

Beyond Foreign Aid:
Managing the Wealth of Nations as an International Imperative for Global Wellbeing

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Abstract

The taxonomy and architecture of foreign aid today is the result of a chaotic evolution that has made it into a flawed concept and project. The extensive literature on its effectiveness, dating almost as far back as aid's own formal inception, has made issue of aspects related to volume, allocation and delivery; much less so of its paradigmatic conception. This literature has had little impact, so far. As a result, aid is increasingly considered to be relatively irrelevant as an agent of development, with perhaps a more tangible role in regard to humanitarian and reconstruction efforts.

Based on the assessment that aid's current paradigm rests on a dated economic growth model, an alternative model is proposed, leading to a new paradigm of "concerted wealth management." A Wittgensteinian epistemological and ontological approach is followed, leading to a demarcation of what should or should not be the subject of the new paradigm. The resulting conceptual framework is built on the idea that it is through the management of wealth (i.e., its formation and use, and the prevention of its degradation, depletion, or destruction) that countries can achieve a self-reinforcing state, in which the wellbeing of the majority of its citizens is satisfied both in the short- and long-run. Value and wellbeing are conceived as an inter-temporal identity. The process through which wealth is managed, as well as the critical-paths that bound it, are situated in a possibility space defined by natural and socio-material limits (determined through a dynamic of rules and routines setting). These limits ensure that the physical realities of human existence (ecosystem) explicitly frame human activity. The actualization of value from wealth is contextual, and, long-term cycles (e.g., Kondratiev long-waves) provide such context. The wealth of nations is not defined by the monetary present value of the output expected from it over time, but by its increasing inter-temporal potential value (wellbeing) generating gradients.

The ultimate goal of concerted wealth management is to achieve the convergence of better-off and worse-off countries in their respective capabilities and freedom to attain self-reinforcing state. Considerable practical implications result from the proposed new paradigm.

July 26, 2017

“We—the middle classes, I mean not merely the rich—we have neglected you; instead of justice we have offered you charity.”

Arnold Toynbee (1883), *Progress and Poverty: A Criticism of Mr. Henry George—Mr. George in England*

“I am a collection of water, calcium and organic molecules called Carl Sagan...

But the essence of life is not so much the atoms and simple molecules that make us up as the way in which they are put together... If we did not know better, we might be tempted to take all the atoms that make us up, mix them together in a big container and stir. We can do this as much as we want. But in the end all we have is a tedious mixture of atoms. How could we have expected anything else?”

Cosmos (1980), Episode 1, *The Shores of the Cosmic Ocean*

"I have long thought about sustainability in terms of balance sheets. The idea is that our economies and lifestyles are underpinned by a set of assets, not just the conventional ones like infrastructure, but a broader set that includes the ecology of the planet and the knowledge base on which we function. If we run those assets down over time, then one way or another, material well-being and quality of life will suffer. We will have damaged the opportunities of future generations, possibly in different dimensions. At the very least we will have imposed costs on future generations that we ourselves did not have to bear to the same extent.

Most of us think that there is a moral imperative not do that."

Michael Spence (2011), *The Next Convergence*

“...the sickness of time is cured by an alteration in the mode of life of human beings, and it was possible for the sickness of philosophical problems to get cured only through a changed mode of thought and of life, not thought a medicine invented by an individual...”

Ludwig Wittgenstein (1978), *Remarks on the Foundations of Mathematics*

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List of Acronyms

ANS – *Adjusted Net Savings*
CO₂ – *Carbon dioxide*
CPIA – *World Bank Country Policy and Institutional Assessment*
EEI – *Embodied Environmental Impact Indicators*
GDP – *Gross domestic product*
GHG – *Greenhouse gas*
GNI – *Gross national income*
HDI – *Human Development Index*
HPI – *Happy Planet Index*
IHEID – *Graduate Institute of International and Development Studies*
INGO – *International non-governmental organization*
ISO – *International Standards Organisation*
IWI – *Inclusive Wealth Index*
MES – *Millennium Ecosystem Assessments*
MSM – *Minimum Standard Model*
NDP – *Net domestic product*
NIS – *National innovation systems*
NGO – *Non-governmental organization*
ODA – *Overseas development assistance*
OECD – *Organisation for Economic Co-operation and Development*
OPEC – *Organization of the Petroleum Exporting Countries*
RMSM – *Revised Minimum Standard Model*
SEEA – *System of Integrated Environmental and Economic Accounting*
SNA – *Standard National Accounts*
TFP – *Total factor productivity*
UNDESA – *United Nations Department of Economic and Social Affairs*
UNDP – *United Nations Development Programme*
UNEP – *United Nations Environment Programme*
UNHCR – *United Nations High Commissioner for Refugees*
UNU-IHDP – *United Nations University – International Human Dimensions Programme*
US – *United States*

Preface

Before I joined the World Bank in 2004, I had spent 14 years working directly in the private sector, or in the public sector in areas that dealt primarily with private sector issues. My background is in business and during those 14 years my motto used to be: “if we are going to make it happen, let’s make it happen right now.”

Rhetoric and office politics exist in every business, and, in general, in every organization. The World Bank and the many other multilateral and bilateral organizations within, and with which I interacted, were not the exception. They were not much different either. The difference, however, was that contrary to what happens in the private sector, and as it is the case of other public and non-for-profit organizations, they did not have an unequivocal and irrefutable benchmark of success. In the private sector, rhetoric and office politics can only go so far; there is always a point where profits show the real colors of what is going on. If you make the right things happen, the achievement of success is clear. Without such an unequivocal and irrefutable benchmark, other types of organizations struggle.

Without a development background or much non-for-profit or public sector experience, I approached my new job at the World Bank with the same attitude and with the same objectives I did in the private sector: I aimed at getting things done; as soon as possible.

It was precisely in discussing what needed to be done, when and where I finally experienced the biggest difference I was now facing vis-à-vis my experience in the private sector: the theories on which decisions about what needed to be done were, for the

most part, too narrow in reach, too general in terms of cause-effect connections, too atomized, and too disconnected from each other.

Furthermore, and given the characteristics of its theoretical basis as described above, the crafty dimension that according to my private sector experience needs to accompany the more scientific part of management theory, seemed perhaps even more important in development than it was in business. However, such crafty interpretation and adaptation was severely discouraged. Institutional and personal reputational risks deterred many forms of informed risk taking and innovation. The incentives at all levels within the aid world favored little risk taking and solutions within the confines of established theories (even when they did not provide the micro-level solutions required). There were macro decisions that would frame some real variables, although their main effect was to create rhetorical boundaries. Within these boundaries, micro decisions would align, rhetorically, with the macro rhetorical boundaries but will ultimately align, technically, within the safety net that “proven” approaches (based on experiences that showed not to lead to trouble, not necessarily to success) and widely accepted theories could provide. If failure ensued, the micro and macro actors following such approach, would demonstrate rhetorical alignment, and, if the question arose, they would further demonstrate replication or escalation from past success and/or alignment with widely accepted theory. Exogenous factors would then be blamed for any shortcoming or failures, and both micro and macro actors would be safely acquitted from any responsibility.

At the core of this dynamic, there was yet another disturbing characteristic: in spite of the distance between the theory and the praxis, as well as between design and results, the culture demanded absolute self-assurance both inside and outside the aid

organizations. Aid policy makers and practitioners pretended to know, without any doubt, how to make development happen; no qualms; no questions. Lack of self-assurance became extremely unappealing in securing the political and economic support from the stakeholders of aid.

When I turned to the literature in hopes of finding more solid bearings for my “make it happen right now” enterprise, I also found disillusionment. Besides William Easterly (a former employee of the World Bank) and Angus Deaton (a recent winner of the Nobel Prize in Economics), who have stood up and denounced some of the nonsense going on, an important number of academics played the same game as the rest, some because in the end, they were also part of an aid machinery; a machinery about which Milton Friedman (1995) once bitterly complained because it was immorally benefiting from the misfortunes of those in more need.

I am glad I waited 10 years to pursue my Ph.D. and that in that period (8 years at the World Bank and 2 years at The Jane Goodall Institute), I could accumulate a lot of practical experience. I am glad to have sat in silence and observed, as I am glad to sometimes have rebelled against the status quo and experienced, first hand, the consequences of doing so. Over those years, I visited more than 60 countries, 14 of them in Sub-Saharan Africa, and the remaining taking me to every other continent but Antarctica. Over the last 5 years of my career at the World Bank, I had veto authority over a portfolio of 190 projects spread across 70 countries, and worth about US\$200 million. The department for which I was leading the monitoring and evaluation practice was funded through a multi-donor facility. This also allowed me to establish and maintain close links with 15 bilateral donors who financially contributed to our programs. The

breath of such experience compelled me to finally go back to academia and try to build on what I had learned, hoping that, perhaps, I could try and “make things happen” from that end as well.

The main purpose in recounting these antecedents before the reader embarks in attending to my arguments, is to make it clear that I have dedicated the last four years of my life, passionately and uncompromisingly to get things done, and to try and break the vicious circle in which aid has been stuck for the more than 60 years that have passed since its formal inception. In this spirit, I have purposely avoided the conventional and fruitless debates; shifted the ideologically charged language that no longer allows for fresh and productive conversations; pointed to the skeletons in the closet about which very few people want to talk; framed aid within an alternative epistemological and ontological framework that can help setting the limits between the sensical and the nonsensical (the latter, within which a considerable part of the aid debate has taken place). I have focused on the praxis of aid, and on the axis of that praxis, and not on the impractical or the snobbish, or the many times futile intellectualism of the last 60 years that are all denounced as such by the needless deaths of millions of people who waited for its fruitful resolve, but instead, were left with thousands of pages hammering, over and over again, on the same aid (in)effectiveness problematic that never seems to get fixed. In this spirit, my citations are heavy in number, trying to convey this nonsensical hammering of the same issues. Likewise, my discussion of previous “high development theories” and their relationship to aid (in)effectiveness is untraditional and unaccommodating, as they have only proven to “muddy the waters”. In all of this, I have followed the approach of Ludwig Wittgenstein, who rebel against traditional philosophy,

in the same way in which we need now to rebel against the nonsensical debates about aid (in)effectiveness of the last 60 years.

Keeping the distances between his achievement and the humbler effort I have made through the following pages, the preface Keynes (1957), wrote for *The General Theory of Employment, Interest, and Money* (which reflects the intellectual influence Keynes's friendship with Wittgenstein had on him), captures perfectly my objective, my own struggles, and the struggles I expect the readers of this dissertation to have:

For if orthodox economics is at fault, the error is to be found not in the superstructure, which has been erected with great care for logical consistency, but in a lack of clearness and of generality in the premises... I have thought it important, not only to explain my own point of view, but also to show in what respects it departs from the prevailing theory. Those, who are strongly wedded to what I shall call "the classical theory", will fluctuate, I expect, between a belief that I am quite wrong and a belief that I am saying nothing new. It is for others to determine if either of these or the third alternative is right...

The composition of this book has been for the author a long struggle of escape, and so must the reading of it be for most readers if the author's assault upon them is to be successful,—a struggle of escape from habitual modes of thought and expression. The ideas which are here expressed so laboriously are extremely simple and should be obvious. The difficulty lies, not in the new ideas, but in escaping from old ones, which ramify, for those brought up as most of us have been, into every corner of our minds. (Keynes, 1957, pp. v–viii)

This dissertation does not present a case against aid as a concept or as an enterprise. In

fact, it proposes untested avenues to make it better. It does, however, present a strong case against continued pretending that we know more than we do, or that 60 years is not more than enough to know by now that there is something inherently wrong with our approach to the task.

To the reader used to the mainstream aid literature, as well to those who approach the issues of aid effectiveness from the political science or political perspectives, it will seem odd that I seem to say little about the operationalization of the conceptual framework I propose. From these perspectives, it would be expected that a plan that suggests changes to the institutional basis of aid would be included. It would also be expected that an analysis of the power structures and their balance or unbalance would be factored in to such plan, as otherwise it would be perceived as unrealistic or potentially ineffective.

Yet, I would have not been consistent with my ontological and epistemological approach if I had done so. Following such an expected path would have contradicted what I arduously argued over the several hundred pages that follow.

Instead, I offer a somewhat odd solution that might seem unrelated and inconsequential. Judged from such perspectives as the ones mentioned above, this assessment would make sense. Yet effectively if escaping from the ontological and epistemological basis on which these perspectives are constructed, the proposed solution might not be as odd as it seems. When it is believe that there is little that has not been tried or that there is little space to try what has been proposed over and over again, even if in different shapes and forms, there is almost no space for the kind of traditional solutions expected from those perspectives. Chapter 6 offers considerations as to the

operationalization of the conceptual framework proposed in Chapters 3, 4, and 5.

Nevertheless those considerations might seem technocratic and devoid of social or political considerations. They are, indeed, in appearance, because they are not meant to contemplate those types of considerations beyond what the equations proposed in Chapters 4 and 5 have already made endogenous into the proposed conceptual framework. The point made is that, as we do today with GDP, the calculations behind the proposed conceptual framework are also technocratic.

The reader will be left then with a proposal to move forward with the adoption of the United Nations System of Environmental-Economic Accounting (SEEA), as well as their integration into a new set of labelling standards that capture the wealth of nations embedded in products and services. Chapters 3, 5, 6, and the Epilogue will all build an argument supporting why such a seemingly innocuous and detached solution might make more sense than some of the traditional ones proposed over the last 70 years or so. The solution is conceived as a Trojan Horse and, as a Trojan horse it should also startle and surprise the reader of this dissertation.

If any success comes from this research, it would be not because I finally graduate but because it makes a contribution in stopping what does not make any sense continuing, and because, instead, it put us on our way to getting things done, right now! This much we owe to those we claim we want to help.

Chapter 1

Framing Aid Effectiveness

Chapter Summary

Chapter 1 briefly outlines the assessment of the problematic being addressed through this dissertation, and the literature supporting such assessment. Both will be explored in much more detail over Chapters 2 and 3.

The effectiveness of aid has been questioned since its very inception. A complicated origin, beset by different traditions and a mix of conflicting motives, established an almost insurmountable constraint to its effectiveness. Furthermore, the theoretical basis on which its praxis was slowly built was itself plagued with limitations. The theory of economic growth on which it was conceived, as well as the tools of development planning and national income accounting that emerged from it, became the language of aid; a language that defined its limits and constrained its world. Within the limits of its world, aid became entrenched in a vicious circle of endless debates regarding its effectiveness. These limits situated it away from the more relatively relevant role other contextual variables played in influencing the outcomes it pursued; away from a realistic consideration of the timelines by which the achievement of its objectives were bound; and, in between the two ends of the effectiveness debate that, not being conclusive enough in favor of one or the other, let aid developed according to its conceptually ineffective inner logic. Today, more than 60 years later, the problems related to its volume, allocation, and delivery that plagued its effectiveness almost from its inception remain awfully similar. This, in itself, is perhaps a much stronger signal of its

ineffectiveness, and definite proof of the ineffectiveness of the effectiveness debate itself.

Aid's theoretical underpinnings situate the origin of growth and development in the accumulation of capital, the growth of population, and the increased knowledge that translates into higher factor productivity and, therefore, economic growth. These underpinnings do not consider the existence of any limits to such growth (its logic rests in maximizing growth), nor do they give much consideration to other contextual variables, considered exogenous (e.g. remittances, trade, corruption, financial flows, intellectual property, and others). Perhaps they do so only rhetorically, but the world we live in, and our praxis, is much more tangible for sure.

Drawing from this assessment and using a Wittgensteinian epistemological and ontological approach, this dissertation aims at "dissolving" the illusion that the problematic of aid effectiveness is due to issues related to volume, allocation, and delivery, by reinstating these issues, not as the causes but, instead, as the effects of the real cause of this problematic: a flawed conception of aid. It is suggested, then, that aid needs to be replaced by a broader concept and a simpler framework.

Since it is through the effective and efficient use, and overall management of their wealth that countries can fulfill the wellbeing of their citizens and sustain, or even increase, their capacity to do so, wealth management is central in the process of development. Given that most countries are not isolated from others, but in fact share many public goods and one global ecosystem, the management of each country's wealth requires global coordination. This coordination is also required given that, despite the monetary denominations and the social structures that might conceal them, every local and global transaction and exchange conveys a transfer of real wealth between the

parties. The idea of *concerted wealth management* is proposed, then, as the broader but simpler conceptual framework that can replace aid.

To argue in support of the proposed conceptual framework, this dissertation relies on the development of an alternative understanding of economic growth and development that draws from Wittgenstein's epistemological and ontological approach. The proposed understanding is built on the setting of clear limits that separate those variables about which something meaningful can be said and done, from those about which we should remain silent or passive. Methodologically, a quasi-counterfactual will help establish the superiority of the proposed conceptual framework or new paradigm over the old-paradigm aid. This quasi-counterfactual will require the derivation of volume, allocation, and delivery consequences from the proposed conceptual framework, leading to a typology of actions that would be justified as part of the concerted wealth management approach proposed as a replacement for aid. This typology would then allow for a comparison with the taxonomy of actions that are currently justified through the old paradigm of aid. Through such comparison, this dissertation will aim at demonstrating the advantages of the new paradigm proposed. Although this demonstration will be only theoretical in reach due to time and resource limitations, it will hopefully pave the way for future empirical validation.

The Problematic

As a concept and as a global project, foreign aid (from now on, "aid"), has been in crisis almost since its inception in the late 1940s (see for example, Montgomery, 1967; Pearson & Council on Foreign Relations, 1970; Tinbergen, 1958; Wiggins & Schoeck, 1958). Its critics are many and the numerous facets from which it is criticized cover

almost every aspect of it; yet, this criticism keeps going in circles, being almost as ineffective in bringing about considerable change as aid itself seems to be, particularly development aid. This vicious circle is particularly evident when the criticisms made in the past are virtually identical to those made today (Independent Commission on International Development Issues, 1980; OECD, 1981; White, 1974; Whitfield, 2009).

The most important inquiry about aid—that is, whether it achieves its many times conflicting economic, humanitarian, political, and moral objectives (Picard & Buss, 2009)—cannot be accurately and positively argued for except in a very specific cases (Banerjee & Duflo, 2011; Claessens, Cassimon, & Van Campenhout, 2009; May, 1989; Schabbel, 2007). Hence, not only it is unlikely that this criticism will diminish, but most importantly, that under its current form (one that makes it almost impossible to disentangle those many conflicting objectives), aid will hardly ever be considered unequivocally effective (see among others Bjørnskov, 2013; Mosley, 1987; Riddell, 1987). In fact, some scholars argue aid might carry pernicious consequences for the recipient countries (Bauer, 1973; Deaton, 2013; Easterly, 2006; Friedman, 1995; Nunn & Qian, 2013).

The problematic of assessing the effectiveness of aid, as mentioned above, not only lies in the complexity and conflicting nature of its motives and objectives. It lies as well in the resulting entanglement of these motives and objectives with the many other factors that influence the variables aid aims to impact—for example, economic growth and poverty (Bjørnskov, 2013). Likewise, the conflicting nature of some of the donor objectives vis-à-vis those of the recipient complicates even further any attempts of assessing aid effectiveness. This entanglement of purpose and delivery in the evaluation

of aid has been used by both its defenders and its critics to substantiate their arguments. Defenders claim the purpose of aid is defensible despite its seemingly ineffective delivery (given that delivery can always be improved); critics have used aid's seemingly ineffective delivery to dismiss its purpose (Deaton, 2013; Easterly, 2006; Mosley, 1987; Riddell, 1987). Both of these sides have been able to accumulate solid and abundant enough evidence to apparently refute each other. Ultimately, this has helped maintain the status quo.

Despite this confusing situation, if donors were to be consistent with the rhetoric of aid and, more importantly, with its theoretical foundations, as problematic as they are, it would be far more appropriate to conceive, develop, deliver, and evaluate aid in line with *recipient objectives*, rather than the motives and objectives of the donors. These recipient objectives are the same as those that also underpin, for the most part, the theoretical foundations of development economics. If aid is meant to help aid-receiving countries to develop and converge towards the levels of wellbeing of the aid-giving countries (Barro & Sala-i-Martin, 1997; Gerschenkron, 1962; Warsh, 2006), there should not be any room for other motives or objectives that could only dilute its contribution towards these goals; at least, not in theory or rhetoric—we unfortunately know that praxis do often deviate from both (see the following for countless number of examples, Arndt, 1987; Crewe & Axelby, 2012; Cukierman, Hercowitz, & Leiderman, 1992; Mosley, 1987; Riddell, 1987; Schabbel, 2007; Warsh, 2006).

When looked at from the perspective of aid-receiving countries, aid can, broadly speaking, take two forms based on distinct families of objectives: (a) humanitarian- and emergency-related aid (usually short-term), aimed at helping a country protect the

integrity of its wealth (including its citizenry) by addressing both actual and potential damage; or, (b) development-related aid (usually long-term), aimed at helping a country ensure the present and future wellbeing of its citizens by enabling or facilitating a sustainable process of social, economic, and political change (Bjørnskov, 2013). Aid-giving countries are not only able to deal with emergencies and to sustain a more stable development path (despite the occasional short-term disturbances), but they can also, without disrupting their capacity to fulfill these roles for themselves, afford to provide the financial assistance that aid-receiving countries seem to require in dealing with some of these challenges on their own (Benson & Clay, 2004; Chenery & Strout, 1966a; Managi, 2015; Stirk, 2014).

While the distinction between emergency- and development-related aid is imperative when considering its effectiveness given how different these two objectives are, many of the debates on aid effectiveness do not keep a clear distinction between them (Bjørnskov, 2013). Emergency-related aid tends to be much more narrowly focused and requires shorter-term interventions, while development-related aid is extremely broad and usually requires interventions over the very long-term (after all, more than 60 years have already passed since it started). This latter form of aid plays a role among an invariably broader set of exogenous policies, actions, and events, all shaping together progress towards the same development objectives. Therefore, determining and assessing its catalytic role, if any, and its individual contribution, if any, becomes essential in determining and assessing its (in)effectiveness.

In spite of the murkiness of these aid-effectiveness debates, critics like Easterly (2001, 2006, 2014) and Deaton (2013) insist that besides the narrowly focused

humanitarian- and emergency-related aid, which according to them have been and can potentially be effective in specific circumstances, any other forms of aid are, on the contrary, mostly ineffective and sometimes even detrimental to its recipients (see also, among others, Bauer, 1973; Deaton, 2013; Easterly, 2006; Friedman, 1995; Nunn & Qian, 2013). As Krugman (1998) has pointed out, aid driven interventions (which were often inspired by high development and economic growth theories) failed in achieving the outcomes that were predicted, or actually achieved outcomes that were not predicted or expected.

A basic stylized fact is that a country's capacity to deal with emergencies depends, to a high degree, on its wealth or balance sheet—broadly understood as the value of, among others, its institutions, infrastructure, tangible and intangible capital, people, and natural endowments, relative to both its local and global relative worthiness (Benson & Clay, 2004; Managi, 2015; Spence, 2011; UNU-IHDP and UNEP, 2012, 2014, World Bank, 2006, 2011). Within this local and global context (particularly considering the wealth value transfers that inter-country flows convey (Managi, 2015; Sengupta, 2013), the wealth of a country depends, in turn, on how well it manages to create, first of all, enough output to sustain the wellbeing of its citizens, and second, to save and reinvest some of this output, while achieving both tasks without diminishing, but hopefully increasing its overall wealth over time (Spence, 2011).

Reinvesting and ensuring long-term sustainability are necessary for a country to maintain, or preferably increase its wealth. In turn, increasing its wealth is essential for a country, particularly when there is a need to improve the levels of wellbeing of its population further, or when there is a need to sustain the same levels of wellbeing for a

growing population—both usually typical situations for aid-receiving countries (UNU-IHDP and UNEP, 2012, 2014, World Bank, 2006, 2011). All of this, of course, considering that the country also manages the distribution of wealth in a manner that contributes to improving the levels of wellbeing of most of its citizens and not just a few (Deaton, 2013; Milanović, 2016; Piketty, 2014; Stiglitz, 2013).

The process of social, economic, and political change, or perhaps in more practical terms, the process through which a country manages its wealth in order to ensure the wellbeing of its citizens—the main subject of this dissertation—are pointed out by Douglas North (2005), Michael Spence (2011) and, Joseph Stiglitz (Stiglitz & Lin, 2013), all Nobel Prize winners in economics, not only to be the single most important factor behind economic growth and development, but also, the factor about which we know the least (see also Campbell, 2004).

In light of what is discussed in previous paragraphs, even if we acknowledged that aid-receiving countries might need assistance from aid-giving ones in dealing with emergency or development related issues, conceiving aid as one of the main drivers and catalysts for both these two major task areas—considerably larger and much more complex than what aid can realistically address—seems not only odd but inaccurate, particularly in the case of development-related aid (Cassen, Sewell, Jolly, & Wood, 1982; Deaton, 2013; Easterly, 2006, 2014; Goldin, 2016). Indeed, when compared, among others, to volumes of trade, private investments, royalties paid for intellectual property, and flows of migration and remittances that take place between aid-giving and aid-receiving countries, aid is just a minuscule fraction (for example, as reported by the OECD and the World Bank (2017) low income countries' net overseas development

assistance—ODA—as a percentage of gross national income—GNI—went from 17 to 9 percentage from 1994 to 2014, while, in the case of middle income countries went from 0.83 to 0.25 percent from 1990 to 2014). Even when no serious scholar or practitioner of aid would dare formally claim aid to be the main driver, or automatically give it a categorical catalytic role in the process of development, the truth is that it only suffices to pay attention to the rhetoric surrounding aid, as well as its praxis, to know that they carry an undeniable self-impose blindness about how truly important and effective aid is (i.e., it is widely affirmed, many times implicitly, that we *can* end poverty), and how sure they are about what to do and how to do it (i.e., it is also widely affirmed, many times implicitly, that we *know how* to end poverty).

Moreover, when compared to arms trade, corruption, drug trafficking, shuffling of financial flows, transfer-pricing arrangements within transnational corporations, international tax-avoiding or minimizing strategies, and other activities that operate within or outside of the boundaries of the formal and informal global social, economic, and political architecture, development-aid can hardly compete with the effects and destabilizing nature of these activities, the inter-country flows they create, and the wealth value transfers they convey (see for example, Bruszt & McDermott, 2006). Given their relative and considerably superior weight, all of these variables, among others, exert a more considerable impact on the wealth of aid-receiving countries than aid can and does exert on it (Wickstead, 2015, pp. 76–77). Often, these other variables result in unbalanced and unjust wealth value transfers between countries, as well as in situations where the capacity and freedom of aid-receiving countries to manage their wealth is greatly constrained (Picciotto, 2009)—all, far beyond what aid can and aims to achieve. And

while, through initiatives like the European Union's Policy Coherence for Development (Carbone, 2009) or the Center for Global Development's Commitment to Development Index (Birdsall & Roodman, 2003; Roodman, 2012), these issues are increasingly being considered, the practical impact of such efforts is still limited (Barder, Clark, Lépissier, Reynolds, & Roodman, 2013; Barry, King, & Matthews, 2010; Picciotto, 2005).

Furthermore, when considering the impact the current international monetary and financial systems have in creating asymmetries between the prices of different product groups and between countries, as well as the impact these asymmetries have on the fairness of the wealth-value transfers that take place through inter-country flows, the potential relative role of aid in helping aid-receiving countries is further diminished (Meikle, 1995; Norrlof, 2014; Stiglitz & United Nations General Assembly, 2010).

Finally, when compared to the scope of the challenges faced by aid-receiving countries in managing emergencies and achieving a self-sustained process of development, the funds provided by aid are, relatively speaking, even less relevant (Picciotto, 2009; Picciotto & Weaving, 2004; Wickstead, 2015).

The above are some ways in which the current global social, economic, and political architecture influences—in more relevant manners than those in which aid does and can do—the nature of inter-country flows, the wealth value transfers they convey, and their impact both on aid-receiving countries' wealth, and on their capacity and freedom to manage this wealth. It is evident, then, that the assistance required by aid-receiving countries from aid-giving ones should not be limited to the traditional transfers of wealth, in aid funds or knowledge, but should also include efforts to create and maintain a balanced global social, economic, and political architecture that is conducive

to the convergence in wellbeing of both groups of countries (Spence, 2011).

Ultimately, as explained above, a country's capacity to deal with emergencies and development issues depend on its wealth, and wealth is itself impacted in much more relevant and sizeable ways by all these other variables discussed above, than it is by aid.

Even so, the underlying and unspoken assumption behind some aid literature is that the catalyzing effect that it can have is prominent—far beyond what it seems to have been and what could be, even more so when looked at it from a theoretical point of view (Chenery & Strout, 1966a, 1966b; Mikesell, 1968; Riddell, 1987). Reinforcing this assumption and despite rhetoric directing to the contrary, there is yet another working, but usually unspoken assumption behind long-held attitudes towards aid, that the problem of development is an endogenous one (Dasandi, 2014). The focus of aid efforts seems to rest much more heavily on the internal dynamics of aid-receiving countries, their savings level, corruption, capacity, institutions, among other things, the local ingredients on which economic growth theory is based (Commission on Growth and Development, 2008), and not nearly enough on the impacts that the global social, economic, and political architecture has on aid-receiving countries' wealth through the above-mentioned inter-country flows, as well as the wealth value transfers they convey.

The underlying and often unspoken view behind the above-mentioned assumption, which is reflected through aid's praxis, is that aid can help accelerate development (Riddell, 1987), even if not much else in the global context in which aid-receiving countries operate changes (think for example, of aid-giving countries subsidies to farming or carbon fuels, and intellectual property's implications in terms of the pricing of pharmaceuticals or overall access to knowledge), and even if the ways in which

countries relate and interact with each other remain unchanged—hence the usual silence about these contextual factors when discussing or implementing aid (Birdsall & Roodman, 2003; Deaton, 2013; Picciotto, 2004, 2009; Roodman, 2012). This view has meant that, in practice, aid could be viewed as an indirect way to compensating aid-receiving countries (only partially) for the mostly unacknowledged and unspoken imbalances in the global social, economic, and political architecture, rather than correcting such imbalances so that there would be no need for them to be compensated in the first place (e.g., eliminating trade restrictions, relaxing immigration rules for displace people, regulating arms trade, and many others). For example, Chenery and Strout (1966a, 1966b), in what is considered one of the most thorough theoretical accounts of the role of aid, suggests that aid could fill the gap in reserves created by the trade imbalances commonly carried by aid-receiving countries. However, their paper does not suggest addressing the global causes of these imbalances, so that this gap would be minimized or eliminated—it can only be imagined, due to the unspoken held assumption that trade competitiveness and the direction of financial flows are mostly endogenously led.

In a sense, if one were to apply Sen's (2000) ideas about development-as-freedom at the country level, we would have to admit that under the current global social, economic, and political architecture, not all countries enjoy the same degree of freedom, or the capabilities that underlie it. In fact, it is aid-receiving countries that are often grossly unfree, in Sen's terms, and therefore constrained, rather than enabled, by the global social, economic, and political architecture in their development efforts (Amin, 1976; Commission on Global Governance, 1995; Elson, 2011, p. 211; Independent

Commission on International Development Issues, 1980; see several of the articles in the edited volume by Kaul, Grunberg, & Stern, 1999; Spence, 2011; Stiglitz, 2010; The South Commission, 1990).

Furthermore, aid has unrealistically been portrayed as a relatively effective, short-term solution to development issues. (See, for example, Millikan & Rostow (1976) who proposed in 1957 that, if about US\$3.5 billion of aid were provided to aid-receiving countries every year, all would be in a stage of self-sustained growth in less than twenty years—an evidently unrealistic proposal, when almost 60 years and more than US\$1 trillion of aid later, this has not yet been achieved.) It has barely been acknowledged by aid's theory and praxis, that aid cannot override the also often ignored critical-path to development determined by the natural, social, and material limits constraining the process of change behind it (Campbell, 2004).

The effectiveness of aid has also been inhibited by the relative narrow concentration of economic growth and development economics literature on labour, capital, and technological progress as the drivers of growth—the ingredients mentioned above—and on the market as the institution that fosters it (Commission on Growth and Development, 2008; Galor, 2011; Helpman, 2004; Salvadori, 2003a, 2003b; Schabbel, 2007, p. 194). In today's radically different world economy, intangible capital, such as knowledge, institutions, and social arrangements, including the less tangible components of produced capital, like software and similar types of intellectual property, have far surpassed the importance of physical capital (Ugur, 2013; World Bank, 2006, 2011). As Thirlwall (2002) argues, even what is called “new growth theory” is, ultimately, not that different from the “old” one, nor considerably more helpful in understanding how growth

occurs or can be influenced.

It is an anachronism that severely limits the understanding of development, as well as of its different paths, to continue modelling economic growth on: (a) the broader categories of labour, capital and innovation (hence, limiting our understanding of the very different policy choices available to influence very different kinds of wealth) (Hartmann, 2014; Spence, 2011; Warsh, 2006); (b) the emphasis on maximization rather than optimization, including the focus on increasing total factor productivity (TFP) that leads to the perception that there are established development paths (e.g., industrialization) and to the denial of physical and environmental limits to growth (Alpert, 2014; Helpman, 2004; Miller & Page, 2007; Page, 2011; Sengupta, 2013); and (c) the assumption that markets are, for the most part, driving the process through which these “ingredients” are engaged in a maximizing growth producing combination (rather than reliance on a broader set of institutional arrangements for managing a country’s wealth that result from the interaction of human beings and their efforts to address the coordination and control issues that arise from cooperation) (Arrow, 1974; Reynaud, 2002; Roth, 2015).

While economic growth theory has shown the relationship between the “ingredients” and growth, it has not demonstrated a causal connection between them (Easterly, 1997, 2001; Jones, 1998; Montgomery, 1967; Toye, 1987). Furthermore, it has narrowly focused on the relationship between flows and not enough on the relationship between the flows and stocks of wealth—a focus that is absolutely essential in understanding the workings of the complex systems underlying the process of social, economic, and political change (N. B. Forrester, 1973; Meadows & Wright, 2008; Miller & Page, 2007).

This narrowness in the thinking about economic growth has pervaded aid praxis. Consequently, the design and delivery of aid has gravitated towards approaches resting on these long-held mechanistic and technocratic paradigms about economic growth—what was termed above, an “ingredient-based” understanding of development, rather than a “process-based” one. These paradigms have led to a belief that if the appropriate “ingredients” were put in place with the help of aid, they would combine and interact through the invisible hand of the markets and, as a result, create economic growth, and more generally development (H. A. Arndt, 1984, 1987; Chenery & Strout, 1966a; Easterly, 1997). Even when some development theorist such as Hirschman (Alacevich, 2011) suggested increased attention needed to be given to the “process” of development and towards an “unbalanced” rather than “balanced” understanding of this process, ultimately, the praxis of aid was increasingly shaped by the “balanced approach” which relied on a macro understanding of the development process based on neoclassical economic growth theory which was mostly focused on increasing the “ingredients” behind growth (Black, 1960; Dalgaard, Hansen, & Tarp, 2004; Easterly, 1999, 2001). Likewise, neo-Marxist thinkers such as Amin (1976), Wallerstein (1976), and Frank (Cockcroft Frank, Andre Gunder., Johnson, Dale L., 1972), among others, gave more emphasis as well to the “process” rather than to the “ingredients”, however, their ideas had little impact on the actual delivery of aid.

In this context, it is easy to see why, when motivated by this theoretical understanding, mostly driven by a neo-classical economics understanding of the world, aid’s praxis has for so many years concentrated on improving the quality of these “ingredients”—be it tangible capital at first, intangible capital and human capital later, or,

more recently, the market mechanism and other institutions (as exemplified in the Washington Consensus). As discussed above, this concentration on the “ingredients” was further ingrained into the praxis of aid through the institutionalization of national income accounting and development planning techniques (both also based on the same neoclassical growth theory) as the tools of choice for allocating resources and priorities (Boettke, 1994; Dollar & Easterly, 1999; Easterly, 1999, 2001). (See Chapter 2 for further discussion on this subject)

In the face of the lack of broader and more solid economic growth theory foundations, the conception, design, delivery, and evaluation of aid, its praxis, was shaped, then, not only within the confines of this limited understanding, but more importantly, by all the other elements that filled this theoretical void: conflicting ideas behind objectives and motives of different stakeholders; the politics behind them; ideologies; economic and financial crises, and; the wide variety of historical contexts through which aid grew into what it is today—a multi-billion dollar activity that, while still relatively small, has become much bigger and longer-lasting than what its original supporters ever envisioned (Deaton, 2013; Easterly, 2006, 2014; Lumsdaine, 1993).

In summary, aid has been deeply shaped by narrow visions about the process of economic growth and development, as well as by an unrealistic, and perhaps politically induced rhetoric, about both its relevance and the timeframe in which it can exert considerable influence in jumpstarting and accelerating the process of development (e.g., big push). As a consequence, aid effectiveness has also been evaluated within the limits of this theoretical framework—that is, often isolated from other variables and from other structural features as if, regardless of its lesser relative size, it was nevertheless an

important catalyzer in improving the ability of aid-receiving countries to deal with emergencies, and to engage in a sustainable process of development.

While the suite of problems surrounding aid effectiveness has been comprehensively examined from the perspectives of its volume, allocation, and delivery, it has been less so in the context of the above-mentioned process of social, economic, and political change (the process); in the context of other inter-country flows (the flows)—among which it is a relatively minor and shrinking one; as well in relation to the size of the problems being addressed (the challenge). Aid has also been barely examined in the context of a country's wealth (the stock), particularly if wealth is more broadly understood than how, up to now, economic growth and development economics theories have understood it (Easterly, 2007; Mosley, 1987; Riddell, 1987; Spence, 2011). Furthermore, the link between economic growth and development economics theories, as well as the ways in which aid has been conceived, designed, and delivered, have also rarely been considered as potential explanations for its apparent ineffectiveness (while Easterly (1999, 2001), among others, have made a strong case about how this connection shaped the praxis of aid, the literature on the impact this connection had in terms of aid (in)effectiveness has not been explored in more detail).

If this seems to be the case, it is fair to ask how is it possible that after more than sixty years, whenever aid is conceived, debated, or evaluated, it is mostly done outside the context of the considerations summarized in the previous paragraphs?

Easterly (2014), among other critics of aid (e.g. Carothers & de Gramont, 2013), call this narrow approach “the technocratic illusion”—the underlying assumption behind some of the literature and attitudes in support of aid that we know how development

works, what role aid plays in catalyzing it, and how we can make it happen through the use of aid. Similarly, Deaton (2013), the winner of the Nobel Prize in economics in 2015, calls this idea or assumption the “hydraulic approach to aid,” that is, all we need to do is inject funding into aid-receiving countries to make development happen. Krugman (1998), another Nobel Prize winner in economics, argues more broadly, as previously discussed, that the practice of development economics, including aid’s praxis, has been mostly unsuccessful, with the few success stories we can account for being mostly unexpected and unpredicted surprises, rather than planned and expected outcomes. Montgomery (1967), Mikesell (1968); Mosley (1987); Lumsdaine (1993); Easterly (2006, 2014); Picard and Buss (2009), Riddell (1987, 2007); Carothers and Gramont (2013); Schabbel (2007) and Deaton (2013), among many others, capture some of the complexities of the debate surrounding aid that explain aspects of such narrow understanding, as well as of such a prolonged debate around its effectiveness. These complexities are partially explained by the historically-driven confusion and polarization of views about aid’s motives, objectives, and means, and, therefore, about what success looks and should look like. They are, of course, partially explained as well by the historical contexts in which these debates have taken place.

As a result, between ups and downs, and mostly in struggling to survive, aid has been resilient in front of never ending debates that have yet to lend a clear winning hand to any of the different sides engaged in them. Likewise, aid has been conceived and devised, and has evolved, building organically from all these confusing pulls and pushes rather than building on a clear and robust understanding of its role in development—perhaps too, because of our understanding of development is limited as well. The current

taxonomy and architecture of aid are, then, more of an accident of this convoluted debate and process, than a well thought out and substantiated enterprise to help its recipients (Lumsdaine, 1993).

Elusive as it is, at least under the recurrent kind of criticism which has been dominant since its inception in the late 1940s, aid effectiveness is bound to remain a mystery. Unless the debate is shifted to include the other factors mentioned above that have been missing from it, the now old and recurrent criticisms will continue, and the prospect of a more effective aid enterprise will remain low.

Posing the Problem: The Central Research Question

The focus of this dissertation will be on reframing the received understanding and debate on the causes underlying the apparent ineffectiveness of aid, particularly since this current understanding and debate have had limited success in addressing this perceived ineffectiveness.

This research intends to alter the current understanding of what aid (in)effectiveness is by focusing on two main gaps in the literature and debate that are also gaps in aid praxis, namely, the structural context in which aid takes place, and the role aid can play in the process of social, economic, and political change through which countries should manage their wealth, as the mean to deal with emergencies, and to create a sustainable process of development.

These gaps, it will be argued, have led to the creation of an aid delivery architecture and taxonomy, as well as a global social, economic, and political architecture that: (a) is based on the assumption that, or at least built on the incentives to behave as if aid has a catalytic effect; (b) is constrained by a simplistic and mechanical ingredient-

based rather than process-based conception of economic growth; (c) leaves out a whole range of other inter-country flows, as well as characteristics of the global social, economic, and political architecture that shape them, which, through the wealth value exchanges they convey, are much more relevant in fostering or hindering development than aid; and that (d) lends itself to a problematic combination of conflicting motives, interests, and ideologies that contribute not only to the creation of perverse incentives to maintain the status quo, but that also dilutes its effectiveness even further.

In shifting the current understanding and debate of the causes underlying the (in)effectiveness of aid, it will be argued over the following pages that aid needs to be replaced by a broader concept of *concerted wealth management*, which will encompass the gaps mentioned above. Given that aid's theoretical basis and praxis rely in turn on the existing mainstream theory of economic growth, a new and broader conception of aid requires a new theory or understanding of economic growth; without it, it is argued, the effectiveness and efficiency of aid can only change marginally, as the history of the past 60 years or so has proven.

From this starting point, more specifically, this research will be seeking to understand:

1. What are the theoretical underpinnings of the process of social, economic, and political change through which a country manages its wealth in order to engage in a sustainable process of development, and in order to better-handle emergencies? What are the main challenges this process presents to aid-receiving countries that seem to require or that could benefit from concerted wealth management? Which are the ways in which aid-giving

countries can cooperate with aid-receiving ones in dealing with these challenges? What are the ways in which these concerted efforts can be organized and delivered to effectively help aid-receiving countries dealing with these challenges?

2. What is the impact that inter-country flows have in the process of social, economic, and political change through which a country manages its wealth in order to engage in a sustainable process of development and in order to better handle emergencies? What are the main challenges these inter-country flows present to aid-receiving countries that seem to require, or that could benefit from, concerted wealth management? Which are the ways in which aid-giving countries can cooperate with aid-receiving ones in order to address the challenges inter-country flows present to them in the process of managing their wealth? What are the ways in which these concerted efforts can be organized and delivered to effectively help aid-receiving countries dealing with these challenges?

Given the extent and complexity of the research problematic that this dissertation will be addressing, rather than exhausting it completely, its objective will be to provide a basic conceptual framework on which an initial basic response to the main research questions above can be constructed. Thus, this research will also contribute to the literature and the debate by not only providing a preliminary set of policy recommendations but also by proposing directions for future research.

Thesis Statement

Contrary to the mainstream literature, this dissertation will suggest that the most

important cause of aid (in)effectiveness does not rest as much on aspects relating to its volume, allocation, or delivery, but in the narrowness of its conception. It is this narrowness of conception that leads to ineffective practices related to volume, allocation, or delivery, and not the other way around. Effects have been mistaken for causes, and hence the ineffective circularity of the debate about aid (in)effectiveness.

Aid has been conceived on the basis of a narrow understanding of economic growth (and the development theories that draw from this understanding) that focuses on the ingredients rather than on the process of social, economic, and political change through which development takes place—the recipe. It has also been conceived on the underlying assumption that economic growth and development are mostly endogenously led processes and, therefore, that the role of aid is to address the country-specific constraints faced during this process, rather than the aspects of the global social, economic, and political architecture that may play a part in it.

To address its perceived ineffectiveness, aid would need to be replaced by a broader concept that does not solely focus, as aid has traditionally done, on transferring resources and knowledge to aid-receiving countries. A new paradigm is therefore needed. This new approach to understanding the process of development could be called *wealth management*, as it is through the managed extraction of value from wealth, as well as from the prevention of its degradation, depletion, or destruction that countries can develop. *Wealth management*—or the balance sheet approach (Spence, 2011)—is understood here as the process of extracting value from wealth that aims to ensure its long-term survival and capacity to sustain its citizens' wellbeing. This process—a result of social, economic and political change—is based on a comprehensive management of

the different kinds of wealth available to a country (being countries a working unit of analysis that could easily be aggregated or disaggregated as needed), taking into account their nature, and the characteristics that result from their nature, all of this in the context of a global social, economic, and political architecture under which inter-country flows convey wealth value transfers that add or subtract to their wealth stocks. While wealth management is inherently an endogenously led process, it is constrained and shaped by the exogenous conditions imposed by the global social, economic, and political architecture. The link between these endogenous and exogenous factors shaping wealth management lie in the wealth value transfers that result from inter-country flows.

Concerted wealth management, as opposed to our current understanding of aid, should, therefore, aim at enabling, enhancing, and safeguarding the freedom and capabilities of aid-receiving countries to manage their wealth in the most effective and efficient ways, so as to allow them to reach and sustain the level of wellbeing that they need and want. It should focus on two main issues: (a) how aid-giving countries can cooperate with the aid-receiving in their wealth management process, including preventing and managing emergencies; and (b) how aid-giving and aid-receiving countries can work together, and agree, on a global social, economic, and political architecture that ensures that all inter-country flows and the wealth value transfers they convey, do not disproportionately and negatively impact aid-receiving countries' wealth, as well as the process through which they manage this wealth.

Concerted wealth management should aim at enabling and facilitating the convergence between aid-giving and aid-receiving countries' freedom and capabilities to reach their desired levels of wellbeing.

Methods and Data

The main building block of this dissertation's methodological approach is the elaboration of a conceptual framework for understanding the process of social, economic and political change through which a country manages its wealth in a global context—more or less proactively—in order to better handle emergencies and engage in a sustainable development path. This conceptualization will be essential in order to understand how the proposed idea of concerted wealth management, as a substitute for aid, can contribute to both these objectives and therefore be shaped in terms of its praxis.

As a starting point, an alternative epistemological and ontological frame of reference based on the ideas of Ludwig Wittgenstein will be used. His approach towards reframing long standing conceptual and theoretical confusions through the use of a particular methodology, as well as his minimalistic and strictly practical approach towards dissolving apparent issues (Horwich, 2012), can contribute immensely towards breaking the vicious circle in which the aid enterprise and the question of its (in)effectiveness have been trapped over the last 60 years or so. Building on Wittgenstein's philosophical framework will allow for understanding how the words and meanings and the underlying understanding of knowledge, rules and causation that shaped aid, contributed in "limiting its world", as well as the debate about it. It will also allow for a shift in the framing of the aid enterprise and the understanding of its effectiveness or lack thereof. Such a shift is required due to how charged the meaning of the words used in the debate have become, no longer allowing for a focus on the issues beyond axiomatic or ideological biases. Furthermore, the use of a Wittgensteinian approach, in particular his framing of rules and routines, knowledge and explanations,

and the dynamics of language games, will allow for a better alignment with the increasingly accepted realization about the complexity of the social, economic, and political order, as well as with the implications this complexity introduces in understanding the process of social, economic, and political change. Wittgenstein's philosophical approach can help discern those areas about which it is worthwhile for aid saying and doing something to promote the process of development, and those about which it may need to remain silent and passive. While the choice of an epistemological or ontological framework is, in essence, an arbitrary decision, it is nevertheless considered that the choosing of Wittgenstein's approach in this particular research, is the most appropriate given its unsettling features and how these features can fulfill the urgent need for disruption from the vicious circle within which debates about aid have remained trapped over the last 60 years.

One of the practical implications of adopting the proposed epistemological and ontological framework is that, while in Chapters 1 through 3 the terms used will be extracted directly from the literature and, therefore, could potentially be assigned a range of meanings according to each authors' intentions, starting in Chapter 3, a critical set of words and their meanings are proposed. They are meant to shift the debate and to allow for a framing of the issues discussed from a different analytical perspective. Consequently, Chapters 4 through 6 mostly rely on the new words and meanings provided in Chapter 3, rather than on those found in the literature (although when literature is cited, the terminology used in it is respected).

This dissertation will approach the proposed research problematic by analyzing:

- 1) Wealth and the different forms it takes—a country's balance sheet.

- 2) The way in which these different forms of wealth (assets) relate to each other.
- 3) The ways in which these assets are used and transformed through the process of social, economic and political change that underpins the explicit or implicit efforts of a country to manage its overall wealth—its balance sheet.
- 4) The impact that inter-country flows and the wealth value transfers conveyed by them have on a country's wealth.
- 5) How global social, economic, and political architecture influences or determines the impact of those inter-country flows in a country's wealth.
- 6) The ways in which aid-giving countries can cooperate with the aid-receiving in ensuring that inter-country flows, and the global social, economic, and political architecture in which they are embedded, do not have adverse impacts (on the contrary, positive ones) on their wealth nor on the process through which they manage their wealth with the objective of both: dealing with emergencies, and engaging in a sustainable process of development.
- 7) The possible mechanisms and architecture through which such concerted wealth management could take place.

It is important to clarify first, that this dissertation will not engage in an attempt to reassess the effectiveness of aid by following mainstream debates centered or concerned with aspects related to its volume, allocation, and delivery. Instead, its starting point of reference will be that the increasing convergence of the literature towards the conclusion that aid seems to be relatively irrelevant at the macro level, is in itself, a sign of the more substantial structural problems it carries due to its conception, design, and delivery.

Mixing motives and objectives, as well as the underlying weak theoretical foundations on

which aid is substantiated, makes it almost impossible to be conclusive about its effectiveness, and this, in itself, is a sign of its potential ineffectiveness. The apparent circularity of the debate about aid effectiveness—after more than sixty years, the same issues keep being recycled without arriving at conclusive evidence nor profound changes in effectiveness—points to the need to shifting the debate rather than deepen it. This dissertation’s starting point is, then, that the ineffectiveness of aid is not due to problems related to its volume, allocation or, delivery, but that the problems plaguing these dimensions are, in fact, the result of an inherently ineffective conception. Effects have been confused with causes.

The proposed conceptual framework will allow for an exploration of the ways in which aid-giving countries could cooperate with aid-receiving countries given a much broader understanding of both the process and context in which development takes place. Delivery has to follow purpose, and it is this dissertation’s contention that the murkiness of our understanding of the purpose of aid has muddied its delivery. Through the proposed conceptual framework—rather than focusing on volume, allocation, and delivery—this dissertation will explore the causes behind aid (in)effectiveness by focusing, instead, on the broader role that aid-giving countries can have in cooperating in the development of aid-receiving ones. Through such an understanding, the volume, allocation, and delivery dimensions of concerted wealth management (as the proposed substitute of aid), can be then shaped to better serve its purposes.

In order to substantiate this dissertation’s thesis that the ineffectiveness of aid is due to its deficient conception, the proposed conceptual framework will allow for an understanding of the potential role of concerted wealth management, void of confusion

regarding motives and objectives, with no other concern than the achievement of a sustainable process of development. The next logical step would be to devise a typology of actions that corresponds to this newly devised role—form (and delivery) following purpose, as it should be. By comparing this resulting typology with the existing taxonomy of aid, this dissertation will test the hypothesis that the discrepancies between the old and the new paradigm proposed can help explain the problematic (in)effectiveness of aid.

This comparison would lead to a list of two different categories of aid related kinds of interventions: those in the taxonomy that do not exist in the proposed typology (old-paradigm aid exclusive interventions, identified as “X”), and those in the proposed typology that do not exist in the taxonomy (new aid exclusive interventions, identified by “Y”). Both these kinds of interventions could be then compared from empirical and theoretical perspectives to determine whether the proposed thesis of this dissertation could be proved or not: if there is empirical evidence about interventions of the kind “X” (old-paradigm aid interventions) that prove they have been ineffective in achieving the objectives of aid, this could point out to why the alternative typology emerging from the new paradigm did not include these, reinforcing the case in favor of the thesis proposed. Additionally, these items “X” could be analyzed using the logic of the new paradigm to understand the reasons why they are not part of the resulting typology. This understanding, when compared to that of the original theoretical justification of these items “X” emerging from the old paradigm, might also point out to theoretical weaknesses that could explain their ineffectiveness.

With respect to interventions of the kind “Y” (those new-aid interventions in the

proposed typology that do not exist in the taxonomy of old-aid interventions), it is very likely that empirical evidence about these does not exist, given that since they are not part of the existing taxonomy, they probably have not been tried before or perhaps only marginally. Therefore, it might not be possible to validate or invalidate them with empirical evidence. The analysis could focus instead on evaluating these in terms of the theoretical foundation of the existing taxonomy. Such analysis could help elucidate whether the theoretical grounds on which they are justified through the new paradigm are sounder than those from the old one. This analysis could also point to weaknesses in the current theoretical conception of aid, thereby contributing to substantiating the thesis of this dissertation.

To establish the quasi-counterfactual described above (Ehring, 1997; S. L. Morgan & Winship, 2007; Paul, 2013), a two-tiered methodological approach will be adopted. This two-tiered approach is essential: the first tier, the economic modelling, is the scaffolding through which the hypothesis emanating from the second tier, the political economy analysis, can be consistently and systematically tested (political economy is defined here as the interdisciplinary framework to understand the interaction and mutual influence between economics, sociology, and politics (Weingast & Wittman, 2006)). The resulting model allows not only for a comparison against the old paradigm using a common language (mathematics), but also for the building of conclusions by considering what-if political economy analysis scenarios through the consistency of a solid theoretical grounding. These what-if considerations also feed back into the model design and contribute to its fine-tuning. (Quasi-counterfactual is used here to denote that given most comparisons between the old-paradigm aid and the new one resulting from the proposed

conceptual framework will be theoretical and not empirical, they can't be considered in full as counterfactual evidence.)

One of the most significant criticisms by mainstream academics of the political economy analysis literature, particularly that of the left is that the analyst sometimes lacks the scientific basis to do the analysis (Popper, 1965, 1972, 1976). This is, there is an alleged lack of a basic understanding of economics, statistics, causality, and at times argumentative logic, as well as no resulting testable hypotheses (Ayer, 1964; Ebenstein, 2015; Friedman, 1977; Keuth, 2005; Popper, 1972; Rodrik, 2015). On the other hand, one of the most important criticisms levelled against the mainstream economics literature is that it relies too much on its own theoretical constructions and the reduced worlds represented by their models; sometimes even falling in the trap of undeservingly considering that the simple use of mathematics gives scientific status to their work (M. S. Morgan, 2012; Rodrik, 2015; Sanguineti, 1977). Whether models are 90 percent or 10 percent of the solution when compared to the political economy analysis or vice versa is up for debate. However, we cannot do one without the other: political economy analysts err as much as economist when they ignore each other (M. S. Morgan, 2012; Rodrik, 2015). As Krugman (1998, p. 83) points out, development economists tend to get lost in their models, while non-economists are lost in the "fog" that results from not having models at all.

Consistent with economic science practice, the approach to modelling will start by considering a one-country model through which the wealth management process can be understood isolated from any external influences (a closed economy). In this phase, consideration will be given to the natural, material, and social dimensions of different

classes of assets. This will serve as a stepping stone towards understanding the portfolio of wealth a country possesses and how the interrelations and interactions between the different classes of assets in it, changes the more simplistic considerations about them initially made.

As the model becomes more complex, additional considerations will be added about the impact countries may have on each other in managing their wealth. Likewise, the idea that the value generating potential of wealth is dependent on how synchronous or asynchronous its lifecycle is with that of the context, as well as that of the wealth of other countries, will be incorporated into the model.

Further modelling will be used to theorize about a potential typology of concerted wealth management efforts that could contribute to the convergence of aid-giving and aid-receiving countries towards a more balanced and stable situation.

Throughout these phases of the modelling process, both the implications of the financial and monetary systems over the inter-country flows and wealth-value transfers they convey, as well as the country's wealth management process, will be considered. This analysis will allow for the isolation of their potential effects on the different variables and the interactions between countries, as well as in the internal dynamics within a country.

Given the time and resource limitations to explore an already broad and complex research topic, empirical data will not be used throughout this dissertation to test the model both for consistency and for explanatory and predictive powers. Instead, guidance for future research and empirical validation is provided in Chapter 6, including a list of testable and falsifiable stylized hypothesis. Nevertheless, a few examples from the

literature which are built on empirical evidence, will be cited when possible and, when relevant, to showcase and support the line of argumentation being followed throughout this dissertation.

While the proposed economic modelling that will be produced as a result of this research will contribute by providing a starting point from which the relationship between relevant variables—inter-country flows, wealth value transfers, wealth, concerted wealth management, economic growth and development, and their interrelations—can be better understood, it will be beyond the scope of this dissertation to exhaust the understanding and theorization of all the potential relationships and interactions between these variables. The contribution of this research will be to relate variables in ways they have not been related before, rather than providing an exhaustive account of these relations. Instead, a research agenda to fill those gaps in knowledge will also be proposed in Chapter 6.

It is expected that the proposed conceptual framework will provide basic elements that could be used in suggesting some foundations for: (a) a theory of wealth management; (b) a conceptual framework for understanding the nature of the value transfers resulting from different kinds of inter-country flows; (c) a basic understanding of concerted wealth management outlining a typology that corresponds to a new broader understanding of aid; (d) a better understanding of the relationship between the proposed typology for concerted wealth management and the existing taxonomy of aid, as well as the gaps between them; and (e) a better understanding of the implications of all of these considerations in terms of the architecture through which aid is currently being delivered, and any changes that might be required in this architecture in order to focus instead on the proposed broader concept of concerted wealth management. As explained before, this

comparison between taxonomy, typology, the architectures of aid and the proposed idea of concerted wealth management, will allow for the establishment of a quasi-counterfactual against which the thesis and research questions put forward in this dissertation can be assessed.

A limitation of the proposed methodology that arises from the nature of the economic modelling process, is that by definition, this modelling process relies on a selection of variables and the relationships between them that cannot fully represent reality. Given that during the process of modelling, decisions will be made about which variables to include, about the assumptions under which they are included, and about the ways in which each contribute to the interaction depicted by the model, the result will be bound by these choices, and, therefore, the theoretical conclusions deriving from it will be bound as well. As a consequence, the understanding of the theoretical findings of this research, as well as of its suggestions, will have to be framed and understood within the context of these limitations.

Summary of the Chapters

Chapter 2 will provide a review of the literature in the three main theoretical areas on which this dissertation is built upon, namely: aid effectiveness; theories of social, economic, and political change; and, wealth and endowment economics, including theories of economic growth and development.

This chapter will also provide background on the gravity of the problem addressed by aid, and the history of aid in the context of economic growth theory. Special attention will be given to the debates that have shaped aid into what it is today, as well as to the ways in which these debates have determined its conception, design, delivery, and

evaluation at different points in time, particularly in the context of the evolution of the broader relationships between aid-giving and aid-receiving countries. In addition, this chapter will explore historically the various ways in which the theorization of aid has shaped its delivery, as well as the ways in which this delivery has been aimed at impacting the “ingredients” of economic growth and development, and the process through which economic growth and development takes place. The importance of economic-growth theories, development planning, and national income accounting as Trojan horses that helped institutionalized a certain idea and praxis of aid will also be showcased.

Finally, the chapter will provide an epistemological and ontological framework based on the philosophy of Ludwig Wittgenstein, which is used to approach the analysis of the issue of aid (in)effectiveness, as well as its potential solution.

Overall, this chapter will provide a comprehensive reference point from which a conceptual framework underpinning the process of *wealth management*, as well as the idea of *concerted wealth management*, can be built.

In Chapter 3, an alternative conceptual framework—concerted wealth management—will be elaborated. As a starting point, it will begin with the conceptualization of *wealth management* as a comprehensive process of social, economic, and political change, that leads to optimal value extraction and allocation, and most definitively to the achievement and sustainability of wellbeing for the majority of people. As an alternative to traditional economic growth theories and the development planning techniques and national income accounts on which aid praxis relies, the conceptual framework of *wealth management* will also include a conceptualization of

alternative development planning techniques that could be used as a Trojan horse to create a new paradigm of aid.

The chapter will also explore a more encompassing and detailed definition of economic factors, or “ingredients”: the assets that compose a country’s wealth—its balance sheet. The nature of each type of asset will be explored in terms of their origins, as well as in terms of their characteristics with regards to both space and time dimensions. The dynamics behind their formation, use, and degradation will also be explored. The concept of a critical-path of development that frames realistic timelines based on the nature and characteristics of each one of the reviewed types of assets will be introduced. With this knowledge in hand, the chapter will then explore the ways in which all of these different kinds of wealth interact. The impact of inter-country flows in these various types of wealth will be discussed, as well as the potential implications these may have in terms of symmetry or asymmetry of the exchanges, and, therefore, in terms of wealth management and development.

Using this conceptual framework, the chapter will also theorize about the options for national and international development policy, as well as concerted wealth management, that can be used to influence the ways in which inter-country flows and wealth management take place.

Chapter 4 will proceed with the formalization of the conceptual framework and, when feasible, present some limited empirical evidence to partially substantiate the resulting model. The objective of this validation process will be to ensure that the model can more closely represent and explain reality. Particular care will be taken in considering the shortcomings of existing national income accounts in reflecting use and

exchange values of certain intangibles and public goods, as well as the fact that they do not separate, or even include, some of the types of wealth and exchanges that will be considered in previous chapters. The analysis of an alternative model that goes beyond the data reported through existing national accounts cannot, by definition, be empirically tested with the data available.

Chapter 5 will finally turn to the role of concerted wealth management by situating it first, in the broader context of the different exchanges that take place between countries, and second, in the context of a country's process towards the strategic optimization of its wealth: *wealth management*. Concerted wealth management, in this view, could play the role of reducing or eliminating existing imbalances in inter-country flows, or of contributing to a country's wealth management process. A typology of mechanisms through which concerted wealth management could be delivered will be formulated based on the nature of inter-country flows, the nature of the types of wealth, and the nature of the process to manage a country's wealth. Finally, starting from this proposed typology, the chapter will explore possible types of architectures and mechanisms that could improve the effectiveness and efficiency in the delivery of different development actions proposed under the new paradigm of concerted wealth management (i.e., its praxis). Given the political complexities that usually surround the implementation of alternative models like the ones that will be proposed, this and the following chapter will also include analysis from a political science perspective, of the options and paths that might be available to influencing such implementation, and the potential success that a proposed new Trojan horse could have—a Trojan horse that will serve to replace the more traditional views of economic growth and development

planning introduced by the old one.

Finally, Chapter 5 will also proceed to look at the existing taxonomy and architecture of aid and compare these against the proposed typology and architecture for concerted wealth management. This comparison will be grounded not only in economic theory but political science as well. The economic model constructed in previous chapters will help in theorizing about this comparison. The overall objective of the chapter will be to analyze how the new paradigm proposed addresses the widely-documented shortcomings of the status quo. The aim of this analysis is to obtain a further refined typology and architecture that better addresses any gaps between the old and new paradigms that had not yet been integrated into the proposed alternative.

Chapter 6 will present a summary of the new paradigm and will provide an assessment of how well it responds to the set of requirements that were defined in Chapters 1 to 3. It will also propose some directions for future research.

An Epilogue will present a brief discussion on a political strategy and the policy options to pursue its implementation plus discuss from a more practical perspective the tangible conclusions emanating from from this dissertation and the ways in which these can shape the praxis of concerted wealth management.

Chapter 2

The Current State of Aid

Chapter Summary

There are still billions of people whose many needs, not even the basic ones, are yet to be fulfilled, and whose capabilities and freedom to confront the harshness of life are considerably lower than their human potential. There is no doubt about the existence of this challenge and the burden it imposes on the human race. Ultimately, what we do about it is a profoundly practical moral issue.

The limitations from which the conceptualization and implementation of aid have suffered have made it into a flawed project, as its history and the mix of inconclusive evidence show. These limitations were almost instantaneously recognized after aid's formal inception following World War II. They have been documented and debated ever since with little progress to show. Aid's conception and praxis are narrow, too focused on the endogenous aspects of development, and too limited by the language of economic growth theory, and the tools of development planning and national income accounting on which it relies. Yet, these limitations are usually given less attention than preoccupations about its volume, allocation, and delivery.

Given that aid's conceptualization and praxis relies so heavily in the received understanding of economic growth and its tools, breaking the vicious circle in which the debate about its effectiveness has been enmeshed requires an alternative epistemological and ontological framework from which to reframe the debate and consider alternative solutions. Continuing the same line of argumentation and adding more volumes to the

already copious literature of the last 60 years or so, has proven ineffective.

Wittgenstein's strictly practical approach can provide such a required frame of reference. His method aiming at dissolving apparent from real problems through the questioning of their epistemological and ontological basis, can help separate those aspects of development about which aid could actually say and do something, from those about which it should remain silent and passive. Specifically, Wittgenstein's ideas related to knowledge and explanation, words and meaning, and rules and causal change, offer a credible and useful link to the existing literature about the role of ideas in influencing social, economic, and political change. Ideas are apprehensions, and apprehending requires the above mentioned three categories: an idea reflects knowledge that can potentially serve to explain something; an idea is usually captured by words and their meanings; and an idea is frequently geared to action (its validity and potential is realized through practice). Practice is usually framed by rules, either endogenously implied as part of the formulation of the idea, or exogenously defined by the context in which the idea comes into place and is put into practice.

Among other advantages, using a Wittgensteinian approach can lead to understanding the futility of the technocratic/hydraulic/clinical approach behind many of the interventions from the aid enterprise. Likewise, it can lead to debunking the rationale on the basis of which aid has aimed at spreading knowledge and best practice, including the unrealistic timeframes envisioned for their internalization that ignore the existence of critical-paths that cannot be short-circuited beyond a certain extent. It also provides support to the assessment that aid's praxis towards ownership, coordination, and participation tend to be more rhetorical than practical, and hence ineffective. Finally, it

also allows us to assess the consequences resulting from the distance between theory and praxis embedded in the aid enterprise and how its instability, as reflected by its fragmentation, duplication, and unpredictability, leads to unstable and unproductive “language-games” that have a significant impact on its effectiveness. Ultimately, a Wittgensteinian analysis of aid leads to a better understanding of the role that the ideas, and the words and meanings behind them have played in shaping and limiting it. It provides as well an avenue to think about non-traditional ways to shift the debate, and hopefully, address the ineffectiveness of aid through alternative and more effective avenues. In essence, a Wittgensteinian approach allows for drawing boundaries between what should and should not be the subject of aid praxis.

The neoclassical understanding of economic growth, and the development planning and national income accounting approaches that emerged from it, all worked together as a Trojan horse that impregnated the entire aid enterprise to its very core, particularly its praxis. In between ideological battles, macro rhetoric, and overall conflicting motives, the individuals who were faced directly with the challenges confronted by aid, resourced to developing a set of practical skills that allowed them to navigate their own limited world. They did this mostly rhetorically, while relying on a limited and many times flawed theoretical construct that was vetted by such a macro world. Macro aid decisions made by politicians were indeed key in setting the limits and overall framework on which aid was implemented. Nevertheless, those macro decisions said little about implementation and the very praxis of aid. Just like Wittgenstein’s philosophy about rules and routines argues, it was not the politicians who determined what happened on the ground, it was the aid workers who, taking general guidance from

politicians, construed this guidance within the frameworks they had, and came up with interpretations and routines that shaped aid praxis. Economic growth theory and the tools of development planning and national income accounting became the language of aid and, as such, set the boundaries for its world.

It is argued, then, that the problematic of aid (in)effectiveness that continues being discussed is not really the cause, but the effect of an ineffectiveness that is embedded in its conception and in the ways in which this conception has permeated its praxis.

Changing such flawed conception is required to break the vicious circle in which aid and the debate about its (in)effectiveness, has remained enmeshed over the last 60 years.

Under the current circumstances, this might only be possible through the interjection of another Trojan horse: a change of language that includes a new conceptualization of economic growth, development planning, and new national income accounts.

The Severity of the Challenge

Over the last few years, the human race has made important strides in addressing suffering, death, and constrained possibilities for some: the number of children who die before the age of five has been reduced by six million since 1990; measles vaccinations have prevented more than fifteen million deaths since 2000; maternal mortality is now 50 percent lower than that it was in 1990; between 2000 and 2015, more than six million deaths from malaria have been prevented; about thirty-seven million lives have been saved because of efforts to prevent, diagnose, and treat tuberculosis; since 1990, 2.6 billion people have improved access to drinking water sources (United Nations, 2016).

Yet, while progress has been made, enormous challenges remain: there are 836 million people living in what has been defined as “extreme poverty” while 2.2 billion live

below the US\$2 a day poverty line; one billion, it is estimated, go to sleep feeling hungry every night, while another one billion are undernourished; in contrast, about 2 billion people are overweight or obese, and about US\$1 trillion worth of food is wasted every year—food that could feed all of the two billion people that need it. Maternal mortality in developing countries is about 14 times higher than that in developed countries, and women in rural areas are three times more likely to die giving birth than those living in urban centres; 3.1 million children below the age of five die each year due to poor nutrition, along with another 3 million who die from other preventable causes; one in every three children who live in developing countries suffer stunted growth and face limited opportunities because of it; about 57 million children do not attend school, while about 103 million young people do not have basic literacy skills; 1.4 billion people lack access to electricity; 800 million people do not have access to water; 2.5 billion people do not have access to toilets or other basic sanitation services; 828 million people live in slums; the emission of carbon dioxide has increased exponentially by 50 percent since 1990; and developing countries lose about US\$1.26 trillion per year due to corruption, bribery, theft, and tax evasion (United Nations, 2016).

These are just some of the figures underlying the Sustainable Development Goals (United Nations General Assembly, 2015).

While both this new attempt, and its predecessor, the Millennium Development Goals, have been instrumental in improving awareness about the scale of the issues faced, the variables that can be used to measure progress made, and the necessity to focus aid and development efforts on the most pressing needs, these attempts have not necessarily improved awareness about the complexity that lies behind efforts to make progress

towards any of these goals.

For example, while the challenges embedded in the Sustainable Development Goals are portrayed as common global objectives, it is nevertheless made very clear that it is an individual task of each country to address them, even if some international help is provided. This means that, ultimately, these challenges are seen and portrayed as endogenously originated (Dasandi, 2014), with the role of the global context being hardly acknowledged. At most, the idea that the traditional transfer of resources in the shape of aid, as well as the partnerships that underlie it, is reaffirmed in just one of the seventeen goals (United Nations General Assembly, 2015). Yet, the whole framework contributes very little to increasing awareness about the idea that some of the challenges faced are products of international arrangements, structures, and the interactions they frame; and, therefore, that addressing them might require a much more comprehensive and unconventional sort of international coordination, than that which is currently taking place. Perhaps even more importantly, it does very little to increase awareness about how even if countries do all they can, there might be goals for which, without a change in these international arrangements, structures, and interactions, the progress they can make is only minimal.

Likewise, the development goals framework has not been particularly good at increasing awareness about the relative size of current efforts to deal with the challenges faced, vis-à-vis the size of these challenges themselves; nor about the inequalities that exist among countries and within countries, as well as between present and future generations.

As a consequence, it is unclear whether the general public understands that while

in the longer-run, everyone could potentially be better-off, in the short-run, those who have more, be it individuals or countries, might need to make a bigger effort, if progress is to be made more quickly, or if they are not to penalize future generations. This lack of awareness is particularly evident when one considers the attitudes of developed countries' constituencies and politicians towards their tax contributions being used to support those living in other nations, or their jobs being "taken by" foreigners or immigrants, or their countries receiving refugees (May, 1989; Mosley, 1987; Riddell, 1987).

Ultimately, suffering, avoidable death, and hampered possibilities, or what could be called poverty, does not solely have immediate implications for those who experience it directly: these implications are carried forward in time by them and their descendants—as much as they are by the societies they belong to. Many times these cannot be fully overcome—at least not after only one or two generations. Hence, the velocity with which progress in eradicating them takes place can be as important, or even more important, than the absolute amount of progress made (for example, as will be discussed later, ensuring that children are appropriately fed over their first two years of life, might be considerably more effective than other sorts of development interventions which—even when more substantial and over longer periods of time—involve children who are older than two years and already carry in them the lifetime consequences of malnourishment). This urgency is yet another 'hidden' aspect that the development goals framework fails to make evident.

Nevertheless, and regardless of these blind spots that are recurrent in the rhetoric of international development efforts, one thing is clear: the human race is still facing a

huge challenge it cannot escape addressing. Either it will face it proactively, or the challenge's presence will become so overwhelmingly strong that it would be impossible to no longer face its daring consequences—in the many unavoidable and potentially even more harmful ways in which they will be expressed (i.e., famine, disease, political instability, social division).

The Complexity of the Challenge

The challenges mentioned above are but a few of those behind the complexity involved in attempting to improve the wellbeing of the majority of human beings. There are many other challenges that add to this complexity, but two, in particular, play a crucial role.

First, initial unequal endowments and initial conditions created by historical events (e.g., colonization, slavery, power distribution, war, technocratic ideas, and ideologies) tend to drag in time, with entrenched and lasting consequences. They partly contribute in explaining present differences among countries (there is considerable literature discussing the role of unequal endowments and initial conditions on development, among them: Costa, 2011; Galor, 2011; Helpman, 2004; Hubbard, 2009; Landes, 1998; Nayyar, 2013; Spence, 2011; Tinbergen, 1962; see also the literature by Acemoglu et al.: Acemoglu, Egorov, & Sonin, 2011; Acemoglu, Gallego, & Robinson, 2014; Acemoglu & Robinson, 2012).

Second, the human condition or human nature and how it shapes human interaction in its social, economic, and political spheres, are difficult to assess, understand, and influence, yet omnipresent (Carothers & de Gramont, 2013; D. Cohen, 2012; Hubbard, 2009; Landes, 1998; Modelski & Thompson, 1996; Spence, 2011).

Among the complexities that make human interaction so difficult to assess, understand, and influence, there are: collective-action problems (Ostrom, Gibson, Shivakumar, & Andersson, 2002); various degrees and spheres in which elites exert influence (Amsden, DiCaprio, & Robinson, 2012); difficulties in establishing convincing theoretical proof to support cause-effect relationships (Carothers & de Gramont, 2013; Cartwright, 1999; Crewe & Axelby, 2012; P. R. Krugman, 1992, 1996, 1998; Riddell, 1987); intricacy of social dynamics, and formal and informal structures that underpin them (Campbell, 2004; Helpman, 2004; P. R. Krugman, 1992, 1998; Unsworth, 2009); path-dependence which seems to severely constrain prospects for change (Campbell, 2004; Carothers & de Gramont, 2013; Crewe & Axelby, 2012; Helpman, 2004); and, divergence between micro-motives and macro behaviours of societies and their members (J. Diamond, 2006; Schelling, 1978; Surowiecki, 2004).

It is evident that the analysis of the complexities mentioned above, as well as the resulting understanding and codification of potential solutions aimed at achieving development goals, are also constrained by the epistemological and ontological limitations of the social, economic, and political sciences (Cartwright, 1999; Cartwright & Hardie, 2012). Some of the most relevant being: their extremely limited capacity to predict, and even when possible, to usually do so only for the very short-term (Popper, 1972; Ryan, 1973); the limited set of generalizations they have been able to accumulate and that cannot be subjected to the kinds of rigorous testing that those from the natural sciences undergo (Ayer, 1964; Popper, 1972); and the many areas of knowledge for which very little is still known (Ayer, 1964; Campbell, 2004; Popper, 1972; Ryan, 1973).

This is perhaps why the ideas of social welfare, aid, and international coordination

have, and continue to be, so passionately and widely debated—as well as ignored or rhetorically discussed—even when, as clearly shown by the figures supporting the Sustainable Development Goals provided at the beginning of this chapter, there is no doubt that a real, sizable, and extremely severe challenge exists and needs to be addressed.

Given the lack of uncontested evidence for or against its benefits and overall effectiveness, local and international welfare considerations have been supported or rejected largely on the basis of ideological views or, in the best case scenario, by deeply entrenched axiomatic theoretical constructs, particularly those of mainstream economic science, that provide some degree of rhetorical certainty (Athreya, 2013; Bourguignon, 2004; Browne, 1999; Independent Commission on International Development Issues, 1980; Jones, 1999; Nasar, 2011; Stiglitz & Lin, 2013). Historically, the problem has not usually been the recognition of the challenges of development directly, but the agreement on how to address them.

The Origins of Aid as International Welfare

The attempts and efforts of nations helping others in the form of international welfare, development assistance, aid, or whatever other forms and names it has taken, have also been affected by their own initial conditions, as well as from the path-dependence that seems to affect every human enterprise (Campbell, 2004; Lumsdaine, 1993). (Throughout this dissertation “aid” is used generically to refer to all of these past and existing forms of international transfer of funds between countries aimed at helping the recipient in dealing with problems of human wellbeing.)

Montgomery (1967) and many others provide a historical account of how there is

no single unique event or proclamation behind aid, nor a grand design. A series of experimental responses to practical challenges built into each other from two different traditions to, later on, shape aid into what it is today. These traditions were: (a) an unsystematic humanitarian oriented tradition, and (b) a more systematic and commercially oriented technical assistance tradition—reinforced after World War II by the success of the Marshall Plan (Curti, 1954; Hogan, 1987; Hubbard, 2009; Montgomery, 1967; Picard & Buss, 2009; Riddell, 1987). Respectively, these came to be known as “humanitarian assistance” and “development assistance.”

Having started simultaneously, among others, as: (a) a potential source of commercial and trade opportunities; (b) the source of one-sided expert and technical advice from one nation to another; and as (c) a one-sided morally motivated humanitarian enterprise with those in need, a mix of conflicting motives were embedded into the fabric of aid. To these origins, the growing importance of the nation state in the new international order created after World War II, added an overall diplomatic and geo-strategic motivation behind many aid efforts (Black, 1960; Browne, 1999; Lumsdaine, 1993; May, 1989; Montgomery, 1967; Neumayer, 2003; Pearson & Council on Foreign Relations, 1970; Picard & Buss, 2009; Thompson, 1992). None of these often conflicting motives can individually explain decisions about aid; as Picard & Buss (2009, p. 5) clearly express it: “Different elements weigh in differently at different times.”

The result, after the Bretton Woods agreement, the success of the Marshall Plan, and President Truman’s Point Four, was an increasingly consolidated and systematic aid enterprise (Montgomery, 1967; Picard & Buss, 2009; Riddell, 1987). Nevertheless, neither this consolidation nor the systematisation behind it removed the underlying

conflicts carried by its complex origins.

Moreover, to make matters even more complex, supporting these initial aid efforts was a narrow and weak theoretical foundation. This foundation was, for the most part, built on the economic growth theory—particularly on the Harrod-Domar model (Alacevich, 2009; H. A. Arndt, 1984, 1987; Domar, 1957) and the pre-eminence it gave to physical capital as the main responsible factor for generating growth (H. A. Arndt, 1984, 1987; Helpman, 2004; Mikesell, 1968). Additionally, this foundation put undue emphasis on the endogenous aspects of economic development, and, as a consequence, started a tradition of focusing on the “ingredients” responsible for economic and human development, rather than on the “recipe” through which they could be mixed or the international context in which the mixing took place (H. A. Arndt, 1984, 1987; Commission on Growth and Development, 2008; Dasandi, 2014; Helpman, 2004; Spence, 2011).

The DNA of Aid

This combination of historical, theoretical, and political forces and traditions resulted in an inherently flawed conception and architecture of aid. Specifically, the humanitarian and technical assistance traditions helped foster confusion about the motives behind aid (e.g., moral or commercial), while a weak theoretical foundation, which put too much emphasis on the endogenous aspects of development and the ingredients required, rather than on the recipe behind it or the context, gave excessive room for the political process and ideological forces to, chaotically and simultaneously, build and breakdown aid’s efforts, or, many times, simply leave aid to face its own destiny (Lumsdaine, 1993). As Montgomery (1967) has elegantly put it:

International development aid suffers from an irresistible, popular tendency to pull the plant up to see if its roots are growing. This chronic rootlessness increases its vulnerability to political accident. Understandably, the result changes in international development aid operations have not always been improvements. (p. 87)

Perhaps even more important, although less discussed, is how these origins meant that aid was, and continues to be conceived and treated, in practice, and through the underlying assumption behind the rhetoric surrounding it, as if it was sizeable enough to be relevant both in relation to the problems it is trying to resolve, as well as in connection with the other resources made internally or externally available to these countries (Bourguignon et al., 2012; Browne, 1999, 2006; Carothers & de Gramont, 2013; Cassen et al., 1982). As illustrated at the beginning of this chapter, this is consistent with the rhetoric that, many years later, is still behind the most recent development goals framework.

The result of these traditional approach was, and continues to be, that the debates about aid usually start from the unspoken but clearly underlying assumption that it, most definitively, can make a difference (as the rhetoric of aid portraits) regardless of: (a) the size of the problem being addressed; (b) its relative contribution vis-à-vis the other resources available to address the problem, and, more disingenuously; (c) the international contextual factors that feed into the problem; and, therefore; (d) irrespective of whether these factors are addressed as part of the solution or not (Cassen, 1986; Deaton, 2013; Easterly, 2006; Mikesell, 1968; Norrlof, 2014; Picciotto, 2009; Picciotto & Weaving, 2004; Riddell, 1987; Spence, 2011; Stiglitz & United Nations General Assembly, 2010; White, 1974). This latter oversight was based on another working, but

hidden-under-the-rhetoric complementary assumption mentioned earlier: that the problems of development are, for the most part, endogenous by nature, and not created or deepened by exogenous conditions and factors (Dasandi, 2014).

These realities discussed above and the assumptions they helped establishing within the praxis of aid, do not reflect the available knowledge, theoretical understanding of the issues, or empirical evidence. Yet, in spite of these shortcomings having been routinely recognized for almost as long as aid has existed (Black, 1960; Independent Commission on International Development Issues, 1980; Pearson & Council on Foreign Relations, 1970; Singer, 1984; Jan Tinbergen, 1962), they continue to be deeply embedded in the rhetoric, and, more importantly, in the daily praxis of aid (Browne, 1999, 2006; Crewe & Axelby, 2012).

To illustrate the point with just three examples, among many more that could be mentioned: first, Berthélemy, Beuran, & Maurel (2009) find that for countries with GDP per capita below US\$7,300, the tightening of migration policies in the developed world could be considered to be equivalent to a reduction of 24 percent in their inflow of aid. (Coincidentally, the McKinsey Global Institute (2014) shows that over the last 30 years, the increase in long-term migrants has been barely in line with population growth precisely because of the tight grip kept on migration policies by developed countries.) More recently, Minasyan and Nunnenkamp (2016) find evidence of a link between more sensible immigration policy and aid effectiveness. Second, Picard & Bus (2009) and Picciotto (2009) call attention to the fact that, among others: (a) agricultural subsidies in OECD countries have usually exceeded the total amount of aid on a yearly basis by a factor of about two; and, (b) developing countries outflows to developed countries, due to

intellectual property royalties, are roughly equal to their inflows of aid. Third, Grubb (2013, p. 6) explains that, for least developed countries, each increase in the price of oil of US\$10 per barrel, can bring down their GDP by about 1.5 percent. Energy imports cost more than 20 percent of export earnings in 35 countries with a combined population of 2.5 billion; for another group of 15 countries with a combined population of 200 million, energy imports cost about 10 percent of GDP. Meanwhile, production subsidies for fossil fuels in the energy sector are estimated at around US\$100 billion a year (close to the amount of yearly aid). This amount does not even include additional indirect subsidies that are difficult to track.

Furthermore, the inter-country flows of people, services, finance, goods, data, and communications dwarf any level of aid provided. These global flows contribute to GDP growth an estimated US\$250 to US\$450 billion each year—this is, about two to three times the yearly flows of aid (flows which, in any case, do not necessarily result in the fostering of economic growth) (McKinsey Global Institute., 2014). In fact, the McKinsey Global Institute (2014) estimates that global flows are responsible for 15 to 25 percent of the world GDP's yearly growth. Furthermore, it is estimated that countries that are most connected to the international network of global flows, mostly developed countries, benefit about 40 percent more than those that are not, mostly developing countries. When in the context of the previous fact, it is considered that South-South trade represents almost two-thirds of developing countries' share of trade in the world economy (a total of about US\$4.4 trillion), it is difficult denying that any claim that South countries receive unequal benefits from trade because they trade with North countries, might need further revision. There seem to be deeper systemic factors in the international framework for

trade that contribute to these inequalities regardless of whether South countries trade with North or South countries.

Over the last few years, aid has averaged US\$150 billion. Alternatively, in 2012, flows of goods were US\$17.8 trillion, flows of services were US\$4.2 trillion, and financial flows were US\$3.9 trillion, for a total of about US\$26 trillion (the respective shares of these amounts for developing countries were 39, 32, and 37 percent) (McKinsey Global Institute., 2014)—roughly 170 times the size of aid (or 65 times against the share of developing countries). Global flows related to international telecommunication revenues, business travelers, and intellectual property royalties and patents accounted for US\$ 12.6 trillion in 2012 (about 100 times the size of aid). FDI amounted to US\$1.4 trillion in 2012 (about half going into developing countries and about 4 times the flows of aid they receive), while remittances reached US\$ 523 billion (almost 3.5 times the flow of aid). Interestingly, already in the early 1960s, Tinbergen (1962) had suggested that the international community could impose balancing rules between the quantity of aid flows and the costs imposed by exchange controls and trade restrictions.

There are wage differentials for low-skilled workers of up to 1,000 times between different regions of the world that are not matched by differences in prices of goods and services. This situation increases the incentives for long-term migration, while the barriers to doing so continue to be challenging for those who want to migrate (McKinsey Global Institute., 2014).

In the same report, McKinsey Global Institute (2014) not only estimates the total amount of global flows could grow up to US\$54 trillion or even US\$85 trillion by 2025, but also that the volatility of these flows can spoil some of the positive effects this

increase could have on GDP growth (Lomborg, 2013b). Wickstead (2015) has recently illustrated the relative position of aid against all these other flows in a clear way (Goldin, 2016 makes a similar argument):

Overall, in 1990 total gross ODA amounted to just over \$113 billion, or about a quarter of the total international resource flows to developing countries (which amounted to around \$450 billion). And those international resources flows accounted for well over half of total domestic developing country government expenditure of nearly \$777 billion. By 2012, total gross ODA had increased by nearly 25 per cent to around \$140 billion, but total international resources had more than quadrupled to nearly \$2 trillion, and domestic Government expenditure in developing countries had increased eightfold in the same period to over \$6.4 trillion. So overall, aid mattered much less in 2012 than it did in 1990. (p. 76-77)

When compared to the size of the issues which aid is supposed to contribute to solving, the distance is more than significant: the time spent by people collecting water was estimated to be worth about US\$60 billion in 1990, and, despite the progress made and expected, it is still estimated that this cost will be around US\$45 billion by 2030 (about a third of aid flows); similarly, developing countries are projected to lose close to US\$6 trillion by 2050 because of air pollution—about 40 times the size of yearly aid flows (Lomborg, 2013a, 2013b). A study by the International Labour Organization (ILO, 2004), estimated that the global costs of eliminating child labor over a period of 20 years was about US\$1,9 trillion, or about US\$95 billion per year—which is rather close to the entire amount of aid in any given year (amount that is spread among a considerably large number of issues besides child labour).

Finally, in comparison to the about US\$150 billion in yearly aid flows, global defense expenditures in 2012 amounted to about US\$ 1.5 trillion, roughly ten times more. Expenditures in the US alone were in the order of US\$600 billion, or about 20 times more than the country's expenditures on aid, and four times global aid flows. (The International Institute for Strategic Studies, 2013). The US was responsible for US\$56 billion out of the total US\$85 billion global arms transfer agreements in 2011 (from this overall total, the top ten recipient developing countries received about US\$58 billion). This is about twice the amount the US allocated to aid (which in itself already included an important proportion of military aid).

These flows of arms, which mostly benefit developed countries, tend to support and, many times, enable civil conflicts and war. The evidence suggests (Collier et al., 2003) that when conflict happens, private wealth flows swiftly out of the country and that, on average, after seven years of civil war, per capita income decreases by about 15 percent, while absolute poverty increases by about 30 percent. Additionally, the same study estimated that by the end of a typical war, the cumulative income loss accounts for about 60 percent of one year's GDP. Furthermore, Cairns (1997) suggests that in more recent years, the victims of war have tended to be mostly civilians, and that this has stickier effects on social, economic, and political development when compared to the situation at the beginning of the twentieth century when the majority of the victims were soldiers. Finally, among many other impacts created by war and civil conflict fuelled by arms trade, is the issue of displaced populations and refugees, which according to the UNHCR (2015) amounted to 59.5 million in 2014 (19.5 million refugees, 38.2 million internally displaced, and 1.8 million asylum-seekers).

In short, aid is not more than a tiny speck in the reality of our world.

Aid's Track-Record

At the outset, the world of aid is characterized among other features, by a high degree of fragmentation; suboptimal coordination among fragmented stakeholders; divergence in the discourse about its purpose, architecture, and potential impact, as well as in how this discourse is actually expressed in practice; decision-making processes that reflect conflicting political and technical objectives, as well as asymmetric information and unbalanced roles and power among different stakeholders; mounting pressure at many levels (subnational, national, supra-national) to demonstrate impact and the underlying efficient and effective use of the scarce resources available; and an increasing disenchantment, disbelief, and cynicism with regards to its effectiveness. These and other obstacles and concerns have been, and continue to be addressed, through stakeholder's high-level meetings on the subject. The Monterrey Consensus (2002), the Paris Declaration on Aid Effectiveness (2005), the Accra Agenda for Action (2008), and the more recent Busan Partnership for Effective Development Cooperation (2011), have all aimed at improving the current state of affairs by fostering transparency, selectivity, specialization, coordination, and ownership, among others. Results have been mixed at best, and very slow for sure (Annen & Moers, 2012; Bourguignon et al., 2012; Easterly, 2007; Easterly & Williamson, 2011; Frot & Santiso, 2011; Gibson, Ostrom, & Shivakumar, 2001; Kindornay & Samy, 2012; Nunnenkamp, Öhler, & Thiele, 2013; Nunnenkamp & Thiele, 2013; OECD, 2008a; Wood & Betts, 2013)

This bleak outlook does not seem to improve when taking into account the mixed and inconclusive evidence with regards to aid's relevance and whether it actually

contributes towards the purpose(s) it is meant to serve (which, as discussed above, can be very different for different people and their own conflicting motives) (Akramov, 2012; Boettke, 1994; Bowen, 1998; Browne, 2006; Carothers & de Gramont, 2013; Crewe & Axelby, 2012; Lumsdaine, 1993; Mosley, 1987; Riddell, 1987; Schabbel, 2007; Whitfield, 2009).

Scholars have researched aid effectiveness, at both the macro and micro levels, without being able to establish a clear link between success or failure at one or the other level (Dreher, Eichenauer, & Gehring, 2016). Deaton (2013) and Easterly (Easterly, 2001, 2006, 2007, 2014), among others (see also Browne, 1999; Mosley, 1987), argue that we cannot easily translate micro solutions into macro ones, and that we still do not know what specific actions lead towards development. Hence, they argue, positive evidence at the micro level cannot be considered to be of relevance at the macro one, nor imply that micro-successes will translate into macro-ones. Ultimately, this means that we still do not have an understanding of the causal chain between micro-actions and macro-behaviours and solutions (Schelling, 1978). Nonetheless, others, like Arndt, Jones, & Tarp (2010, 2015) or Bowen (1998), claim to have found partial evidence of a micro-macro link between aid and economic growth.

At the macro level, much of the literature has focused on its overall impact on economic growth as a source of poverty reduction, as well as on its overall impact on poverty. Bourguignon et al. (2012) argue in several chapters of this edited volume that the evidence concerning aid effectiveness is mixed at best, with more clarity regarding its impact at the micro level, but little evidence at the macro level (see also Sagasti, Alcalde, & International Development Research Centre, 1999; Schabbel, 2007). Specifically,

Boone (1996) claims that aid does not significantly increase investment and growth, and, therefore, does not benefit the poor as measured by more comprehensive measures such as the Human Development Index. He also finds that aid effectiveness is not dependent on the recipient country's type of governance (i.e., democracy, dictatorship), although Burnside and Dollar (2004) find contradictory evidence on the role that quality of state governance and institutions have on aid effectiveness. Nunn & Qian (2013) find empirical evidence of food aid from the US being correlated to increases in the incidence and duration of civil conflicts. However, others like Tarp from UNU-WIDER and several of his co-authors (C. Arndt et al., 2010; C. Arndt, Jones, & Tarp, 2014; C. Arndt et al., 2015; Dalgaard et al., 2004; Mekasha & Tarp, 2013), as well as Bearce & Tirone (2010), and Radelet (2006) find evidence of a positive relationship between aid and economic growth, although, specifically, Arndt, Jones, & Tarp (2015) conclude that even when positive, the magnitude of the effects are moderate, particularly when compared to the great expectations that were common in the 1960s and 1970s. In the end, both sides present convincing arguments and evidence, making it difficult to come to a conclusive position with regards to the macro evidence.

At the micro level, research on aid effectiveness has focused on issues of volume, allocation, and delivery, as well as on the constraints that seem to reduce the overall impact of aid. In the edited volume by Bourguignon et al. (2012), some of these elements are summarized as: lack of convergence between the interests of donors and those of recipients; high delivery costs; incentives to spend aid budgets within a given timeframe, as well as according to political preferences in portfolio allocation; and, lack of coordination, considerable duplication, and herd behaviour on the part of donors. Kim

(2013), the current President of the World Bank, places much more emphasis on the science of delivery than on the macro considerations of policy design. In his view, the latter is an area for which countries and donors already have a much better handling, while with regards to the former, inefficiencies abound whenever aid is delivered. With regards to empirical evidence of aid impact at the micro level, Yontcheva & Masud (2005) find positive evidence about the relationship between NGOs efforts and reductions in infant mortality (NGOs being more effective than bilateral donors). They also find a positive effect in reducing illiteracy, although less significantly. Banerjee & Duflo (2011) and others (for example, Easterly, 2008) showcase several micro examples where scientific approaches have led to quantifiable successes, in areas like: increasing civic participation, reducing the incidence of HIV/AIDS, selecting more effective policy makers, among many others. These and many other examples in the literature, however, fall short in presenting and demonstrating a full causal chain between these micro and many times short-term successes, and macro long-term success reflected in political, social, and economic change towards development (Deaton, 2010; Deaton & Cartwright, 2016).

The lack of conclusive evidence with regards to aid effectiveness has polarized academics and politicians, with each group proposing radically different approaches, and none becoming robust enough to lead to a radical reform of aid (Engel, 2014). These range from substantially increasing aid to conducting comprehensive and concerted big interventions, and arguing that difficulties in proving its impact are inherent to the complexities of the field (Sachs, 2005); to rejecting the idea of big supply driven aid efforts, in favour of a more direct and specific approach towards solving specific

problems like malaria, AIDS, and other narrowly defined issues negatively impacting development (Deaton, 2013; Easterly, 2006, 2007; Easterly & Williamson, 2011; Hubbard, 2009). A more moderate group can also be identified (Howes, 2014), arguing either along the lines of Collier (2006, 2007), who proposes that aid should be directed towards addressing extreme poverty and conflict-affected and fragile states; or along the lines of those who proposed a more scientific approach towards problem solving, particularly using experimental methods (Banerjee & Duflo, 2011; Pritchett, Samji, & Hammer, 2012; Ramalingam, 2013). The inconclusiveness of this debate, as well as the continued polarization resulting from it has, in effect, helped to maintain the current status quo.

Ultimately, this lack of conclusive evidence has resulted in ideologies filling the existing knowledge gaps (Crewe & Axelby, 2012; Riddell, 1987). In turn, this has made the debate about aid effectiveness even more complicated and inconclusive (the role of ideology will be revisited later in the chapter).

Despite the polarization that exists with regards to *how* effective aid is, this polarization does not exist when it comes to agreeing about the array of issues currently plaguing its effectiveness; that is, the *why* it is or is not effective (the considerable number of citations supporting each one of these issues aims at showcasing a rather small fraction of the literature that has repeatedly dealt with them throughout the last 60 years or so):

- Distance between rhetoric and praxis (Annen & Moers, 2012; Carothers & de Gramont, 2013, pp. 60, 163, 222; Carr, 1998, pp. 56–58; Crewe & Axelby, 2012; Easterly & Williamson, 2011; Scott, Mcloughlin, &

Marquette, 2012; Weaver, 2008, pp. 27, 29, 40; White, 1974).

- Lack of transparency, wrong incentives, and corruption (Lomborg, 2013b; Pomerantz, 2004; Weaver, 2008; Woods, 2006).
- Asymmetric power, leading to skewed rules of engagement (Carothers & de Gramont, 2013; Carr, 1998; Crewe & Axelby, 2012; Easterly, 2006; Eyben, 2007; Millikan & Rostow, 1976; Mosley, 1991; Mosse, 2011; OECD, 1981; Ostrom et al., 2002; Picard & Buss, 2009; Picciotto & Weaving, 2004; Pritchett, 2002; Ravallion, 2008; Riddell, 1987; Svensson, 2003; White, 1974; Whitfield, 2009; Woods, 2006).
- Disconnect between the short-term results expectations of donors and their constituencies, and the long-term nature of many of the development issues addressed (Barry et al., 2010; Carbone, 2009; Carr, 1998; Crewe & Axelby, 2012; Independent Commission on International Development Issues, 1980; Koch, 2009; Mosse, 2011; Pearson & Council on Foreign Relations, 1970; Picciotto & Weaving, 2004; Pomerantz, 2004).
- Disproportionality between the resources required to address the problems aid tries to solve and the size of the interventions it can fund (Bourguignon et al., 2012; Chauvet & Collier, 2004; Independent Commission on International Development Issues, 1980; Lomborg, 2013b; Mosley, 1987; Picard & Buss, 2009; Picciotto, 2005, 2009; White, 1974).
- Incompleteness of the aid market—including asymmetries in information and power, and uncertainty of supply and demand of resources, among others (AbouZahr, Adjei, & Kanchanachitra, 2007; Aspers, 2011; Browne,

2006; Easterly, 2007; Greenhill, Prizzon, & Rogerson, 2013; Kanbur, Sandler, Morrison, & Overseas Development Council., 1999; Montgomery, 1967; Mosley, 1987; OECD, 1981; Pomerantz, 2004; Tierney et al., 2011; Weaver, 2008; White, 1974; Wood & Betts, 2013; Woods, 2006).

- A multitude of parallel duplicating structures due to dysfunctionality and path-dependence of existing ones (Bourguignon et al., 2012; Browne, 1999; Eyben, 2007; Gibson et al., 2001; Greenhill et al., 2013; Kindornay & Samy, 2012; OECD, 2008a; Weaver, 2008).
- High transaction costs (Hodler & Dreher, 2013; OECD, 1981, 2008a; Schulpen, 2011; Wood & Betts, 2013).
- Difficulties in measuring (and pricing) opportunity costs and side effects resulting from aid (Barry et al., 2010; Carr, 1998; Cassen, 1986; Chauvet & Collier, 2004; Kanbur et al., 1999; Mosley, 1987; Mosse, 2011; Nunn & Qian, 2013; Riddell, 1987).
- Lack of conducive innovation dynamics to improve effectiveness—creative-destruction, that results from a process of failure/success, learning, and adjustment—a dynamic highly frowned upon within the existing aid architecture (Carr, 1998; Cartwright & Hardie, 2012; Mosley, 1991; OECD, 2008a; Picciotto & Weaving, 2004; Woods, 2006).
- Non-encompassing and non-coherent policies (Barry et al., 2010; Brooks, 2014; Carbone, 2009; Carbonnier, 2012; Grabel, 2007; Picciotto & Weaving, 2004).

- Bundling of incommensurable issues related to humanitarian and development assistance which cannot be bundle due to radically different nature and characteristics (Crewe & Axelby, 2012; Easterly, 2007; High-Level Panel on Humanitarian Financing, 2016; Kanbur et al., 1999; Montgomery, 1967; Picciotto & Weaving, 2004; Stirk, 2014).
- Coordination issues, including among others: fragmentation, duplication (as well as donor proliferation), unpredictability, fragility, incoherence, allocation inefficiencies, reduced additionality, unclear accountability, herding, inappropriate timing—by delivering aid in a pro-cyclical rather than counter-cyclical fashion (Black, 1960; Bourguignon et al., 2012; Bulíř & Hamann, 2008; Carbonnier, 2012; Carothers & de Gramont, 2013; Collier & Dollar, 2002; Commission on Global Governance, 1995; Frot & Santiso, 2011; Griesgraber & Gunter, 1996; Hausmann, Hidalgo, & Coscia, 2013; Hodler & Dreher, 2013; Independent Commission on International Development Issues, 1980; Kim, 2013; Kindornay & Samy, 2012; Koch, Dreher, Nunnenkamp, & Thiele, 2009; Lumsdaine, 1993; Metzger, Nunnenkamp, & Mahmoud, 2010; Mikesell, 1968; Mosley, 1987; Mosse, 2011; Neumayer, 2003; Nunnenkamp et al., 2013; OECD, 1981, 2008a; Jan Tinbergen, 1962; Wood & Betts, 2013).
- Limited absorptive capacity (Burnside & Dollar, 2004; Carothers & de Gramont, 2013; Collier, 2012; Feeny & de Silva, 2012; Independent Commission on International Development Issues, 1980; Millikan & Rostow, 1976; Montgomery, 1967; Jan Tinbergen, 1962).

- A technocratic approach towards problem solving which assumes that the problems of development and poverty are linear and well known in their causal components, and therefore, their solutions known as well, and their implementation straightforward (Campbell, 2004; Carothers & de Gramont, 2013; Deaton, 2013; Easterly, 2014; Mosley, 1987; Mosse, 2011; J. Sachs, 2005; Weaver, 2008; White, 1974; Whitfield, 2009; Woods, 2006).

If these issues above have something in common it is that they are narrowly related to decisions about the volume, allocation, and delivery of aid. They often ignore, as well, the effects of the frequently implicit assumptions in aid's praxis and the rhetoric surrounding it, suggesting that: (a) aid can make a difference regardless of its relative size vis-à-vis the challenges faced; (b) aid can be successful because we know what the solutions to these challenges are—and, therefore, we can solve them (the technocratic approach); and (c) aid can be effective even when not particularly addressing the international context in which aid recipients operate (because it is believed, or at least the aid enterprise acts as if, that the causes of the challenges are mostly endogenous to the countries being aided, rather than exogenous) (Dasandi, 2014). Nevertheless, the issues of volume, allocation, and delivery, and not the implications of the assumptions discussed above, are the ones that figure prominently in the Monterrey, Paris, Accra, and Busan declarations (OECD, 2008b, 2011; UNDESA, 2003)—declarations that have not been particularly effective (Chandy & Kharas, 2011; Easterly & Williamson, 2011; OECD, 2008a; Whitfield, 2009). The lack of effectiveness of these declarations continues to taint as rhetorical some of the discourses and efforts to improve aid architecture and delivery

(Eyben, 2007), with some scholars even suggesting that improvements of coordination among donors are unattainable given the incentive of donors to maximize their relative achievements, rather than collective ones (Annen & Moers, 2012).

Donor proliferation has only made all of these issues even more relevant and urgent. In 2008, there were already 23 Development Assistance Committee (DAC) members with a varying number of agencies, 47 UN agencies, 12 multilateral organizations (including the World Bank, IMF, European Commission, regional development banks, etc.), and about 31 international non-governmental organizations (INGOs)—without even counting the almost inordinate number of national or smaller international NGOs. Some of these INGOs are so big that their budgets exceed the aid budgets of countries like Italy, Greece, and Finland. Furthermore, additional bilateral donors like China have extended their reach both independently and as part of other multilateral initiatives along with Russia, India, and Brazil (OECD, 2008a, 2014, 2016). The resulting complexity of the donor landscape, and the fact that new donors do not formally adhere to any of the existing instruments and efforts to improve aid effectiveness, makes it even more difficult to achieve the objectives set forth by those instruments (Greenhill et al., 2013; OECD, 2008a; Overton, Murray, & McGregor, 2013). Wood and Betts (2013) estimate that the total global flows of aid that are not yet covered by the Paris Declaration might be just shy of US\$30 billion—this is, about a quarter of those flows coming from established DAC members.

The Never-Ending Circle of Aid (In)Effectiveness

The literature references backing many of the known issues hampering the effectiveness of aid have something in common that is hard to obviate: we have

denounced, researched, analyzed, and offered solutions to these issues since almost as early as aid was born as a systematic international effort in the late 1940s (see for example, Godfrey, 2014; Hubbard, 2009; Independent Commission on International Development Issues, 1980; OECD, 1981; White, 1974; Whitfield, 2009). This empirical and theoretical analysis has had marginal impact in transforming aid towards improved effectiveness, or at least radically reducing the incidence of some of the recurring issues about its volume, allocation, and delivery pointed out in the previous section.

For example, at the end of the 1950s, Millikan and Rostow (1976) suggested the need to avoid conditionality and the tying of aid, and clearly argued against the existing rhetoric of short-term solutions to long-term problems. In 1970, the Pearson Commission already pointed out to the same issues of tying aid, coordination, fragmentation, lack of transparency, and red tape that, more than thirty years later, were also captured in the Paris Declaration (OECD, 2008b; Pearson & Council on Foreign Relations, 1970). In 1981, the OECD (1981) called attention to the high transaction costs; power and information asymmetries between donors and recipients, as well as diverging motives and incentives between them and their respective stakeholders; duplication; and lack of coordination, among others. In the 1960s, Tinbergen (1962) and Hirschman, among others (Carothers & de Gramont, 2013), pointed out to the futility of ignoring the politics behind aid, as well as the importance of ownership and inclusion by its recipients. Both the Independent Commission on International Development issues (1980) and the Commission on Global Governance (1995) also summarized many of the issues included in previous sections, and not only showed widespread acknowledgement and agreement about their existence and role, but vehemently proposed specific changes to address them.

Moreover, these reports themselves, also referenced much earlier attempts within aid institutions to address the same issues, going as far back as 1969. At the beginning of the 1970s, White (1974) already denounced the ineffectiveness of aid, due to passing and many times contradictory fashions, that tended to flourish due to the skewed incentive systems and asymmetries embedded in the aid architecture. Constantly tried and discarded, these fashions created inefficiencies along the way, as well as trumped aid effectiveness. Even then, White already questioned the slow progress made by the aid community on issues that seemed to him, in 1974, long known and denounced. Finally, looking at the chronology of the aid enterprise put together by Fuhrer (1994), it is clear that starting as early as 1961, and not later than the early 1990s, most, if not all of the issues that are still listed as responsible for undermining aid effectiveness, had been long known, analyzed, and familiar proposals to address them had been suggested.

Ultimately, the reaction to all the criticisms and the slow pace of improvement has resulted in an increased emphasis on measuring, monitoring, and evaluation of the success or effectiveness of aid interventions. This has been furthered by the adoption of randomized control trials in development, which, despite also creating controversy with regards to their applicability, soundness, and implications (see for example, Cartwright, 2007; Cartwright Munro, Eileen, 2010; Deaton, 2010; Deaton & Cartwright, 2016), have become a potentially hopeful source of knowledge on what works and what does not, at least for some micro-level development issues (Banerjee & Duflo, 2011; Bourguignon et al., 2012; Easterly, 2008; Pritchett, 2002; Pritchett et al., 2012; Ravallion, 2008; Scott et al., 2012).

Moreover, while this tendency to track, measure, and evaluate everything has

recently consolidated to become a pillar of aid delivery, it has also ironically come into conflict with the fact that, in spite of failure and experimentation being costly but necessary for progress to take place, they are absolutely frowned-upon in the aid world. There is little incentive to talk about failure when donors and recipients already are mobilizing the resources they need or want, and when they are constantly engaged in a never-ending quest to increase them (Pritchett, 2002). Constituencies and stakeholders who influence funding decisions are, to say the least, impatient about any failure as well as irrational about their expectations of continuous success (see as well, Cartwright & Hardie, 2012).

This contradiction between the benefits of failure and experimentation and the way the aid enterprise rejects any failures, creates a lose-lose situation where investing in honest learning is minimal or not possible; and where, without new and more accurate knowledge, the prospects of raising aid effectiveness are reduced. Furthermore, the agenda concerning aid effectiveness is now polarized among those who claim that randomized experiments are the gold standard for demonstrating what works and what does not, and those who suggest a more cautious approach by resorting to a variety of methods (Banerjee & Duflo, 2011; Bourguignon et al., 2012; Jessica Cohen & Easterly, 2009; Deaton, 2010; Deaton & Cartwright, 2016; Ravallion, 2008).

A Preliminary Verdict

So far, we know that regardless of motives, traditions, preferences, and realities, aid is needed. The sheer number of human beings who need help today is staggering. Ultimately, and regardless of any other motives, what we do with this fact is a profoundly practical, moral issue: do we help those that, without a doubt, need help, when it is

clearly possible for us to do so?

Over the last sixty years or so, humanity has decided to do something about this undeniable need. Aid institutions have been created for this purpose; yet, as is the case with any other human endeavour, diversity of opinions, circumstances, and our paradoxical stances between our most selfish and our most selfless instincts and emotions, shape and limit our resolve and possibilities. Even those with the most utilitarian views have not recommended the use of aid to pursue ulterior motives, as they have argued, it has not and it will not serve them well (Bauer, 1974; Friedman, 1995).

The moral response to our predicament, with all its insecurities and contradictions, is further constrained by our limited understanding of the complexities of the process of social, political, and economic change. Even if our motives and intentions were pure and selfless, the truth is we do not really know the nuts and bolts of how to make social, economic and political change happen. We have clues, but despite our technocratic claims, the track record of our actions shows, emphatically, that we still have much to learn. Moreover, learning takes time—sometimes much longer than what the urgency of the task allows for.

As a fragile endeavor since its inception, aid has been shaped by cycles of in-vogue theories claiming to have the last word, only to find later that they did not; by recurring volume, allocation, and delivery issues limiting its efficiency and effectiveness; by polarized ideologically-based pressures; and by an architecture and praxis that makes it keep trying to surface to gasp for air, while the weight of its history and DNA keeps pulling it towards the bottom.

There are thousands of volumes numbering, analyzing, and addressing all the

pitfalls to which aid has been, and, most importantly, continues to be subjected. There is little new that can be said. In fact, books from the 1950s already discussed many of the issues that occupy us today. Nevertheless, we keep debating these issues without having much to show for the last sixty years—at least not if we accept that the list of challenges accounted for in the 1950s still looks awfully contemporary.

There has to be something fundamentally flawed in our historical approach to the task, as well as in our approach to its solutions, as through all of this, six million children die needlessly every year; 1 billion people are undernourished while another 1 billion go hungry every night, despite the food required to feed them being available (albeit in the garbage cans of aid-giving countries); and one in every three children in developing countries is suffering from stunted growth, severely limiting her/his possibilities and hampering the quality of the future human capital that their countries desperately require in order to break the vicious circle of poverty.

The following sections will offer an alternative view on these matters, drawing on the very practical philosophical approach of Ludwig Wittgenstein, as well as other scholars who have more recently researched the role of concepts and ideas in the process of social, economic, and political change (who draw as well on some of Wittgenstein's ideas on these issues).

An Epistemological and Ontological Alternative for Reframing Aid

Previous sections of this chapter have shown that the practice of aid has been handicapped by its isolation from a variety of historical and contextual factors. These factors seem to be more relevant in enabling or constraining development than what aid itself could possibly be. Aid has also been handicapped by the unproven assumption of its

catalytic role in various realms where its relative importance pales in relation to the challenges it faces. Finally, it has also been handicapped by the assumption—and the incentives to act as if it was not an assumption, but a fact—that we already know, unequivocally, how to make development happen.

The practice of overlooking these handicaps has led to a strong focus, instead, on issues related to the volume, allocation, and delivery of aid as if they were the main culprits of its less than optimal performance. By focusing on these issues, the implicit message from the aid community to their stakeholders is: we do know what needs to be done, but as in every human endeavour, we are always struggling with improving the effectiveness and efficiency of our efforts; that is, aid works although it could work better. Does it, however, at least in its current form?

As we have also seen in the previous sections, evidence on whether aid actually works or not is inconclusive. Moreover, a consequence of this inconclusiveness has been that ideological views have taken over the disputed spaces.

This clearly points to a situation in which we need to question our approach to the task. What do we mean by *effective*? What do we mean by *poverty*? And, what do we mean by *development*? There is an unspoken and presumed view of what these are, both in technocratic and ideological debates. However, are any of these views valid, granted, consistent, or sound? What are the points of reference, the absolute truths, if any, against which we hold them to be correct? Ferguson (2007), originally, and Chhotray (2011) among others, following him, have already argued on how discourse impacts development practice.

Ludwig Wittgenstein's strictly practical philosophical approach can provide an

alternative point of view, and is a very useful point of reference to deal with these issues. His ideas on knowledge and explanations, on words and meaning, and on rules and causal change will be explored in the next few sub-sections and will offer several useful points of reference for framing this dissertation's discussion of its proposed research problematic. The objective is to use this reference point to re-examine the problematic of aid through a different lens and set of pictures—through an unorthodox epistemological and ontological perspective.

Wittgenstein's ideas have been the subject of a wide variety of competing interpretations and criticisms (Grayling, 1988; Hacker, 2001; Horwich, 2012; Read, 2011), although more recent ones have broken with the usually held interpretations of him offering two distinct philosophies (the earlier and the later ones), by arguing there is just an evolving one that follows a common thread (Hintikka, 2000; Horwich, 2012; Read, 2010, 2011). These more contemporary interpretations also argue against the idea that his philosophy is about language and logic, instead of actually a meta-philosophy and a method based on a particular epistemological and ontological view of the world in which human beings live and act (Hacker, 2001; Horwich, 2012; Tyler, 2011).

Among the chief criticisms about Wittgenstein's work are: it oversimplifies the issues he addressed in a way that distort their true nature (Grayling, 1988); offer little in defence of some of the basic assumptions he makes, like for example, the existence of "forms of life" and perhaps more importantly, the underlying relativism to everything in life (Grayling, 1988); the lack of clarity and systematism in his work that leads to confusion about the points he is making, including the use of vague and metaphorical concepts and notions that might change their meaning depending on the context

(Grayling, 1988, p. 99); the way in which he linked the meaning and use of words, which while important, might not necessarily be as exhaustive as he claims (Grayling, 1988); the suggestion that through the sorting out of meanings, philosophical puzzlements might dissolve, and how this claim might not necessarily be satisfactory, as in fact, such sorting out might actually generate the opposite, that is, puzzlements of its own (Grayling, 1988, p. 102); and, the claim that language is essentially public, not private (given the need for a reference point), and how this claim might create inconsistencies with his claim that rule-following must also be based on such a reference point (Grayling, 1988, p. 110).

Elucidating or taking a particular stance against these controversies not only goes beyond the scope of this dissertation, but ultimately, it is inconsequential precisely because there is an axiomatic nature behind different philosophical positions that cannot be reconciled. Wittgenstein himself said,

Where two principles really do meet which cannot be reconciled with one another, then each man declares the other a fool and heretic. (Wittgenstein, 1969, para. 611, p. 81)

Rather than such elucidation, what is important for the purposes of this dissertation is that the choosing of Wittgenstein's epistemological and ontological approach responds to the desperate need to break the circularity of the problematic of aid in the same fashion in which Wittgenstein originally set himself to break what he perceived to be an entangling of philosophy into its own web. Wittgenstein's approach can precisely provide a different vantage point from which the problems of aid can be reframed, from which the conception of aid can be reformulated, and from which the real problems behind it can be affirmed, while the apparent ones get dissolved.

Evidently, there will be those who, on the grounds of their disagreement with Wittgenstein, would then perhaps disagree with the arguments or conclusions of this dissertation. This is something that cannot be avoided, but is not either a factor that should prevent setting a clear epistemological and ontological basis for the analysis. In the end, it is expected that this dissertation will offer a plausible explanation of how aid could be improved and that such conclusion will demonstrate in itself the usefulness of the choice made to use Wittgenstein's philosophical approach.

Knowledge and explanation.

In contrast to the logical, ahistorical, and empirical take on science of Locke and Hobbes, which posits the existence of certain truths lying beneath the surface that would be valid under any circumstances, Kuhn, Feyerabend, and others propose science to be a social enterprise. For the latter, knowledge is defined by the way the world is viewed: by the paradigm through which it was looked at (Phillips, 1977).

Wittgenstein's language-games and Kuhn's paradigms have key similarities (Morawetz, 1978; Phillips, 1977). Scientific disciplines can be seen as special cases of language-games, seeking to construct a language that can be used to describe and explain the part of the world that is their subject. In doing so, they create an ordered understanding which focuses on certain aspects of the world and leaves other parts out. One could say that each discipline has a history and, through that history, it creates its own grammar to sort out the part of the world it focuses on. A paradigm, like a language-game, represents a way to see and make sense of the world, as well as to communicate this knowledge. Paradigms and language-games influence what people can perceive and what they will consider compelling evidence. They come into existence, they change,

they become obsolete, or they are even forgotten (Bloor, 1983; Phillips, 1977, p. 43).

Nonetheless, there are also differences between paradigms and language-games—the most important being, while for Kuhn, paradigms were incommensurable and there was no logical way to break out from one into another, Wittgenstein’s language-games are not (Phillips, 1977). In fact, it is possible to play several language-games at the same time, because, according to Wittgenstein, all possible language-games have their origins in the same language-game of daily life which stems from our nature and biology—what Williams (2002) calls “bedrock practices.” This common language-game has, in Wittgenstein’s view, “epistemological and ontological primacy,” given that they represent “the very rock bottom of our knowledge and experience”; they are at such a basic level that there is “no transcendental criterion” against which a judgement could be made of them being true or false (Gier, 1981; Morawetz, 1978; Phillips, 1977, p. 89; Williams, 2002). Ultimately, these “bedrock practices” are what allow us to be sceptical, judge other’s ideas, and consider them reasonable, even if we do not necessarily accept them or understand them in full (Morawetz, 1978; Surowiecki, 2004).

Wittgenstein’s conception of what he calls “forms of life” is, in a way, related to the timeless philosophical discussion about being and essence, and perhaps even surprisingly aligned with Aquinas’ conception of the “*esse*” (the act of existing) as undefinable but, ultimately, the source of every knowledge (Aquinas, 1949; Sanguineti, 1977). In fact, Aquinas’ definition of “common experience” is strikingly similar to that of Wittgenstein’s “forms of life” (Aquinas, 1949, 1960, p. 238 para. 645; Gier, 1981; Morawetz, 1978; Phillips, 1977; Sanguineti, 1977, p. 251; Williams, 2002).

This difference between paradigms and language-games allows, following

Wittgenstein, for the possibility to describe the world in different ways and for various explanations of the same phenomena to coexist through the existence of different language-games. In the *Tractatus Logico-Philosophicus*, Wittgenstein remarked:

the fact that it can be described by Newtonian mechanics asserts nothing about the world; but this asserts something, namely, that it can be described in that particular way in which it is described, as is indeed the case. (Wittgenstein, 2010, p.85 6.342)

From his point of view, it is scientists who provide scientific explanations of phenomena and not, as scientist claim, the theories or laws they “discover,” the ones doing the explaining (see as well the considerable literature of Cartwright (1983, 1999; Cartwright & Hardie, 2012) which also supports the same line of argumentation). The knowledge that people acquire exists already the way it is. It is not found by a discovery of reason (Gier, 1981): “Our similar biology, rather than a cognitive achievement, is the origin of our practice” (Dromm, 2008, p. 83). Explanations, then, are mosaics put together with what we already know; they are ways of ordering the facts of the world we somehow already know (Bloor, 1983; Cartwright, 1999; Cartwright & Hardie, 2012; Dromm, 2008, p. 101; Phillips, 1977, pp. 19, 90–91).

Building on the previous quotation from Wittgenstein’s *Tractatus*, it was not until Albert Einstein’s theory of general relativity that the basis of Newtonian mechanics was revised, even if, until then, it had described the world in a way in which it could be described. With Einstein’s new theory, we had now to our avail a different description of the same world, explaining the same phenomena. It was just that Einstein’s explanation was considered to be a better, more comprehensive one. (This is also consistent with both

Aquinas' views on scientific explanation (Aquinas, 1949; Sanguineti, 1977), as well as with those from Cartwright (Cartwright, 1983, 1999).)

For Wittgenstein then, an explanation of a phenomenon is the result of a specialized language-game, which builds on the meta-language of daily life, and which, in turn, rests on our biological or common nature: the “forms of life” (Phillips, 1977). Such a specialized language-game allows the players to see and make sense of the world in a particular way, and, therefore, to set forth explanations for the phenomena they perceive. Players of other language-games may, within the limits of their own game, perceive the same phenomena in different ways and, therefore, provide alternative explanations for them (Cartwright, 1983; Sanguineti, 1977). The consequence of this is that, for Wittgenstein, there cannot be an “objective, mind-independent reality” (Phillips, 1977; Temelini, 2015). His philosophy is meant to be a cure for our metaphysical obsession to look for “foundations, external stand points, or epistemologically certain explanations, to expose these as nonsense” (Dromm, 2008; Temelini, 2015, pp. 206–207). This contrasts with Aristotle and Aquinas conception of science as pursuing the knowledge of beings and their causes (a metaphysical approach), although it coincides, in turn, in the distinction they all make between apparently knowing something by possessing some information about it, and truly knowing something by being able to relate it to specific actions. In this sense, Wittgenstein's understanding of knowledge prevents the risk that both Aristotle and Aquinas saw in abandoning the singular expressions of being, in favor of an incorrect and impossible aim at only pursuing and holding universals. Both Aristotle and Aquinas argue that in losing sight of the singular, the knowledge of the “being” and its “esse” is lost and therefore the universals only

apparent (Sanguineti, 1977).

Wittgenstein suggests that knowing is closely related to understanding, as well as “to be able to” (Bloor, 1983; Dromm, 2008; Phillips, 1977; Tyler, 2011). Knowledge not only is strictly practical. It is also a public and not a private affair. Ultimately, knowledge is a “publicly shared [set] of concepts which are social creations” (McGinn, 1984; Morawetz, 1978; Phillips, 1977, p. 200). We come to understand not only through education or initiation but as a result of our encounters with others and our joint efforts and struggles to make sense of the world (Dromm, 2008; Temelini, 2015). Understanding and knowledge are then the results of an ‘experimental state’ rather than just a physical state or a visual experience. Understanding is not only drawing lines connecting the ingredients we know; it is also connecting them with our feelings and thoughts, so our knowledge acquires depth (Aquinas, 1949; Dromm, 2008, p. 101; Tyler, 2011). (This is consistent with recent neuroscience discoveries, see for example (Eagleman, 2016).) Consequently, many times, we are not able to see reasons where others do; no matter how many additional facts we get, without sympathy or empathy, we cannot simply understand a practice, and, therefore, acquire knowledge (Dromm, 2008, p. 102).

To know that one understands or knows, one has to have some outward criteria for validation: there have to be public rules that show one’s understanding by adhering or not to them. “Understanding a game ... may mean knowing the rules, but it may also mean knowing how to play it” (Bloor, 1983; Phillips, 1977, pp. 49–50; Pitkin, 1972). For Wittgenstein, there is no divide between the conceptual and the empirical (Phillips, 1977, p. 100); knowledge comes from the particulars and not necessarily from our attempts to reduce any phenomenon to its alleged essence (Danford, 1978; Temelini, 2015; Tyler,

2011).

Words and meanings.

Just as knowledge and explanation are conceived by Wittgenstein as social creations, words and their meanings are too. However, they are not accidental nor arbitrary; they are based on the same “naturalness” that gives the language-game of life “epistemological and ontological primacy” (Danford, 1978; Phillips, 1977, p. 89; Temelini, 2015). This view, which is more in line with that of the classics, clearly differs from that of Hobbes and Locke, who aspire to derive general principles by looking beneath the surface of things—to unearth the simpler elements (Danford, 1978; Temelini, 2015). Words and meanings, then, cannot be taken out of the social setting in which they are used, as well as the language in which they are articulated (Klagge, 2011). In *On Certainty* (1969), Wittgenstein illustrates this by proposing a community that having got rid of private property for too long for their members to understand what it means anymore, is studied by sociologists concerned with theft. Not having the concept of private property, the members of the community use their shared wealth in ways in which might be interpreted as theft by these sociologists. When questioning the members of this community about their behaviour, the sociologists would frame their arguments from the perspective that theft was happening, while the community members would not be able to grasp the idea of theft, since they cannot grasp the idea of private property (Phillips, 1977).

For Wittgenstein, words and their meaning cannot be separated from their use, the language in which they are used, and the social groups in which they are used; meaning is not an abstraction, meaning is use (McGinn, 1984; Reynaud, 2002; Williams, 2002).

Rules and causal change.

Perhaps one of the most important points Wittgenstein made about rules is that rather than being causally connected to an action, they are simply likely reasons (Reynaud, 2002). Establishing causality would require complete knowledge of the process leading from rule to action, and, Wittgenstein argues, doing so is not possible (Dromm, 2008). Contemporary philosophers like Cartwright (1999; Cartwright & Hardie, 2012) argue in a similar fashion about the limits of our knowledge and explanations.

This impossibility comes from the four properties that are common to rules: generality, abstraction, permanence over time, and distance from the solution (Dromm, 2008; Reynaud, 2002, p. 122). Rules are neither solutions nor decisions; a solution is specific, but a rule provides a frame in which to set an action—hence its generality and abstraction; a decision is made at a particular point in time, but a rule allows for actions to be taken over time.

As discussed in previous sections with regards to knowledge and explanation, and words and meaning, rules as well can only have meaning in social practice. They also draw from the same epistemological and ontological primacy mentioned earlier (Phillips, 1977). One cannot know if one is following a rule unless there is a point of reference through which the action can be seen and assessed as complying with a rule or not (Dromm, 2008; Reynaud, 2002). Wittgenstein is against the idea that understanding a rule is a mental process; he insists that such mental process may not be more than a signal, and that there is no substitute for the action of correctly following the rule as proof of understanding (Arnsward, 2009; Cartwright, 1999; Dromm, 2008, p. 73). The following or application of rules is then grasped through its teaching and through

people's negotiation with the rule (i.e., interpreting, doubting, challenging, justifying). It is only through this social process of grasping through action, that participants can, over time, reach a tacit agreement, and ultimately sustain a routine, or even change it or drop it. Given that this process of negotiating with the rule is unique to different people and groups, rules can be said to lead to different practices. Furthermore, as this negotiation takes place within specific social institutions, the success of a rule in establishing a new practice would be influenced by how much support it can draw from these institutions (Arnsward, 2009; Dromm, 2008; Reynaud, 2002, pp. 132–133). Rules are followed because such institutional base provides certainty about “steady ways of living, regular ways of acting” (Dromm, 2008, p. 80). Still, Wittgenstein warns us that such certainty cannot be interpreted as the actions following the rule due to causality. At the most, they can show a speculative explanatory connection between them (Dromm, 2008, p. 97). Beliefs are necessary in order to take action (one does not speak to someone whom one believes cannot hear, or one does not walk into a room if one does not believe the floor can support one's weight), yet, they are not causes—they are necessary but not sufficient (Cartwright, 1983, 1999; Morawetz, 1978, p. 25).

Why Wittgenstein and What It Means for the Reframing of Aid?

Wittgenstein's ideas, discussed in the previous section, provide an alternative epistemological and ontological basis for revisiting the challenge of aid (in)effectiveness.

In a nutshell, his approach requires conceiving the limits of what can and cannot be known, the realization of how things can be known, and the coming to terms with the setting of these limits as the best way to avoid epistemological and ontological confusion, which ultimately leads to ineffective practices (Arnsward, 2009). Furthermore, this idea

of limits is applied by Wittgenstein to the idea of language-games and their role in social interaction. Since language-games stochastic, their limits are always pushed and moved, in particular, when they come into contact with other language-games. As discussed above, this possibility of finding common ground between language-games always exists as, in the ultimate analysis, all of them share common “forms of life” grounding (Arnswald, 2009). Furthermore, the nature of language-games makes them time dependent: universalistic ideals of justification (Arnswald, 2009) are not possible as both context and people change. The following quotation clearly summarizes the points above,

The entirety of these practices and reactions of the linguistic and non-linguistic kind belong to a particular language game that the actors actually control, yet without the game resting on a metaphysical guarantee, like reason. No rational structure is available that points beyond the contexts in which individual languages are used and that underpins the related purpose still further; and moreover, according to Wittgenstein, such a structure is superfluous. Likewise, as our own language game is neither rational, nor irrational, but merely there, like life itself, so too, is the language we use in our moral discourses, in Wittgenstein’s view, lastly governed by the fact that we rely upon something. (Kertscher, 2009, p. 96)

Taking into consideration the previous discussion on the themes of knowledge and explanation, words and meanings, and rules and causal change and applying them to the subject of aid (in)effectiveness, let us start now by considering the importance of words and meaning. What are the meanings of the words used in aid, and how do they shape what aid does? What is development? What is aid? What is it meant by regulations,

institutions, or market? What does success look like for aid? How do we understand and evaluate its impact? Even more importantly, what does it mean for it to have “impact”? (Lin, 2012b; Riddell, 1987).

These are all critical concepts, considered in every context in which aid is discussed. These discussions take place through the use of different language-games. Do all parties taking part in the discussion mean the same? Do all parts understand the rules of each one of these games in the sense that they can actually play them? Is it possible that part of the problematic with aid effectiveness is that stakeholders are mixing up different language-games?

Take for example the word *development*. Back in 1970, the Pearson Commission in the document *The Crisis of Development* defined it as each country’s self-determination of a balance between self-sustainable economic growth and social progress. Four years later, White (1974), was already criticizing how the aggregation of ideas had led to the impression that aid was one kind of resource, being administered by one kind of agency, implementing a coherent strategy called aid, aiming to achieve one single idea of what development was. In 1980, the North-South Report (Independent Commission on International Development Issues, 1980) shifted the focus of the notion of development from material progress and economic growth, to people—development had to be about the individual. The report also argued against single models of development, particularly foreign ones—the idea of development had to take into consideration culture, religion, traditions, endowments, and political patterns. Somehow it echoed the view of the Pearson Commission in 1970. In a study of the history of the idea of economic development, Arndt (1987) reminded the reader that, regardless of any

name or meaning given, development has been happening throughout the history of humanity; but that once it became a political objective after World War II, it went from material progress and modernization, to changes in power relations, changes in social justice, or a simple rejection of materialism and consumerism as a destructive force. For Friedman (1995), development was about giving people the freedom to change old into new ways. Crewe and Axelby (2012) show how development has been, at times, poverty reduction, at others rights, or science and technology, or growth, or freedom, among others; whatever way it was defined, they argue, the most current idea of development would be the one driving aid. Godfrey (2014) and Skidelsky & Skidelsky (2012) bring back the classical Greek idea of eudemonia to define development as the fulfilling of what is physically necessary, so people can be free to fulfill their non-material needs.

Another example is the concept of markets. In particular, what does it mean for a market to be free or regulated? Harcourt (2011) makes a very strong case about the irrelevance of such a distinction by comparing the Parisian markets for grain in the 18th century with the Chicago Board of Trade (for similar examples see also Desan (2014) and Roth (2015)). He shows how confusion about the meanings of freedom and discipline has led us to the erroneous perception that today's markets are freer than they were in the past when, in reality, they are not. Ultimately, he argues, all markets are created through regulations that determine how they operate and what their likely allocation results will be (Bruszt & McDermott, 2014; Hale, 1923). There are no unregulated free markets—the idea of free-market is a fiction. In fact, he shows how such artificial differentiation between free and regulated markets, which cannot be easily or accurately measured, is just a confusion of labels that hinder an accurate assessment and discussion of what is

really going on behind them. Harcourt (2011) argues that by attaching to the concept of free markets the idea that they occur naturally, as well as the idea that they operate as a matter of natural order, believers in free markets have claimed a self-given exception from political, social, and moral debates: they believe markets are the way they are, and that regulation only interferes with their natural state.

The fact that the new and scientific language of equilibrium theory and Pareto improvements underlying the idea of free markets in economics, or that the countless definitions and emphases put on the idea of development, have both had such huge implications in the way aid is understood and delivered despite their inaccuracy, is a clear testament to the relevance of Wittgenstein's ideas about words and their meanings, and how they are intrinsically linked to praxis. The Washington Consensus was, for example, a clear example of the role words and meanings (in this particular case "free" "markets") in permeating the praxis of aid.

However, who are the ones determining these meanings, and how do they go about it? Woods (2006) points out to the fact that when both the World Bank and International Monetary Fund were created not only did their charters not provide guidance as to how to achieve their task. In fact, these organizations did not even have either the experience, or the economic or political theories to tell them what development was and how to achieve it. It was only through a process of competing policy objectives and economic theories bumping into each other, that the internal incentives of these institutions started shaping and evolving a vision of what development was and, as a consequence, what aid was (Alacevich, 2009). This process of internalization of rules through the creation of routines and standards within the aid enterprise is, coincidentally, a

great example of the discussion above about Wittgenstein's understanding of rules and causal change. In fact, the process of internalization that the aid enterprise had to go through, followed a similar logic like the one explained by Reynaud (2002) in her book *Operating Rules in Organizations. Macroeconomic and Microeconomic Analyses*.

These processes of accumulating knowledge and devising explanations, or language-games, as Wittgenstein called them, is sometimes limiting. For example, Krugman (1998) shows how precisely at the point in time when the meanings of development and aid were starting to be shaped, a counter-revolution from mainstream economists wiped away a number of valuable ideas that could not be formalized using the mathematical models that, by then, had already become the instrument of choice of economics. While these ideas were not necessarily wrong, a lack of analytical clarity in the eyes of economists led to their rejection. At the time, many of the methodological instruments required to formalize such ideas were not available and therefore prevented their acceptance. As Krugman points out, in silent and probably unknown agreement with Wittgenstein, they were rejected because they were not codified in a way that made them intelligible to others in the professional field—they could not pass the test of social validation within the relevant group of gamers. In fact, this also illustrates Wittgenstein's argument that the conceptual and the empirical cannot be separated: the practice of economics requires mathematics and, therefore, those not using mathematics simply cannot play the game. Furthermore, Krugman's argument can also pinpoint the origins of the technocratic approach towards aid. As a social science, economics has been increasingly detaching itself from political or social considerations (in contrast to the idea of political economy, which was oriented towards the normative, economics aspired to

become a positive discipline). As Woods (2006) argues, these positive economic theories were confronted, within the Bretton Woods institutions, by political objectives, institutional constraints, and limited financial resources that, combined, helped shape the form aid would assume, and the way it would evolve over the years.

The words and meanings that shaped and continue to shape aid are the result of these varied social, economic, and political language-games taking place between those who have the power to make decisions—usually the ones who provide or manage the financial resources. It is easy to think of a countless variety of language-games taking place in this context: conceptual/theoretical ones dealing with determining what works and what doesn't in stimulating development (including within-disciplines and across-disciplines); empirical ones dealing with decisions about volume, allocation, and delivery; political ones between donors and their stakeholders and constituencies, between recipients and their stakeholders and constituencies, between donors and recipients, between donors and the recipients' stakeholders and constituencies, and between recipients and the donors' stakeholders and constituencies, among others.

Beliefs, motives, experiences, understanding, objectives, meanings, and many other categories vary widely among these language-games, and this makes it very easy for players to get lost and confused, and for the games to become unproductive. This is just another way to look at the pervasive issues created by the current cumbersome aid architecture: humanitarian aid is radically different from development aid, among other salient differences. Pursuing economic or diplomatic objectives is radically different from pursuing poverty reduction or institutional development. Nonetheless, as Wittgenstein proposes, there is no reason why a common ground cannot be achieved between all these

games and all their players, especially as all of them draw from “forms of life.” What is perhaps needed is a new language-game that can bridge all those differences, or that at least can facilitate a clearer distinction among real issues and those which need “dissolving” through the clearing of confusions created from the mixing of different language-games.

It is at this point that we can bring to bear Wittgenstein’s ideas about rules and causal change discussed above. Aid has relied on the idea that rules imply causation, contrary to what Wittgenstein suggests. The technocratic approach to aid is largely based on the idea that increasing investment has causal implications; reforming institutions has causal implications; and, among many others, improving education and health has causal implications. Somehow, the technocratic approach has simultaneously portrayed these causal effects to be not only undeniable, but also almost immediate or at least attainable in the short-term (otherwise aid-giving stakeholders would be likely to withdraw their support), thanks to the particular choice of measures selected to showcase the effects of aid. For example, a reform of the education system may lead to higher enrolment (a measure of choice) or higher average number of schooling years (another measure of choice). While these causal relations between aid and such measures could be shown to be a probable description of what happened as a result of the reform of an education system, such description would be detached from the number of assumptions behind our understanding of the role of education in development; or behind our claims of how representative measures of enrollment or number of schooling years are as proxies of improvement in education; or how these particular improvements in education translate into something else that translates into something else, that at some point translates into

development. In this case in point, Hanushek (2015) provides solid empirical evidence to refute the importance we have given for so long to school enrolment and schooling years as explanatory of economic growth.

Similarly, a language-game of technocratic justification shifts and shapes the debates about aid effectiveness within a particular realm, and by doing so, helps reject claims that become incomprehensible or inadequate within such a game. For example, in the case of education discussed above, the technocratic language-game of aid allowed for investments in a certain kind of education related achievements to go on, unquestioned, based on an assumption of causality that was incorrect, according to Hanushek (2015). The contestation of such assumption was incomprehensible or inadequate within such game, and therefore rejected if ever interjected.

Another example to illustrate this point is related to welfare. When it comes to welfare, mainstream economics operate within a game that frowns upon any intervention in markets under the deeply entrenched belief that doing so will hinder the achievement of Pareto-optimal outcomes (first theorem of welfare) (Athreya, 2013). Economists playing this language-game know very well that Pareto-optimal distributions, which potentially can make everyone better-off, do not address issues of distribution and inequality. Yet, they believe that the only way to achieve distributional and equality objectives without upsetting the possibility of achieving Pareto-optimal outcomes is by changing the initial endowments of individuals through lump-sum transfers, and that not only will other redistribution tactics not work, but that as a result of them, everyone will end up being worse-off (second theorem of welfare) (Athreya, 2013). Evidently, none of these arguments will play well with those playing the language-game of socialism, or

with those playing that of social democracy. Even within mainstream economics, Nobel Prize laureates, like Joseph Stiglitz (Stiglitz & Arnott, 2003), question these theorems of welfare; yet, they continue to guide the economics language-game, as well as its influence in aid and other development efforts. Once again, the Washington Consensus was a clear example of how these technocratic ideas shaped aid's praxis to its core.

At this point it is useful to bring to bear two important aspects of Wittgenstein's philosophical approach discussed above: (a) the impossibility of separating the conceptual from the empirical (and, therefore, theory from practice), and (b) the grounding that all knowledge and explanation should have in the practical (philosophers like Cartwright (1999) argue similarly about the importance of not separating knowledge from practice). Both these ideas strengthen the arguments against a technocratic approach. As Woods (2006) has described, our delivery of aid has been based on very specific (technocratic) formulas and strategies that, once moved from the conceptual realm into the real world, showcase their difficulties or deficiencies in achieving the effects they were supposed to induce. Therefore, these failures debunk the idea that the delivery of aid—its praxis—was based on authentic and solid knowledge, and not on possible and partial explanations instead (otherwise aid would have attained its theoretical potential).

Krugman (1998) agrees with this assessment. He criticizes the way in which development economics ideas have been used to justify policies that ultimately achieved the opposite results they were supposed to—like the excessive emphasis on capital accumulation under the Harrod-Domar model, or the import-substitution efforts implemented in Latin American countries (Meier, 2001a). In fact, he goes so far as to

state that even in places where rapid economic growth occurred, it did so in ways that were not anticipated by any of the development economics theorists. It is this evident distance between the theory of aid, the praxis of aid, and the results of aid, what shows how the explanations provided by the theorist, while possible within their own games, do not seem to be “practical” or “real” knowledge: we claim to understand how development and aid work, but we cannot actually succeed: we claim to know how to play these language games but we can’t, or perhaps more accurately, we are not skilled at playing it.

The limits of such a theoretically driven aid practice have been discussed for many years, as has been shown earlier was also the case of many of the other issues that plague or limits its effectiveness.

Over the last few years the Paris, Accra, and Busan declarations have put particular emphasis on the need for increased popular participation in the development enterprise. Ownership from the beneficiaries, as well as their validation of any policies and strategies to be pursued, have also been discussed and promoted as an integral part of such increased popular participation (OECD, 2008b, 2011; UNDESA, 2003). Nonetheless, given the incentives embedded in the architecture of aid, many times, efforts in this direction are more rhetorical than practical (Crewe & Axelby, 2012; Mosse, 2011; Whitfield, 2009; Woods, 2006). Many of the proposed policies and strategies submitted to the vetting of the affected communities, still come from a technocratic tradition and culture, and the room for manoeuvre given to these communities is, many times, reduced to a binary yes or no.

This state of affairs is yet another reason why, following Wittgenstein’s reasoning, aid might not be effective. Delivery of aid, even when enhanced by some

degree of popular participation, still relies on a model of linear causality from rules to desired change. Even when communities might agree in principle with the implementation of certain policies and strategies, it is not until they start playing the language-game under the new rules that the interpretative and internalizing process will start, and that the trial and error and adjustment process will determine what the outcome of those new rules will be. Still, aid does little in this respect—and not unexpectedly, as the principle of ownership and political neutrality and independence embedded in its architecture requires them to avoid, in many ways, such realms of action.

Furthermore, incentives in the architecture of aid promote that those who are responsible for its delivery, must be eager to achieve the expected theoretical results; while their recipients, understanding such incentives, will also be eager to perform as if this was the case (as given their own incentives, this would be key for ensuring continued aid support). On the other hand, donors' constituencies expect them to provide information regarding outcomes resulting from their money, hoping that what actually happens remains aligned with the constituent's original expectations based on the theoretical justification on which they agreed to provide the funding in the first place.

The participatory approach to aid is then constrained by the institutionalized incentives that rig the language-game to respond to those incentives, rather than to the development outcomes that should have primacy. Even when incentives embedded in the aid architecture may seem to be aligned with the development outcomes desired, the track record of aid shows that there is, definitively, considerable distance between them.

Ultimately, this disconnect and rhetorical distance between theory and practice severely limits the improvement of aid effectiveness given that, following Wittgenstein's

logic, the real learning that leads not just to understanding the language-game, but to actually being able to play it successfully, does not occur in full within the aid enterprise, to say the least (Carothers & de Gramont, 2013; Roth, 2015). In this respect, Pitkin (1972) states:

A Wittgensteinian approach makes possible, but also requires us, that we take other people, and other cultures, *seriously*, that we really listen, that we become able to see from the perspective of another. But it also makes possible, and requires of us, that we take ourselves seriously, that we be serious, that we accept our own perspective as our own, that we say what we really mean and live by what we say.” (p. 339-340)

Language-games, then, can contribute to the creation of certainty by clarifying their rules through participants’ practice. Certainty, or at least reduced uncertainty, is essential for action to take place. Aid is afflicted with all sorts of uncertainties: how much of it will be available, for how long, and to whom (volume, allocation, and delivery issues), as well as changing rules on incentives driven by conflicting motives. These are not pitfalls faced only by recipients but also by the international institutions that serve as intermediaries between donors and recipients. These pitfalls are also faced by donors when facing their constituencies and stakeholders, or by recipients facing the same kinds of audiences. Rules are not stable nor clear, our knowledge and our ability to explain them are limited, and we are all confused by the many meanings given to the words that are essential for aid to operate.

This epistemological and ontological interpretation of aid, drawing from Wittgenstein’s philosophy, helps us reveal a fresh understanding of the reasons behind

the recurrent issues plaguing aid, as well as the reasons why efforts to address them have moved so little, so erratically, and so slowly.

From the previous discussion, it is apparent that the multitude of language-games in the aid game, as well as their disconnect from the practical (which ultimately hinders our understanding of the explanatory power that rules might have in driving the desired change), is driven by a multitude of motives, but perhaps even more prominently, by ideology.

Ideology can frame aid as pursuing modernization, control, empowerment, or discourse, among others (Crewe & Axelby, 2012). From the left, it can claim that aid is just a diversion or an enabler for maintaining an asymmetry in power distribution (H. A. Arndt, 1987; Mosley, 1987); a mechanism to intensify capital intensity to further pressure wages down and increase exploitation of labour (Mosley, 1987); that aid and its effects are not well understood and many times end up supporting those who have the greatest power and the most economic means (Hayter, 1985; Riddell, 1987); or, among many others, that aid is used to maintain an international order that works in favour of those who give aid (Amin, 1976; H. A. Arndt, 1987). From the right, it can claim that aid reduces the relative cost of 'leisure,' while increasing that of 'effort', and that this creates distortions in the market that, in turn, create internal inefficiencies, as well as the distorting of the international division of labour (Bauer, 1973; Friedman, 1995; Mosley, 1987; Riddell, 1987; White, 1974); that economies of developing countries do not function in the same manner that those in developed ones do and that aid only forces institutions and actions that do not, and cannot create growth and development (H. A. Arndt, 1987); or simply, that development is a slow and endogenously driven process that

cannot be forced or engineered through aid (H. A. Arndt, 1987).

The problem with many arguments from the left is that they tend to converge to the same problematic about classes and power. This also tend to lead to the argument that change can only occur through a shift of power, and, from there, to the argument that the only real alternative to achieve the required power shift is revolution or an approximation towards it. This rationale tends to isolate their arguments from mainstream debates, as revolution is not conceived in these debates as desirable, or realistic.

As Horwich (2012) argues, following Wittgenstein, these ideological debates could be understood as pseudo-questions fueled by confusion rather than ignorance:

These apparent questions are defective because the impression that each of them gives of pointing towards an answer presupposes assumptions that are products of muddled thinking. Thus a pseudo-question or pseudo-problem, is one that we should not attempt to answer—not because it is too difficult, but because there is every reason to expect that no objectively correct answer exists. (p. 170)

Likewise, Kertscher (2009) provides considerable support to Wittgenstein's view that differences in "world pictures" amount to an almost impossibility to agree:

"Where two principles really do not meet which cannot be reconciled with one another, then, each man declares the other a fool and heretic." (OC, 611). The argument implies, namely, that consensus must already exist in the judgements themselves, before the rules that hold sway in discourse ethics can even be effective in society. (p. 99)

The issue is that, at the moment of truth, while the arguments provided from either side of the ideological spectrum or in between positions might sound more or less compelling,

once they are dissected and confronted with empirical evidence, they all run into problems, either because they cannot be validated or because there are cases that disprove or falsify them. They are, then, ultimately reduced to ideological stances that can be easily contested by opposite ideological stances (Alacevich, 2009; Cassen et al., 1982; Dopfer, 2005b; Sen, 1960; White, 1974).

This is consistent with the practical epistemological and ontological approach that has been embraced in this chapter. As Phillips (1977) ascertains, in agreement with a similar argument made by Kishik (2008):

Each of us is committed to certain ideas because ultimately these ideas are rooted in how we choose to live our lives. In terms of how I live my life, practise science and write about it, I must make various commitments as to what stands fast and what is certain for me. Some things that others might doubt would get a foothold ... This certainty, as Wittgenstein would say, is not, based on agreement concerning opinions but on agreement in form of life. (p. 221-222)

Further elaborating Wittgenstein's idea of "forms of life," Kishik (2008) states,

I want to suggest that the notion of form may enable us to imagine a shared life—a community if you wish—that is not based on the possession of a certain property or common denominator and has therefore nothing to do with the participation in a class. We can live together not because we all possess something, or some fact, but because we share a space of possibilities... Even though a form of life can never be defined, it still appears to be the adequate medium or the proper mean (which lacks an specific end) that enables us to share our lives with one another. (p. 25)

The epistemology and ontology for the aid enterprise adopted here provides an alternative view from the traditional one. Instead of being founded on the methods of natural sciences that could lead to the establishment of general or causal theories, it is based in a dialogical practice that allows for the understanding of discrete aspects of reality through cross-cultural encounters, conversations, open challenges, and revisions through compromise and negotiation (Friedman, 1970; Mäki, 2009; Popper, 1972; Temelini, 2015, pp. 210–211). As discussed earlier in the chapter, there might be different valid descriptions of the world that derive from different language-games.

All of this leads us to yet another important logical consequence of this newly embraced epistemological and ontological approach: change is, in the end, an individual affair that takes place in the company of others doing the same:

It is not that we cannot change our concepts or our habits or our institutions, but that not every change is possible, and philosophizing will not change them. If they are to change, we must change them in our actions, in our lives; and ultimately that means that we cannot change them in isolation. (Pitkin, 1972, p. 340)

As Wittgenstein himself put it in *Remarks on the Foundations of Mathematics*, one person alone cannot invent change:

The sickness of a time is cured by an alteration in the mode of life of human beings, and it was possible for the sickness of philosophical problems to get cured only through a changed mode of thought and of life, not through a medicine invented by an individual. (Wittgenstein, 1978, p. 133, 23)

For Wittgenstein, there is an inseparable correspondence between language, life, and being (particularly the “will” that results from such disposition to action; from such an

attitude towards living) (Arnsward, 2009). In *The Moral Economy*, Bowles (2016) argues too against the idea that change can be artificially created without real individual change. Hence, the plurality of individuality is a necessity of our reality and our attempts to change it, just as Isaiah Berlin reasoned and advocated (Crowder, 2004).

Likewise, in *Civilization in Transition* (1970), Jung makes an even clearer point, linking private actions and social events:

The great events of world history are at bottom, profoundly unimportant. In the last analysis, the essential thing is the life of the individual. This alone makes history, here alone do the great transformations first take place, and the whole future, the whole history of the world, ultimately spring as a gigantic summation from these hidden sources in individuals. In our most private and most subjective lives, we are not only the passive witnesses of our age, and its sufferers, but also its makers. We make our own epoch. (p. 149, 315)

Ultimately, this confirms that approaching aid from a Wittgensteinian perspective requires making a clear distinction between those aspects about which aid should remain passive and silent (i.e., the actions that lead to the process of social, economic, and political change as such) and those about which it should be active (i.e., improving the conditions and dispositions that are behind social, economic, and political change).

Ideas and Change

The categories of knowledge and explanation, words and meaning, and rules and causal change adopted over the previous sections, have, as discussed, some commonalities that bind them together: they all share their origins in practice, social validation, and a common epistemological and ontological foundation. These categories

also provide a sound background for the understanding of ideas and the way they are connected to change.

Ideas are apprehensions, and apprehending requires the above-mentioned three categories: an idea reflects knowledge that can potentially serve to explain something; an idea is usually captured by words and their meanings and is frequently geared to action—its potentiality (and validity) is realized through practice. Practice is usually framed by rules, either endogenously implied as part of the formulation of the ideas that underpin it, or exogenously defined by the context in which the idea comes into place and is put into practice.

What role do ideas play in social, economic, and political change? Scholars, like Blyth (2002), Goldstein (1993a, 1993b), Campbell (2004), and Hall (1989), provide a solid and comprehensive basis to answer this question.

For Goldstein (1993a), ideas represent shared beliefs about causal relationships. These beliefs are based on values and normative concepts. Note that Goldstein, contrary to Wittgenstein, establishes causality between ideas and action. In fact, Hall (1989), Campbell (2004), and Blyth (2002) all agree with this view. However, the distinction between an idea having causal or explanatory value is not critical for the purposes of the argument pursued throughout this dissertation, given that what matters to our understanding of their role in social, economic, and political change is not their inherent causal effect, if any, but their general relationship with actors' change-seeking actions.

These four scholars have taken on the task of demonstrating the role of ideas in social, economic, and political change. Methodologically, they establish counterfactuals in the form of a null hypothesis stating that ideas play no role in change, and then,

proceed to conduct archaeological investigations of their institutionalization to, in a sense, unearth whether this null hypothesis is true or not (Goldstein, 1993a).

Hall and others scholars (1989) provide an account of the role and impact of Keynes' ideas across seven countries. They showcase the power of Keynes' ideas and the channels through which they exerted considerable influence in these countries. Goldstein (1993a) looks at the history of US trade policy from 1870 to the 1980s and unearths how ideas enabled and constrained change through the years. Blyth (2002), building on Polanyi's *The Great Transformation* (1957) and his idea of the double movement, shows how ideas not only are responsible for the creation of the welfare state, but also for its dismantling through another double movement during the 1980s and 1990s.

Their conclusion is that ideas do matter. First, ideas help in bridging uncertainty and diverging interests (Blyth, 2002; Campbell, 2004; Goldstein, 1993a), as well as markets and institutions (Goldstein, 1993a). Through this bridging, they help smooth ideological differences and, therefore, allow for compromise by leaving room for practical manoeuvring (Mosse, 2011). They facilitate the understanding and framing of the past, the present (including the awareness of the existence or not of a crisis), as well as of the steps that need to be taken towards the envisioned future (Blyth, 2002; Campbell, 2004; Goldstein, 1993a).

Evidently, as much as they can facilitate change, ideas can also constrain it, and this makes them even more significant (Campbell, 2004). In fact, ideas can have very negative consequences, like for example, import-substitution, or the indiscriminate application of the Harrod-Domar economic growth model to the realities of developing countries which the model was not conceived for (Meier, 2001b).

Ideas have long-lasting effects through their institutionalization (Goldstein, 1993b). This means that while at a specific point in time (in the foreground) they might be agents of change, creating discussion, debate, and challenge to the status quo, at other times, when embedded in-between the institutional layers and private and public social arrangements (in the background), they might create path-dependency (Campbell, 2004; Goldstein, 1993a). When not constrained, ideas can transform intellectual environments and political discourses. They can even force a new language with words and meanings that challenge established conceptions of the world (P. Hall, 1989).

Being such powerful instruments, ideas help policy-makers define policy goals, as well as fine-tuning the policies being implemented (Campbell, 2004; P. Hall, 1989). They can also drive social, economic, and political forces towards political objectives (Goldstein, 1993a), particularly since they can also alter how people conceive their own self-interest (Blyth, 2002). Ideas can also help policy-makers expand their consideration beyond traditional interest-based or rationalist-based causal models in which the beliefs of actors are presumed to be fixed, as in reality they are highly contextual (Campbell, 2004; Goldstein, 1993b).

Yet, in order to matter, ideas have to be socially appropriate—that is, they have to build on existing institutions, skills, and expertise (Campbell, 2004; Mosse, 2011). They have to fit by being ambiguous enough to allow them to be adapted to different contexts, and they have to provide a sense of certainty by providing roadmaps towards goals and the means to achieve them (Goldstein, 1993a, 1993b; P. Hall, 1989). Ideas need to be viable—economically, politically, and administratively (P. Hall, 1989); and, they need to bring closer both intellectuals and policy-makers, as well as foster coalition building and

compromise (Goldstein, 1993a; P. Hall, 1989). Ideas need supporters of different kinds—theorists, decision-makers, and framers—who can communicate what they mean for various audiences; brokers who can bring dissenting parties together; and, constituents who back and validate the ideas (Campbell, 2004). Ultimately, ideas do matter when they succeed in effecting outcomes and when they leave their mark imprinted into institutions that extend, in time, their influence and permanence (Goldstein, 1993a, 1993b; Mosse, 2011).

However, while we know ideas matter, there is still a significant knowledge gap in our understanding of how ideas are connected to change (P. Hall, 1989; Manyin, 2005).

Ideas That Have Shaped Aid and its Effectiveness

If ideas matter, then, which ideas have most influenced the conception, design, delivery, and evaluation of aid? How have these ideas been institutionalized, and how have they been embedded—or even hidden—in the fabric of aid?

The answer to these questions is easy: regardless of fashions or phases, there has been one single and powerful idea that has been central to shaping aid praxis over the last sixty years, the idea of economic growth (H. A. Arndt, 1987). Economic growth became synonymous with development since the beginning of aid (Alacevich, 2009; Browne, 1999) and has remained this way despite broader considerations of justice, ethics, and distribution having complemented it more recently, although without having been able to dethrone it (Hartmann, 2014), perhaps because the former considerations have been formulated in ways that makes it into a practical affair, while the latter have remained much more theoretical and aspirational.

Furthermore, the fact that ultimately and regardless of its motive, form, or objective, every aid intervention involves the use of physical resources and therefore have direct, indirect, and opportunity costs, has meant that a financial/economic framework needed to be used in deciding the allocation of limited aid funding. Such framework was aligned from the beginning, and continues to be with economic growth theory and the economic and financial tools that are deeply entrenched within the confines of this theory and its intellectual bearings. Dalgaard, Hansen, and Tarp (2004) showcase, for example, the pervasive role that economics based models of decision have had in aid allocation, particularly through the institutionalization of the Country Policy and Institutional Assessment index (CPIA), not only by the World Bank but also by bilateral agencies like the British one. Specifically, the CPIA provides a decision criterion to allocate aid based on the expectations of it generating economic growth. Likewise, and as it will be discussed later, the World Bank's Revised Minimum Standard Model (RMSM), which is still in use today and is built on economic growth theory, is a key factor in shaping aid praxis through its direct use in influencing its volume, allocation, and delivery. The pervasiveness of these tools and the theories that underlie them is far reaching and therefore do influence not only multilateral or bilateral aid, but also INGOs as a considerable part of their funding tends to come from those same institutions.

While there has been consistent and considerable criticism of equating economic growth with development (H. A. Arndt, 1987; Browne, 2006; Chang, 2003; Crewe & Axelby, 2012; Easterlin, 2014; Helm, 2014; Oishi, 2012; I. Sachs, 2000; UNU-IHDP and UNEP, 2012, 2014), it is hard to completely dismiss the fact that to be able to provide even the most basic material needs, a country with a growing population requires

economic growth, even more so if population growth is considerable—as has been, and is still the case of many aid-recipient countries. Growth might not be sufficient; nevertheless, it is necessary (Bruton, 1997; Millikan & Rostow, 1976; I. Sachs, 2000).

Even if the alternative of redistribution from those who have more was politically and socially viable, redistribution could only go so far. In fact, in 2014, the world average Gross National Income (GNI) per capita was about US\$41, specifically, US\$4 per day in low-income countries, US\$27 in middle-income countries, and US\$111 in high-income countries (World Bank, 2016a, 2016b). Redistributing for equality would mean a 63 percent reduction in income per capita for high-income countries, 925 percent increase for low-income countries, and 52 percent increase for middle-income countries.

However, given the more than proportional population growth in low-income countries versus the rest, population growth will continue eroding the above world average, even if total world GNI could be sustained at the 2014 level. It is unlikely, however, that in a world where there is little incentive for innovation or hard work, growth could be sustained. In fact, it is likely that GNI will drop, further eroding the per-capita figures above (Athreya, 2013). Moreover, growth is necessary as it allows paying for the interest on the accumulated public and private debt, as well as for replacing jobs that are substituted through technological progress (Kümmel, 2011)

Consequently, there is little chance that development—in a much broader sense—could be possible without economic growth, at least not for the time being and foreseeable future.

Before aid became an institutionalized effort, economic growth theory, as understood by the classics, was the consequence of certain factors or characteristics being

present in an economy. For Adam Smith, these were specialization and trade, capital accumulation, and increased productivity (H. A. Arndt, 1984; Mikesell, 1968; A P Thirlwall, 2002). Like Smith, Marshall discusses growth by focusing more on the factors, than the process or the interrelation between these factors. In Marshall's case, the list of factors was much more comprehensive; it included natural resources, climate, human character, political freedom, willingness and ability to save, improved transportation, external economies, increasing returns, existence of extensive markets, existence of a substantial middle class, an efficient and honest government, education, and social mobility (Mikesell, 1968).

Contrary to Smith and Marshall, Ricardo and Marx both focus on the process of economic growth rather than on a list of the factors that might activate or enable it. In their case, profit was the key dynamic creating factor, although with some variants (H. A. Arndt, 1984; Mikesell, 1968). For Ricardo, the rate of profit directed the reallocation of resources from less productive to more productive enterprises, thus paving the way for increased growth. For Marx, it was not the rate of profit but the surplus value extracted from labour, which created increased growth and wealth.

With the neoclassical synthesis, the focus turned to the understanding of the relationship between the factors, as a way to explain the process of economic growth. Growth was seen as a function of savings and technological progress, and dependent on flexible wages that could facilitate full employment and the avoidance of negative economic cycles (Mikesell, 1968). Joseph Schumpeter later criticised the neoliberal synthesis, on the grounds that growth and stability are always in tension and that economic cycles are creative-destructive. The broader understanding of factors involved

in the process of economic growth along the lines of that of Marshall was abandoned for many decades (H. A. Arndt, 1984; Mikesell, 1968; A P Thirlwall, 2002).

The next two waves of economic growth and development theories—the first from 1950 to 1975 and the second from 1975 to the present—followed a similarly simplistic approach (Browne, 1999; Bruton, 1997; Meier, 2001b).

The first wave.

During the first of these waves—from 1950 to 1975—John Maynard Keynes' ideas and his macroeconomic grand-theory approach was the most influential point of reference (P. R. Krugman, 1998; Mosley, 1987; Riddell, 1987; Toye, 1987). Economic development was understood as economic growth, and economic growth was believed to be led by governments which take a proactive role, fostering savings, investment, consumption, and the creation of skilled labour (Alacevich, 2009; Riddell, 1987). Market efficiency and efficacy were highly doubted, particularly in developing countries. Nonetheless, this vision of government as an active agent of change was stripped down to its role in the economy, rather than a more comprehensive role in state-building, and specifically, in fostering social and political development (Carothers & de Gramont, 2013).

Keynes' ideas, interpreted and formalized by Harrod and Domar between 1939 and 1946, permeated almost every theory of growth and development during this first wave of theories—in some cases more explicitly than in others. The Harrod-Domar model became the transmission mechanism through which Keynes' ideas got into development theories (Toye, 1987). The success of the Marshall Plan, which relied on the model, further solidified this status (Hogan, 1987; Sagasti, 1988; Sagasti et al., 1999).

The practical implication of the Harrod-Domar model is that the source of economic growth lies in the accumulation of capital (Helpman, 2004; Jones, 1998; Salvadori, 2003a, 2003b).

As Easterly (1997, 2001) thoroughly showcases, the Harrod-Domar model continues to be the most widely applied economic growth model in history. Today, it hides as a ghost, embedded into the Revised Minimum Standard Model (RMSM), which remains the tool-of-choice used by international financial institutions, bilateral donors, and aid recipients (the RMSM allows for the estimation of the financing gaps needed to be filled with aid, if economic growth targets are to be achieved) (Easterly, 2001; Nowak, 2013; Schabbel, 2007). It remains embedded, as well, in most current economic and development planning models (Boettke, 1994; Dalgaard et al., 2004; Easterly, 1997, 1999, 2001; Mosley, 1987; Nowak, 2013; A P Thirlwall, 2002; Toye, 1987; White, 1974).

The other grand-theories of development that dominated the first wave, relied, one way or another, on Keynes' ideas, and on the Harrod-Domar model's insight that the accumulation of capital was key for economic growth. From Rosenstein-Rodan and Leibenstein's big-push theory; the theories of balanced and unbalanced growth (Nurkse and Hirschman, respectively); Rostow's stages of growth; Lewis' dual-sector model; Singer and Prebisch's ideas about periphery-center dynamics and declining terms-of-trade (including the ideas of Myrdal with regards to the role of foreign exchange and exchange rates); to Chenery's dual gap model; all these theories and ideas revolved around the role of capital (understood in very diverse ways) and the relations between savings, investment, and wages. In interrelating these variables, they all relied on Harrod

and Domar's formulation or at least on the idea of increasing or repurposing productive factors which is at the core of Harrod-Domar's formulation (Browne, 1999; Chenery, 1969; P. R. Krugman, 1998; Meier, 2001b; Mikesell, 1968; Sagasti et al., 1999). Even when, in the 1950s, Solow devised an improved version of the Harrod-Domar model to include technological change as a key driver of economic growth, the main thrust of his model was still based on a similar formulation to the one used by Harrod and Domar (H. A. Arndt, 1984, 1987; Carothers & de Gramont, 2013; Helpman, 2004; Meier, 2001b). Alacevich (2009), quoting Sen (1960), as well as some related ideas expressed by Krugman (1992, 1998), showcases how, in the final analysis, many of these development theories had considerable common ground and did not differ from each other as radically as it was once thought.

Before this first wave of economic development theories and ideas was replaced by a second one, a wave that shifted the emphasis from rate of growth to quality of growth, three significant consequences had already been deeply entrenched in the institutional framework of aid: (a) a focus on increasing the relative availability of a narrow number of "ingredients" or economic factors considered essential for development; (b) a technocratic approach based on the belief that increasing the relative availability of these ingredients will inevitably result in a correlated increase in economic growth; and (c) the consolidation of development planning and national income accounting as its only official "language" (H. A. Arndt, 1984, 1987; Browne, 1999; Easterly, 1997, 1999, 2001; Griesgraber & Gunter, 1996; Helpman, 2004; Spence, 2011).

With regards to the "ingredients," this first wave was responsible for reducing the long-list of broader factors influencing economic growth that had been proposed by

Marshall (see above), as well as abandoning his and Adam Smith's comprehensive political economy approach, which did not take for granted the political and social aspects behind the process of development (H. A. Arndt, 1984, 1987; Browne, 1999; Mikesell, 1968). This list of ingredients had been, by 1970, reduced to labour, capital, land, and technological innovation. Solow's celebrated discovery was that, for the most part, total factor productivity (TFP) and not capital accumulation, was the main driver of growth; yet, he was not able to make it endogenous in the model—this is, to provide a theory of how TFP led growth happened (Hartmann, 2014; Helpman, 2004; Stiglitz & Lin, 2013).

Simplified models of economic growth using a very limited number of variables and a clear logic linking increases in economic factors to growth, engendered a technocratic belief in the praxis of aid (H. A. Arndt, 1984, 1987; Browne, 1999; Mikesell, 1968; Toye, 1987).

This dual and severe constraint imposed on development and economic growth thinking and theorizing (e.g., very limited set of ingredients and an extremely simplified but apparently strong causal explanatory effect), was further institutionalized by the widespread adoption of development planning techniques and national income accounting (including Leontief's input-output model) as the means to understand, discuss, and influence most aid efforts (considerable evidence can be found, among others, in Browne, 1999; Carothers & de Gramont, 2013; Easterly, 1997, 1999, 2001; Helpman, 2004; Hubbard, 2009; Mosley, 1987; Sagasti et al., 1999; Thirlwall, 2002; Toye, 1987). As the official "language" of aid, they defined a paradigm or language-game to conduct the technocratic task of fostering economic growth. In the words of

Wittgenstein, “The limits of my language mean the limits of my world” (Wittgenstein, 1979, p. 50). Development planning was further pushed as part of this new paradigm, as there was a perception in Western countries that the Soviet Union had achieved impressive growth, ahead of that attained by the West in the same period, precisely because of their planning approach (H. A. Arndt, 1984, 1987). The increasing spread of national income statistics which allowed for inter-country comparisons, further intensified an economic growth race between countries (H. A. Arndt, 1984; Easterly, 1997, 2001).

Three consequences emanating from the first wave of development and economic growth thinking—the embedding of simplistic economic growth models, adoption of development planning, and adoption of national income accounting—meant that development would become a target-setting enterprise. Technocratic beliefs and the availability of development planning and national income accounts meant that measures of success could be set (H. A. Arndt, 1984, 1987; Mikesell, 1968; Toye, 1987). Of course, more specific measures brought with them increased pressure to perform and deliver. In turn, this also shaped the strength and depth of the involvement aid has consistently tried to solidify, and hold on to for itself, in front of recipients and their shared development goals. As previously discussed, the possibility of setting such measures of success had been impossible at the beginnings of the aid enterprise. The lack of readily available techniques and direction on how to achieve their mandates led the Bretton Woods institutions to continuously struggle in establishing a clear language-game from the beginning (Woods, 2006), that is, until development planning and national income accounts were broadly institutionalized.

By 1970, they had finally succeeded. Together, the new Harrod-Domar-based models and national income account statistics, allowed the aid enterprise to determine the gap between available in-country economic factors and those required to achieve an economic growth target. Chenery and Strout (1966a, 1966b), drawing on the Harrod-Domar model, provide a theoretical basis to formalize the role of aid as a filler of those gaps. They identify two: the savings gap and the foreign exchange gap.

By encouraging all recipients of aid to implement development planning and national income accounting, the aid enterprise was able to shift its project-based *modus-operandi* to a more comprehensive program approach (Alacevich, 2009; Massachusetts Institute of Technology and Social Science Research Council, 1961; Mikesell, 1968). This approach allowed them, instead of evaluating each project on its own, to evaluate the entire development program for consistency and greater overall effect (H. A. Arndt, 1984, 1987; Mikesell, 1968; Toye, 1987). This approach also allowed the aid enterprise to track overall progress towards development goals; to have a bigger role in policy determination and coordination; to assess the absorptive capacity of the recipients; and to allow them to have unified and consistent programs (Hubbard, 2009; Jan Tinbergen, 1962; Waterston, 1979).

Both academics and donors greatly pushed planning and programming, as well as national income accounting to be adopted by all countries. Economists, like Tinbergen, Leontief, Stone, and Lewis, all of whom received the Nobel Prize in Economics for their related contributions, published extensively and provided guidance to adapt the idea of Soviet central planning to market-based economies in the form of development planning (Boettke, 1994; Chenery, 1984; Lewis, 1966; Jan Tinbergen, 1958, 1967). Institutionally,

the UN, World Bank, OECD, and the US government, all made significant efforts to ensure that all aid recipients used development planning and national income accounting; in fact, while it was widely understood to be a requirement to receive aid, in some circumstances, it even became an explicit prerequisite, as, for example, in the case of the Marshall Plan or of the Alliance for Progress—which included 20 countries in Latin America (Black, 1960; Easterly, 1997, 1999, 2001; Hubbard, 2009; Mikesell, 1968; OECD, 1967; Waterston, 1979).

Contrary to what would happen later in the 1980s and 1990s with regards to the adoption of Washington Consensus ideas and tools, most countries willingly and readily adopted both development planning and national income accounting (Woods, 2006). By 1970, virtually every country receiving aid had done so (Massachusetts Institute of Technology and Social Science Research Council, 1961; Mikesell, 1968). By 1971, the World Bank had fully integrated and operationalized Chenery and Strout's dual gap approach, as well as development planning and national income accounting statistics. The Minimum Standard Model (MSM) was by then computerized (Easterly, 2001). During the next decade, it was considered indispensable to follow this overall approach to aid and development (Independent Commission on International Development Issues, 1980). Currently, the Poverty Reduction Strategy Papers (PRSP) and the Revised Minimum Standard Model (RMSM) that provides the basic tools for the economic analysis behind the PRSSPs, incarnate the development planning approach that started in the 1950s (Carothers & de Gramont, 2013)

The second wave.

While the first wave of economic growth and development theories was breaking,

there were already dissenting voices. By 1955, the idea of pursuing growth per se was being questioned, with calls to focus on its quality rather than its rate (H. A. Arndt, 1984). In 1962, *The United Nations Development Decade: Proposals for Action* report (United Nations, 1962) was explicit about economic growth not being sufficient nor equivalent to development, which the report defined as growth plus change—meaning social and cultural qualitative and quantitative improvements. By 1970, concerns about the impact of economic growth on the environment were already being voiced (H. A. Arndt, 1984), and the dual gap theory of aid had disappeared from the academic literature, although even today, it has not ceased to be used (Dalgaard et al., 2004; Easterly, 2001; Nowak, 2013).

The second wave of economic growth and development theories started around 1975, and is still developing (Browne, 1999; Bruton, 1997; Meier, 2001b). In contrast with the macro-focus of the first one, this second wave paid attention to the micro issues and built on the ideas of neoclassical economics. It also incorporated the concerns about the quality of growth, poverty, and the environment already expressed during the previous wave (H. A. Arndt, 1987; Browne, 1999). Consistent with the neoclassical synthesis, most of the theoretical and practical work during this wave related to minimizing the role of the government, getting prices right, promoting innovation and exports, investing in the development of human capital, as well as the institutions supporting the markets.

The models of economic growth elaborated by Harrod-Domar and Solow were further refined by endogenizing technological progress and human capital formation (Lucas, 1988, 2002; Romer, 1990). These models brought a realization that the allocation

of capital from low- to high-productivity sectors, rather than the accumulation of capital, was the key to economic growth. This insight also implied that initial endowments and conditions were irrelevant in explaining the differences between countries in terms of development and economic growth (Hartmann, 2014; Helpman, 2004; Jones, 1998; Salvadori, 2003a; Warsh, 2006). Furthermore, the work of Douglas North (Carothers & de Gramont, 2013; North, 1990), integrated into mainstream economics the consideration of incentives embedded in institutions, and this, in turn, made economists take politics, governance, and institutions more seriously, although, unfortunately, still using a technocratic approach that was also implanted into the delivery of aid programs aimed at improving governance (Carothers & de Gramont, 2013). His insights provided a more structured link between micro-behaviors and their overall development consequences. Likewise, the works of Ostrom (2010; 2002), provided insights into the links between our individual actions and our collective impacts on public goods and the ecosystem.

This underlying economics approach was complemented by other political and social messages about poverty, as well as the shared desire of all stakeholders to, at least, ensure people's basic needs were met. A stronger focus on redistribution placed growth rhetorically in a secondary place in what was termed "redistribution with growth" (Carothers & de Gramont, 2013; Sagasti et al., 1999). Focus on individual needs led to the reception of Sen's ideas about "development as freedom," and to a push for human rights, as well as for increased civil society participation in the process of development (Browne, 1999; Carothers & de Gramont, 2013; Crewe & Axelby, 2012; Hartmann, 2014; Sen, 2000). It also led to an effort to broaden the indicators driving development theorization (i.e., gross domestic product), to include education and health, among others.

This led to the creation of the Human Development Index (Hartmann, 2014).

Complementing the economists' realization about the importance of institutions, this new wave also focused on anticorruption efforts and on promoting democracy (Carothers & de Gramont, 2013). Yet, neither this nor the other dimensions added besides growth, were effectively integrated into any of the practical tools driving aid praxis, particularly those more influential in the determination of volume and allocation of aid.

The DNA of Aid (Further Explained)

As previously discussed, since the very moment aid became a systematic enterprise at the end of the 1940s, and even when complemented by broader messages about poverty, freedom, civil participation, corruption, redistribution, and the quality of growth, development has been, for the most part, equated with economic growth or at least, covertly driven in its practice by it. This, in turn, made development planning, and the set of national income accounts supporting it, indispensable for the whole enterprise. This reality means that, not only do models of economic growth and development drive aid's conception, design, delivery, and evaluation (its praxis), but that, as a consequence, the aid enterprise mainstreams the shortcomings of these models and their tools to all of its recipients. What are these shortcomings, and what have they meant in terms of aid effectiveness?

As argued before, economic growth models have severely simplified the number of factors explaining growth. From the long list of factors cited by Marshall (see above), growth became dependent only on labour, capital, land, human capital, and technological progress. While institutions have also been added as a relevant factor for development, they still have not been fully made endogenous into a widely accepted unified

mainstreamed model of growth (Helpman, 2004; Jones, 1998; Salvadori, 2003a). Galor (2011) has recently developed a unified growth theory that integrates, and further dissects, the role of more factors and that explores the process and mechanisms of change; however, his theory is not yet widely recognized or hasn't yet replaced the neoclassical paradigm.

Not only are these models of economic growth based on a very unrealistic assumption, like, for example, that factors can be substituted by each other; they also leave essential factors, like natural endowments and the environment, completely out of any consideration. (Elson, 2013; Emmott, 2013; Hartmann, 2014; Helm, 2014; Laperche, 2012; White, 1974). This lack of consideration, leading to the illusion that there are no limits to growth, has quickly resulted in the current environmental crisis in which 87 percent of ocean fish are fully or over-exploited, 70 percent of the Earth's available fresh water is being used for agricultural irrigation, the CO₂ absorption capacity of Earth can only deal with 50 percent of existing emissions, floods in Asia have increased from 50 per decade to nearly 700 per decade since 1950, and major fires in the American continent have gone from only 2 per decade, to 50 per decade since 1950 (Emmott, 2013). Furthermore, these models only deal with the available quantities of economic factors (which are mostly given exogenously) not with their qualitative characteristics, or even less with the process through which these factors interact to create growth (Salvadori, 2003a; A P Thirlwall, 2002). Likewise, they rely mostly on the analysis of flows or marginal changes, rather than on the stocks, seriously limiting the possibility of understanding the complexity of the social, economic, and political system (N. B. Forrester, 1973; Meadows & Wright, 2008; Miller & Page, 2007; Page, 2011).

These models showcase the “ingredients” required to produce economic growth, but they do not offer a clear “recipe” through which these ingredients can be used to create growth. All they offer is an understanding of the potential relationships between the factors but not any real causation (Aghion & Durlauf, 2005--see the considerable entries in this edited volume all related to the different growth models; Black, 1960; Boettke, 1994; Easterly, 1997, 1999, 2001; Elson, 2013; Giugale, 2014; Griesgraber & Gunter, 1996; Hanushek, 2015; Jones, 1998). In fact, research shows that about 70 percent of growth comes from sources other than factor accumulation (Easterly, 2001; Friedman, 1995; Hartmann, 2014; Stiglitz & Lin, 2013). Overall, this makes it very difficult to learn much from the models about potential government actions or policies that could lead to growth or development.

Finally, these models are also characterised by additional unrealistic descriptions of the world, like, for example, that supply creates its own demand (demand is not considered), that the world is always in equilibrium (models are not dynamic but static), that there is no trade (economies are closed), that growth is equal for everyone (fails to consider that growth tends to be unequal and that inequality has a proven negative impact on growth), and that the structural transformation that results from growth does not have an economic cost nor changes the parameters on which the models are built (Disdier, Fontagné, & Cadot, 2014; Helpman, 2004; Kregel, 1972; Mikesell, 1968; Salvadori, 2003a; Spence, 2011; A P Thirlwall, 2002).

Given that the role aid would have in economic growth (at least in theory) was derived from these models, their shortcomings have had considerable impact in the ways in which aid was conceived and delivered. The political economy analysis of the classic

economists was reduced to very little. First, excessive focus on the “ingredients” meant that aid was often about increasing the availability of such factors, although the exact meaning of what these factors encompassed was not unequivocal. For example, as discussed earlier, Hanushek (2015) shows clear evidence about how increases in mathematical and scientific skills, and not education enrolment or some of the other qualifiers of human capital traditionally used, are much better explaining factors of growth. In practical terms, this has meant that increases in economic factors supported by aid may have been directed towards quantitative aspects of these “ingredients” that might have been irrelevant for growth.

Additionally, given the narrow number of factors considered in these models, aid’s scope was also narrowed (as Wittgenstein would say, its world being limited by its own “language”). First, through an artificial grand-vision that aid could have a meaningful impact at the macro level (i.e., transforming the structure of an entire economy). Second, through the focusing into macro areas in which aid could probably have limited impact (i.e., development aid), and away from very specific and limited tasks in which perhaps aid could be much more effective (i.e., humanitarian aid) (Deaton, 2013; White, 1974, p. 117).

Furthermore, given that, as discussed above, the models of economic growth did not consider the process or “recipe” through which growth is achieved, aid itself could not do and, in fact, did little about improving such a process (Hartmann, 2014; White, 1974). The black-box in which the “ingredients” were mixed together according to the models (the “free” markets), gave little insight on the policy actions required to promote growth (Hartmann, 2014; Kregel, 1972). Improving the “free” markets became a proxy

for improving the process of economic growth and development.

Perhaps an even more important consequence that came about from relying on these models of economic growth was that, through the dual-gap theory, aid was automatically ascribed a catalytic role for which the proof was tautological: increased availability of factors was assumed to automatically generate growth. Theoretically, this meant that every single dollar of aid had an impact on economic growth as long as it went towards engrossing the “ingredients” or preventing any savings and foreign exchange gaps that could prevent such engrossment (Chenery & Strout, 1966a; Griesgraber & Gunter, 1996; Kregel, 1972; Toye, 1987; White, 1974). Aid was given a free-pass on theoretically demonstrating its role and relevance in creating economic growth (Browne, 1999; Montgomery, 1967; White, 1974). And, in spite of having only been a “theoretical” free pass, it seems to have been assumed, in praxis, that aid catalytic role was a given.

Ultimately, determining which “gaps” to fill, how to fill them, and when to fill them had no theoretical bearings. As per the example above, increasing education or investing in capital are not unequivocal or linear tasks (e.g., what does it mean to invest in education? Increasing enrollment? Increasing math skills?). Perhaps, more importantly, these questions reflect a conflicting identity: is filling a temporal gap the ultimate goal of aid, or is it to create the structural transformation of an economy, so it can stop experiencing gaps? While these may be related, the real problem created by these economic growth models was that they contributed to shaping aid along lines that made it socially and politically inept. A more comprehensive theory of aid that could give it the tools to overcome these limitations did not exist, nor does it yet (Helpman, 2004; Mikesell, 1968). Having been framed by these economic growth models, aid started

relying more and more on development planning techniques to guide volume, allocation, and delivery decisions. In the course of this process, development planning added its own problems and limitations to those it already had.

Development planning, as well as the Harrod-Domar model that underlies it, paints a picture of development as if it was a linear enterprise (Bruton, 1997; Crewe & Axelby, 2012). Given its macro level reach, it also relies on a series of aggregations and simplifications that obviate the richness of social, economic, and political arrangements, as well as other characteristics that give development life (Blakely, 2013; Carothers & de Gramont, 2013). In the end, while a good institutional framework and good governance are essential for development, it is individual initiative in a collective setting, not aggregated macro planning, which drives it (Boettke, 1994; Hayek, 2007).

The kind of uniformity development planning creates, serves more the interests of donors rather than those of recipients—a common “language” allows donors to consolidate knowledge and facilitate their own planning and influence (Toye, 1987). Additionally, development planning is conducted according to decision-making time intervals that are considerably shorter than the development processes about which it tries to guide decisions. For example, most development planning is done for three or five years intervals, yet building human capital may take a generation or two (Bruton, 1997). Even more, development planning does not consider the costs of these development processes, nor of the resulting structural transformation costs, nor the implications they have for all other economic factors (Spence, 2011).

Finally, development planning is severely constrained at the technical level by the limited data available and its poor quality, as well as by the same tautological thinking

underlying the economic growth models on which it is built. Economic data is available only for the variables allowed for by the “language” created by economic growth theory and national income accounting. (There are no widespread official variables for natural endowments, social benefits and costs, intangible capital, and social cohesion, among many others.) Furthermore, the quality of this data and the limited availability of time series, make the conversion coefficients that are at the core of development planning inaccurate, to say the least (Browne, 1999; Mikesell, 1968). This has obvious implications in terms of the analysis and conclusions that can be arrived through it. Ultimately, this makes the allocation of resources and the limited policy choices derived from it, questionable (Bruton, 1997; Massachusetts Institute of Technology and Social Science Research Council, 1961; Mikesell, 1968). Specifically, Davidson (2015) showcases through a very clear argument, the negative impact of the ergodic axiom behind the calculation of the above mentioned coefficients.

Given that one of the main purposes of development planning is to achieve the most efficient allocation of scarce resources in an economy, the technical shortcomings discussed above makes it a less than optimal tool for ensuring the effectiveness of aid, or development policy for that matter (Aspers, 2011; Black, 1960; Browne, 1999; Freeman, 2008; Hayek, 2007; Hubbard, 2009; Mikesell, 1968). In fact, already by 1975, there was evidence that the alleged Soviet economic growth success driven by central planning, had been both inaccurate and mostly overstated (P. R. Krugman, 1996; Meier & Rauch, 2005). A final, but important point about the allocation of resources is that, while the allocation of aid funds was itself informed at the technical level by planning techniques, frequently other non-technical motives and political factors also had considerable say in

such decisions (White, 1974).

In addition to these limitations discussed above, there is the underlying epistemological and ontological debate about how effective development planning can possibly be. For those on the right, meddling with “free-markets” create distortions and inefficiencies (Boettke, 1994; Frydman, 2011; Hartmann, 2014; Hayek, 2007; Spence, 2011); for those on the left, markets require government intervention, and, appropriately done, planning can help avoid economic cycles and improve the efficiency of the allocation of economic factors. The right believes, instead, that ensuring the rule of law creates a more effective allocation (Boettke, 1994; Hartmann, 2014). In the end, these debates were dependent on underlying axiomatic views about what markets are and about how they work.

It is appropriate at this point, to revisit the discussion earlier in this chapter about the epistemological and ontological approach of Ludwig Wittgenstein—which was also shared by his cousin Friedrich Hayek (2007). In fact, Wittgenstein proposes there are things about which nothing can be said and only can be shown (Hintikka, 2000; Tyler, 2011). Likewise, Wittgenstein argued in favor of the primacy of language-games over specific rules and the means through which they operate (Hintikka, 2000, p. 49); in many circumstances, it is much more productive to set limits to what can be said and known than to engage in confusing debates and arguments that draw from “confusion” rather than “ignorance” (Arnsward, 2009; Atkinson, 2009). For both Wittgenstein and Hayek, change was not only a very personal and practical affair; it was also a process bounded by social interaction. Language limits the world of participants, but markets give them other means to articulate and exchange information and knowledge through social interaction

that cannot be captured or expressed by language (Hayek, 2007). As Atkinson (2009) puts it,

Reality cannot be expressed in words, but this does not mean to deny it. When all philosophical language has been rejected, including the propositions of the book [*Tractatus Logico-Philosophicus*] we are left with “seeing” the world correctly, not understanding or knowing in a correct manner. (p.5)

Better information and knowledge leads to better decisions; yet, the social process through which these decisions come, cannot be short-circuited: trial and error need to occur, just as it does in evolution, or as Schumpeter proposes through a process of creative-destruction (Schumpeter, 1934). Surowiecki (2004) also provides valuable insights into the wisdom of crowds, and how many times they can outperform single individuals even when these individuals are deemed to be better informed and skilled. In his book, *The Political System: An Inquiry Into the State of Political Science*, Easton (1971) presents the “black-box” as a similar space bounded by social interaction in which inputs come to generate outputs through a process we cannot fully understand in terms of causes and effects, but only likely results. In fact, neuroscientists like David Eagleman (Cytowic, 2009; Eagleman, 2016) have demonstrated how our perception of reality is composed of several multi-sensorial dimensions that lie outside our consciousness.

This all means that both the right and the left have something in common: they see waste, or perhaps, more appropriately, a social cost, in the process of development deriving from: (a) well-intentioned decisions from the central planner who fails to have perfect information—when seen from the right; or from (b) trial and error and its interim consequences for the members of a society—when seen from the left (Boettke, 1994;

Bruton, 1997; Hanushek, 2015; Hartmann, 2014; Hayek, 2007; Riddell, 1987; Spence, 2011). The matter becomes axiomatic and ideological at this point.

In summary, what is clear is that economic growth theory acted as a Trojan horse, which, once inside, at the core of the aid enterprise, embedded itself to the point that, in practice, there was little distinction left between one and the other. Although rhetorically, the aid enterprise continually tried to broaden the concept of development, it is argued here, based on the evidence presented in this chapter, that this broadening has been mostly rhetorical because, ultimately, the praxis of aid has been shaped for the most part, by development planning and national income accounting and the theories connected to them. While epistemological, ontological, and ideological debates take place at the macro level, the women and men who are responsible for making the day-to-day decisions about the volume, allocation, and delivery of aid, rely on the “language” of development planning and national income accounts to make those decisions (Alacevich, 2009). At the macro level, a decision could be made about allocating more aid towards improving governance or education; yet, it is in the specific design of the projects and the way in which they are implemented, as well as in their interpretation of what is meant by governance and education or the idea of “improvement”, where the seeds of success or failure lie; and these seeds come at least to an important degree from the technocratic tools of aid drawing from economic growth theory.

In turn, this means that, for developing countries that were dependent on it, aid became the Trojan horse through which economic growth theories became ingrained into their fabric. To access aid, developing countries needed to speak the “language” of aid, and, in learning to speak this language they ended up limiting their own world by it.

Has Aid Crossed the Gates of Hell?

At this point, it would be easy to get disheartened about the possibility to ever improve the aid enterprise, particularly if the prominent and traditional analytical view is taken. However, when the alternative epistemological and ontological approach of Wittgenstein is used, a more positive view of aid emerges.

In the old view, a number of measures or recommendations could be offered to address the issues aid faces and that have been widely discussed in this chapter. Among these, there could be more innovative and technically sound solutions than the countless ones that already have been proposed over the last sixty years. There is indeed a lot that could be done, for example, about perfecting a market for aid: neutral and more transparent information; supply and demand allowed to float fully without non-development interests driving them; embedding of pricing risks and innovation; and, fuller participation of constituencies and stakeholders in the market decision-making process, among others.

However, why would any of these suggestions gain more traction than the hundreds already out there? Why would these new ideas be more successful than those that have already been waiting for sixty years or more to be implemented? The answer is that they will not, not because they might not be the best ideas ever developed, but because the architecture, knowledge base, and data on which aid praxis relies, will not allow it, just as it has not allowed older ideas to succeed.

So, what about using the alternative view provided in this chapter? How does this look? To answer this question, the example of the adoption of development planning can be used as a clear and loud example. At the height of the Cold War when East and West

were the most antithetical, central planning, a tool of socialist pedigree and the darling of the enemy's economic policy-making, was not only adapted and adopted in the West as development planning. The West even forced it upon its allies (e.g., the Alliance of Progress in the 1970s). How is it possible that when actual physical walls were dividing East and West, while they pointed at each other with the possibility of human annihilation, while they sabotaged each other, or lured allies to become enemies both through diplomatic and more violent means, development planning slid through such heavy physical, political, social, and ideological hurdles, into the soul of Western economies, and through the aid enterprise, into the economies of their allies? As discussed before, this was the work of a Trojan horse.

Following this historic and practical lesson, it is here argued that what is needed in order to enact considerable change into the aid enterprise, and as a consequence on its effectiveness, is a new Trojan horse: a horse that can overcome the circularity of the (in)effectiveness debate, which is currently in an ideological lock-down, and that can slip into aid's praxis as an alternative and better tool than the ones built and supported by our current models of economic growth, and the tools of development planning and national income accounting that emerged from them.

Chapter 3

Concerted Wealth Management as an Alternative Aid Paradigm

Chapter Summary

Aid has remained trapped by the limits of its language (i.e., economic growth theory, development planning, and national income accounts). As the history of ideas and the social, economic, and political change they generate demonstrates, shifting words and meanings can help create new spaces and attitudes towards reform. This approach is consistent with the Wittgensteinian framework adopted throughout this dissertation.

Central to the idea of concerted wealth management as an alternative paradigm of aid, is the concept of self-reinforcing state (state, understood as a condition, not as a political community), a state in which the levels of wellbeing wanted and needed by the majority of a country's citizens can be fulfilled intertemporally. This means that, under the proposed new paradigm, development can be conceived as the process leading towards such a self-reinforcing state.

Fulfilling the wants and needs on which the wellbeing of a population rests, requires extracting value from the wealth available, and, since some of this wealth is shared globally, the self-reinforcing state cannot really exist independently for a single country, unless the majority of them are in such a state simultaneously.

Intertemporally, wellbeing and value are conceived as an identity. Wellbeing does not depend on continuous economic growth but on the intertemporal optimality of the value extraction from wealth. Due to incommensurability issues related to, among others, the multiple and differing timelines of each kind of wealth, relying only on the monetary

denomination of such value or wellbeing severely limits and biases social, economic, and political decision-making. Relying, then, on its physical realities as well, is less distorting for managing the wealth of nations than doing so exclusively using monetary denominations.

Given that value and wellbeing come from wealth, the management of all the different classes of assets that conforms to it, is critical. The traditional bundling of wealth into land, capital, and labour (more recently, knowledge) is far from providing a useful and more thorough framework for managing the wealth of nations.

Wealth management involves ensuring the intertemporal potential of wealth to sustain the wellbeing of humanity. Therefore, it aims both at preventing or minimizing the degradation, depletion, or destruction of wealth, as well as maintaining, promoting, facilitating and building-up wealth's potential to derive value. Wealth management involves managing each class of assets, individually and as part of a portfolio. Function gradients determine the classes of assets' potential to derive value, and critical-paths both determine the development of such function gradients, as well as constrain not only wealth in general but the other dimensions of wealth that are subjectable to management. Wealth management also involves dynamically managing and balancing natural, material, and social structures, as well as the limits they impose on human activity.

In this context, rather than a limited number of discrete states in which countries can be said to be (e.g., developed, transition, developing, least-developed), there is a continuum of countries in a path towards self-reinforcing state, some of them better-off than others (i.e., closer than others), but not yet having reached such a state unless most countries have simultaneously converged towards it.

Due to the undeniable interdependence of countries through the wealth they share (wealth on which the wellbeing of their citizens depends), individual or country specific wealth management alone cannot lead to self-reinforcing state. Only concerted efforts among all countries to manage wealth collectively can ensure global wellbeing. Concerted wealth management involves ensuring the convergence of all countries towards the self-reinforcing state.

The proposed conceptual framework aims at addressing a number of limitations that the current paradigm imposes on aid. These, among others, include: broadening the classes of assets considered; building on the stocks of these classes of assets and not only on the flows they generate; focusing on intertemporal optimization of value extraction rather than the maximization of growth or present monetary value of flows; considering the process of development rather than just the ingredients that may be behind it; broadening the solutions to the coordination and control problems of cooperation beyond the traditional formulations of markets; addressing the costs created by the process of development; integrating the real impact inter-country flows and other international factors have in the intertemporal potential to extract value from wealth; and moving beyond the linear/historical conception of the process of development and instead, embracing a highly contextual approach that can offer alternative unimagined pathways towards achieving self-reinforcing state.

Towards a New Paradigm

Economic growth theory, development planning, and national income accounting operated as Trojan horses that, once at its core, shaped the aid enterprise into what it is currently. They embedded into its institutions a logic, process, and language—a

paradigm—that has superseded in influence many of the initiatives and efforts aimed at reforming aid over the last sixty years. The strictly practical nature of this theory and the tools derived from it, ensured that any macro-debates and big ideas aiming at shaping aid's praxis would trickled down into practice, filtered and interpreted through the narrow lenses and spaces they provide. When, for example, at the macro-level, the aid community would agree on the need to improve human capital, the doers had to interpret what this meant in practical terms, how to measure it, and how it would be placed into the broader picture of aid praxis. Rather than disrupting the paradigm imposed by this theory and its tools, these macro-ideas where, instead, absorbed and shaped by it.

Trapped inside this paradigm, aid has had little chance to overcome the shortcomings and limitations it has faced in improving its effectiveness and efficiency throughout its history.

A new paradigm of aid requires new words and meanings, new tools—a new language that can break the limits of the world it inhabits today, the limits imposed by words and numbers that do not seem to be able to take it further away from where it has stood for the last six decades. This new language must redefine the current meanings of the words and numbers that are central to aid, as well as to the process of development it aims at enabling and facilitating. (Dopfer (2005a) takes a similar method to contextualize its approach in the new field of evolutionary economics; as Keynes, a close friend of Wittgenstein, did too in order to shift classical economic thinking (Davidson, 2015; P. Hall, 1989; Wittgenstein, 1974).) The new language must include new measures and indicators that expand the realm in which it operates, and that, so far, has been restrained by the current national income accounts. The objective of this new language would be

both, (a) to expand the knowledge and potential explanations about the process of development and the role aid can have in enabling and facilitating it, as well as, (b) to shift the debate about aid from the lock-down position in which it is today, towards freer and more fertile grounds where a clear distinction is made between those aspects of development about which aid can say and do something sensible and useful, and those about which it should remain silent and passive. This new language should also allow for the framing of new rules, as well as for the practices of alternative processes of change. It should also set the ground for a new language-game to take over and substitute for the old one.

This new aid paradigm also requires an alternative explanation about the process of development than that provided by existing theories of economic growth. Even when it is unavoidable that such an alternative explanation would also contain shortcomings and limitations of its own, it would be essential for a new paradigm of aid and development to be effective in enabling and facilitating social, economic, and political change, that its shortcomings and limitations will themselves be different from those of the old paradigm.

The Conceptual Framework of Concerted Wealth Management

New words and meanings.

Self-reinforcing state and wellbeing. *Self-reinforcing state* will be understood as a social, economic, and political condition in which a country possesses the capability and freedom to, intertemporally, sustain the *wellbeing* for the majority of its citizens and succeeds at it. Note that “state” does not refer to a political community, and that to avoid any confusion, no other meaning than “condition” will be given to it throughout this dissertation. Also, note that country is used here as a standard unit of analysis that could

be aggregated or disaggregated further, that is, the idea of self-reinforcing state could be as applicable to an individual community, as it can be to the entire world.

This state is one in which two different levels of wellbeing: the first, required by the physical and biological realities and needs of human survival and agency (i.e., capabilities and freedom); and, the second, corresponding to the country's self-determined aspirations and desires about the *wellbeing* it wants for its citizens, beyond that initial first level. In this sense, *wellbeing* can be understood as a two-tier concept composed by a basic level concerned with respect for the integrity of human life—since one has first to be alive, free, and capable, in order to have the life one wants; and another level that, respecting the differences in the perceptions and aspirations of different societies and cultures, is freely determined by the majority of its citizens as desirable. *Self-reinforcing state* is then focused on sustainability, survival, and self-determination.

In essence, it is a state in which the value extracted from wealth is optimal, as it allows for the fulfillment of intertemporal wellbeing (*optimal value extraction*), and in which, simultaneously, the allocation of the value extracted among citizens is optimal too, as most of them, if not all, get their needs and wants satisfied intertemporally (*optimal value allocation*). While it should be, by definition, a fairly stable state, the self-reinforcing state has to be pro-actively maintained; attaining it does not guarantee remaining in it. It requires constant effort and innovation. It cannot be fixed given that the ecosystem is not fixed. Furthermore, as all countries share the same planet, the self-reinforcing state can only be attained as long as there is room for all other countries to converge towards it, and for the majority of countries to maintain it through time (see definition for *concerted wealth management* below).

It is important to note, however, that the self-reinforcing state is defined as the ultimate but very improbable state a country can achieve and, as a consequence, serves as an asymptotical mathematical limit to which different countries are at different distances from, although never exactly at it. What matters is how close countries get to this limit. Furthermore, by definition, and as stated in the previous paragraph, the self-reinforcing state is, in the final analysis, an intertemporal collective state. Even if one or a few country are at any given time close to the self-reinforcing state, such degree of closeness to the state is intertemporally illusory and unsustainable due to a majority of countries not being as close to such a state.

Development and value. *Development* is a process of social, economic, and political change towards *the achievement of self-reinforcing state* that takes place within the possibility space delineated by the natural, material, and social structures, and the limits they impose (see below for the definitions of these terms). It is the result of the extraction of *value* from *wealth* through natural and social forces—*value* being defined as a relative, social and/or individual, fulfilment of a facet, or the totality, of social and/or individual wellbeing. The logical consequence of this is that in the self-reinforcing state, total *value* extracted and total *wellbeing* achieved are equivalent: this total value could be termed *optimal value extracted*, and could replace, or at the very least complement, the idea of *economic growth*. The self-reinforcing state does not result from continuous economic growth but from intertemporally sustaining *optimal value extraction*. Reasons why value and wellbeing might not be equal outside of self-reinforcing state are: (a) inequality in the distribution of value/wellbeing; (b) value extracted is not sustainable; and (c) not enough value is generated to satisfy the levels of wellbeing wanted and

needed. Given that tangible and intangible proceedings from the use of *wealth* are exchanged at varying rates in monetary or barter terms, both in national and international, and formal or informal markets, their potential to contribute in the attainment of *wellbeing* is given by their relative standing against all other proceedings from wealth, as well as against the *value* of the *needs* and *wants* that required fulfilment in order for wellbeing to be attained. This relative standing that the proceedings from wealth have, and that is represented through prices, will be called *monetary denomination*. Due to the incommensurability of the different elements embedded within these monetary denominations, as well as due to the multiple and differing timelines embedded in them, their role informing social, economic, and political decision-making is not only severely limiting but also bias inducing.

Wealth and classes of assets. *Wealth* is the collection of entities, which will be called *classes of assets* (potential or actual, concrete or abstract, tangible or intangible), as well as the combinations and permutations of these *classes of assets* (potential or actual, concrete or abstract, tangible or intangible), from which individuals and their societies can extract *value*. Each *class of assets* is defined by its origins (e.g., mineral, soil, water, biological, social, produced or non-produced); spatial characteristics (e.g., fixed, mobile, dispersed, concentrated, scarce, accessible, inaccessible, rival, non-rival, excludable, non-excludable, tangible, intangible); and time characteristics (e.g., formation, transformation, degradation, depletion, destruction—which vary depending on whether they are renewable or non-renewable). Some *assets* exist within the physical boundaries of a country, while some others are regional or global but accessible to all or a few countries. The collection of all the classes of assets is considered here as an “ecosystem.”

Wealth management. *Wealth management* is the process of ensuring the intertemporal subsistence of wealth's capacity to sustain the wellbeing for the majority of the citizens of a country, that is, its capacity to lead to self-reinforcing state (again, country is used as a standard unit of analysis that could be aggregated or disaggregated as needed). Therefore, wealth management aims at both preventing or minimizing the degradation, depletion, or destruction of wealth, as well as maintaining, promoting, facilitating, and building-up wealth's potential to derive value intertemporally. Wealth management is central in the achievement and maintenance of self-reinforcing state. Given that wealth is a collection of diverse classes of assets, wealth management involves both the management of each individual asset, of each class of assets, as well as of the portfolio of these classes of assets, and of the space in which they exist and are used. Taken all together, wealth management aims at ensuring the intertemporal capacity of wealth to underpin the self-reinforcing state. Wealth management involves, among other things: (a) ensuring that the natural, material, and social structures, and the natural and social forces that flow through the spaces the limits of these structures create, are well understood and managed in a way that optimizes wealth's intertemporal capacity to generate value and, through it, wellbeing (this means ensuring that the limits imposed by such natural, material, and social structures are accurately and clearly defined and known, that they are fairly stable in time, and that the process through which they are adjusted and changed is transparent and as predictable as possible); (b) managing the risks posed to the integrity and characteristics of individual assets, classes of assets, or the entire portfolio; (c) managing the timelines and function gradients by which each class of assets and the portfolio of classes of assets are bound; and, (d) optimizing each class of asset's

and the entire portfolio of classes assets' potential to generate value (their function gradients). Likewise, wealth management involves optimizing and managing the natural, material, and social structures (being able to do so at different degrees, be they locally, regionally, nationally, and globally) with the aim of optimizing the contribution of natural and social forces in creating wealth, as well as in extracting value from wealth, and therefore satisfying wellbeing. That is, it aims at improving the characteristics of the *possibility space* (see definition below). Finally, wealth management involves dynamically balancing structures and forces in an ever-changing context, to ensure adaptation, resilience, coevolution, and, ultimately, survival and sustainability. Given that at the highest level of aggregation, wealth is not a country level affair but a global one, *concerted wealth management* (see definition below) is essential to the achievement of self-reinforcing state.

Critical-path. The process of wealth management is constrained by the physical and temporal dimensions (i.e., space and time) of the classes of assets that form a country's wealth. In practical terms, this means that the ability to extract value from a class of assets might be dependent on: (a) the availability and use of other classes of assets; (b) the available quantities and qualities of the class of assets and how they relate to the quantities and qualities of the other classes of assets in which the extraction of value from it might rely or depend on; (c) the qualities of the class of assets that are a result from its nature, formation, transformation, and degradation; and, (d) the contextual environment in which value is being extracted from the class of assets. In this perspective, *critical-path* refers to the space and time constraints introduced by the physical, temporal, and contextual realities of the classes of assets that create a minimum

timeline for their formation, maintenance, transformation, degradation, and use (both, individually and as part of a portfolio), and, therefore, for the potential to extracting value from them.

Better-off countries. Better-off countries are those that are closer to achieving self-reinforcing state.

Worse-Off countries. Worse-off countries are those that are farther from achieving self-reinforcing state.

Natural and social structures, and rules and routines. The natural world has an order. Whether we know all the rules and routines that create such order, or whether we can explain them or not, they seem to exist (which is the logical conclusion resulting from the fact that we continuously discover evidence of such rules and routines). This order can be called *natural structure*. *Natural forces* operate within the natural structure and are bounded by it (this distinction between force and structure is notional only, as in the natural world it is because of the structure that the forces exist—they do not seem to be two separate realities, but one).

While embedded and bounded by the natural structure, the social world has an order of its own too. Nevertheless, this order is in appearance more complex (it might be as well that we have yet not been able to make better sense of it). Both the interaction of the individual with itself, as well as with others—be it one or many, is influenced, and sometimes bound, by both the social and natural structures. There are implicit and explicit, and formal and informal rules and routines in a *social structure*. Rules and routines can facilitate or disrupt these interactions at different points in time and/or in different contexts. Human interaction, through trial and error, results in preferences for

certain rules and routines over others. This temporal state in which certain rules and routines have precedence over others for the majority of those interacting, can be called a *social structure*.

Social structures embed all the different dimensions of human interaction: social, economic, political, and cultural, among others. Regardless of their immediateness, they also embed in them a collection of temporal choices made in the past and accumulated over time, which have created, among others, social, infrastructural, and technological rigidities that constrain how much and how radically these social structures can feasibly change in time, as well as the potential impact *social forces* can have on them (see *material structures* below).

In fact, *social forces* tend to be bound by the natural, material, and social structures; yet, contrary to what happens in the natural world, material and social structures are not exact and serve only as reference points (they can be transgressed at different levels, creating or not consequences for those who transgress them, as well for other members of the society). Social structures can be simple or complex: they can have very specific or broad roles, they can be fleeting or enduring, among others. Yet, we know little about the causal relationships that lead to any of these characteristics. Specifically, social structures might be local, regional, national, or global; they might be based on written laws and regulations, and standardized instruments of exchange—like money; they might be based on explicit or implicit beliefs and moral values; they might be based on culture or tradition; and, they might create incentives and motivations that lead to specific social dynamics, as well as to their dismantling; among others.

Ultimately, natural, material, and social structures impose limits that delineate a

possibility space through which the natural and social forces that are behind the process of development flow.

(This notional description of natural and social structures is not meant to imply that a comprehensive logical construct of the world is intended or even possible. The point of conceiving such structures is to conceive the possibility of constructing limits, even if inexact, that, in turn, can help delineate the space in which the process of development takes place. Given the emphasis of the proposed conceptual framework on the physical aspects of the wealth of nations, as a consequence, this notional description of natural, material, and social structures aims at supporting the possibility of “materializing” them so the limits discussed above can be sketched and the possibility spaces delineated; both of these elements, central to the proposed conceptual framework.)

Natural and social forces. *Development* is driven by natural and social forces, which alter the state of wealth in terms of its time (temporarily or permanently) and/or space (partially or fully) dimensions. *Natural forces* are, among others, climatological, biological, geological, and chemical; and overall, they are space-time-bounded. Alterations these forces can cause are, among others, erosion, decaying, aging, death, extinction, displacement, evaporation, solidification, destruction, and depletion. In turn, *social forces* are those that take place within existing natural, material, and social structures and the limits they impose, and that are initiated and carried forward up to a point in time, by an individual or group of individuals—consciously or subconsciously; purposely or aimlessly, and any other degrees within these categories or others.

Both natural and social forces, theoretically, carry the same invariable causal effect: the same exact force, carried by the same exact agent, in the same exact space and

context, and in the same exact subjects, will have the exact same effect. However, in reality, since both the natural and social orders are complex in nature, there is barely anything exact about them, making both natural and social forces more or less unpredictable in terms of their impacts. Given that natural forces are bound by more ordered structures (e.g., thermodynamics, chemical reactions, physical properties, biological processes), planning and managing for their impacts is less uncertain than the planning and management of social forces (at least with the state of our current knowledge). Social forces seem to be less ordered and, therefore, less certain, particularly because their agents and the context in which they act are barely in comparable states through the space-time continuum. Certainty and uncertainty are linked to risks. From this perspective, social forces might offer more certainty at the macro level, as structural social change tends to be slow and gradual. Even when much faster and radical social change can take place at the micro-level, the progression towards tipping-points that could trigger much more uncertain structural changes, is potentially tractable. On the contrary, some natural forces are highly unpredictable and can potentially have devastating effects at a macro scale, all in a matter of minutes or even seconds (e.g., earthquakes, typhoons, tsunamis). Both forces are also highly sensitive to initial conditions and contextual factors, and their impacts in terms of space-time dimensions (e.g., scale, transientness or permanency, degree) vary accordingly. Natural and social forces flow through the possibility space that is delineated by the limits imposed by natural, material, and social structures.

Material structures. The stock of *fixed produced capital* and *mobile produced capital* that, underpinned by the *intangible produced capital* that contributed to their

creation, provides human beings, individually and collectively, with a constrained physical space and skewed incentives towards maintaining the physical characteristics of such *material structures* (due to the fixed costs involved in changing them). Material structures tend to be defined not only by local physical and intangible choices, but also by international trade, which requires sharing certain material platforms, across countries (or across other levels of aggregation and disaggregation). The costs involved in contesting such material structures tend to be prohibitive, and increasingly so with the passage of time, as they embed and entrench themselves deeper and more broadly. Being of varied physical natures, material structures' lifecycles tend also to be different, introducing further complexity into the kind of constraints they impose. Material structures are related to social, economic, and political power and its distribution. Those social actors, at different levels of aggregation, who are further ahead in possessing or having access to material structures that mimic or are highly matched and synchronized with those that are most common and pervasive, can draw power from this degree of similitude or approximation, particularly over those other social actors whose material structures are farther away from those common and pervasive ones.

Possibility space. Natural, social, and material structures set each corresponding natural, social, and material limits. These limits, which mutually affect and impact each other, define and confine within them a possibility space within which natural and social forces flow. Within these possibility spaces is where human life takes place. Projected in time, the possibility space can be conceived in its intertemporal dimension, as a space-time continuum for social, economic, and political interaction.

Inter-country flows. Non-produced assets that are transferred from one country to

another (or between any other parties at different levels of aggregation) represent, in the final analysis, an exchange of wealth. Similarly, since tangible and intangible produced goods and capital come into life through the extraction of value from wealth, wealth ends up embedded in them, and therefore, when exchanged, they also actualize an exchange of wealth between the parties involved. Consequently, *inter-country flows* refer to the exchanges in physical units of wealth, directly or indirectly (through their embedding in goods and services), that take place between countries in a context of natural, material, and social structures and limits, within which natural and social forces flow and interact.

Concerted wealth management. A concerted effort by a group of countries aimed at managing their individual and shared wealth in ways that ensure that the majority of these countries are in self-reinforcing state (that this, the number of worse-off countries among them, is minimal or zero). It involves: (a) continuous efforts to enhance the way in which countries' and common global wealth is managed (improved wealth management); (b) continuous efforts to enable the majority of countries to engage in balanced inter-country flows that do not impact their wealth in negative ways; and (c) continuous safeguarding of every country's and common global wealth to minimize endogenous and exogenous negative effects.

Public and private debt. Public and private organizations can issue debt to finance expenditure and investment. Given that most organizations keep a certain level of debt across generations, the stock of *public and private debt* represents an intergenerational transfer of wealth. The portion of this stock that has served to fund consumption from previous generations, represent a negative transfer of wealth—future generations will have to pay for current consumption with questionable benefits to

themselves. The portion of the stock of debt that has served to accumulate *produced tangible and intangible capital* or to form or improve other classes of assets, while to be paid by future generations, also might benefit them. Furthermore, extremely high levels of public and private debt may constraint the possibility of future generations to issue debt, as well as the resources available to them (given that a portion of these resources will have to be used to pay the stock of debt and its interests), reducing the flexibility they will have to manage the process of *development* (debt facilitates and enables a smoother process of development given the diverging timelines involved in the formation, use, and degradation of wealth). High levels of public and private debt might as well influence the country's *international social, economic, and political relative standing*. That is, excessive relative stocks of debt introduce rigidities that constrain the choices, capabilities, and freedom of individuals and societies over time.

Local and global social, economic, and political relative standing. Social, economic, and political power are all linked to each other. This power is, however, not absolute but relative. It is defined in relation to others, as well as in relationship to context. Unequal power is a characteristic of any human collective, as it is unequal in terms of health, cognitive, and behavioural characteristics. This inequality is one of the problems of coordination and control presented by cooperation. Different collectives deal with these problems in different ways, some being more successful than others in establishing checks and balances that minimize the negative consequences these inequalities may have in the collective. Unchecked inequalities lead to asymmetries that, in turn, translate into formal and informal institutional arrangements that embed mechanisms, from which, in turn, a likely outcome will be to produce unequal benefits to

different groups or individuals in the collective (usually reinforcing the inequalities that created these mechanisms in the first place). The still incomplete global social, economic, and political global structure of today has lent, and continues to lend itself for inequalities that keep reinforcing each other. This has created differences in the *relative standing* of countries that do not correspond to either the population or the geographical extension of the countries but to the social, economic, and political power that has, in turn, attached to it. This *relative standing* has allowed a reduced number of countries to set and continually influence, more than proportionally, the global social and material structures, further entrenching such unequal relative standing. The process of development and the conditions under which wealth management can take place are thoroughly influenced by the social and material limits these local and global structures influence and, sometimes, even determine. Therefore, a country's relative standing influences how enabling or disabling the global structure can be in its efforts to attain the self-reinforcing state, that is, its capabilities and freedom to develop are influenced by its local and global social, economic, and political relative standing.

The requirements.

An alternative conceptualization of the process of economic growth that allows for an alternative conceptualization of development planning and national income accounting, and, hence, a new vision and paradigm of aid, has to overcome the main shortcomings of the existing paradigm (for several accounts of these shortcomings see, Browne, 1999; Carothers & de Gramont, 2013; Deaton, 2013; Easterly, 1997, 2014; Easterly & Pfutze, 2008; Godfrey, 2014; Riddell, 2007; Schabbel, 2007; Spence, 2011). As a result, the new paradigm would have to (the following points draw on a considerable

amount of literature about aid (in)effectiveness and hence the considerable number of citations supporting each one):

- Go beyond the broader categories of labour, capital, and knowledge and innovation to incorporate the more specific and much more relevant classes of assets that form the wealth of nations in the twenty first century. This would include consideration of public goods. It would also ensure sufficient understanding of the characteristics of these types of wealth in terms of their origin, and both their space-time dimensions. The latter include an understanding of the ways in which wealth can be used and transformed, as well as ways in which it comes into existence, is created, or remains idle when not used or transformed (Common, 2014; Godfrey, 2014; Sengupta, 2013; Spence, 2011; Stiglitz & Lin, 2013).
- Consider, as a starting point, the stocks of wealth and then build on their understanding, to, in turn, identify the flows that both derive from and impact on these stocks. The new paradigm would have to explore the relationships between stocks of wealth, between these stocks and different types of flows, as well as between flows—always focusing on their ultimate effects on wealth (Albala-Bertrand, 2013; Common, 2014; Richardson, 2014; Sengupta, 2013; Spence, 2011; Stiglitz & Lin, 2013).
- Focus on the intertemporal optimization of wealth rather than on the maximization of present outcomes or present value (recognizing that there are physical limits to growth). The new paradigm would also have to consider that this optimization also requires the planning and management

of potential emergencies and other externalities that could impact the stocks of wealth (Athreya, 2013; D. Cohen, 2012; Common, 2014; Ermisch, 2012; Laperche, 2012; M. S. Morgan, 2012; Sengupta, 2013).

- Not only rely on the ingredients that may impact economic growth but also be built on a more solid understanding of the process of social, economic, and political change through which these ingredients get mixed (Campbell, 2004; Carothers & de Gramont, 2013; Crowder, 2004; Fligstein, 2001; Gérard-Varet, Kolm, Mercier Ythier, & International Economic Association, 2000; Goldstein, 1993a, 1993b; Reynaud, 2002; Roth, 2015; Stiglitz & Lin, 2013; Jan Tinbergen, 1962).
- Rely not only on market forces as the main means for mixing the ingredients for growth, but on the role of government and society as creators and enablers of alternative methods to address the coordination and control problems of cooperation (Arnon, 2011; Carothers & de Gramont, 2013; Crowder, 2004; Finnemore, 2013a; Fligstein, 2001; Goldstein, 1993a, 1993b; Hubbard, 2009; Kaul, Grunberg, & Stern, 1999-- several of the chapters in this edited volume are quite relevant; Krugman, 1996; Michalos, 2010; Reich, 2015; Roth, 2015; Szirmai, Naude, & Alcorta, 2013; Turner, 2016).
- Address the costs of transformation resulting from the process of development (Athreya, 2013; Barnett, 1998; Campbell, 2004; Commission on Global Governance, 1995; Common, 2014; Goldstein, 1993a, 1993b; Goodspeed, 2012; Grossman & Helpman, 2014; Hartmann, 2014;

Independent Commission on International Development Issues, 1980; P. R. Krugman, 1996; Sengupta, 2013; Spence, 2011; Stiglitz & Lin, 2013; Szirmai et al., 2013; Jan Tinbergen, 1962; Woods, 2006).

- Consider levels of aggregation and disaggregation of social interaction, as well as the forces this interaction creates and releases, both at micro and macro levels (Bourguignon, 2004; Ermisch, 2012; Sengupta, 2013; Slanina, 2014).
- Give consideration to the local, regional, national, and global social and material structures in which the process of development takes place, particularly through the wealth value transfers that result from all inter-country flows (Campbell, 2004; D. Cohen, 2012; Commission on Global Governance, 1995; Elson, 2011, 2013; Finnemore, 2013b; Gérard-Varet et al., 2000; Independent Commission on International Development Issues, 1980; Kaul et al., 1999--a very relevant edited volume with several chapters supporting the importance of the point made above; Krugman, 1996; Lall, 1981; Laperche, 2012; McKinsey Global Institute., 2014; Nayyar, 2002; Sachs, 2000; Stiglitz & Lin, 2013; Jan Tinbergen, 1962; Wall, 2014).
- Integrate both the endogenous and exogenous factors that impact the capabilities and freedom of countries to develop (Barnett, 1998; Dasandi, 2014; Laperche, 2012; Modelski & Thompson, 1996; Perez, 2002; Sen, 2000; Spence, 2011; Stiglitz & Lin, 2013; Szirmai et al., 2013).
- Allow for a drawing of a roadmap for a new vision of concerted wealth

management that does not assume a catalytic effect and that focuses on supporting countries to manage their wealth. In doing so, lay down a clear mandate with only one driving motive and one architecture with consistent incentives. Also, provide a typology of specific activities and actions (mechanisms) that can be taken to achieve its ultimate objective of enabling most countries to attain the self-reinforcing state.

- Not rely on an underlying assumption that the process of development is a linear enterprise, driven first by countries' primary, then secondary, and, finally, tertiary sectors (D. Cohen, 1998).

The process of development.

Attaining self-reinforcing state requires of a country that it has enough potential (in the form of wealth) and actual value (extracted from wealth) to be able to satisfy, intertemporally, the levels of wellbeing needed and wanted by the majority of its citizens. Value is derived from wealth through the process of development, which, in turn, relies on wealth management, resulting in optimally extracting value from wealth.

This process of development, a result of social, economic, and political change, is then based on a comprehensive management of the different classes of assets that compose the wealth of nations, taking into account their nature and the characteristics that result from this nature—the natural and material structures. This management of wealth takes place in the context of local and global natural, material, and social structures. Within these structures, inter-country flows (or exchanges at every other level of aggregation) convey wealth-value transfers, which add or subtract to the wealth stocks and flows of countries. While wealth management is inherently an endogenously-lead

process, it is constrained and shaped by exogenous conditions imposed by the global natural, material, and social structures. The link between these endogenous and exogenous factors shaping wealth management lies in the wealth-value transfers that result from inter-country flows, as well as in the constraints the global natural, material, and social structures impose in the corresponding local ones. Ultimately, since there are certain classes of assets from which all countries draw, and since there are actual exchanges of wealth between them, the possibility for all countries to converge towards the self-reinforcing state is dependent on concerted wealth management.

In order to manage its wealth, a country has to understand the origins and nature of each class of assets composing its wealth, and how these determine space and time characteristics that govern their use. It also has to understand how wealth can be impacted, not only by the use countries make of it by extracting value from it, but also by how natural and social forces may transform, degrade, deplete or destroy it. These two dimensions: 1) use and the maintenance of wealth to create value, and 2) managing of its integrity and the risks to it, are very distinct from each other. Both, however, are essential to the process of wealth management. Ultimately, management of wealth's integrity and risks to which this integrity is subjected to, is dependent on the possession of wealth itself. This is why countries that possess more wealth are better able to deal with the risks of potential emergencies, and the costs of real ones. This capability, of course, is characteristic of the self-reinforcing state.

Wealth management also aims to balance the natural and social forces behind the process of social, economic, and political change, as well as managing the structure through which these forces flow and interact (the possibility space). Besides being based

on the understanding of wealth's origin, nature, and characteristics, wealth management means balancing the natural structures, as well as the local and global material and social structures through which wealth is owned, used, exchanged, and shared—among others. It also means balancing natural and social forces that come into play through the above-mentioned structures; for example: path dependence; social, economic, and political long-term cycles; global dynamics; conflicts; preferences; comparative advantages; social, economic, and political shocks; and natural disasters—among others. As these forces are dynamically changing, the space in which they interact require adjusting (through the fine tuning of socio-material limits). It is also through management of these structures that countries can influence forces behind the process of development, or, at least, their relative importance in the process of development. Both structures and forces feed into and from each other, exercising influence into each other that can result in them changing. This is why the local and global social, economic, and political relative standing of a country is so relevant: the better its relative standing is, the more it is able to influence all of the above structures that, in turn, are so crucial to its own survival and development. This also means that an objective of concerted wealth management should be to continuously balance the relative standing of countries to ensure all of them have a voice and that such voice is relevant in shaping the global material and social structures.

In achieving this balance between forces and structures, wealth management aims to fill the shortcomings and limitations within the current paradigm by, among others: 1) considering the critical-paths by which the process of development is bounded; 2) addressing market failures due to the intertemporal complexities of managing wealth; 3) devising tools and policy instruments to shape the elasticities that govern the

complementarity, substitution, and transformation of wealth; 4) coordinating stocks and flows of wealth and optimizing wealth as a portfolio, rather than focusing instead on sectors, projects, and simple allocation of labour and capital; 5) managing aspects of the local and global material and social structures that influence the process of development; 6) actively managing the distribution of outcomes and wealth, as well as the distribution of the costs of the structural transformation that result from the process of development; and 7) achieving intertemporal optimization of the value generating capacity of wealth (optimal value extractions), as well as of its distribution, in ways that are sustainable and that create an equitable society where the levels of wellbeing needed and wanted by the majority are met (optimal value allocation).

Contrary to the neoclassical understanding of economic growth, wealth management is built on the idea that physical limits exist, and that if these are not considered, the resulting degradation, depletion, and destruction of wealth will mean that intertemporally, the country, and the world (or any other unit of analysis), will not be able to achieve nor sustain a desired level of wellbeing, or even worse perhaps, the level of wellbeing that it needs. The neoclassical model assumes that markets usually have full information and, therefore, that decisions made through them include these intertemporal considerations. While this understanding has been challenged with the introduction of the idea of asymmetrical information and incomplete contracts, its implications in terms of the management of wealth, particularly in terms of its intertemporal dimension, have not been yet fully considered nor integrated into neoclassical or new-growth models. The proposed alternative approach to wealth management considers and integrates the idea that a different kind of government and or societal role, both at the local and global

levels, would be needed in order to ensure that this intertemporal optimization of value extraction from wealth and its optimal allocation can take place, in spite of these market imperfections. Furthermore, this different role will also be needed to ensure that the natural tendency of the current approach to economic growth to foster inequality, resulting from the structural transformation that enables it, is addressed in a timely manner so the majority of the citizens of a country can actually enjoy the levels of wellbeing they need and want. If we consider human capital as a kind of wealth, its management means ensuring not only that it is not degraded, depleted, or destroyed, which is more likely in highly-unequal societies plagued with poverty or more vulnerable to emergencies, conflicts, or disasters, but that it is also equally and thoroughly built, maintained, and enhanced. This is unlikely to happen across the board in very unequal societies.

A different government and societal role does not necessarily mean restricting or intervening on certain actions, redistributing output or wealth, or other traditional ways in which it has been understood (although some of these might be needed and legitimate). What it means is to proactively manage (e.g., designing, fine-tuning, modifying) the possibility space through which natural and social forces can create and innovate (among others), by relying on both traditional and/or alternative or modified market mechanisms that can improve the ways in which society deals with the problems of coordination and control that are created through cooperation.

Wealth management, while also notionally related to the concept of development planning, is not to be confused with it. The latter is narrower and less strategic, and, it is also based on the same outdated understanding of economic growth in which

development economics and aid are based. Wealth management focuses on wealth, both stocks and flows, while development planning focuses on sectors, projects, and, the configuration of labour and capital—mostly in the form of flows, not stocks (Anthony P Thirlwall, 2011). More specifically, development planning relies, for the most part, on a ‘black box’ in the sense that it is markets and prices (and through them, the public and private sectors), which drive a great deal of the decisions with regards to resource allocation and investment.

The Harrod-Domar understanding of economic growth that underpins development planning provides the theoretical basis for programming the future based on coefficients that determine the needed levels for capital formation based on the desired targets of economic growth. While the concept of managing wealth is a form of developing planning, it is only in as much it involves the allocation of stocks of wealth and of the flows that result from the use of these stocks of wealth. Ultimately, development planning is not directly concerned with the explicit management of wealth per se, but with the narrow idea of allocating scarce labour and capital in ways in which output is maximized. The assumption under development planning is, for the most part, that the role of a government is limited to: (a) providing public goods; (b) addressing market imperfections by correcting them and providing the institutional environment for them to thrive; (c) protecting citizens, particularly those who are most vulnerable, and, (d) ensuring an intra- and inter-temporal equitable distribution of income (Anthony P Thirlwall, 2011).

On the contrary, the proposed concept of wealth management underpinning the process of development, aims at helping governments deal with, among others, some of

the most difficult limitations of traditional markets (Athreya, 2013; Claessens et al., 2009; Independent Commission on International Development Issues, 1980; Sengupta, 2013; Szirmai et al., 2013). For example:

- Diversity of the time-horizons that, given the different nature of the classes of assets a country possesses, need an intertemporal coordination that no single market can provide. This includes management and coordination of the critical-paths by which each kind of wealth is constrained in terms of its formation, transformation, and degradation. This also implies managing other temporal and physical limits of wealth, including any global coordination required by virtue of these limits—coordination that is made possible through the local and global material and social structures (Common, 2014; Goodspeed, 2012; Landes, 1998; Jan Tinbergen, 1962).
- Coordination of uncoordinated markets through the provisioning of consistent and systematic intertemporal signals that can extend the effective time dimensions under which markets operate (through the shaping of a possibility space). Markets' functioning relies on information. In the long run, it is government policy and regulation, as well as the natural, material, and social structures, which provide markets with more information about an uncertain future than any independent organizations or forecasting methods could. Government policy and regulation, when intertemporally backed-up by a solid social contract, represent a willful conscious commitment and, therefore, is not as unstable and unpredictable

as micro-behaviours are (Goodspeed, 2012; Stiglitz & Lin, 2013; Jan Tinbergen, 1962).

- The process of shaping, through policy, of the elasticities of different classes of assets, so their formation, complementarity, substitution, and transformation can be strategically managed so as to enable the attainment of the self-reinforcing state. (This implies managing both stocks and flows of wealth.). Markets cannot do this without proper government information and regulation, given the wide and complex dispersion of wealth across space and time. No one single market deals with all assets and dimensions of wealth at once; nor do any of the assets relate exclusively, in all its dimensions, to only one single market (Common, 2014; Goodspeed, 2012; Independent Commission on International Development Issues, 1980; Stiglitz & Lin, 2013).
- Management of the time-dimensions of flows and stocks of wealth (e.g., formation, transformation, improvement, maintenance, degradation, idleness, etc.), based on an understanding of the critical-paths to which different kinds of wealth are bound (Common, 2014; Crewe & Axelby, 2012; Goodspeed, 2012; Landes, 1998; Stiglitz & Lin, 2013).
- Management of the entropy created by uncoordinated markets, and by the structural transformation of the economy that ultimately degrades the relative stocks of wealth and that generate shifts in the material and social structures, which create winners and losers (Common, 2014; Goodspeed, 2012; Stiglitz & Lin, 2013).

- Coordination and management of the implications of the global material and social structures on local and global structures; on countries' flows and stocks of wealth; as well as on the flows and stocks of public local and global goods (Common, 2014; Independent Commission on International Development Issues, 1980; Stiglitz & Lin, 2013; Jan Tinbergen, 1962).
- Management of the process of influencing a more equal distribution of a country's stocks and flows of wealth among its citizens, as well as of the value obtained from them, which have proven not to occur naturally or automatically (Gérard-Varet et al., 2000; Stiglitz & Lin, 2013).
- Minimization of excessive upswings and downswings in the functioning of a society that create social costs, which, in turn, are not necessarily fairly distributed and therefore end affecting different groups unevenly (Frydman, 2011).

This concept of wealth management can perhaps be better understood by relating it to the rules of chess: each type of wealth, the classes of assets, could be equated to the different kinds of pieces used in the game, each one of a different nature and with different characteristics and roles and rules governing its use, but all contributing to the game (some of these roles and rules are given by natural structures while others are given by material or social ones). Wealth management could also be equated to the chess game itself, whereby moving a piece in certain ways, each player aims at building configurations of pieces on the board (in turn, bound by the constraints their interaction create) that serve a specific purpose in the game, always in relation to another player's configurations, be it defense, attack, or both, and that, ultimately, contribute to the end

result of the game: winning or losing. This last part of the analogy does not have to correspond with the reality of wealth management: the world can certainly be a zero-sum game, but this does not mean it has to be as such. It is precisely through concerted wealth management that such an outcome can be avoided.

Both the level of value extraction and level of wellbeing are representative and realistic of the realities of the ecosystem in which human life takes place, only when they are sustainable; otherwise, they are illusory in the sense that their existence is only possible at the cost of other human beings' present and future value and wellbeing (due to their degrading effect on a country's wealth on which this wellbeing depends).

Optimal value extraction (as a new conceptualization of economic growth) can no longer be understood by only considering wealth to be labour and capital, or even natural endowments and institutions. The way in which assets are currently lumped together creates considerable limitations for the understanding of their potential contribution to development, and, perhaps most importantly, to the understanding of how they can be sustainably used in the process of development. It also creates huge limitations for understanding how they can be influenced by policies through wealth management efforts. Instead, the current social, economic, and political order relies on many more specific types of wealth or specific modifiers that impact their potential to generate value, such as:

- Natural endowments and their connection with global public goods.
- Social, cultural, psychological, and spiritual capital (e.g., institutions, laws, rules, values, traditions), considered in this dissertation as social structures and social forces.

- Human capital (people and their capacity to create and manage wealth to extract value).
- Infrastructure (e.g., public services, roads, ports, schools, hospitals) and produced physical capital (e.g., fixed and mobile produced assets used in extracting value).
- Intangible-produced capital (e.g., intellectual assets, like corporate practices, branding, and others that generate value, not only through locally driven use, but also through royalties or through their future development into productive physical and intangible capital).
- Local and global stock of public and private debt (representing the present value of the country's wealth that has been borrowed from the future).
- Local and global social, economic, and political *relative standing* (a result of the relative size of the wealth of a country and its power against that of other countries, giving it a relative bargaining position that impacts, either positively or negatively, the balance of its inter-country flows and the wealth value transfers they convey).

In using these types of wealth (classes of assets) and their modifiers, to extract value, a country cannot do so by ignoring their nature and characteristics; even less so by not being strategic in their use. That is, a country can no longer afford to rely on the traditional ideas behind development planning, which do not actively allow it to engage in the management of its stock and flows of wealth, but only in the indirect allocation and extraction of value from them (through looking mostly at sectors, projects, and the capital-labour configurations). Renewable types of assets ought to be treated in different

ways than non-renewable ones. In extracting value from renewable assets, a country has to be aware of their natural limits, which, once crossed, causes them to lose their capacity to be renewed (these limits vary widely in scale and timeframe). Furthermore, different kinds of wealth have different formation, degradation, and depletion time-horizons, as well as different tipping-points on which the extraction of value depend—space-time limits that ultimately define a critical-path from which the process of development cannot escape. Different kinds of assets possess different levels of flexibility, mobility, and transformability; they can also interact with others to potentially create synergies and a sort of virtuous gravitation pull that can foster development, while their interaction with others can create conflict and degradation. Some types of assets lend themselves to the maximization of use in creating value; others, instead, can generate the most value when its use is optimal; others generate the most value when optimization and maximization are balanced in the best way possible; and, others' value can be optimized and/or maximized only at specific points-in-time or under certain conditions (e.g., non-renewable minerals could generate the most value when extracted and sold at times when their price is the highest). This understanding should not only underpin decisions about the strategic use of wealth to generate value that a country makes, but also its decisions about the optimal way in which surpluses (savings) can be used to ensure sustainability, and, hopefully, an increase of its wealth, so that the wellbeing of current and future generations can be ensured and improved, if needed.

It is precisely through a comprehensive and encompassing wealth management strategy that a country can create the conditions for development in such a way that it can also create conditions for self-sustainable wellbeing (the self-reinforcing state)—evidently

within the limits that the local and global material and social structures imposes on them. Such a process could be conceived as the equivalent, at the government level, of Schumpeter's "creative-destruction": governments could play through cleverer policies and information, both the role of an indirect entrepreneur and/or venture capitalist encouraging innovative ways in which wealth could be configured that could lead towards development; as well as the role of continuously shaping and fine-tuning the possibility space created by local and global material and social structures on which such creative-destruction process takes place.

The proposed concept of wealth management could provide governments with the understanding and tools to play a more productive role in development. In principle, if the private sector can play the role of an entrepreneur or venture capitalist, there should be no reason why governments could not play a similar role (through their shaping of the possibility space), particularly when their knowledge and command with regards to the stocks and flows of wealth and both the local and global material and social structures in which these operate (that is, the possibility to regulate and influence the management of wealth), provide them with much better information, knowledge, and agency than any single or collective private sector player could potentially have. The principle that collective action allows for the achievement of results, which no single individual can achieve, should also apply to the collective achievement of better management of their collective wealth, the coordination of which is entrusted on governments. In principle, if the mechanisms that have been designed so far to address the issues of coordination and control presented by the challenge of cooperation and collective action are considered to be defective or inadequate (like some would argue markets are), this does not mean that

alternative mechanisms that can be more effective and efficient cannot be found. That these may have partially failed so far does not mean new ones cannot succeed (Roth, 2015).

A New Aid Paradigm: Concerted Wealth Management

Given their limited capabilities and freedom to attain self-reinforcing state, worse-off countries could be helped by better-off ones by ensuring that the global material and social structures do not hinder these capabilities and freedoms, but actually enhances them. Better-off countries can ensure inter-country flows and the wealth-value transfers they convey, are not negatively affected by distortions that in virtue of their status of being better-off, they have imposed in the global structures either directly or indirectly through their local and global policy choices. This type of action could be called *enabling*.

Better-off countries could also help those worse-off by helping them prevent and address the degradation, depletion, and destruction of their wealth through increased capacity to address emergencies and other events that may impact the integrity of their wealth, and through the management of risks in a more efficient and effective way. This type of action could be called *safeguarding*.

Finally, better-off countries could help those worse-off improve the ways in which they manage their wealth. This type of action could be called *enhancing*.

The reasons behind worse-off countries' reduced or non-existent capabilities and freedom to achieve self-reinforcing state might be related to the types and the volumes of wealth they possess; to the ways in which they manage it; to the ways in which the global material and social structures influence the wealth-value transfers that result from inter-

country flows; to the ways in which they manage the risks to the integrity of wealth; and to the way in which they manage events that impact the integrity of wealth.

There is a two-way relationship between the first of these factors, the types and volumes of wealth they possess, and the rest of them. As mentioned before, countries that possess more wealth are usually able to better deal with the aspects involved in managing their wealth, particularly in managing emergencies and their consequences. Therefore, the amount of wealth a country possesses influences the way it manages it, and the way it manages also influences the amount of wealth it possesses.

In this context, it is clear why the current taxonomy and architecture of aid is ineffective: it does not consider nor address essential aspects of the process of development that is supposed to serve. A broader concept of concerted wealth management that considers these dynamics between better-off and worse-off countries, and focuses, as a consequence, on enabling and enhancing the management of wealth, as well as safeguarding it, is necessary and should replace the exhausted and ineffective current paradigm of aid. The ultimate goal behind concerted wealth management is to achieve the convergence of better-off and worse-off countries' capabilities and freedom to develop towards the achievement and maintenance of self-reinforcing state by the majority of countries.

Contrary to the existing paradigm of aid, concerted wealth management, the proposed new paradigm, needs also to be based and organized on the basis of a more realistic understanding of the influence better-off countries can have on those worse-off. This will contribute to avoiding unrealistic expectations about what is possible.

Better-off countries can always contribute to worse-off ones by enabling and

directly safeguarding their wealth, even when enhancing it might not be feasible.

Ultimately, the process of development cannot be forced on to anyone. The concepts of capabilities and freedom that are at the core of the definition of development adopted in this research, are not only applicable in one, but in both directions. While the global community should never stop trying to contribute to the internal dynamics of a country, it also has to accept and respect the fact that each country should be sovereign. This is where the importance of the concept of defending the integrity of wealth by managing the risks and events that can degrade it, deplete it, or destroy it comes to play. Respecting a country's sovereignty is as important as respecting the life of its citizens, or preventing the loss of wealth that, ultimately, determines how feasible the life and wellbeing of the citizens of that country are in the long-run. Therefore, even in the case of failed or conflict afflicted states where the possibilities of contributing in the longer-term aspects of development are very remote, better-off countries can still collaborate with them in maintaining the integrity of their wealth, including its people (safeguarding), and by ensuring that the global architecture does not impact them negatively, but that in fact enables them to increasingly achieve their wellbeing (enabling).

Literature Underpinning the Proposed Conceptual Framework

Over the following sub-sections, relevant literature supporting and further expanding on the basic conceptual framework proposed above will be summarized. At the end of each section, a table containing key messages from the literature is provided. These messages are incorporated in the formalization of the proposed conceptual framework developed in Chapters 4 and 5.

The origins of wealth and wellbeing.

Wealth can be simply defined as a stock of assets that produce a stream of value (C. Hall, 2012; Polanyi, 1957). The potential of wealth to produce value not only depends on the volume, quality, or characteristics of assets, but also on the composition of an asset portfolio or *balance sheet*. This is also the case of the wealth of nations (OECD, 2001; Spence, 2011; World Bank, 2011). The complementarity of assets within the portfolio is considered to impact the wealth of nations' potential to generate value (Daly, 2004; Galor, 2011; Godfrey, 2014; Hartmann, 2014; Kümmel, 2011; North, 2005; OECD, 2001). However, this complementarity is contextual, and it changes with time (measured, for example, through changing input-output coefficients, or substitution and complementarity elasticities (Common, 2014)) (Athreya, 2013).

While for mercantilists, the origin of wealth was a positive trade balance, for classical economists, it was instead the result of specialized labour, drawing from the use of land and tools. For the latter, the value created through production was the result of objectively adding the costs involved, represented by their use values (C. Hall, 2012).

With the marginal revolution, introduced by neoclassical economists, value and wealth became relative (measured by exchange and not by use value), as well as a result of transforming production factors (natural resources, labour), not just their addition. Greater growth, value, and wealth were created when the marginal contribution of all additional units of factors used matched their marginal cost, maximizing the utility obtained from the portfolio of the factors of production. Furthermore, neoclassical economists assume that all factors of production could be substituted by others, obviating in this way the possibility of any limits to growth, or the possibility that economic growth

could impose any additional costs not already prized (Common, 2014; Daly, 2004; C. Hall, 2012; Helpman, 2004; Sengupta, 2013). In fact, growth was considered essential because the bigger the economic system, the better and more successful it was considered to be (Sengupta, 2013).

As a consequence, most neoclassical economic growth models rely on the factors of production as the ingredients that, through the maximizing effects of the market and the pricing system, are ultimately responsible for growth (Sengupta, 2013). The price system, defined as the mechanism through which the overall context in which economic growth takes place is internalized into the production function (Galor, 2011).

In time, economists realized that the accumulation of assets was not enough to guarantee growth and sustained wealth increases. Saving and investment was not enough, as originally believed by neoclassical economists and others, like Keynes (Meltzer, 1988). Several iterations in the modelling of economic growth, added: (a) first, that “total factor productivity” was more important than the volume of the ingredients possessed; (b) later on, that technology and education, and overall human capital (as the source of technological progress) were the main causes behind ‘total factor productivity’ improvements; and (c) finally, that institutions and other public goods were also an important factor in explaining economic growth (H. A. Arndt, 1984; Helpman, 2004; North, 1990, 2005). These realizations extended the original list of ‘ingredients’ from land, labour, and machinery to the more elaborated concepts of human capital, intellectual capital, produced physical capital, natural endowments, and institutions (Aghion & Durlauf, 2005--these two volumes showcase the evolution of economic growth theory; Helpman, 2004; Spence, 2011; UNU-IHDP and UNEP, 2012, 2014,

World Bank, 2006, 2011).

In fact, environmental economists use the neoclassical framework but strive to quantify and internalize the value and prices of natural endowments as an important ‘ingredient’ required for economic growth (Sengupta, 2013; UNU-IHDP and UNEP, 2012, 2014).

Both physics and ecological economics challenge these interpretations about where the wealth of nations lies, and how it is created and formed. Already in the early 1920s, Frederick Soddy (1924), a Nobel Prize winner in chemistry who spent a good part of his career writing about economics and specifically about money and wealth, called attention to the conceptual perils of obviating that, ultimately, the source of all wealth was a continuous flow of energy and the still untapped knowledge about unfamiliar sources of energy, as well as unknown ways of improving the efficiency in its use (entrepreneurship and intellectual capital). Additionally, he also refuted the idea that capital could represent actual savings—in his view, it was, at the most, a form of embodied energy of which use had been delayed for a limited time. As a consequence, he suggested that wealth could be conceptualized as an ‘entitlement’ over flows of energy. His work was continued by other physicist and economists like Georgescu-Roegen (1971), Grubb (2013), Kummel (2011), Hall (2012), and Richmond (2013). Specifically, Kummel (2011), among others, produced empirical data to demonstrate that about 90 percent of total factor productivity increases (which, in turn, explain about 70 percent of all economic growth) has been due to increases in net energy. Aligned with the physics economics school of thought, Kummel (2011, p. 243) argues that wealth only increases when the ratio of energy resources to number of people increases, and that some 99

percent of all species on Earth have become extinct because their ‘technology’ was not able to produce a net positive energy balance.

While on the ecological economics front, scholars also acknowledge the importance of energy, their emphasis lies on energy’s role as a source of sustainability and resilience of the biosphere. They focus on the portfolio of assets and services that the biosphere provides (Biggs, 2015; Common, 2014; Costanza et al., 2015; Daly, 2004; Managi, 2015; Sengupta, 2013). Their understanding of wealth also relies on the idea that it is the result from the extraction of value from endowments and services provided by the biosphere. Given that human life is not possible without the biosphere, its resilience and sustainability are, in the final analysis, the real wealth of nations. Understanding, then, how to ensure that renewable resources are not overexploited, ecological-services are not pushed beyond their limits, non-renewable resources value is maximized through opportune and efficient transformation, and that the overall scale of human impact on the biosphere does not destabilize it in its fragility, is the key to realistic wealth creation and management (Biggs, 2015; Common, 2014; Daly, 2004; Managi, 2015; Sengupta, 2013). Scholars like Daly (Daly, 2004) approximate the achievement of this situation through the idea of a “steady-state economy” which contrast with the classical and neoclassical economics notion of steady-state (a state of equilibrium) embedded in theories of economic growth ((Helpman, 2004; Solow, 1956). Economic growth is costly, and there are actual physical limits, given by the biosphere and the impossibility to substitute natural capital with produced one (Sengupta, 2013).

Both environmental and ecological economists have put considerable efforts into measuring the value of wealth in monetary terms. Evidently, their efforts have found

limiting factors given that several of the assets in question are public goods that are not traded in markets, nor is their value fully factored into the pricing of products and services that are traded. In fact, both groups of economists tend to identify sustainable development with stable or increasing aggregate value of all assets considered to be part of the wealth of nations (Common, 2014; Daly, 2004; Sengupta, 2013; UNU-IHDP and UNEP, 2012, 2014).

In all the previous accounts of what wealth is and how it is accumulated, there is an underlying narrow discourse about ever increasing material wellbeing. Nevertheless, two relevant alternative debates have taken place, and have further intensified over the last few years. One relates to wealth allocation and the ways in which value extracted from this wealth (in the form of income) is distributed (Athreya, 2013; Daly, 2004; Galor, 2011; C. Hall, 2012; Kümmel, 2011; Milanović, 2016; Piketty, 2014). The other relates to the additional dimensions of wellbeing that are not material and how they can be measured—including happiness, satisfaction, trust, sense of freedom, feelings of worthiness, and, more broadly, subjective wellness (Biggs, 2015; Daly, 2004; Managi, 2015; Max-Neef & Smith, 2011; OECD, 2001; Oishi, 2012; UNU-IHDP and UNEP, 2012, 2014, World Bank, 2006, 2011). This distinction between material and non-material wellbeing is also consistent with several psychological studies like those of Maslow (2013) and Herzberg (1966) which suggested the existence of hierarchies separating between these two kinds of wellbeing and the differential impact they have in terms of motivation and self-actualization. In fact, the OECD (2001) goes as far as defining the portion of the gross domestic product that does not contribute to wellbeing as “regrettables.” Ultimately, both these debates question what value really is and means—

and, hence, what wealth is, and how it relates to wellbeing.

This debate about what wellbeing really means has also been at the center of Sen's (2000) ideas about development as freedom. His influential view proposed that freedom was not only the primary end of development, but also the primary mean to development. Freedom is proposed by him as an expression of capabilities that allow human beings to avoid or escape the difficulties of poverty, as much as to pursue their own self-realization. This approach of a two-tier like understanding of human need as material and immaterial, resonates with the approaches of Maslow (2013), Herzberg (1966), and the other scholars mentioned in the previous paragraph.

The impossibility to commensurate the concepts of use value, exchange value, and social value, tends to be resolved at the ideological level (Amin, 2013; Becker, 1977; Daly, 2004; C. Hall, 2012; Harvey, 2006; Hollander, 2008; Meikle, 1995; Soddy, 1935). In fact, Soddy (1933) argued in the 1920s and 1930s that the ideas of value and wealth were becoming meaningless, as the monetary system allowed for an excessive quantity of money whose own value rested on nothing more than ungranted trust rather than on any real variables or facts. Similarly, and pointing to the same issue, another Nobel Prize winner, this time in economics (Tobin, 1965) suggested that the illusion of value created by money can only hold as long as everyone does not try to convert it, simultaneously, into anything real. In his reasoning, Soddy applied the laws of thermodynamics, particularly looking at how, when considering entropy, it was impossible to think that the financial sector could possibly expand beyond the real sector, and without any limit. At the core of his argument was the idea that, if those who are not producing any real products are still yielded earnings, this could only happen at the expense of those who

were actually producing (see also Kümmel, 2011; Soddy, 1924). In 2007, global financial assets were already 3.6 times that of global GDP. This financial capital requires a return and this means that the real sector needed to produce enough returns for both itself and the financial sector—growth cannot go on forever, as Soddy argued (Kümmel, 2011).

Likewise, value and wealth are inherently related to the idea of public debt, which, in many cases, become a de facto intergenerational redistribution of wealth (Athreya, 2013; Goodspeed, 2012; Kümmel, 2011; Soddy, 1924; Stiglitz, 2010). For Soddy (1924), even physical capital was, in itself, debt; financial and capital assets are an entitlement to money in the future—their value lies in their ability to produce goods and services in the future or in producing rent by lending that capacity to others (Kümmel, 2011). Acknowledging this intertemporal quality of debt, economists have developed what are called “overlapping generations” models (Athreya, 2013; P. A. Diamond, 1965), which allow for the understanding and analysis of how households that are taxed to repay public debt, might not be the same ones benefiting from the spending and investment funded through it.

Going back to the non-material dimensions of wellbeing, psychological studies on the psychology of wellbeing have pointed out the difficulties of understanding, and even more, measuring the relationship between ways in which we traditionally determine value and ways in which people perceive value, particularly when the time dimension is added (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Oishi, 2012). Such studies have demonstrated that human beings seem to have a sense of wellbeing that is split between short- and long-terms; short-term being less linked to material wealth, and long-term more dependent on it. These senses of wellbeing are also split between the quality of

professional and material achievement and the quality and quantity of personal relationships; the happiest people are those with the best relationships, yet they do not reach levels of professional success that others who seem to be less happy do. Nevertheless, ultimately, these studies also find that satisfaction with our own lives is highly dependent on how our own societies define what should make us feel satisfied; these factors usually include high quality social relationships, access and level of social support, and mutual trust. These seem to be even more important than material wealth (Oishi, 2012). Finally, these studies also show that there seems to be a lack of continuity between what makes individuals happy and satisfied with their lives and what seem to make nations happy as a whole (Oishi, 2012).

While these debates have brought overall agreement that wellbeing is a multidimensional concept far more complex than just material value and wealth, the underlying importance that material aspects have on the non-material ones cannot be overstated. This has also led to a general agreement that higher degrees of inequality in the initial distribution of wealth and higher inequality in the distribution of income, both do prevent optimal economic growth and wealth formation (Biggs, 2015; Costanza et al., 2015; Galor, 2011; Kümmel, 2011; Sengupta, 2013). Increasingly, wellbeing is measured through new approaches and indicators; for example, the Inclusive Wealth Index (IWI) (UNU-IHDP and UNEP, 2012, 2014); World Bank's Adjusted Net Savings (ANS) (Managi, 2015); the UNDP's Human Development Index (HDI) (Managi, 2015); and the Happy Planet Index (HPI) (Managi, 2015). Furthermore, other measuring tools, like Planetary Boundaries or the Ecological Footprint (Managi, 2015), focus on helping to understand and address challenges of intergenerational natural wealth equity.

The problem, however, is that no agreement has been reached on how to deal with inequality in the achievement of wellbeing. On one side, neoclassical economists, relying on their welfare theorems, argue that the only effective way in which inequality can be addressed without making everyone worse-off is by redistributing initial wealth endowments (Athreya, 2013), and that any other mechanisms are doomed to fail. Furthermore, most economists address the problem of intertemporal wellbeing by relying on the idea that, if markets get the net-present value of wealth right, inter-generational equity can be achieved. What is needed then, they argue, is to improve markets (UNU-IHDP and UNEP, 2012, 2014). Environmental economists argue that, unless most components of wealth and wellbeing are measured and internalized into the economic system and its markets (through prices), inequality in both the intra- and inter-temporal dimensions will remain unchecked (Biggs, 2015; C. Hall, 2012; Managi, 2015; Sengupta, 2013; UNU-IHDP and UNEP, 2012, 2014, World Bank, 2006, 2011). Ecological economists, in turn, advocate incorporating the limits of the biosphere and its ecological system on which human life depends on into the global economic system, as the only real way to ensure intertemporal wellbeing (Common, 2014; Daly, 2004; Sengupta, 2013).

Table 3.1. Wealth and wellbeing key messages

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|---|
| <ul style="list-style-type: none"> • <i>Wellbeing</i> results from material and non-material <i>value</i>, as perceived and experienced by human beings. <i>Wealth</i> and its proceedings are only <i>wealth</i> in as much as they contribute to <i>wellbeing</i>. • While <i>wellbeing</i> can be understood at both individual and social levels, societal <i>wellbeing</i> cannot be optimized if inequality is not minimal. Likewise, short-term <i>wellbeing</i> is not necessarily consistent with long-term <i>wellbeing</i>. Even |
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Table 3.1. Wealth and wellbeing key messages

when countries may express different preferences with regards to *wellbeing*, the survival of the human race and the biosphere, which makes its life possible, is not dependent on human choice but on its physical realities.

- In the final analysis, all *value* comes from the energy that keeps Earth's biosphere functional, and that allow human beings to exist and use their knowledge and capabilities to extract *value* from wealth and to structure social, economic, and political arrangements (the *material and social structures*) in increasingly better ways and forms.
- *Wealth* is composed of *natural capital* (in the form of endowments and services provided by nature), *intangible capital* (human-produced knowledge that increases the productivity of *value* generating activities); *tangible capital* (both mobile—machinery, tools—and fixed—buildings, roads, public services); *social capital* (organizations, laws, traditions, value, culture—all allowing human beings to achieve more as a collective, than what they can achieve individually); and *human capital* (human beings' biological, intellectual, and psychological capacity that allows them to procure for their own and the collective *wellbeing*). Most of these *classes of assets* derive their *value* from *human capital's* capabilities to discover and realize the relative *value* embedded in them; in turn, *human capital* derives these capabilities from the opportunities that *natural capital* allows them to have by being alive in the first place. With no energy, there would be no biosphere; with no biosphere, there would not be human beings and others forms of life; and without human beings, any sort of a live or inert entities would be just lonely objects floating around in the universe, in a planet called Earth, with no purpose beside their mere existence.
- The *wealth* of a country, however, is not only dependent on these individual *classes of assets*, but most importantly, on the overall portfolio and the way in which these relate to each other. The total *value* that can be extracted from the portfolio is bigger than the summation of the *value* that can be extracted from

Table 3.1. Wealth and wellbeing key messages

<p>them individually. <i>Assets</i> can sometimes and in certain conditions substitute and complement each other at different degrees, and they also exert feedback loops on each other (although not completely, nor all of them).</p> <ul style="list-style-type: none"> • The material aspects of <i>wellbeing</i> are better known as they have physical points of reference; individual and social psychological aspects of <i>wellbeing</i> are harder to understand and measure, but, nevertheless, they are the ones on which “real value” lies. • Money and debt tend to create confusion both in the perception and analysis of what value and wealth are. They also have real implications in the ways in which society functions. They both play a role in bridging past and present, and through this role they also have real implications in equality and sustainability. As a consequence, while monetizing wealth can help commensurate incommensurable <i>classes of assets</i> and internalize more elements that play a role in the achievement of wellbeing, doing so also introduces distortions in perception and confusion that can have real negative consequences, particularly distributive ones that can create and reinforce social, economic, and political inequality.

Natural structures.

Even when human ingenuity is the driver of any kind of progress, progress is bounded because human life and all its outcomes are themselves ultimately bounded by the natural structures that their bodies, environment, the biosphere, and the universe impose on them (through organic and inorganic processes) (Kümmel, 2011; Wolpert, 2016). Natural structures also bind both the material and social structures (Grubb, 2013). Human ingenuity does not shift the limits imposed by these structures but actually works its way towards them: what humanity may regard as limits at one point in time might not

necessarily represent actual limits, but instead limitations in human knowledge. While preindustrial societies were bound by organic and inorganic constraints only, industrial and post-industrial societies, which have used technology and energy inputs to extend organic capabilities, are now bound also by technological constraints. While these bounds can be pushed further out through human capital's creative and innovative capabilities, there are ultimate physical limits that cannot be transgressed (Emmott, 2013; Georgescu-Roegen, 1971; Kümmel, 2011; Wolpert, 2016)

At the most basic level, the laws of physics are the outer bound to which human life is subjected; specifically, the laws of conservation and transformation of energy given by the first and second laws of thermodynamics. This means that perpetual exponential growth is impossible since nothing can happen without energy conversion and its resulting entropy (Georgescu-Roegen, 1971; Kümmel, 2011; Soddy, 1924; Wolpert, 2016). The biosphere is a semi-closed system (one where limited exchanges with its environment takes place—it allows for energy inputs from the Sun) and, as a consequence, the internal services it provides carry limited capacity. As a consequence, increased growth reaches a point where pollution has to be abated through increases in energetic inputs. A point is invariably reached where the costs of abating pollution are higher than the value created through the activities that produce it, rendering them unfeasible in the long-term (Georgescu-Roegen, 1971; Grubb, 2013; Kümmel, 2011; Wolpert, 2016).

The biosphere, then, imposes limits to human activity given by its carrying capacity, and the timelines by which the services it provides are bound within it (Emmott, 2013; Georgescu-Roegen, 1971; Grubb, 2013; Kümmel, 2011; Soddy, 1924). For

example, it has been estimated that once carbon dioxide emissions are brought back to acceptable levels (those within the carrying capacity of the biosphere—planetary boundaries) (Managi, 2015), it will take the biosphere about 300 years to deal with the excess stock of carbon emissions accumulated. In general, the atmosphere, oceans, and cryosphere display high levels of inertia, considering the timelines in which they operate to be of 50 to 100 years (Grubb, 2013). Furthermore, in the same way that the distribution of natural capital and human characteristics is unequal, the distribution of several of the effects that human activity has in the biosphere is unequal too. At a macro level, for example, while developing countries are historically responsible for less than a third of the cumulative of carbon dioxide emissions over the last 50 years, they are expected to endure about 75 percent of the damages caused by this accumulation (Grubb, 2013; Managi, 2015; Spence, 2011). Similarly, at the micro level, pollution that occurs in a specific place does not stay there but may, in fact, actually accumulate in spaces whose inhabitants played no part in the polluting activities nor attained any benefits from such activities (J. Diamond, 2006).

At a different level, other natural structures further bound the limits of human creative and innovative efforts (Wolpert, 2016). The biological limits imposed by the human body are further bound by events that surround its development from their conception, as well as other events that may have short, medium, and long-term consequences in their capabilities. Keating (1999) and Bloom (2013) provide compelling arguments and evidence about the important effects that specific windows of opportunity and the events that take place during these windows have in the shaping of health, cognitive, and behavioural gradients. In particular, the first two years of life have proven

to be key in binding the potential of human beings. Moreover, biological and psychological characteristics of the gendered biology of living beings also influences economic and social behaviours, as well as play a role in terms of skills possessed (Eswaran, 2014).

Natural structures, then, bound the creation, formation, and use of wealth, and therefore bound, as a consequence, the extraction of value from it and the attainment of wellbeing. Furthermore, natural structures allow for random unforeseen natural events to take place that can have considerable impact on wealth and on the capacity of human capital to extract value from it. Natural events and disasters that cannot be controlled, need to be planned for by managing risks, by increasing preparedness, and by building resilience, all within the realm of material and social structures (Benson & Clay, 2004; Commission on Global Governance, 1995; Committee on Assessing the Costs of Natural Disasters, 1999; Richardson, 2014).

Table 3.2. Natural structures key messages

- *Natural structures* bound all *classes of assets*. They also bound *material and social structures*. The human understanding of the bounds imposed by these *natural structures* is, in turn, bound by knowledge and technology. While increased knowledge and technology may change our understanding of these bounds and our possibilities within them (allowing us to move closer to the limits), it does not change them.
- Perpetual exponential growth is theoretically impossible given the laws of thermodynamics. Bound by the laws of physics, the biosphere provides services that are limited in capacity and that, in turn, limits possible growth. Therefore, there is always a theoretical point where the costs of growth exceed its benefits.

Table 3.2. Natural structures key messages

- The operating timelines by which certain *natural structures* in which our way of life is deeply ingrained, usually extend between 50 to 100 years (although there are many others that operate in timelines of thousands and millions of years). Nevertheless, specific anthropogenic changes might have impacts that extend beyond those timelines and therefore pose intergenerational consequences, particularly in terms of equity in *wellbeing*.
- *Natural structures* do not ensure equally distributed impacts. This poses a challenge in terms of the distribution of *wealth* and the *wellbeing* that draws from it.
- *Natural structures* provide specific windows of opportunity for the formation and improvement of different *classes of assets*. Events that take place in the course of these windows, define function gradients that bound the potential of these *assets* to create and extract *value* and, therefore, to contribute in the attainment of *wellbeing*.
- *Natural structures* cannot be controlled in every circumstance. They allow for random and unexpected events that can have sizeable impacts on *wealth* and its potential to create and extract *value*. These events can only be planned for and managed so as to reduce their impact. They are not equally distributed across the world and therefore do not affect all countries or individuals in the same way.

Natural capital: natural endowments and natural public goods.

Human existence is bound to the ecosystem in which it takes place. Therefore, the ecosystem and all its constituents are the most important natural endowment humanity relies on for its subsistence. In turn, this ecosystem cannot itself exist without the constant influx of energy received from the Sun (Common, 2014; Daly, 2004; Georgescu-Roegen, 1971; Grubb, 2013; Kümmel, 2011).

Contemporary views of what constitutes natural capital have considerably expanded from those of the past. Besides land, mineral, and organic resources as inputs of economic activity, the idea that the ecosystem provides ecological services, as well as recreational ones, has become part of a commonly shared view about the potential of natural capital to generate value (Helm, 2014). Broadly speaking, natural capital can be classified into: (a) renewable sources which are mostly organic (e.g., fisheries, vegetation, soil, wild and domestic life-forms); (b) non-renewable sources which are mostly inorganic (e.g., minerals, organic energy sources); and (c) ecosystem services (e.g., provisioning, regulating, supporting, including cultural and wellbeing services). The first two of these correspond to stocks from which flows can be extracted in order to consume, or to further accumulate into human made capital; the last one corresponds to the services (these have a limited capacity) without which life cannot be sustained and supported (Common, 2014; Daly, 2004; Managi, 2015; Sengupta, 2013).

The challenge faced with regards to natural capital is that the ecosystem, and, therefore, human life, are fragile. Their existence depends on a number of very complex relationships that exist in a precarious balance with each other and that do not relate to each other in linear ways (J. Diamond, 2006; Grubb, 2013; Kümmel, 2011; Sengupta, 2013). Different components of the ecosystem possess different dynamics and time-paths (e.g., they go through different sorts of oscillations and cycles, some through equilibrium and disequilibrium). Some undergo a process of succession (e.g., the species composition of an area evolves from less to more complex—for example, the transformation of grasslands into shrubs and into pine forests and then into hardwood forests, all over a period of 100 years or so)—some show remarkable resilience towards external shocks

without their own dynamic changing that much in spite of them; others display threshold effects (e.g., non-proportional impacts—small changes create exponential impacts); others are sensitive to bio-magnification (e.g., when a combination of factors build on each other to magnify an original effect); others are prone to synergy (e.g., by combining effects into something bigger than themselves); and some others are entropic (e.g., disorder and waste increases) (Common, 2014). All of these characteristics point to non-convex substitution, complementary, and price elasticities among different kinds of natural capital, and, perhaps, among natural and produced capital (Common, 2014; Daly, 2004; Grubb, 2013; Sengupta, 2013).

As previously discussed, the timescales at which these relationships exist and hold are very different, ranging from decades and centuries for atmospheric and hydrological processes (for example, to process out greenhouse emissions of methane, it takes the atmosphere about 10 years, while to do the same with carbon dioxide, it takes it about 100 years), to millions of years in the case of geological process. These become a challenge when human beings make use of natural capital in ways in which their demands over time exceed those that the ecosystem services' capacity, as well as the natural limits of the renewable and non-renewable resources, allow for (Common, 2014; Sengupta, 2013). In fact, as Sengupta (2013) explains, by some estimates the current ecological footprint of human beings already exceeds the bio-capacity of our ecosystem.

There are many ways, then, in which societies can undermine their environment. Diamond (2006) proposes at least 12 categories: (a) deforestation and habitat destruction; (b) soil degradation; (c) water mismanagement; (d) overhunting; (e) overfishing; (f) introduction of non-native species; (g) human population growth; (h) overall increase in

per-capita impact of human beings on the environment; (i) human-caused climate change; (j) build-up of toxic chemicals in the ecosystem; (k) energy shortages; and (l) full utilization of photosynthetic capacity. In turn, Biggs (2015) offers a number of principles to reduce society's impact on the environment: (a) maintaining diversity and redundancy; (b) managing connectivity among its components; (c) managing slow variables and the feedback they provide into the system; (d) managing the environment as a complex system; (e) encouraging learning and experimentation that leads into more effective and efficient use; (f) using a form of poly-centric governance; and (g) monitoring and responding opportunely to emerging asymmetries.

Grubb (2013), among others (for example Daly, 2004), showcase how “defensive” or “protection” expenditures aimed at reducing or avoiding societies' burdens in the ecosystem, as well as at minimizing the risks of the ecosystem impacting human life, tend to have relatively high payoffs. For example, the assessment of the Clean Air Act in the US concluded that the costs incurred in protecting the environment between 1970 to 1990 produced benefits worth more than 40 times those costs (Grubb, 2013, p. 9). Among environmental policy instruments that have been proposed and used are: (a) market-based regulations; (b) command and control instruments (e.g., emission licenses, minimum technological requirements, location restrictions); (c) taxation; (d) tradable permits; and (e) environmental performance bonds (Common, 2014; Daly, 2004).

From the understanding of these realities, concepts like “maximum sustainable yield,” “critical dispensation point,” and “bio-capacity” have emerged as theoretical constructs that can enhance our capacity to understand the limits of our environment

(Daly, 2004; Sengupta, 2013). Kummel (2011), for example, suggests that social structures should limit material progress based on the limits of organic and inorganic processes.

This complex fragility requires delicate management and awareness about the implications that individual and collective decisions have in the resilience of the ecosystem and organic life in it (Bairoch, 1975; J. Diamond, 2006; Spence, 2011). While different approaches have been proposed to facilitate this management process, they all build on the idea that measurement is essential, and that, currently, we lack measuring instruments and standards to make sensible decisions about our environment, as well as to understand our impact on it (Helm, 2014; Managi, 2015; Sengupta, 2013; UNU-IHDP and UNEP, 2012, 2014, World Bank, 2006, 2011).

At the macro level, changes to national economic accounts have been proposed and are increasingly integrated into national income accounting statistics standards. At the micro level, methods to measure the content of natural capital in products traded and consumed have also been proposed. Among these many attempts are: (a) the concepts of Net Domestic Product (NDP) (which includes appreciation and depreciation of natural and human capital, and, more specifically, state of depletion of non-renewable resources, under- or over-use of renewable resources, and overall state of the ecosystem); (b) Social Value (the net present value of all current and future flows from natural capital that contribute to income and wellbeing); (c) Standard National Accounts (SNA) and the System of Integrated Environmental and Economic Accounting (SEEA) (allows for the integration of environmental accounting into national accounts both in terms of physical volume, as well as monetary value); (d) Millennium Ecosystem Assessments (MES)

(aims to measure provisioning, regulating, and cultural services from the environment); (d) Living Planet Index (measures biodiversity as a proxy of the health of the ecosystem); (e) Ecological Footprint (provides estimates of the human demand on natural resources); (f) Embodied Environmental Impact Indicators (EEI) (provides evaluation indicators of the equity in the allocation of natural resources as measured by what is embedded in consumption); and (g) the Inclusive Wealth Index (IWI) (provides a monetary quantification of the wealth of nations that serve as a benchmark in time and across countries of the evolution of their stocks of wealth) (Common, 2014; Helm, 2014; Managi, 2015; Sengupta, 2013; UNU-IHDP and UNEP, 2012, 2014).

An area where better measuring instruments and standards is critical is that of the process of development. Because of the fact that increased levels of wellbeing per capita require an increased per-capita footprint in the ecosystem (under the current natural, material, and social structures), it is of particular importance to understand, not only the ways in which countries use their natural capital, but also the ways in which this capital is exchanged due to international trade. This understanding goes well beyond what the traditional national income accounting systems allow (Daly, 2004; Managi, 2015; Sengupta, 2013).

Some of the measurement approaches described above contribute in tackling these limitations and needs. For example, an approach that is particularly useful in helping in accounting for wealth transfers resulting from inter-country flows is the Embodied Environmental Impact Indicators (EEI) (which require the internalization of all natural resources and services used in production). There are two approaches towards constructing these indicators (Daly, 2004; Managi, 2015; Sengupta, 2013): (a) bottom-up,

consisting in tracing the environmental impact of each step involved in the production of goods and services (examples of these are the GHG from the World Resources Institute; and the ISO-14064 from the International Standards Organizations, among others); and (b) top-bottom, which relies on macro input-output analysis to determine the overall transfer of natural capital by sector (these does not allow for the understanding of the environmental impact of specific products or companies—some examples include the Single-Region Input-Output Model (SRIO), and the Multi-Region Input-Output Model (MRIO)).

According to Managi (2015), EEI indicators can be instrumental in the achievement of global sustainable development because they not only help quantify interdependence among countries in terms of natural capital, but also because they help raise awareness of how consumption impacts the use of local and foreign resources.

In his book *The economics of green growth: new indicators for sustainable societies*, Managi (2015) presents a case study where water use embodied in the world trade of products is quantified for countries with a population over 20 million. It differentiates between water used for consumption and for production. The study shows how, for example, countries like Japan do not possess enough water to cover their own consumption; they virtually import water through the products they consume thanks to international trade; and if they were to maintain their consumption levels in a world with no international trade, they would need the equivalent of about 1000 percent of the water their current sources provide them with. This example begs the question of whether the current pricing system considers, and therefore assigns a price to this real transfer of natural capital in the form of water, from one country to another. It also begs the question

of whether the price assigned, when one exists, truly reflects the current and potential value of the water transferred. Similarly, it begs the question of whether such exports and imports of embedded natural capital are creating unsustainable use-patterns that lead to its unequal degradation or depletion in ways we do not know, measure, nor understand. Following a similar approach but focusing on India only, Sengupta (2013) uses an input-output table to record transfers of natural capital among economic sectors, showcasing the possibility and usefulness of such analysis, even if yet rudimentary.

Such transfers of natural capital are key to the wealth of nations, not only when seen through the lens of classical comparative advantage economic theory, but even under the less of “new” trade theory (Helpman & Krugman, 1985), which, in spite of opening room for additional factors like increasing returns to scale and network effects, nevertheless confirms the important role that national factor endowments continue to have in determining trade patterns and potential winners and losers. A lot depends, then, on the accuracy of market prices, preventing that current trade does not have negative intertemporal consequences on the wellbeing of trader nations.

Table 3.3. Natural capital key messages

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| <ul style="list-style-type: none"> • The ecosystem is the most important natural endowment humanity has. The ecosystem itself is fully dependent on the energy influx from the sun. • Natural capital can be classified into: (a) non-renewables or inorganics (stock), (b) renewables or organics (stock and flow), and (c) ecosystem services (flow). • The ecosystem is a complex web of interrelationships that are not linear but complex. Each component of the ecosystem behaves too in a complex way and is characterized by different dynamics and time-paths ranging from decades, to |
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Table 3.3. Natural capital key messages

hundreds or millions of years.

- Natural and man-made capital relate to each other through non-convex substitution, complementary, and price elasticities.
- Transgressing the limits allowed by natural capital undermines the ecosystem. These limits could be understood as maximum sustainable yields, critical dispensation points, or bio-capacity, among others.
- Maintaining the diversity, redundancy, and connectivity of natural capital contribute to reducing society's impact on it. It also pays off to use environmental policy instruments to protect the environment.
- Natural capital should be managed as a complex system through forms of polycentric governance. This means too, managing any emerging symmetries, as well as the slower variables and the feedback they provide. In order to do this, learning and experimentation needs to be allowed.
- Managing natural capital is as complex as the dynamics of the natural capital themselves. Comprehensive measurement and monitoring are required for better management: stocks and flows need to be measured both in real and monetary terms; absolute and relative limits need to be constantly monitored and validated.
- Transfers of natural capital between countries and local economic actors take place (besides obvious direct capital exchanges) through amounts embedded in products and services that are nationally and internationally traded. Empirical evidence shows how some countries are consuming and using natural capital beyond their own possibilities, while others are depleting and destroying their natural capital to fulfill the consumption of other countries without necessarily obtaining an equivalent, or at least similar, amount of wealth in exchange. These exchanges have a direct impact on countries' potential to achieve and maintain *self-reinforcing state*, as they do involve a literal exchange of *wealth*. These exchanges of wealth are not always properly priced despite of their potential intertemporal effects on wellbeing.

Material structures.

Material structures (e.g., energy transmission, transportation, and other public services infrastructure, as well as technological choices) facilitate the process of development and the attainment of wellbeing. However, they also impose real and opportunity costs, as well as important constraints to change (North, 2005; Stiglitz & Lin, 2013; Thrift, Tickell, Woolgar, & Rupp, 2014). These types of structures, and the systems that support them cannot be changed overnight (Georgescu-Roegen, 1971; Grubb, 2013; C. Hall, 2012). As a result, the degree of flexibility that the material consequences of social choices embed in material structures, facilitate or constrain social, economic, and political change (Aoki et al., 2012; C. Hall, 2012; Kümmel, 2011; Thrift et al., 2014). In fact, Grubb (2013) suggests that, due to the constraints currently imposed by material structures, humanity consumes about ten times more energy than is physically necessary to provide for the services demanded.

Geoffrey West et al. (L. M. A. Bettencourt, Lobo, Strumsky, & West, 2010; L. M. a Bettencourt, Lobo, Helbing, Kühnert, & West, 2007; Kühnert, Helbing, & West, 2006; Luis Bettencourt & Geoffrey West, 2010) show display the relationship between population size and the size of their infrastructure and supply network show a scaling relationship, hence demonstrating the relevance and pervasiveness that the material implications of human choice and action, and the resulting material structures have.

Material structures, then, provide real and tangible incentives to reinvest in their maintenance and enlargement, rather than in disrupting and replacing them. As a consequence, the deeper they are seeded into a mutually-reinforcing circle with the social structures, the more pervasive they become in influencing all sorts of social, economic,

and political decisions and their physical and financial lifespans (Grubb, 2013; Kümmel, 2011). Ultimately, technology, infrastructure, and institutions all have material consequences in creating path-dependence for any process of change, and, while incentives and policies may push in alternative directions driven by innovation, they will be constraint by these material structures and the incentives they create and entrench (Grubb, 2013; Kümmel, 2011; Thrift et al., 2014).

Table 3.4. Material structures key messages

- Material structures (e.g., public services infrastructure, materialized technological choices) both facilitate and constraint social, economic, and political change. They create certainty but they also create incentives against innovation given the size and timespan of the investments required. They are extremely intrusive in that they touch almost every aspect of human life.
- Material structures cannot be changed overnight. More flexible material structures, then, seem to be more conducive to change than inflexible ones.

Social structures: social, cultural, psychological, and spiritual capital.

Human beings, in all their individual capacity and ingenuity, cannot individually achieve as much as they can through cooperation with other individuals (e.g., peace, health, trade, justice, equity, environmental sustainability). However, for cooperation to take place, interpersonal organization, formal or informal, is required (Arrow, 1974; Benkler, 2006; Cronk, 2013; Godfrey, 2014; Hartmann, 2014; North, 1990, 2005). Likewise, cooperation is required for interpersonal organization to occur in the first place. Cooperation presents coordination and control problems that need to be addressed

(Godfrey, 2014; Pomerantz, 2004; Surowiecki, 2004). Therefore, it is perhaps in the capacity of societies to deal with these social dilemmas presented by cooperation, that the value of social capital lies (OECD, 2001; Oishi, 2012).

Cooperation cannot be forced nor reduced to only one form or mechanism (Hartmann, 2014). Originally, it relies on trust, which usually can be established mainly at the personal level among small or medium sized groups. As the groups get bigger, more formal rules are required, as well as the formal and informal organizations to enforce them. Both these rules and the organizations they are embedded into can potentially create and maintain impersonal trust (Bowles, 2016). Nevertheless, in order for organizations to be functional, individuals need to sustain a relationship of trust with the organizations themselves, which is somewhat dependent on other individuals doing the same. It remains, nonetheless, a collective action issue, subjected to free-rider issues, and the coordination and control challenges discussed above, among many others (Arrow, 1974; OECD, 2001; Reynaud, 2002).

Along with trust, concepts of respect, concern, and consideration for others; discipline; altruism; and other social and cultural values, all contribute to strengthening the role organizations have in a society, as well as their effectiveness. What has been termed social, cultural, psychological, or spiritual capital, is what makes cooperation possible (Morillo, 2014; O'Sullivan, 2012; OECD, 2001; Oishi, 2012; Rima, 2013). In the final analysis, the social structures that result and underpin human cooperation are the evidence of the commonalities that exist among the people that creates them—even if it is at some basic level (Arrow, 1974; Hartmann, 2014; O'Sullivan, 2012; OECD, 2001; Pomerantz, 2004; Rima, 2013; Surowiecki, 2004). As discussed in Chapter 2, these are

the same commonalities in forms of life, the language-game of daily life, which Wittgenstein argues about in his philosophical analysis.

These capacities to understand, relate, and collaborate with each other, and perhaps more importantly, trust each other (the social and emotional intelligence of people) are the fuel that makes social, economic, and political change possible (Hamilton, Helliwell, & Woolcock, 2016; OECD, 2001; Oishi, 2012). In the end, seeking trust is equivalent to seeking reduced uncertainty (Aspers, 2011; Meltzer, 1988).

Success of rules and organizations is not guaranteed only by their creation; they have to be validated through societal internalization. This internalization process, through its inner workings towards validation and routine setting, gives rules and organizations a strength in creating solid social structures that they do not possess by their mere theoretical existence (Godfrey, 2014; Reynaud, 2002; Surowiecki, 2004). The social structures created have many layers: from the family unit; to community; enterprises; local, regional and national governments; and the global order (Hartmann, 2014; North, 1990, 2005).

By their nature, rules are neither exact nor specific. Rather than providing precise and complete instructions for every single possible individual and collective action challenge, impossible in principle, they create a space and incentives within such a space that signal to both individuals and collectives—and allow them to signal each other—about socially-acceptable and desirable actions and courses of action, as well as about the cognitive instruments and approaches that enable individuals and collectives to share a vision and understanding of the world.

Human understanding relies on experience, both contemporary and historical, and

this experience is not all laid out clearly in the open; a very relevant part also lies hidden within language, culture, cosmologies, traditions, and even within our genes (North, 2005). Rules, which are theoretical, do not mean much until they are converted into routines that are practical (Arrow, 1974; Chang, 2003; Jean Cohen, 2012; Godfrey, 2014; Hartmann, 2014; North, 1990, 2005; Pomerantz, 2004; Reynaud, 2002; Roth, 2015; Surowiecki, 2004). “Rules do not have any meaning in themselves; rather the meaning of rules lies in their use.” It is the resulting routines that give rules and organizations a sense of identity, as well as stabilize them as part of a social structure (Reynaud, 2002, p. 121).

Ultimately, space created by social structures allows for success and failure to take place (Athreya, 2013; Pinto, 2014). The more options and freedom available in this space, the higher the probability that net positive outcomes will result (Athreya, 2013; Benkler, 2006; Hartmann, 2014; Wolpert, 2016). As Nobel Prize laureate in Economics, Tinbergen (1962), argues, a conducive economic order requires both broader spatial and temporal horizons. Cohen (2012) calls this space, following Leijonhufvud’s corridor hypothesis, a “corridor of confidence,” a space in time through which social, economic, and political forces flow. Creating such a space or corridor is difficult, not only because it is a lengthy, complex and fragile enterprise, but also because undoing any progress made is a fairly easy and short-term affair (OECD, 2001).

It is precisely in this micro-feature of human interaction, the need to internalize coordination through routine setting, where part of the complex characteristics of society come from. Facing the same set of rules, two groups of people will engage in the process described above to, in the end, create different sets of routines. What these sets will be is extremely hard to predict; what the emergent properties of these sets of routines will be

for the overall collective, even harder (Hartmann, 2014; Miller & Page, 2007; Page, 2011; Reynaud, 2002). Furthering this level of complexity, there are now a number of pervasive media channels through which social, economic, and political change is influenced, particularly the newest ones (e.g., social networks, internet) (OECD, 2001).

Hartmann (2014), among others, argues that it is this process of validation, stabilization, and identity creation, what makes growth possible, and not the traditional “ingredient-based” factors that are usually showcased by economic growth models (e.g., knowledge, innovation, physical capital, labour). It is, in fact, through this stochastic process that mechanisms of social coordination and exchange to deal with uncertainty and build trust are created (e.g. markets, networks, and hierarchies). These are all solutions to the coordination and control problems that human cooperation present. Some of these challenges are better addressed by some instruments and actors, and some by others—there is no rule that says private enterprise is universally better than public action, or that price-driven markets are always superior than any other mechanism to allocate scarce resources or possibilities. Specific institutional arrangements are required for dealing with specific problems. In fact, several scholars argue that governmental action tends to be more effective at dealing with the internalization of social costs and with other intangible categories like trust, empathy, and other social feelings (Alpert, 2014; Arrow, 1974; Aspers, 2011; North, 2005; Roth, 2015). In particular, research by Nobel Prize winner in economics, Roth (2015), showcases the relevance that matching markets (those where traditional pricing do not play a role) have in solving some of these coordination and control issues. Furthermore, all of this relates, too, to the ideas of the political system being a black-box, as developed by Easton (1971).

This is yet another example illustrating the point made in the previous chapter following Wittgenstein's ideas about the uses of language and how they "muddy" the waters of our analysis and discourse. In particular, the debate between libertarians and socialists about the possibility of social, economic, and political planning, is a case in point. Libertarians are completely opposed to any sort of planning, while socialists are convinced of its need and importance for the success of society (Ebenstein, 2015). When approached from a non-ideological view, it could be argued instead, that experience has demonstrated that certain solutions devised through that stochastic process of internalization and routine making, including planning itself, have proven remarkably successful in achieving effective and efficient results—albeit not always (e.g., matching markets (Roth, 2015) and wisdom of crowds (Surowiecki, 2004)). As discussed in Chapter 2, some sort of planning is practiced in most human societies regardless of their ideological preferences, some with more success than others. We might still be "limping" our way (Roth, 2015) towards better planning, but this does not mean that it cannot be done. Perhaps the key is determining what can and cannot be planned, rather than planning comprehensively. As Meltzer (1988) argues, planning might be beneficial only if it is attempted for those things that individuals and business cannot do on their own, not for those they can.

An important question remains, however, with regards to whether the space created by social structures is, can, or should be the same for all individuals and collectives within it (Chang, 2003; Hartmann, 2014; Keating, 1999). For example, by establishing the breaking of certain rules as crimes, human beings create social structures in which those who break them enjoy a narrower space or corridor with less freedom.

However, there are subtler, or even plainly explicit ways in which these same limitations in space and freedom are imposed informally (e.g., ethnic and cultural discrimination), or even formally (e.g., reinforcing entitlements that perpetuate differences between individuals and collectives). It seems, that absolute equity might be difficult to achieve, and rare in practice. In fact, evidence suggests that human networks that starts from inequality tends to replicate inequality (Chang, 2003; Hartmann, 2014; Keating, 1999). What a society decides to do about these limitations of human interaction is yet another layer that adds complexity to social structures. This is one of those shortcomings that require proactive addressing (Hartmann, 2014). Effective and efficient social structures embed mechanisms to continuously adjust against the frequently unintended consequences, as well as intended ones, that result from the coordination and control challenges that human cooperation present. Once again, it is in the sophistication of these capacities that the value of social structures lies.

How does this process of internalization and routine-setting work? Some suggest that this process cannot all be made explicit or accurately codified; that there exist levels at which individuals and collectives communicate for which our current capacity to articulate them escapes us. In fact, the contribution and relevance of this process may lie precisely on its abstract nature and adaptability (Arnsward, 2009; Arrow, 1974; Dopfer, 2006--see several examples in this edited volume; Godfrey, 2014; Hayek, 2007; Reynaud, 2002; Tyler, 2011). As Kertscher (2009), drawing on Wittgenstein, puts it,

The kind of consensus on these practices that exist in such a system is not the result of a rational consensus building, but is rather created by a common way of life. Only this common aspect facilitates the identification of valid norms; and it

can be described as a complex process of participation in socially diverse practices, language-games and discourses that provide the context for what may be called in this sense the basis of a line of argument. (p. 100)

Nevertheless, it is usually acknowledged that the more intelligible and manageable information is codified and openly shared among as many individuals and collectives as possible, the better cooperation can be, and the bigger the benefits of collective action can be. Social structures that improve the way and extent to which information flows and the way it is managed tend to be more effective in achieving the ends to which they were formed to contribute to (Arrow, 1974; Athreya, 2013; Hartmann, 2014; Reynaud, 2002; Roth, 2015).

A branch of economics—mechanism design—precisely takes aim at what occurs within this space created by social structures, as well as the creation of mechanisms to influence what happens in it. For example, mechanisms are proposed to not only reward participants to display their true behaviour (share true and complete information with others), but also to try and make certain collective choices into a dominant social strategy that can lead to a specific equilibrium outcome—a social choice function (Athreya, 2013).

While the state-of-the-art of our knowledge offers a few pointers of how that process within the space created by rules and routines takes place (e.g., preferential attachments, small-world phenomena, scale-free attributes), these are only broad generalizations. The Gibbard-Satterthwaite theorem states that no policy or incentive can outsmart social preferences spontaneously expressed by a collective. In this context, Nash equilibria (situations in game-theory in which participants, who are already considering

the strategies of others, cannot improve their outcome by changing their own strategies (Athreya, 2013)), allow for an alternative intermediate solution through which, rather than aiming at introducing incentives that lead to one specific action, a range of possible outcomes are considered and incentivize in ways in which the probability of some of these outcomes are higher than others (this is also supported by Titmuss (1971)).

Specifically, the infinite-dimensional spreadsheet of Arrow-Debreu present a space where all possibilities could be assigned a probability (Warsh, 2006). And, while this approach has its critics (e.g. Romer, 1993) due to its assumption that all the possible past, existing, and future consumption goods can be represented, it could be repurposed, not to represent goods, but to represent more general states or other possibilities.

Debate on how much of what happens within space created by rules and routines can be shaped through policy is far from conclusive (Athreya, 2013), in particular about the balance of positive and negative effects resulting from attempts to do so (Bowles, 2016). (See also Cartwright's (1999, 2010) ideas about our "dappled world"). Even Adam Smith (2002) said,

In the great chess board of human society, every single piece has a principle of motion of its own altogether different from that which the legislature might choose to impress upon it. (p. 275)

Still, in the spirit of neoclassical economics and its underlying mechanistic logic (rather than an alternative thermodynamic one), the search for the "holy grail" to find specific causes to specific human actions, both individually and collectively, continues (Richmond, 2013). What these reveal, though, is that many of these attempts are trying to change the outcomes of human action without really addressing their causes (Georgescu-

Roegen, 1971; Meltzer, 1988). For example, as Eswaran (2014) suggests, while millions of dollars are invested to try to directly reduce child mortality by providing health services, several empirical studies have shown that, albeit an indirect route, investing in women's education might be much more effective. Meadows and Wright (2008) point out to the common mistake made in economic theory and modelling to forget that as a complex system, flows do not respond only to direct intervention, but also to system changes that have to do more with stocks.

Rules and routines are shaped by environmental and social conditions, as much as they affect them in return. In fact, in a world of continuous change, rules and routines need to continuously adjust if they are to remain relevant (Aoki et al., 2012; Benkler, 2006; Galor, 2011; Grubb, 2013; Nelson, 1982; North, 2005; Reynaud, 2002). This not only applies at the country level. International structures are also an extremely important part of this process and influence it greatly, as well (Aoki et al., 2012; North, 2005).

Likewise, rules and routines not only facilitate orderly social cooperation, they too impose costs on individuals and collectives (Stiglitz & Lin, 2013). Overall, social structures embed in them social choices about plurality, effectiveness, efficiency, and equity, even when these choices do not seem so evident (Athreya, 2013; Chang, 2003; OECD, 2001). Furthermore, and also in regards to the important role of global social structures, part of the challenge currently facing humanity lies in the fact that many coordination and control issues have a global dimension, while no global authority or mechanism to guide towards their solution nor deal with them exists in full or has the required relative standing to make a difference. Furthermore, both local and global social structures lack the organizations and the social, economic, and political mechanisms to

deal with and ensure intertemporal equity (Alpert, 2014; Chang, 2003; Grubb, 2013; North, 2005). (See also the edited volume by Bruszt and McDermott (2014) which focus precisely on dynamics and outcomes of the efforts towards international integration of regulations.)

While the UN partially supplements some of these global needs, many exceed its capacity, and, perhaps more importantly, its possibility to act and to enact change (Alpert, 2014; Commission on Global Governance, 1995). Overall, there is widespread technical agreement with regards to how current global social structures create a mismatch between private and social returns; how the rise of extremely large private organizations (e.g., banks, transnational corporations) have created trans-border complexities and large power imbalances; how the current arrangements create incentives for short-sighted behaviours; and how, overall, global social structures are far from a level playfield for all countries (Elson, 2011, 2013; Finnemore, 2013a; Independent Commission on International Development Issues, 1980; Nayyar, 2002; Spence, 2011; Stiglitz, 2010). (See Milanovic's (2016) analysis on how the difficulties faced by countries in a globalized world in order to control and tax capital have exacerbated inequality.) The problem seems to be, then, one of collective will and action, rather than an intellectual and theoretical one.

If cooperation can help individuals collectively achieve much more than what they would individually, the logical consequence is that the more effective and efficient social structure are, the more effective and efficient individual and collective efforts will be (Arrow, 1974; Aspers, 2011; Benkler, 2006; Roth, 2015; Sorokin, 2010). More specifically, the kind of rules, organizations, and routines, and the overall characteristics

of the social structures that have been found to positively influence the process of development, are, among others, those that:

- Ensure mutual accountability at all levels of the social organization, as well as transparency about the impact of social and political decisions on the costs assumed by human collectives (Albala-Bertrand, 2013; Athreya, 2013; Benkler, 2006). For example, consumer pricing of energy usually represents more of the political choices and preferences, than the actual accounting of the real costs involved in their production; nevertheless, this is usually hidden from broader social discussion. In fact, about US\$500 billion dollars are annually spent by governments in directly and indirectly subsidizing consumer prices—this is about four times the yearly flows of aid (Grubb, 2013).
- Facilitate the availability, reliability, flow, and distribution of information, as well as the connectedness of individuals and collectives in varied and complex ways (to create strong, cohesive, and broadly connected networks) (Benkler, 2006).
- Give participants similar positions in the networks created, allowing them to also have similar scopes of freedom to act (in network terminology, usually power is linked to those who have more central roles in the network) (Albala-Bertrand, 2013; Athreya, 2013; Benkler, 2006; Fligstein, 2001; Hartmann, 2014; Marschak, 1972; Roth, 2015).
- Rely on scale-free (i.e., characterized by possessing “hubs”), rather than random networks (the former seem to be better at resisting random failure,

and at remaining resilient in front of it; they also seem to facilitate faster diffusion of information) (Hartmann, 2014). Social network analysis can provide the tools to understand and design such networks (Hartmann, 2014).

- Allow for cohesive, social connections based on shared values and homogeneity, as much as they also allow for plurality and heterogeneity, as well as tolerance, solidarity, and willingness to compromise (Chang, 2003; Commission on Global Governance, 1995; Galor, 2011; OECD, 2001; Oishi, 2012; Sorokin, 2010). While several studies indicate that human beings are usually biased in favour of some groups rather than others, this does not mean they are not capable and willing to be aware of such bias and to address its consequences. In the same fashion that these biases can be and have been historically used to elicit disgust among groups to further antagonize with or marginalize particular groups, awareness of this possibility can be used to eradicate or at least minimize such reactions or attitudes (Bloom, 2013).
- Allow for clear and equitable ownership rules, rights, and responsibilities (for example, with regards to intellectual property rights) (Athreya, 2013; Galor, 2011). Successful social structures are based on the understanding that the mere definition of what these rules, rights, and responsibilities are and entitle, are not absolute nor atemporal truths, but the result of a social process and the reflection of temporal social preferences that take place and represent a society in a given point in time (Benkler, 2006; Chang,

2003; Stiglitz, 2010; Ugur, 2013). In fact, in a knowledge-based economy, intellectual property rights are becoming increasingly important, while our social structures underlying them are becoming increasingly out-dated (Pontifical Council for Justice and Peace, 2004).

- Provide the space and incentives for the design of markets and other mechanisms for the allocation of scarce resources, due to a clear realization that no single mechanism or arrangement have universal or atemporal validity (Athreya, 2013; Galor, 2011; Marschak, 1972; Roth, 2015)
- Foster positive attitudes and actions toward innovation by taking into consideration the varied understandings and attitudes that different social, religious, and cultural groups may have towards development (Galor, 2011; Landes, 1998, 2010). For example, Landes (1998, 2010) showcases how even when China had access to gun powder many years before the Europeans did, its traditional use remained the same for many years in spite of evident alternative possibilities. Likewise, Chandler (1997) showcases the effect that social structures had in making transnational corporations and very large enterprises possible, and how these organizations, in turn, changed global attitudes and actions with regards to production costs, the availability of human capital, the relevance of international trade, and the global state of innovation and technological advance.
- Provide financial and credit arrangements, and the intertemporal space

they create to borrow from the expectations of future benefits (Athreya, 2013; Champ, Freeman, & Haslag, 2011; Fligstein, 2001; Galor, 2011; Goodspeed, 2012; Pinto, 2014). While doing so, avoid, as well, organizational choices that may disproportionately reflect the preferences of interest groups, or of those with the most power, rather than the preferences that better the social, economic, and political outcomes of those financial and credit arrangements (Calomiris & Haber, 2014). Turner (2016), for example, points out to how the percentage of banking reserves required is a choice that, while have huge implications in the functioning of the financial system and its impact on development, is not only driven by technical knowledge but by power and how it transpires through social, economic and political dynamics. Credit is not as important for growth as it seems to be. In fact, excessive credit growth might be behind the booms and busts of the economic cycles. What is more important is its intertemporal allocation (Arnon, 2011; Minsky, 1978; Turner, 2016)

- Is based on sound monetary arrangements. These arrangements are extremely important and have both short- and long-term consequences due to the ways in which they frame and constrain social, economic and political choices and actions (Desan, 2014; Fligstein, 2001; Harcourt, 2011; Reich, 2015; Stiglitz, 2010; Stiglitz & United Nations General Assembly, 2010). The complex role money plays in society is a function of the different purposes it has: measure of value, medium of exchange,

store of value (Amin, 2013; Harvey, 2006; Meikle, 1995; Soddy, 1924). Stiglitz (Stiglitz, 2010; Stiglitz & United Nations General Assembly, 2010) and Alpert (2014), among others, argue extensively about the need to reform the global monetary system with the aim of ensuring a more levelled playfield. They both argue this reform is necessary as well to avoid future financial crises by ensuring that an increase in the money supply tracks and does not exceed real and potential economic growth (these reforms include replacing the US\$ as the de facto reserve currency) (Desan, 2014; Richmond, 2013; Soddy, 1924). Money is, in itself, a mechanism for intertemporal coordination (Champ et al., 2011; Goodspeed, 2012) and a way to manage economic cycles and aim for steady economic growth (Friedman, 1984; Meltzer, 1988; Jan Tinbergen, 1962). As Keynes argued, when the neutrality of money is not taken as a fact, money can also be considered as a source of booms and busts (Davidson, 2015). The way in which society considers money and its role (Desan, 2014), has very important implications in the ways in which wealth is created and transferred. While most economists (not Keynes himself) argue that money does not have any impact on real variables in the long run (Davidson, 2015), they often ignore the short-term implications it may have in creating inequalities (e.g., because different groups react at different speeds, have differential access to information, and face different constraints that allow for short-term realized gains for only a few). The fact that society has yet not addressed these implications,

is a reflection of the constraints of current social structures (Amin, 2013; Arnon, 2011; Meltzer, 1988; Soddy, 1924; Stiglitz, 2010; Stiglitz & United Nations General Assembly, 2010; Turner, 2016).

- Provide insurance arrangements that allow for the social spreading of individual and collective macro level risks (e.g., disasters and other shocks and externalities), the possibility to afford the uncertainties of the innovation process, and any other events or situations that can only be planned for but not controlled (Athreya, 2013; Godfrey, 2014).
Unchecked, these risks and the costs they can represent have a direct negative impact in the wealth of nations and their ability to achieve wellbeing (Commission on Global Governance, 1995).
- Establish structures and mechanism to deal with the consequences of the process of social, economic, and political change. This process usually creates winners and losers. Therefore, such structures and mechanisms can allow those who lose to swiftly reintegrate into the winning group (Spence, 2011). These might include, for example, training and transition support in the form of unemployment insurance (OECD, 2001). Throughout these transitions periods, it is usually those who are more vulnerable (e.g., young children, and future generations who have no voice in the present) who are the most affected, and who cannot act to mitigate these effects. Many of these vulnerable populations also face important critical points in their development and consolidation that tend to set specific gradients in terms of wealth, behaviour, and cognitive skills

that define, to a great extent, the breath of possibilities and choices they will have for the rest of their lives. If not addressed during those particular critical points in time, the effects on these populations are usually far-reaching and may last, at least, for the extent of the generation being affected, with the potential for spillovers into the following generations (Keating, 1999). All of these considerations are also applicable at the global level. Countries have spillover effects on each other, as well as on the global order and vice versa. The scale of these spillovers is not equal, nor proportional, among all involved (Chang, 2003; Jean Cohen, 2012; North, 2005).

- Monitor and maintain the flexibility of the *social structures* to change and respond to change. This capability lies in how well diverse interests are represented by the groups which can exert influence in the process of social, economic, and political change; a process that, in itself, should allow for a balanced consideration and participation of all interests, particularly those of the minorities (polarization and exclusion need addressing). Overall the social structures should reassure its members about the functionality and legitimacy of the decision making process (Chang, 2003; Manyin, 2005; OECD, 2001; Pinto, 2014). This flexibility also includes the ability to recognize and address the contradictions that tend to be embedded into social structures given the slow, iterative, and stochastic process through which they are formed. For example, Hills (2015) showcases how there are deeply entrenched and contradictory

views embedded in the United Kingdom's tax code with regards to wealth and its distribution. These contradictions exist due to the differing views liberals and conservatives have, and due to their efforts to perpetuate these views by embedding them into organizations that far outlive them. Landes (2010), reinforces this idea by describing how around the time of the British industrial revolution, the institutions at the time favoured redistributive activities, and as a consequence of these preferences, entrepreneurial activity tended to move towards alternative activities.

- Provide specific structures and mechanisms, and the space to devise new ones, to deal with collective issues related to the public good. Biggs (2015) suggests, following the work of Elinor Ostrom (2010), that such structures and mechanisms should: (a) define in clear terms the ecological and the social boundaries; (b) adapt to the local conditions the rules that dictate how common resources are appropriated and used; (c) ensure that all those who appropriate and use common resources have a saying in decisions made about these resources, and, are accountable as well for their use; (d) graduate sanctions imposed on abusing appropriation or use of common resources, and mechanisms to deal with such conflicts are easy to access and inexpensive to use; (e) possess public legitimacy and are layered to reflect the size and complexity of the resources managed. With regards to policy principles to deal with these issues, Daly (2004) suggests that they should: (a) deal with one, and only one, goal; (b) aim at exercising macro-control while providing micro-freedom (to allow for

variability); (c) allow for a margin of error and for adaptability; (d) consider the initial conditions and their potential impact; and (e) provide a solution to the challenge that is at the same level of the challenge itself (in terms of those who face the challenge and the characteristics of the challenge itself).

- Create and maintain productive and trade structures and policies that enable the transmission of knowledge and technology, as well as allow for the establishment of mutually beneficial relationships, and more equitable private and social returns (Galor, 2011)

In spite of the overall agreement that might exist about the broader categories of desirable features above, once it comes to the specifics, economists like Georgescu-Roegen (1971) suggest that there are no universal and timeless formulas that can be applied successfully in most societies, and, therefore, the most effective and efficient social structures will be those that are finely tuned to the different realities of their respective social collectives. Ugur (2013), makes the same argument by pointing to the example of how the definition of what constitute intellectual property is not only dependent on the prevailing social structures (and the preferences they reflect), but also, in turn, shapes the ways in which innovation is defined, measured, regulated, and encouraged or discouraged.

Likewise, social structures are responsible for all the gender issues that are increasingly being denounced and addressed. These are embedded through history, culture, religion, politics, economic development, and traditionally unequal power distributions among genders (Eswaran, 2014). Many of these choices and preferences are

responsible for embedding differentiated and detrimental gradients for women that are now further embedded and entrenched in both material and social structures (Keating, 1999). Perhaps the most evident example of the impact of social structures on gender differences is the choice to not compensate domestic labour—nor even to recognize them as accruing social benefits, or to protect and compensate women for bearing pregnancies (Eswaran, 2014). Furthermore, and besides the gender bias embedded in function gradients, and in material and social structures that tend to be almost hidden from social awareness, the fact that social structures do not recognize the possibility of differential gender social, economic, and political behaviours that need to be supported and incentivized rather than uniformed using a gender biased framework, is perhaps even more limiting (Eswaran, 2014).

The truth is that while broad normative statements like the ones listed above—for example, that a sound social structure has to provide protection for intellectual property; or that genders have differential behaviours—seem neutral and sound, their meaningfulness, nevertheless, only matters once they are materialized in concrete practical aspects that are neither neutral nor close to perfection, and that, ultimately have real and tangible material and non material consequences. This, again, aligns with Wittgenstein’s philosophical views discussed in Chapter 2 and related to the inseparable connection between the conceptual and the practical; that is, authentic knowledge.

Table 3.5. Social structures key messages

- | |
|---|
| <ul style="list-style-type: none"> • Cooperation allows human beings to achieve what they cannot individually. • Cooperation is based on trust. When the numbers of individuals cooperating |
|---|

Table 3.5. Social structures key messages

become large enough, formal structures need to be put in place to make up for the impossibility to establish direct personal relations of trust with everyone. The bond created through these structures, which also allows for these structures to be created in the first place, is usually termed social, psychological, or spiritual capital.

- Cooperation presents problems of coordination and control that can be solved through different arrangements and practices. Since society is a complex system, none of these solutions have universal application. Furthermore, these solutions cannot be enforced. They need to be internalized and adapted through a process of social interaction that sets new routines replacing old ones. These processes of interpretation and internalization not only take place within the space created by natural, social, and material structures (a "corridor of confidence"), but, in turn, it also modifies it.
- The value of social structures is dependent on how they facilitate the solution of cooperation problems towards achieving wellbeing.
- Social structures do not necessarily provide a level playing field for all their members. The distribution of power they embed and create, influences their functioning and the implications of what takes place in the space they create. Society's preferences about how to address these inequalities are usually embedded in the social structures themselves, and this tends, in turn, to explain why their response and change tends to be slow.
- While the social sciences have sought to understand and devise mechanisms to influence that process of interpretation and internalization that takes place in the space of a "corridor of confidence," success has proven limited. Economists in particular face the limiting finding made by their own discipline that it is not possible to achieve such an objective; instead they have opted for alternative probabilistic tools that allow for different scenarios and different probabilities of them happening.
- Global social structures not only tend to replicate the shortcomings and

Table 3.5. Social structures key messages

limitations local ones have; they also add their own. The incompleteness of global institutions impacts the way in which global structures are currently setup; this leaves voids in terms of responsibilities and action. This is partly why, in spite of considerable agreement about the shortcomings of such structures, progress is not only slow at times, but inexistent at others.

- Social structures that allow for more transparent and comprehensive exchanges of information to take place, as well as for this information to be codified, tend to facilitate the processes of interpretation and internalization described above.
- Effective and efficient social structures (this is, to allow for effectively and efficiently achieve the wellbeing of the majority) tend to: (a) ensure accountability; (b) improve connectivity; (c) facilitate cohesiveness while promoting pluralism and diversity; (d) establish clear rules that are understood and enforced; (e) allow for multiple and diverse mechanisms for allocating resources, roles, and responsibilities, including those to deal with the difficulties presented by the public goods and bads; (f) promote innovation and flexibility while reducing uncertainty through insurance schemes; (g) wisely allow for the use of credit and money as mechanisms for intertemporal coordination, as well as for the proactive management of change cycles or structural transformation; (h) provide the mechanisms to deal with the costs imposed by change in both individuals and collectives, and through these mechanisms further diminishes the uncertainties that disincentive change; (i) minimize the embedding of contradictions in its structure; (j) create and maintain productive and trade structures, and implement policies that, allow for mutually beneficial relationships, equitable social and private returns, and efficient sharing of knowledge and technology; and (k) allow for continuous evolution and active monitoring of embedded inefficiencies and inequalities.

Natural and social forces.

At the broadest level, natural forces are not only pervasive but indomitable by human beings. They can be understood and planned for, to a certain extent, but they cannot be fully predicted nor managed. The risks imposed by them can be mitigated but not eliminated. Therefore, the impact of natural disasters are usually severe, both in the short- and long-runs (Al-Rodhan, 2009; Albala-Bertrand, 2013; Benson & Clay, 2004; Richardson, 2014). In fact, Managi (2015) estimated that in 2012, damages of natural disasters were in the order of US\$250 billion—more than twice the total amount of aid during the same year (OECD, 2012). These natural disasters can be classified into hydro-meteorological (floods, hurricanes, temperature, and the like) and geophysical (earthquakes, volcanoes) (Benson & Clay, 2004).

Regardless of their potential negative effects, these are the natural forces that, driven by energy, put the world in motion and allow human beings to live, innovate, and progress (Georgescu-Roegen, 1971; Kümmel, 2011).

That human beings have now themselves become a source of alteration of their own physical environment, only worsen the potential impact natural forces will have in the future, even perhaps in exponential ways (Biggs, 2015). Furthermore, their usual rates of economic growth, combined with the limited resources and capacity available in developing countries, put them in a rather disadvantageous position to opportunely prevent even more relevant changes to the environment than the ones already made (Biggs, 2015). Additionally, given that natural endowments are not equally distributed, nor are the consequences of natural forces, the initial conditions of countries determine to a great extent many of the risks they would have to face and address (e.g., earthquake

prone, low elevation, high erosion, gene pool, temperatures and other climate conditions). These conditions have been shown to have considerable impact in social, economic, and political progress. They can both drag or boost the forces behind social, economic, and political change (Galor, 2011; Hills, 2015; Managi, 2015; Pontifical Council for Justice and Peace, 2004).

The experience of more developed countries shows that a more comprehensive understanding and effort to address the risks posed by nature's forces, while not eliminating its effects, can greatly reduce them, including the minimization of the human deaths they cause (Managi, 2015). The ability of less developed countries to prevent, deal with, and resist sustained impacts from nature, is considerably lesser than that of more developed ones, just because of their limited resources and knowledge (they might also face worse natural risks due to geography, weather, and other characteristics—e.g., the Maldives).

The risks created by natural forces are not independent of the social and material structures. They are likewise related to the prevailing economic and political conditions (Al-Rodhan, 2009; Albala-Bertrand, 2013; Benson & Clay, 2004). Furthermore, the frequency and continued impact of natural disasters have cumulative debilitating effects that not only extend beyond the specific material damages in the economic, financial, social, and political realms, but that also impact the resilience and speed of recovery of countries. Such potential effects, due to their importance, should be incorporated into macroeconomic forecasting and planning. There is enough evidence of the impact that natural disasters have in terms of economic growth to do so (Benson & Clay, 2004).

Natural forces, independently and in conjunction with social forces, create

uncertainty for human beings. It is precisely this uncertainty that, in turn, provides for a considerable portion of the social forces dynamism. Uncertainty puts human beings' mere existence in doubt, therefore, it serves as an incentive for them to continuously trying to reduce risks (Meltzer, 1988; North, 2005). In this process, it is their entrepreneurship and innovation that creates avenues to better control and management of their environment and the natural forces that underpin this environment (Helpman, 2004; Kümmel, 2011; Landes, 2010; Spence, 2011).

And while this deep seated driver of change seems to be embedded as deep as in the genes of human beings, the ranges within which human beings can express these drivers is given by a number of gradients that constrains their individual health, cognitive, and behavioural capabilities, as well as by the gradients expressed by a society as a whole (Hartmann, 2014; Keating, 1999; Spence, 2011). Hence, human beings' motivation and resolution for change is bound by both these natural and social gradients (Alpert, 2014; Benkler, 2006; C. Hall, 2012; Hartmann, 2014).

Nevertheless, these function gradients can also be seen as enablers of change, particularly the social ones. What has been termed social, psychological, and spiritual capital can have enabling effects and transcend individual limitations by creating collective capabilities and motivations that can become great sources of change (Benkler, 2006; Cronk, 2013; Hartmann, 2014; O'Sullivan, 2012; Oishi, 2012; Rima, 2013). In society, not only individual forces create change: "social dynamics and the forces behind them cannot be reduced to their individual members" (Oishi, 2012, p. 182). Social, economic, and political inequality for example, are increasingly acknowledged to negatively affect forces of change, although, in fact, they can also drive radical social

change when they strike the core of individuals and collectives who no longer are willing to support them. This negative influence is not limited to national or present time dimensions; it extends across national borders and generations (Biggs, 2015; Galor, 2011; Hartmann, 2014; Helpman, 2004; Pontifical Council for Justice and Peace, 2004; Spence, 2011).

Economists have developed “social choice functions” as means to understand the forces behind change, as well as their impacts. They have also developed the idea of “mechanism design” (as previously discussed) aiming to manage such forces and their potential impact in the form of change (Athreya, 2013; Bowles, 2016). Akerlof and Kranton (2010), discuss social identity as a source of such forces. Nevertheless, such manipulation of social forces, can also have unintended negative consequences that might exceed the intended positive ones (Bowles, 2016).

Table 3.6. Natural, material, and social forces key messages

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| <ul style="list-style-type: none"> • Natural forces can have positive and negative impacts. Negative impacts cannot be fully controlled but they can be better understood. Improved knowledge leads to better risk management and, in turn, this leads to mitigated consequences. • Human beings have now disrupted the ecosystem in ways in which have changed its risk profile. • The risk profiles of countries vary. Natural endowments and conditions are not equally distributed. Some countries bear bigger risks than others, and some countries face bigger obstacles in developing than others. Natural forces' impact is also dependent on the material and social structures and forces. • The capacity to prevent and mitigate the impact of natural forces is highly |
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Table 3.6. Natural, material, and social forces key messages

<p>dependent on the level of material and financial resources available. Due to their impact, countries need to include the potential effects of these forces in their macroeconomic forecasting and planning.</p> <ul style="list-style-type: none"> • Survival and the reduction of uncertainty are deeply entrenched motivations that lead human beings' efforts and behaviours. Innovation is often aimed at reducing uncertainty. However, human beings' capabilities are limited by gradients that are set early in their lives. As a group of individuals, societies also display gradients that limit the possibility of change, although they are not linearly related to those of the individuals that compose them. • Among the social forces that impact the possibility and the quality of development, social, economic, and political inequality is a very relevant one.

The process of social, economic, and political change.

Under the modernization paradigm of development, societies have been conceived to transform or developed through a progression from the primary, through secondary, and into the tertiary sector becoming the leading sector, as the pinnacle of a “developed” society. However, this vision is challenged by the idea that ultimately, the alleged “value” these sectors have is given by the social structures in place and by the preferences embedded in such structures at given points in time (D. Cohen, 2012). Furthermore, the idea that change was more dependent on how much was invested rather than how it was invested, was too, socially constructed by the misinterpretation of history (Hanushek, 2015). That is, an intrinsic relationship exists between the way a society is structured and the way in which change occurs, while, in turn, the way in which change occurs shapes and transforms the existing social structures.

The nature of this process is one in which trade-offs are made. How much biodiversity should be kept? Which sources of energy will be given preference? How much overall impact on the ecosystem would be allowed in exchange for what? How much efficiency at the expense of equity? How much for whom? How much technology and how many jobs? How much trade to allow for cheaper consumption but at what temporal costs of losing jobs and sectors? How much balance is achieved between the benefits of present generations and those of future ones? (Athreya, 2013; Biggs, 2015; Galor, 2011; Grubb, 2013; Hanushek, 2015; Helm, 2014; Helpman, 2004; Soddy, 1924)

All the choices made produce real and opportunity costs, and they are not equally distributed. Asymmetries are pervasive, and they are not only a reflection of the process of change. Through the existing asymmetries embedded in the social and material structures, change further deepens or creates new asymmetries. Furthermore, all these asymmetries have an impact on the effectiveness and efficiency of the process of change itself. Among these asymmetries are those related to information, power, access, background, race, and gender (Athreya, 2013; Becker, 1977; Biggs, 2015; D. Cohen, 2012; Eswaran, 2014; Freeman, 2008; Hartmann, 2014; Nelson, 1982). And, since change is so chaotic and unpredictable, it is hard to not do harm, or even reach the goals desired. There are many forces behind the process of change (e.g., natural, material, and social), and they are next to impossible to control without causing unintended consequences (Athreya, 2013; Biggs, 2015; D. Cohen, 2012; Freeman, 2008; Hartmann, 2014).

Change is constrained by material and social structures, but also guided by them; still, the very essence of change requires a new set of structures in place (Campbell,

2004; Lin, 2012a; Stiglitz & Lin, 2013; Surowiecki, 2004). Through their existence, current structures create certainty, yet, change only happens when uncertainty is embraced, so it can become more certain through such embracement. The choice of how much uncertainty to bear also determines how radical the changes could be and how constraining the existing structures will be (Grubb, 2013; Kümmel, 2011). Social structures implicitly embed relationships that showcase different preferences and sensibilities between its components—the elasticities. These elasticities serve as motivators or constraints for change, as well as its qualifiers (Freeman, 2008; Helpman, 2004; Kümmel, 2011). Furthermore, the way in which natural, material, and social structures account for the costs that social, economic, and political change creates establish a precedent, as well as an expectation about how the risks created by uncertainty will translate into actual costs for those individuals and collectives who find themselves in the losing end of such process of change, influencing in turn their attitudes and motivations towards facing these risks (Lin, 2012a; Nelson, 1982).

Therefore, individual and collective actors pursue change, on their own will or pushed by shifting circumstances. They do so, constrained by natural, material, and social structures, and informed by the preferences embedded in these structures with regards to change, innovation, and with regards to who will bear the uncertainty, risks, and costs that result from change. The intensity and speed of their efforts will vary with the intensity of the drivers for change, flexibility of the structures, and safeguards or rewards that such structures offer in exchange for the uncertainties of change (e.g., the ability to acquire and use capital; the ability to leverage their resources, those of others, and those available collectively; and the ability to maintain these arrangements and reduce the risks

of losing them) (Campbell, 2004; Godfrey, 2014; Meltzer, 1988; Nelson, 1982; North, 2005; Surowiecki, 2004). A lot of the room available for change to happen is created by the psychology of individuals and collectives, and how it influences their perception, their attitude towards uncertainties and risks, and the kinds of forecasting tools they use to understand the risks and increase predictability (Aspers, 2011; Frydman, 2011; North, 2005). Furthermore, the room for change is also created by governments through the provision of information that creates certainty about the direction of change and the measures to managing and reducing fluctuations and policy changes (Meltzer, 1988). Ultimately, communication, diversity, freedom, independence, decentralization, timing coordination, and the ability to read the signs embedded in social dynamics, are all factors that increase the probability of change heading towards greener pastures (Surowiecki, 2004).

Change cannot happen if not framed within the current worldviews and perceptions that can provide for some certainty in front of the uncertainty and related risks that the prospects of change create. This frame, in turn, influences the speed and intensity of the change, and even perhaps if it will happen or not (e.g., will the change be evolutionary or revolutionary). Change requires social, economic, and political resources, and unless a minimal level of certainty is provided, the limited resources available are unlikely to be assigned to changes that lack support (Arrow, 1974; Campbell, 2004; Pontifical Council for Justice and Peace, 2004).

Ultimately, though, and while it cannot happen without individual change, collective change is not caused only when individual change itself happens but when the collectives discover and embed new routines that, in turn, create a new stable structure

that influence individual change (Godfrey, 2014; Nelson, 1982; North, 2005; Reynaud, 2002). A new structure is a symptom of adopted and stable change; it is not itself the main driver of change (contrary to what the technocratic approach to aid promulgates).

This social process, more than changes in the volume of any of the ingredients of economic growth—labour, capital, natural endowments, knowledge—is at the core of the process of development (Hartmann, 2014). Changing structures in the process of being adopted usually redefine, among others, what terms like freedom, justice, and productivity mean (Benkler, 2006). They also create diverging environments for individuals and collectives to operate, creating a different set of matches and mismatches between them than the ones that used to exist. As a consequence, individuals and collectives that thrive better than others in the changed environment (e.g., comparative advantage in international trade) will tend to win from the change, while others will tend to lose (Godfrey, 2014; Hartmann, 2014; Lin, 2012a; Nelson, 1982). More importantly, change that does not create a match at all usually fails to take over and slows or prevents more relevant change. Unless change is translated in ways in which it fits individuals and collectives, it will not hold (Campbell, 2004; Freeman, 2008; Perez, 2002). Hanushek (2015); for example, showcases the importance of investments in education, creating a set of skills that matches the needs of the context, and how if this match does not take place, no matter how much money is spent, the results would not be optimal. In the end, the process of change can be equated to a game which set of rules is given by the natural, material, and social structures (Godfrey, 2014).

Contrary to what neoclassic economists have modelled for years, social, economic, and political change is not mechanical. As a complex system ruled by the laws

of thermodynamics, change is a one-way street (Frydman, 2011; Georgescu-Roegen, 1971; Giugale, 2014; North, 2005). Given the uniqueness of complex change and the unpredictable impact of structures and forces in the kind of change created, managing change means continued monitoring and adjusting (Hanushek, 2015; Hartmann, 2014; North, 2005). Furthermore, change is not uniform nor encompassing. Different social, economic, and political processes move at different rhythms; different groups have different interests and different power that all affect the bargaining processes and the outcomes of the change (Campbell, 2004; Dopfer, 2006--see several chapters in this edited volume; Friedman, 1984; Frydman, 2011; North, 2005).

Changing structures take time. Development takes time because it involves morphing values, culture, perceptions, and other complex and intangible factors that are deeply ingrained in individuals and collectives. They may usually require a generation to change into other frameworks that are as stable and pervasive as the existing ones (Godfrey, 2014; North, 2005). Roth (2015) uses the analogy of societies “limping” their way through the process of improving our solutions to deal with collective objectives.

Friedman (1984), for example, argues that social structures can create situations where those who benefit from them the most might, in-time, become themselves minorities. Given that at that point in time the benefits they accrue spread as a social cost, very thinly among the majority, these majority have little individual incentives to unite and push to modify the status quo. In this way, social structures can allow the creation of private wealth at a public cost. Group dynamics usually create incentives for policy makers to listen and cater more to organized minorities, than unorganized majorities (see also, Cukierman, Hercowitz, & Leiderman, 1992; Friedman, 1984).

This slowness in the process of change is commonly termed *path-dependence*. However, as discussed earlier, rather than being a cause of slow change, it might just be an effect of the unavoidable need for collectives to negotiate with rules and social structures to then translate and internalize them into stable social arrangements. Path-dependence might be an effect, rather than the cause of the slowness of the process of social, economic, and political change.

Besides what is described in the previous paragraphs, not much more is known about the process of how change occurs (Campbell, 2004; Manyin, 2005). Some existing research with regards to the mechanisms of change describe and account correlations that provide a plausible explanation, rather than causal relationships, and, therefore, hint at how to manage change without really explain it (Campbell, 2004).

It is clear that when and how change starts happening is important. As a starting point, human being's health, cognitive, and behavioural gradients are defined mostly during the first two years of life. Further changes to these gradients can happen at other points in life, but not to the same extent. Subsequent generations' gradients are also influenced by those of the previous generation (Keating, 1999). Given the central role and multiplier effect human beings have in any process of social, economic, and political change, there is of course, a cascade effect (Keating, 1999). This is important because the capabilities of a collective are essential in driving change (Hartmann, 2014).

Change tends to be driven by human beings' innovations and their disruptive effects. Economic cycles have been a very important concern of economists throughout history. In studying them, some have found patterns or cycles that stretch for 25 or 60 years (Devezas & Corredine, 2001). Some other scholars have negated the existence of

cycles (Barnett, 1998; Devezas, 2006; Devezas & Corredine, 2001). For example, Milton Friedman only acknowledged the existence of short and minimal adjustments in the economy (Ebenstein, 2015). Keynes and Wicksell (Arnon, 2011; Goodspeed, 2012), Schumpeter (Schumpeter, 1934), Tinbergen (1981), and Minsky (1978, 1986) all supported their existence. More recently, Milanovic (2016) has even argued, using empirical evidence, that over the past 500 years there have been “Kuznets waves or cycles” showcasing alternating increases and decreases in inequality. Much of this debate revolves around the timing and length of the cycles and the causalities behind them and resulting from them (Devezas, 2006; Devezas & Corredine, 2001; Perez, 1983, 2002).

Likewise, in sociology, Sorokin’s (2010) four volume *Social and Cultural Dynamics* described, using a highly quantitative approach, how civilization underwent phase movements from sensate to ideational periods, and the transitions in between. Similarly, Schumpeter (1934) argued these dynamics of social and political change bring with them creation and destruction.

Russian economist, Kondratiev, began this idea of regular cycles driven by disruptive innovations, as a hypothesis of the existence of economic long-waves. His hypothesis was extended to political long-cycles that follow the economic ones with some lag between them, due to the relationship that exists between economic and political power. Such combination is ideal in creating synergies between economics and political economy analyses (Barnett, 1998; Clark, Freeman, & Soete, 1981; Freeman, 2008; Modelski & Thompson, 1996; Perez, 2002).

In the same vein of work, J.W. and N.B. Forrester (J. W. Forrester, 1982; N. B. Forrester, 1973) created complex models of the world economy with consideration for

positive and negative loops and their impact in driving economic cycles. Through their research, they determined that the transition from growth to equilibrium is usually characterized by increasing restrictions that economic actors face, as the trade-offs that start developing against change during stages of technological bounded growth are greater and greater, and the new technologies and the corresponding and resulting material and social structures settle in.

Being driven by technological progress, all these ideas of cycles relate to the innovation process and the stages through which an inventions diffuse through the social and material structures (Hartmann, 2014). Due to their nature, these innovations impact not only the technological base of a society, but also its social core. They push society through disruption, growth, synergies, maturity, and crises in a creative-destructive process of reallocating resources, as coined by Schumpeter (Freeman, 2008; Hartmann, 2014; Schumpeter, 1934). They can create inequality (see Milanovic's (2016) analysis of the effects on inequality due to the technological shift that occurred in the 1980s). They are even potential causes of conflict and war (Devezas, 2006).

In fact, considerable research and findings prove that there are different behaviours characteristic to the different stages of these cycles or long-waves (Barnett, 1998; Devezas, 2006; Modelski & Thompson, 1996; Modis, 2007, 2013a, 2013b, Perez, 1983, 2002; J Tinbergen, 1981). Specifically, the challenging times towards the end of the long-waves tend to stimulate entrepreneurship and innovation; as a consequence, during the formative years of a long-wave, the main drivers of human action tend to become related to the "what." Alternatively, as growth settles in and new innovations replace old ones, the biggest driver of change becomes the "how", this is, how to improve

at doing the innovations that have already taken hold (Devezas, 2006). Different stages throughout the process of change require different arrangements, incentives, and policies (Fligstein, 2001; North, 2005).

It is precisely these aspects noted above which are less contestable in the economic cycles literature, this is, that social, economic, and political agents behave differently depending on their perception of the stage through which an economic cycle is going, and that such differential behaviour leads to different outcomes at different stages.

Table 3.7. Process of social, economic, and political change key messages

- Social, economic, and political change is stochastic. It is not preordained by a series of progressive steps.
- How much is invested is not as important in generating change, as is how it is invested.
- Change requires making choices that have both intertemporal effects, as well as opportunity costs. These effects and costs tend not to be equally distributed. Asymmetries in access to information, power, background, ethnicity, gender, and other dimensions tend to play a role as well in the distribution of such effects and costs. These asymmetries tend to be embedded in and perpetuated through material and social structures.
- Social, economic, and political change can only happen when some level of uncertainty is embraced. Material and social structures embed in them, explicitly or implicitly, elasticities between their different components that serve both as incentives and constraints towards change. Specifically, the way in which reigning material and social structures reward the winners and protects the losers create precedents that, in turn, further incentivize or constraint change.
- Psychological factors play an important role in enabling or preventing change,

Table 3.7. Process of social, economic, and political change key messages

not only by validating visions of the future through current frameworks, but also by the ways in which they help processing and situating the uncertainties that come with it.

- Individual change is required for collective change to happen. However, collective change is not stable until change is finally embedded into stable routines that establish a modified social structure. Such changes in the social structure usually tend to redefine central concepts like justice, freedom, and productivity and, therefore, they take time (even a generation or two). In this sense, the concept of path-dependence might be misunderstood as something other than the time it takes to interpret change and embed it into stable routines. Path-dependence may not be the cause of slow social, economic, and political change, but simply a symptom of the nature and characteristics of the critical-path through which this change has to go.
- Changes in social structures impact the ways in which individuals and collectives match or mismatch with the change taking place (this is, in part, what creates winners and losers). Changes that do not lead to considerable matching, tend not to hold.
- Change is complex, not linear. The speed and intensity at which it happens is not uniform, with different components moving at different paces. Managing change requires, then, continuous monitoring and adjusting. It also requires understanding the individual dynamics of its components, as well as the dynamics between them.
- Change tends to be cumulative because it is dependent on the functional gradients of generations that build onto each other's gradients. These gradients are highly sensitive to specific timelines that tend to be missed (mostly due to social, economic, and political reasons), particularly in the instances in which they were also missed during previous generations.
- Change tends to occur in cycles that are usually driven by disrupting events—many times, innovation. These cycles mean transitioning from disruption, to

Table 3.7. Process of social, economic, and political change key messages

growth, to equilibrium, and then towards decline, usually leading towards innovation and disruption, and towards yet another cycle. Different components of the social structures tend to behave in different ways depending on the stage they are and the stage of the cycle in which they are (due to the divergent incentives and environment that each ones of the stages of these cycles create). Likewise, the role of natural, material, and social structures themselves tend to differ depending on the stage of the cycle; and, in return, different stages tend to impact these structures in different ways.

- A new structure is a symptom of adopted and stable change; it is not itself the main driver of change.

Human capital.

There is undisputed agreement about the role that the level and diversity of human capital has in enabling and creating wealth. From the simpler conception of labour of the classic economist, to Marx, to the neoclassical, and to the evolutionary economists, wealth ultimately comes from human beings' manual and creative work (H. A. Arndt, 1984; Galor, 2011; Hanushek, 2015; Helpman, 2004; Lucas, 1988; Romer, 1987, 1990). Manual labour can be substituted by some combination of capital and energy, while creative labour is responsible for output elasticity, this is, for productivity (Kümmel, 2011).

The latest *Inclusive Wealth Report* (UNU-IHDP and UNEP, 2014) estimates that human capital contributes in average to 54 percent of the gains in inclusive wealth (compared to contributions of 33 percent from produced capital and 13 percent from natural capital). This was the case for 100 out of 140 countries for which the estimation

was produced.

However, and while human capital has some sort of precedence over most of the other kinds of classes of assets (excluding natural capital, without which human life cannot exist), it is not in isolation from the classes of assets that it drives the creation of wealth. The ultimate potential to create value contained in human capital is not only given by its quantity and qualities, but by the way these relate to quantities and qualities of these other classes of assets. It is in this mutual relationship that its true capacity to generate value, as well as that of all the other assets, lies (or to destroy it, for example, through an excessive environmental footprint): they affect each other's value, as well as create mutual dependencies and rigidities that feedback into the formation and evolution of each other. In fact, if human capital is the biggest contributor in creating wealth and in extracting value that leads to wellbeing; wellbeing, in turn, is what influences the qualities and characteristics human capital has—which are in turn, those that allows for its prominent role (Arrow, 1974; Galor, 2011; Godfrey, 2014; Hanushek, 2015; Helpman, 2004; North, 2005; OECD, 2001).

More specifically, for example, Helpman (2004) describes the relationship that exists between skilled and non-skilled labour and capital by referring to elasticities of substitution: between skilled labour and capital there is supposed to be a low elasticity of substitution (our technological progress has still to match human intellectual and social capacities), while between non-skilled labour and capital, this elasticity of substitution is higher. This complementarity or substitutability have important implications in the determination of wages, and, therefore, in the distribution of income and social, economic, and political inequalities.

In another example, Hanushek (2015) explains how the closeness or remoteness to and from a given technological frontier influences the way in which human capital is used: closeness to the frontier pushes it towards innovation, while remoteness pushes it towards imitation. In fact, he also demonstrates how higher rates of growth usually come from a strong group at the top of the skill distribution that can make a sizable contribution in terms of value added, as well as from a broad-base in the same skill distribution that can contribute to the competitive dynamism of nations. The problematic this presents is that such skill distribution is a source of inequality at the individual level that, in turn, tends to be perpetuated inter-generationally (see also OECD, 2001).

The qualities of human capital are given by the knowledge, skills, and competences embedded in people, as well as by the attributes it possesses (OECD, 2001). These attributes relate to education, health, psychology, social capabilities, and even to beliefs, value systems, and spirituality (Arrow, 1974; Bloom, 2013; Cronk, 2013; Ermisch, 2012; Hanushek, 2015; Hartmann, 2014; Keating, 1999; O'Sullivan, 2012; Oishi, 2012; Rima, 2013; UNU-IHDP and UNEP, 2014). This is why, more recently, scholars have started differentiating health capital, spiritual capital, and psychological capital, as related but independent from human capital (O'Sullivan, 2012; Oishi, 2012; Rima, 2013; UNU-IHDP and UNEP, 2014).

As with any other sort of asset or type of capital, investments in human capital can be made so it grows in volume and quality (Cronk, 2013; Hanushek, 2015; Managi, 2015; OECD, 2001). The latest *Inclusive Wealth Report* (UNU-IHDP and UNEP, 2014) estimates that, for countries with high rates of population growth, investments in human capital have higher pay-offs than investments in any other class of assets.

The most standard type of investment in human capital is education. However, it takes time for this investment to have an impact; many times, generations (Godfrey, 2014; Hanushek, 2015; OECD, 2001). As with any investment, not all types have the same effect. The effect that an investment like education can have on human capital is not only given by inputs, but most importantly by how its results improve the match between the demand and supply for the knowledge, skills, and competences it created. Furthermore, the obsolescence of skills at different timelines should be matched by enhanced ones—a difficult task to succeed at given the diverging timeframes between changes in the demand for skills and changes in the prevalence of those skills (Hanushek, 2015). Human capital that is not being used or is being under-used (unemployment and sub-employment) is not only not ripping all the benefits it could, but it is also being eroded, with the pass of time, in term of its qualities (Alpert, 2014).

Another important type of investment in human capital is that on health (Keating, 1999; OECD, 2001; UNU-IHDP and UNEP, 2014). Investments in human capital are bound by a critical-path, usually the most important stage of this path being that corresponding to the first two years of life of an individual (Ermisch, 2012; Hanushek, 2015; Keating, 1999). It is during this short period, that the behavioural, cognitive, and health gradients are determined, for the most part. There might be other points in time later that might be conducive to affect these gradients (school entry, and transitions to adolescence and adulthood), but not by a similar degree (Keating, 1999). These gradients determine, in turn, the socioeconomic gradients faced by individuals (gradients resulting from lower investments in human capital makes it harder for people to achieve wellbeing in the present time, as well as in the future—as these gradients tend to reinforce each

other over time) (Keating, 1999).

Table 3.8. Human capital key messages

- Human capital has precedence over all other forms of wealth, except natural capital. Its contribution to overall wellbeing exceeds that of other types of capital or assets.
- The creative and innovative power embedded in human capital is one of the most relevant determinants of output elasticities (total factor productivity), as well as of the distribution of value, and the wellbeing this value helps attain.
- Human capital's role in extracting and creating value is contextual: the knowledge, skills, competences, and attributes it possesses are capable to create and extract more or less value depending on how well they match their context. The management of obsolescence of human capital is necessary in order to maintain and improve its capacity to create and extract value.
- The attributes of human capital relate to education, health, psychology, social capabilities, beliefs, value systems, and spirituality. Investments in these categories can modify the knowledge, skills, and competencies embedded in it—its qualities. These investments tend to produce higher returns than those made in any other types of capital or assets. Overall, investments that contribute enhancing how both the supply and the demand for human capital match, are the most effective.
- The innovation and creativity from human capital that gets embedded in other classes of assets, introduce rigidities in material and social structures.
- There is a mutually reinforcing relationship between human capital and wellbeing: the former allows for the attainment of wellbeing, while the latter contributes to increasing the value extraction potential of human capital.
- Idle human capital represents considerable opportunity costs in terms of the creation and extraction of value and, therefore, in the attainment of wellbeing. Idleness also tends to erode human capital's potential.

Table 3.8. Human capital key messages

- The formation and improvement of human capital is highly dependent on a narrow timeline that creates a critical-path. The first two years of life are the most important in determining the health, behavioural, and cognitive gradients that, in turn, determine the socioeconomic gradient. Below potential gradients represent suboptimal investment, suboptimal human capital potential, and increased difficulties in creating and extracting value, as well as in attaining wellbeing.

Fixed produced physical capital: infrastructure.

Infrastructure or more broadly speaking *fixed produced physical capital*, because of its size and the resources and timelines involved in their design, formation, operation, and depreciation, are in the last analysis, change constraining over the mid- and long-term. The embedded rigidities they impose create highly dependent material structures that often transcend into the immaterial social structures, constraining flexibility and innovation. They also exert pressure on natural structures as their existence establish entitlements over natural resources (Lin, 2012b; Managi, 2015; OECD, 2001; Jan Tinbergen, 1966; UNU-IHDP and UNEP, 2012, 2014).

Up to a point, these rigidities, nevertheless, play a role in reducing uncertainty as well as costs. In turn, reduced uncertainty and costs help societies get closer to achieving an aggregated investment level that could be considered to be a social optimum (the amount of investments necessary to equate private and social returns on investment) (Meltzer, 1988).

Table 3.9. Fixed produced physical capital key messages

- Short- and mid-term wellbeing is partially achieved from the material structure that fixed produced physical capital creates. However, long-term wellbeing might be negatively impacted by the rigidities imposed by these material structures, which also impact natural and social structures, and forces.
- Up to a point, rigidities help reduce uncertainty and costs; increased certainty and reduced costs allow for higher and more effective investments in capital.

Mobile produced physical capital: tools and machinery.

The wellbeing that *mobile produced physical capital* helps generated is dependent on its complementarity with existing material and social structures, as well as with existing human capital. As it is the case with other tangible and intangible capital, it enhances human capabilities. It is a piece of the puzzle, but is neither the only nor the most important one. For example, mobile produced physical capital is designed for specific inputs, these being energy, information, or materials, among others. Therefore, they embed the constraints that result from the structures they are themselves embedded into. Overall, there are feedback loops running to and from mobile produced physical capital into the material and social structures. The slow timeline by which material and social structures change, bounds the timeline by which mobile produced physical capital can change. In turn, mobile produced physical capital embeds constraints into material and social structures; therefore, the demand for it reinforces the constraints already embedded in the material structure (Godfrey, 2014; Independent Commission on International Development Issues, 1980; Kümmel, 2011; Jan Tinbergen, 1966).

Table 3.10. Mobile produced physical capital key messages

- Mobile produced physical capital enhances human capabilities through its complementarities with human, social, intangible and natural capital. They are embedded into natural, material, and social structures that determine their theoretical capacity and efficiency to create value and wellbeing.
- There exist feedback loops between the stocks of mobile produced physical capital and fixed produce physical capital that influence the overall levels of investment in an economy, as well as the evolution of the natural, material, and social structures into which they are all embedded—which in turn, influence the evolution of both types of produced physical capital.

Intangible produced capital: knowledge and technology.

As previously discussed, economists have given innovation and technological progress a central role in their modelling of economic growth (Aghion, Howitt, & Bursztyn, 2009; H. A. Arndt, 1984; Barro & Sala-i-Martin, 1997; Hartmann, 2014; Helpman, 2004; Romer, 1990). Alternative economic models like the one developed by Galor (2011) are also consistent in pointing out that both the stock and rate of creation and diffusion of knowledge are key determinants of growth. Knowledge is responsible for new and improved modes of production that increase the productivity of the factors used.

Not all intangible-produced capital complements the existing stock, though; some new knowledge is disruptive in that it can make previous paradigms and standards obsolete. Even in those cases, obsolescence of knowledge and technology might be temporary, given that their usefulness is dependent on the context (Independent Commission on International Development Issues, 1980). The analysis of the cycles of

innovation and the impact that disrupting knowledge has had in shaping the long-term performance of economies and their countries, was studied by Kondratiev, as previously discussed (Barnett, 1998; Modelski & Thompson, 1996; Perez, 1983; J Tinbergen, 1981). Knowledge and technology can be as disruptive, as they can be soothing and even inertial (Freeman, 2008; Ugur, 2013).

The creation and diffusion of knowledge has, therefore, become an increasingly relevant policy objective. On one hand, investments in education have become a global goal through the Millennium Development Goals and the more recent Sustainable Development Goals (United Nations, 2016; United Nations General Assembly, 2015). On the other hand, progress in innovation and its diffusion have been increasingly promoted through systematic efforts implemented through the label of National Systems of Innovation (NIS) (Freeman, 2008; Romer, 1990; Ugur, 2013). As broader goals and mechanisms to ensure that an economy performs in a way that allows attainment of widespread wellbeing, these two main streams make sense. However, as it is usually the case, translating such macro goals into specific micro actions has proven difficult. For example, in terms of investments in education, traditionally, the focus has been on increasing enrolment, attendance, and attainment. Still, as Hanushek (2015) thoroughly demonstrates, the results of this particular effort has been disappointing in terms of stimulating increasing rates of economic growth. Hanushek demonstrates that it is, instead, the cognitive skills acquired through the education system, the ones which can actually make a difference by increasing adaptability and efficiency in developing ideas and approaches, which, in turn, contribute to economic growth.

With regards to innovation and diffusion, NIS have centered around the

promotion of interactions as a facilitator of co-evolutionary dynamism (Freeman, 2008). Networked economies, where barriers to information are reduced and result in faster sharing, are central to the diffusion of knowledge (Benkler, 2006; Freeman, 2008). Specifically, NIS aim at generating new knowledge, technological progress, more effective and efficient functioning of the economic system (increasing total factor productivity), improved social and economic structures that enable and facilitate innovation, a more supportive cultural environment that values knowledge and innovation, improved products and services (more effective and efficient in fulfilling individual and societal needs), and, of course, an improved labour force in terms of the quantity and quality of their inputs (Freeman, 2008; Ugur, 2013).

In the current social, economic, and political environment, knowledge is considered to have increasing returns given that the costs of diffusion are usually considerably lesser than those of creation (D. Cohen, 2012). While it is true that diffusion costs are relatively small, the increasing returns aspect is only possible because of the societal choices made with regards to intellectual property (Warsh, 2006). It is precisely the resulting social order of these choices what can give knowledge the status of private capital and not of public good; this is, at least for the period under which copyrights are provided to those who created it. It is too this social order, what determines what knowledge is and is not, and hence, what can be the subject of such copyrights. This in turns determine the flow of knowledge in a society and how easily it can or not permeate everyday life. Economists like Barro and Sala-i-Martin (1997) argue that the convergence of developing and developed countries is conditional, precisely due to societal choices related to intellectual property: low incentives to innovate and high incentives to copy

prevent both groups to converge.

Table 3.11. Intangible produced capital key messages

- The creation of knowledge can be enhanced by reducing barriers to access and improving connectivity among agents (both individuals and organizations).
- While knowledge and technology can enable economic growth, they can also introduce rigidities through the accumulation of capital, which cannot be easily repurposed (material structures).
- Technological change disrupts the material and social structures by creating winners and losers.
- Not all kinds of knowledge are conducive to economic growth. The importance that knowledge has for growth is contextual.
- The value knowledge has as capital, is dependent on the societal choices that determine the legal property rights of its creators.

Modelling economic growth, development, and aid.

Models represent theories (particularly for economists, for whom there is now little distinction between one and the other). They are explicit representations of ideas about causation and explanation, a sort of systematic storyline that help human beings make sense of the world they inhabit, as well as trace pathways towards its transformation (P. R. Krugman, 1998; M. S. Morgan, 2012; Morillo, 2014; Rodrik, 2015). The latter being the most practical reason to model: to better understand which are the human actions that can influence the attainment of specific results (change in specific variables), structural change, or foundational change (Jan Tinbergen, 1966). In a way, theories capture specific aspects of the world, and, as a consequence, models do too. As such, models only cover limited aspects of reality, as well as the most common traits of

that reality (rather than the uniqueness of single occurrences) (Morillo, 2014). They also bound those common traits through explicit rules that reduce the uncertainties about causality or explanatory process (M. S. Morgan, 2012).

The relatively limited complexity of models vis-à-vis the reality they represent, makes them into tools through which complexities can be untangled (Rodrik, 2015). Most models lie in between general laws and individual every-day situations: they lie at a mezzo level in between the general and the particular. They help answer sets of questions through the manipulation of its variables and rules. Answers to these questions then contribute, building increasingly accurate narratives that help making sense of the world (M. S. Morgan, 2012). Indeed, by making explicit assumptions about which are the important variables and which are the rules by which these variables are connected to one another, models empower many, not only their creators, to further refine them. Part of their usefulness lies in reducing the role that implicit assumptions might have in the understanding of reality (Athreya, 2013; M. S. Morgan, 2012; Morillo, 2014).

Reducing an aspect of reality into a reduced set of variables and rules require as much imagination and creativity as it does intuition (M. S. Morgan, 2012). Many times, this process is constrained by the modelling tools and/or the nature and quality of the information available. This requires a number of trade-offs to be made by the modeller who has to balance their complexity, adaptability, practicality, and flexibility, while attaining an acceptable level of explanatory and predictive power (Athreya, 2013; P. R. Krugman, 1998; M. S. Morgan, 2012; Vroey & Hoover, 2004).

Specifically, Athreya (2013), Bourguignon (2004), and Vroey and Hoover (2004), suggest a set of specific criteria that they believe improve the quality of models dealing

with economic realities. According to them, these models should:

- Integrate demographic trends.
- Consider the patterns and trends of income and wealth distribution (including actor capabilities) and integrate the enablers and disablers that actors face in the using of such income and wealth.
- Consider the kind of arrangements that rule interactions among actors.
- Consider the objective implicit in the dynamics of the interactions between the actors (purpose of the interaction). It should also consider the winnings and losses incurred by these actors in such interactions, and any possible trends in them.
- Consider non-linear dynamic relationships.
- Considers potential unexpected or unintended consequences of the actors' actions and their interactions.
- Consider the role of psychological variables, like expectations, and approximates the behavioural motivations and triggers of actors.
- Consider sector interrelationships and their individual and collective performance.
- Account for macro impacts of micro effects and the micro impacts of macro effects.
- Be open in nature, integrating an economy within the global economic context, particularly trade and international financial transfers and payments.
- Analyze both real and financial variables and flows.
- Consider the different timelines involved and the specific change taking place.
- Address coordination issues through varied timelines.

- Approximate the limitations faced by actors in terms of information and rationality.
- Focus on the overall functioning of a system, rather than isolated relationships inside of it.

Ecological and physical economists add a few more suggestions that tend to be ignored by mainstream neoclassical economists. Specifically, they point to the fact that an economy is not a mechanical system where motion goes back and forth. Instead, an economy is a thermodynamic system characterized by irreversible processes (entropy). As a thermodynamic system, an economy is also a complex system, and, as such, it is characterized by self-organization (endogenous creation of structures that are considerably resilient to shocks) and emergence (the system possesses features that cannot be deduced from the features of its constituents) (Daly, 2004; Sengupta, 2013; Slanina, 2014). Understanding complex systems not only requires understanding the relationship between the flows within the system, but, most importantly, the relationships between stocks and flows ((N. B. Forrester, 1973; Meadows & Wright, 2008; Miller & Page, 2007). Furthermore, both thermodynamic and complex systems are characterized by the role of random factors and their indeterministic impact on the system. As a consequence, models representing them should be iterative, stochastic, and probabilistic, for sure. For example, Szpiro (2011) explains how the famous Black-Scholes model successfully integrated the physics concept of Brownian motion to conceive a random-walk dynamic that could predict financial market performance. (See also Slanina, 2014, who discusses two different kinds of models to deal with randomness: bare models—in which neither the source nor the dynamic of random behaviors is modelled; and involved

models—in which a mechanism that mimicks the perceived randomness is integrated into the model.)

In fact, the latter ideas about how to model change can be clearly linked to the Wittgenstein's ideas of rules and causal change that were discussed in Chapter 2. Slanina (2014) suggests that modelling human behaviour should consider the possibility that humans store in their memories a number of images that link situations and actions with outcomes. The way these images are stored and classified in the memory is neither systematic nor comprehensive. (It is random, instead.) These collections of images help to establish mental patterns that are used to make decisions by matching these images and patterns with the situation in which the decision is being made. Those images that showcase the most beneficial decisions made in the past in similar situations, are those highlighted through this process, and are those which tend to influence the ultimate decision. These images and patterns are continuously changing through assessment and reassessment of old and new images. This is, in essence, the core of Wittgenstein's argument about the iterative process of interpreting rules and adjusting behaviour.

Finally, Sengupta (2013), concerned with the need to integrate both the economic and ecological realities into a model, refers to the possibility to do this by: (a) adjusting economic models to integrate ecological constraints or parameters; (b) modelling the ecological sub-system and relating it to the economic sub-system via inputs and outputs exchanged between them (using, for example, an input-output model); and (c) unifying ecological and economic factors via a common denominator that is used to value them both.

In spite of all its benefits, the modelling of the complex social, economic, and

political realities of life, has proven to be of limited utility when not used responsibly. For example, Szpiro (2011) accounts in detail the rise and fall of the Black-Scholes model which after much hype and a Nobel prize, resulted in the bankruptcy of the firm that it gave birth to. Likewise, the financial crisis of 2008 was unforeseen due to extreme reliance on models which underlying assumptions made such crisis almost unthinkable (Athreya, 2013; Turner, 2016). Models offer only a partial view, and as such they need to be complemented by political economy analyses that integrate and take seriously social and political variables regardless of how difficult it is to integrate them in the models.

Table 3.12. Modelling economic growth, development, and aid key messages

- Models should balance complexity and simplicity. They have to be practical, flexible, and adaptable; and they have to showcase an acceptable level of explanatory and predictive power.
- Social, economic, and political systems, as well as the ecological system in which they are embedded, are complex thermodynamic systems. They have self-organizing and emergent properties, and showcase random behaviours that can only be modelled stochastically and statistically (regardless of whether the specific dynamics behind such random behaviours are or not specified).
- Assumptions embedded in models should be made explicit.
- Models should consider demographic, income, and wealth patterns and trends, as well as its enablers and disablers.
- The arrangements and rules that govern the interactions and dynamics between actors, as well as the inequalities in intended and unintended outcomes they produce (winners and losers), should be integrated into models.
- Models should consider the role of psychological variables like expectations and approximate the behavioural motivations and triggers of actors, including the limitations faced by them in terms of available information and rationality.

Table 3.12. Modelling economic growth, development, and aid key messages

- Models should account for the macro impacts of micro effects and the micro impacts of macro effects. Similarly, they should consider the relationships between economies; a whole economy and its sectors; and individuals and collectives.
- Coordination issues, both present and future, should be addressed by models.
- Models should consider both real and financial variables and flows.
- Models should reflect on the overall functioning of a system, rather than isolated relationships inside of it.

Chapter 4

A Formal Interpretation of Concerted Wealth Management

Chapter Summary

As discussed in Chapters 2 and 3, while the monetary and pricing systems play a crucial role in a society and have many potential benefits, they also create severe limitations. Among them is, for example, the difficulty in accurately accounting for public goods.

Drawing on a Wittgensteinian epistemological and ontological approach, and using a strictly physical, not monetary approach, this chapter aims at redefining the limits of that about which aid can and should act upon, and that about which it can realistically do little and, therefore, should remain passive. This is the basis of the proposed alternative paradigm of concerted wealth management, which is suggested as a replacement to old-paradigm aid. The distinction between what should and should not be the subject of the proposed new paradigm is not necessarily an ontological, but a practical one: that which merits, and can benefit the most from our attention and efforts (in the form of aid) in order to promote development towards self-reinforcing state, and that which lends itself to confusion and muddiness with little practical effects in promoting such process of development, and therefore not to be meddled with through aid interventions. The new words and meanings introduced in Chapter 3 underpin the formal interpretation of the alternative conceptual framework developed in this chapter.

A conceptual framework is proposed, then, in which covariant absolute and relative limits—natural and socio-material ones—define a possibility space through

which natural and social forces flow, and in which human beings can flourish and increasingly act in development inducing ways. This process of development is bound both by the natural and socio-material limits described above, and by the space-time characteristics of the classes of assets that compose the wealth of nations, in particular, the critical-paths by which their formation, transformation, and degradation are bound, and which translate into embedded function gradients characterizing each class of assets' potential for value generation, within given periods of time.

Wellbeing is possible through the extraction of value from wealth (in the self-reinforcing state, total value extracted and total wellbeing are conceived as an identity). Value is obtained from extracting physical units of wealth, using these physical units to convert them into output (reflecting both, the impact of the dynamics within the possibility space and the impact of the available stocks of all classes of assets), as well as from placing such resulting output into a local and global context which assigns it an effective value in terms of physical units of wealth (usually realized through the comparison of the wealth obtained in exchange for the output in relation to the wealth embedded in such output). Whether the payoff obtained by a country for undergoing such a process of value extraction leaves it with more or less accumulated wealth and therefore modifies its potential for intertemporally satisfying the wellbeing of its citizens, depends on the level of matching and synchronization that exists at any given point in time, between the countries' local natural and socio-material limits and the global ones (assuming an open economy). This level of matching and synchronization is influenced by how the stages in the lifecycle of the classes of assets overlap with the stages of long social, economic, and political cycles (in the case of this dissertation, represented by

Kondratiev long-waves—and, from this point forward, called *long-term cycles*). While this level of matching and synchronization influences the monetary denomination of the value extracted, this monetary denomination does not necessarily represent—in fact, seldom do—the real physical exchange of wealth taking place (mostly because as explained above, the pricing and monetary systems struggle in integrating a number of relevant variables, including of course, public goods).

The extraction of value from wealth, and therefore the attainment of wellbeing, represent a trade-off between intertemporal choices (too much present extraction limits future extraction). This is why the setting of a clear and stable possibility space (through the setting of natural and socio-material limits) is essential in order to ensure intertemporal wellbeing. Such clear and stable space facilitates the making of those critical intertemporal choices.

As a result, this chapter argues, the areas in which concerted wealth management, as an alternative paradigm to old-paradigm's aid, should focus are: the delimitation of a clear and stable possibility space; the stretching of the classes of assets' individual and portfolio bound limits towards their natural relative and absolute ones (as appropriate); the pushing of the classes of assets' function gradients towards their maximum sustainable potential; the minimization of the social, economic, and political costs that structural transformation and natural forces impose differently onto different classes of assets; the improved matching and synchronization of local and global natural and socio-material limits; and, the promotion of improved dynamics within the possibility space. In focusing on these aspects, development praxis should remain grounded on the limitations imposed by critical-paths, including the internal logic and dynamics of the natural, social,

economic, and political processes that take place within the possibility space (i.e., natural and social forces). The focus should then be in managing the conditions of such possibility space, and improving the disposition of those within that space, rather than manipulating their actions.

Country Assets in Four Dimensions

Wealth is the collection of classes of assets from which a country can extract the value that helps it attain wellbeing and ultimately, through the process of development, the self-reinforcing state (see Table 3.1). As discussed in Chapter 3, currently, we could classify these classes of assets into the following: (a) *natural*; (b) *human*; (c) *fixed produced*; (d) *mobile produced*; and, (e) *intangible produced*. The potential of these assets to produce value, and therefore wellbeing, is modified by: (a) the *stock of local and global public and private debt* as a liability that reduces the intertemporal capacity of the country to create and maintain wealth, as well as to extract value and wellbeing from it; (b) the *local and global natural, social, economic, and political structures and forces*, and (c) the *local and global social, economic, and political relative standing* of the country in relation to other countries, as an intangible that allows it to influence the underlying global socio-material structures, and through it, among others, the local and global monetary denomination of assets (pricing) and its proceedings (this impacts the ways in which, at specific points in time, the country can attain wellbeing).

When comparing the proposed list of classes of assets and their modifiers above with the traditional understanding of factors of production, is clear that there is a correspondence between them. First, what was traditionally considered “capital,” has been split into (c) and (d), this is, fixed produced, and mobile produced, respectively.

Second, labour and knowledge are represented through (b) and (e), this is, human and intangible produced capital. Finally, what traditionally was represented by land, is now comprehensively capturing all of natural endowments as (a). With regards to the modifiers, public and private debt has usually been absent from traditional models of economic growth, as well as the social and political factors, such as the proposed relative standing, and the natural and social structures and forces. Both of the latter substitute for the more recent and common in the literature concepts of “social capital” or “institutions”, giving them instead, a far broader reach and meaning beyond that of simple ingredients, and more akin to them being the soul of the development process. The proposed conceptual framework, then, is much richer than the old paradigm and takes political economy analysis seriously by integrating social and political variables within the model.

Classes of assets and the ecosystem.

At the most basic level, the potential to generate value that each class of assets has is bound by *natural limits* (see tables 3.2 and 3.3). This also applies to *intangible assets* (see Table 3.11), as their codification has to be stored in a physical place and transmitted through physical means, even if it is in the human mind. Intangible assets are as well produced by human beings, which are themselves, bound by natural limits due to their biological bodies.

Natural limits are imposed by natural structures (see Table 3.2). Natural structures impose limits that relate to, among others, physical properties (organic and inorganic properties), spatial characteristics (e.g., location, dispersion, accessibility, mobility), use potential (e.g., rival, non-rival, excludable, non-excludable), relative potential (e.g.,

complementarity, substitutability), and time-related characteristics (e.g., formation, transformation, degradation, depletion, destruction, renewable, non-renewable).

Natural limits can be absolute or relative. For example, the laws of physics state that matter cannot be created or destroyed in a closed system. Earth can be considered to be a closed system when it comes, for example, to minerals, given that meteorites, as the only means by which new matter enters Earth in our present time, are not that common and relevant in volume. Furthermore, space mining is in the realm of possibility but is still a few decades away. Nevertheless, theoretically, minerals cannot be exhausted, although this statement applies in geological time, which could be millions of years. Whether human beings can achieve the technological progress to collect and recycle all minerals back into a more orderly state (after their use have resulted in entropy), is debatable. Likewise, whether enough volumes of each mineral can be extracted and processed to supply the needs and wants of every single human being in a world with a growing population is also debatable. Therefore, one could say that in the timeframe by which human beings operate and have the capacity to operate in the foreseeable future, there are particular types of natural assets that will be bound by *absolute natural* limits—represented by Ω_{A_i} and 0_{A_i} , respectively, the upper and lower absolute natural limits of the class of assets, A_i). Once used up, no more will be available. This is the case of non-renewable assets.

Relative natural limits refer to, for example, those boundaries imposed by the functioning of the ecosystem: how much pollution can be processed; or how much of the population of a certain species can be used for human consumption without its feasibility and sustainability being compromised.

Figure 4.1, below, illustrates the points made in the preceding paragraphs.

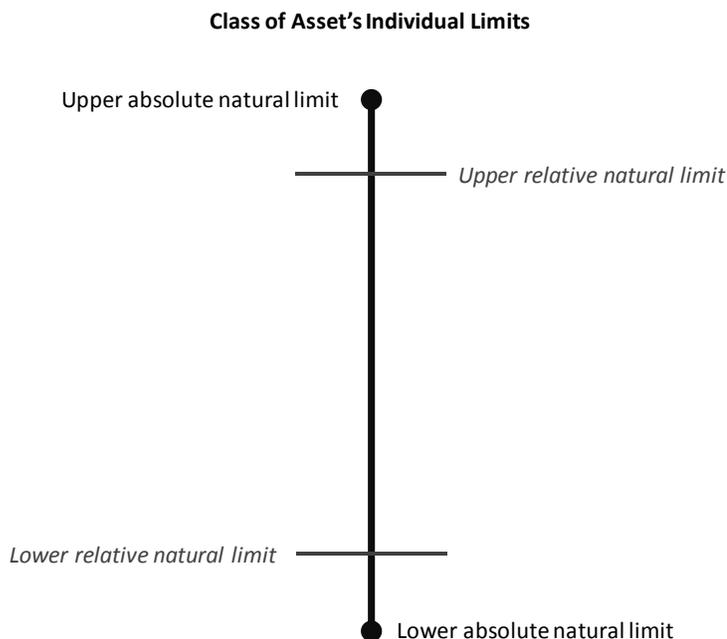


Figure 4.1. Class of assets' absolute and relative natural limits

Given that ecosystems are not absolute themselves, and are contextually time-bound, relative natural limits are not only determined by the nature of the classes of assets themselves, but also by how space and time impact them: the feasible and sustainable levels at which certain assets can be exploited will change continually, based on variations in all other parts of the ecosystem. This is a stochastic process (in contrast to a deterministic one).

Figure 4.2 shows that, while the ecosystem is permanently bound by absolute natural limits, its relative natural limits vary in time (as showcased by the double headed arrows separating the absolute from the natural relative limits). Consistent with the

absolute natural limits of the ecosystem, each class of assets' absolute natural limits are permanently bound by the absolute limits of the ecosystem, as well. In turn, the class of assets' relative natural limits (ω_{A_i} and ϖ_{A_i}) move along with the ecosystem's relative natural limits, although not necessarily in a proportional way (changes in the ecosystem may not affect all its constituents equally, at least not in the short term—ecosystems can always reach new and different equilibriums, hence, their description as stochastic).

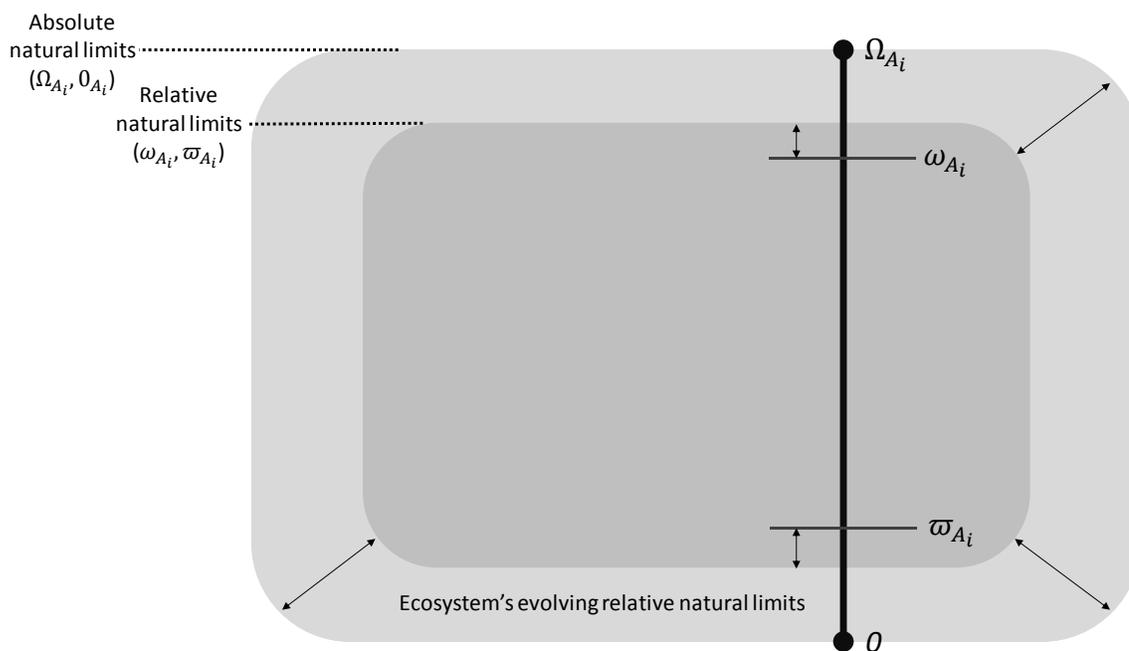


Figure 4.2. Ecosystem and class of asset's limits

Note that since all classes of assets are considered to be part of the “ecosystem,” ecosystem is used here in a broader sense than usually used in the biology or environmental literature (see Chapter 3).

A collection of classes of assets in the ecosystem.

As discussed above, as part of an ecosystem, the potential of a class of assets to generate value is bound by absolute limits first, and then by relative natural limits that are dependent on the relative natural limits of the ecosystem. These relative natural limits are time specific, and they shift based on the internal workings of the ecosystem, which depends on complex relationships between its components.

These relations are dynamic and mutually dependent. They can be understood as the cross-covariance of the stochastic processes that characterize the ecosystem and the classes of assets. For example, to survive, humans require air, a specific temperature range, water, food—further, plants need water; animals need plants; among many others. Balances between living organism populations are very sensitive, and altering these balances can have huge consequences for other components of the ecosystem. This relationship also holds the other way around, with macro-level changes having relevant consequences at the micro-level.

In practical terms, this means that, even though a class of assets may be bound by class specific relative natural limits, there is, as well, an ecosystem-driven relative natural limit for each class of assets, which represents relationships between the classes of assets themselves, in the context of their dealings with the ecosystem, and vice versa. For example, if the state of technological progress had allowed human beings to produce carbon dioxide without having caused much deforestation, the capacity of the ecosystem to abate carbon dioxide would have been greater than it has, and, perhaps, as a consequence global warming might not be as critical a problem. This means that the upper relative natural limit (ω_{A_i}) of the ecological service to abate carbon dioxide could

have been higher than what it is today.

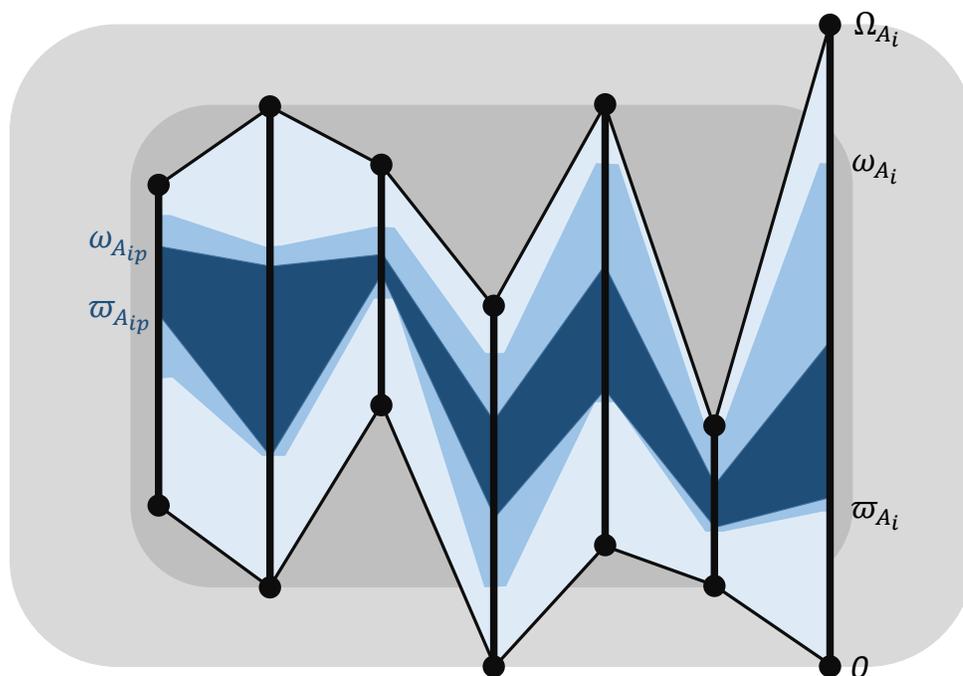


Figure 4.3. Classes of assets' natural limits: individual and ecosystem bound

The ultimate implication of this is that taken as a collection of assets, the upper and lower relative natural limits of each class of assets need to be further revised to reflect the relationships between them in the context of the ecosystem (see Figure 4.3 above). To take into account the shift in the relative natural limits of each class of assets due to its relationship with the other classes of assets, ω_{A_i} and $\bar{\omega}_{A_i}$ can, respectively, become $\omega_{A_{ip}}$ and $\bar{\omega}_{A_{ip}}$. The increasingly darker shades of blue of the different areas represented in Figure 4.3 relate, respectively, to the absolute natural limits (Ω_{A_i} and 0_{A_i}), relative natural limits (ω_{A_i} and $\bar{\omega}_{A_i}$), and relative ecosystem bound limits ($\omega_{A_{ip}}$ and $\bar{\omega}_{A_{ip}}$)

of each class of asset, A_i , in the ecosystem, \mathcal{E} . It is important to note that, while for illustration purposes, the limits are shown for example, to progressively narrow from Ω_{A_i} , to ω_{A_i} , to $\omega_{A_{ip}}$, this might not necessarily be the case. When *assets* are combined in a portfolio, they may actually increase their ecosystem bound relative natural limits due to their enabling or supporting effect.

Adding the local and global social, economic, and political realities.

At a given point in time, each one of these classes of assets is additionally bound by the limits imposed by material and social structures (see tables 3.4 and 3.5, respectively). These structures incorporate into them, among others, the influence that the three modifiers discussed at the beginning of this chapter exert in the potential any class of assets has to produce value, and therefore wellbeing (the stock of local and global public and private debt, the local and global social, economic and political structures and forces, and the local and global social, economic, and political relative standing of the country) (see tables 3.4 to 3.11).

The social structure not only provides the rules and routines (social limits) through which a human collective can use classes of assets to create value; it also bounds the relative natural limits of these assets. Social limits (represented by $\omega_{A_{ips}}$ and $\varpi_{A_{ips}}$) embedded in the social structure carry, intertemporally, the choices made by society throughout history, not only by choices made presently.

For example, an ecologically conscientious society might decide that certain species of animals shall not be killed. The potential of these animals for generating value and attaining wellbeing is still given by the natural limits, and these limits are in no way

modified by the social ones; yet, it is social limits which make this potential negligible as the society has decided that no net wellbeing should be achieved through their killing (that is, the social cost of killing them exceeds the social benefit). Similarly, the same society might decide to conduct mineral explorations only on areas in which the richness of the ecological presence is below a certain threshold. In this case too, social limits do not modify in any way the natural limits, but it bounds them further, in this instance, to social preferences. On the contrary, another society might display a disregard for any intergenerational equity and decide to allow for the transgression of relative natural limits, leading to the depletion or destruction of one or many classes of assets. In this case as well, the social limits would not modify the natural ones; however, given that the social allowance is greater than that allowed by nature, a considerable cost will be borne by society, particularly, future generations.

While social structures can exist at many different levels, for practical purposes, a simplification will be made so that only local and global ones will be discussed (the analysis and the model formalized, however, are applicable to other levels of aggregation or units of analysis). Given that the social structures of countries are embedded in a global structure, the social limits by which the country operates, factor-in, explicitly or implicitly, those global limits by which the country is bound. For example, being a signatory of an international treaty to eliminate the use of ozone-depleting substances, limits a country's capacity to extract value from certain kind of natural assets, meaning that its local and social structure is bounded by the global one.

Another important implication that global structures have on the local structures is that, by virtue of the international trade that takes place between countries, there is a *de*

facto transfer of wealth, as wealth can not only be traded directly but it is, as well, embedded in the products and services exchanged. In practical terms, this means that the ecosystem bound relative natural limits of the classes of assets of a country, $\omega_{A_{ip}}$ and $\varpi_{A_{ip}}$, can be shifted up or down through international trade, not necessarily because a country's own quantities of each asset or their natural limits are actually being changed, but because the net trade balance (imports minus exports) will either mean that the country is, for all practical purposes, benefiting from the value extracted from more wealth than it actually used from its own stock, or that it is letting other countries benefit from the value extracted from its own wealth. Given the limitations of our current pricing and monetary systems in assigning monetary value to several classes of assets, as well of national income accounts limitations, it is likely that these exchanges are not being compensated fairly among the parties in terms of physical units of wealth (see Table 3-1 and preceding text).

If the net proceedings of international trade are positive and consumed in the present, they will not necessarily have an intertemporal effect on wellbeing; however, if these net proceedings are invested, they will increase the volume of the country's assets, increasing, intertemporally, the capacity of the country to generate value. If, on the contrary, the net proceedings of international trade are negative, the country's capacity to generate value intertemporally will diminish given the draining of assets that occur through their embedding in exports or direct exporting (see Chapter 3, Table 3-3, for an example). A country with a trade surplus in terms of physical units of wealth could be said to be building up its wealth, to be enjoying value beyond the one they could obtain from the wealth they currently possess, or a combination of both. A country with a trade

deficit in the same physical terms could be said to be currently experiencing a loss of wealth, which means it ends up possessing a reduced intertemporal capacity to generate value and attain wellbeing.

The ability of a country to have a trade surplus is not only dependent on endogenous factors that determine its comparative advantage. It is also reliant on the social, economic, and political relative standing against other countries, and on how such standing positions these countries in their relative capability of influencing the global social structures. Power, as well as monetary arrangements, have considerable influence in determining comparative advantages, and ultimately trade surpluses or deficits in terms of physical units of wealth. This is similar, although at a more macro level, to the description and theorization that gave Krugman (1987a) its Nobel Prize in economics. He argued that no longer productivity (as argued by Ricardo), or endowments (as argued by Heckscher and Ohlin) were alone in determining countries comparative advantages, but that economies of scale and network effects could sometimes supersede those factors in importance. The argument made in this paragraph, extends Krugman's argument by including not only comparative benefits derived from closeness and complementarity among private actors, but also the private and public benefits that matching and synchronicity between the local and global socio-material structures can create.

With regards to the material limits (represented by $\omega_{A_{ipm}}$ and $\bar{\omega}_{A_{ipm}}$) imposed by material structures, these, as the social ones, are also relative. As the social ones, they are also ultimately bound by the natural limits. However, material limits either lie relatively up or down social limits, depending on circumstances. For example, material limits imposed by infrastructure choices made by society over the years, as well as by the

technological state of the art, might not make it economically feasible, or even possible, to transport certain kinds of assets from one place to another. Theoretically, it might be physically possible, for example, to harness more energy or apply it in other ways than the ones in which we do today; we could, too, invent new means of transportation (transporting such assets might not be bound in the same ways by natural limits as, they are by existing means of transportation and the infrastructure that supports them).

Doing any of these might not be frowned upon by society either, and, therefore, not bound, as well, by any social limits. Still, the material limits of our present time might not allow society to do such a thing in order to extract value (e.g., think, for example, there is no widespread infrastructure to charge electric cars in public spaces and how this material limit, limits in turn social choices—in this particular case, the appeal to acquire an electric car). In this case, natural limits will act as the highest upper bound, social limits as a middle upper bound, and material limits as the lower upper bound by which extraction of value from such assets will be bound overall (at least in a particular timeframe). A hundred years into the future, for example, material limits might have shifted upwards and allow for transportation of such assets. However, at that particular point in time in the future, social limits might have shifted downwards and might then frown upon their transportation, for example, as something undesirable. In this case, natural limits will still act as the highest upper bound, material limits as a middle upper bound, and social limits as the new lower upper bound by which extraction of value from such assets will be bound overall, at that particular point in time. In this last case, social limits might be breached given that material limits allow it (although again, at a social cost), but natural limits will still be inviolable at that particular point in time.

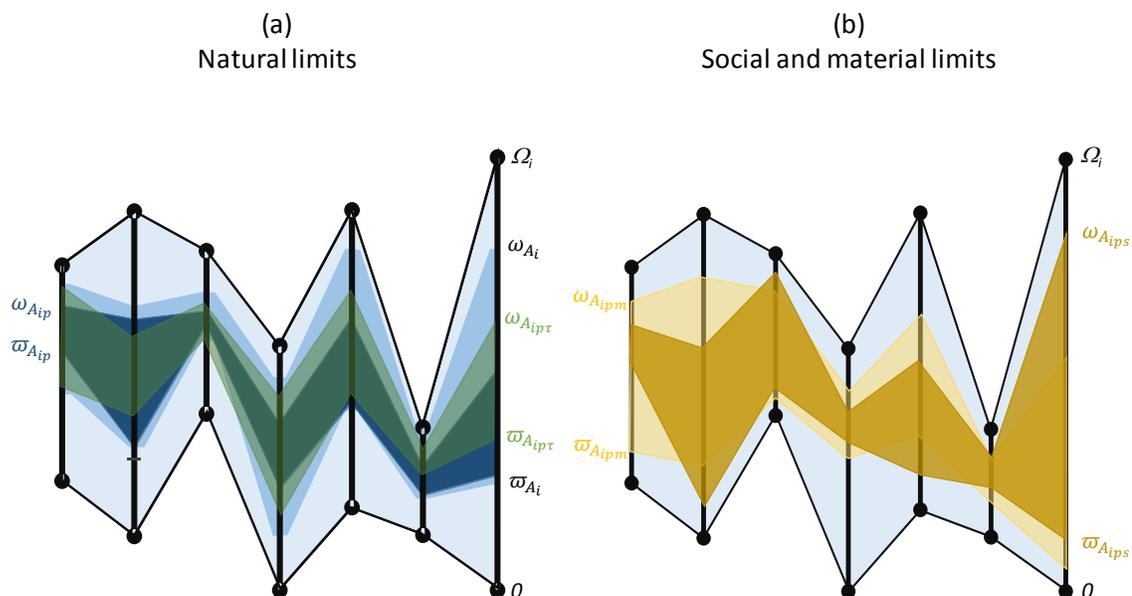


Figure 4.4. Natural versus social and material limits

Figure 4.4 above shows, side by side, the addition of social and material limits to the previously discussed ones in Figure 4.3. On the left, (a), the change in the natural relative limits by a trade surplus or deficit is showcased by the green area juxtaposed over the representation of those limits already illustrated in Figure 4.3 (being these new limits (represented by $\omega_{A_{ip\tau}}$ and $\bar{\omega}_{A_{ip\tau}}$). As discussed above, depending on whether trade produces a deficit or surplus in physical units of wealth, the effective limits of wealth possessed by a country will differ (these effective limits could theoretically exceed natural limits, given that wealth is being added or subtracted to the one already possessed by the country). On the right side of Figure 4.4, (b), and still bound by the absolute natural limits, both the social and material limits resulting, respectively, from the social and material structures, are illustrated. As expressed above, sometimes one will be bound

by the other and vice versa, so the particular situation depicted is for illustration purposes only.

This means that the relation between relative natural limits gets further qualified by these additional two limits, reflecting the possibility that social and material limits may not only allow for the transgression of ecologically bound relative natural limits, but may also allow for the transgression of specific classes of assets' ones.

Ultimately, Figure 4.4 illustrates the resulting upper and lower bounds, which limit a collection of classes of assets' potential to create and produce value, and, hence, to contribute to the attainment of wellbeing. These limits create a possibility space for a social, economic, and political process of change—development (see Chapter 2 for a discussion of this idea of setting limits from Wittgenstein's epistemological and ontological approach). Given that the formalization of the proposed conceptual framework represents the ecosystem as a complex system in which stochastic processes takes place, the space contained within the proposed bounds can be formally termed as the *possibility space*.

This possibility space for each class of assets (in Figure 4.5 below, is given by what could be called effective relative limits, $\omega_{A_{ie}}$ and $\varpi_{A_{ie}}$), is the result of the interaction of their individual natural relative limits (ω_{A_i} and ϖ_{A_i}), the ecosystem bound natural relative limits ($\omega_{A_{ip}}$ and $\varpi_{A_{ip}}$), the international trade relative limits ($\omega_{A_{ip\tau}}$ and $\varpi_{A_{ip\tau}}$), the social bound relative limits ($\omega_{A_{ips}}$ and $\varpi_{A_{ips}}$), and the material bound relative limits ($\omega_{A_{ipm}}$ and $\varpi_{A_{ipm}}$); all of these, bound in turn by the ecosystem.

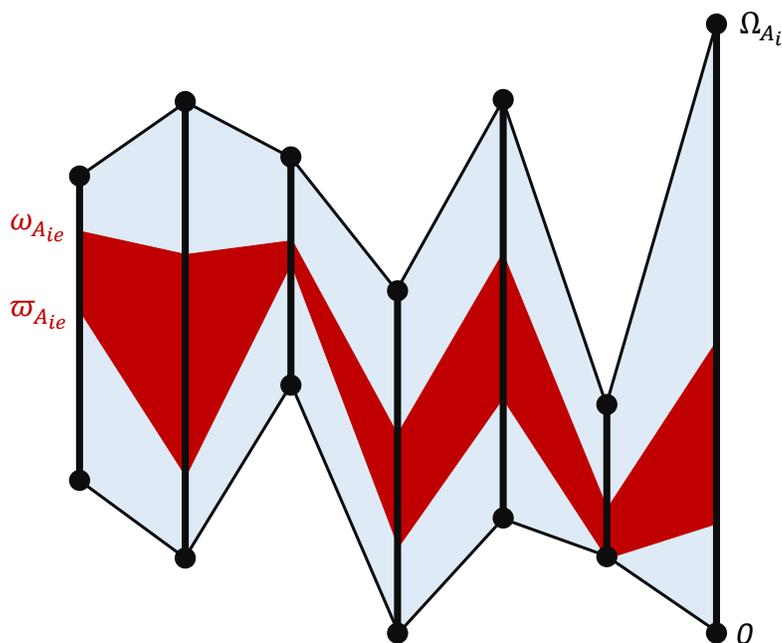


Figure 4.5. Effective relative limits (and the possibility space within them)

In summary, the proposed conceptual framework's possibility space is bound by natural absolute and relative limits, which factor-in the effects of trade into those given by natural structures ($\omega_{A_{ipN}}$ and $\bar{\omega}_{A_{ipN}}$), and socio-material relative limits ($\omega_{A_{ip\Psi}}$ and $\bar{\omega}_{A_{ip\Psi}}$), which factor in both the effects of material and social structures.

Ecosystem's relative limits through time.

The formation, transformation, degradation, depletion, and destruction of a class of assets occurs in time. The timeline for any of these stages may last decades, hundreds, thousands, or millions of years. Some of these classes of assets go through only one cycle, while others can go through several.

As discussed above, this time-bound process is shaped by absolute and relative natural limits, as well as by socio-material ones. For example, evidence shows that, on

average, global life expectancy is approximately 71.5 years (UNDP, 2015). However, the same evidence indicates that, due to a combination of factors, life expectancy is much lower in many countries. While genetic material plays a role in determining life expectancy, evidence also shows that access to preventive and corrective health care, opportune vaccinations, nutrition, and other factors play a prominent role. That countries with higher GDP per capita have, in general, higher average life expectancy, showcases the importance that material and intangible wealth can have. This means that in the present time, an average life expectancy of 71.5 years could be considered a relative, natural limit. This would be a relative and not an absolute limit because, in practice, there are a considerable number of cases all around the world, of people who live up to 80, 90, or even beyond 100 years. Theoretically, then, any of these upper figures, or an average of them, could be considered as an approximate absolute natural limit.

Life expectancy is only one of the dimensions of human life. Other dimensions include physical work capacity (which would be expected to grow during childhood and adolescence, peak at midlife, and start decreasing in later years), reproductive capacity and intellectual capacity (might start and peak later than physical capacity, but can certainly last longer and even perhaps never stop growing), among many others.

Therefore, each class of assets is bound by a timeline: a single one, or a cyclical one characterized by a succession of single timelines that repeat every so often (cohorts). For practical purposes given the geological timelines involved, it will be assumed that all inorganic classes of assets belong to the first category, that is, they only go through one cycle (this will also be assumed to include the fixed and mobile produced classes of assets); while organic classes of assets, as well as those created and formed by them,

belong to the second. Figure 4.6 showcases this difference (note that in the case of renewable/organic classes of assets, those represented in (b), the shape of the curve is used for illustration purposes as it is a simplification of the many different shapes that the curves representing each individual class of assets could assume based on their space-time characteristics).

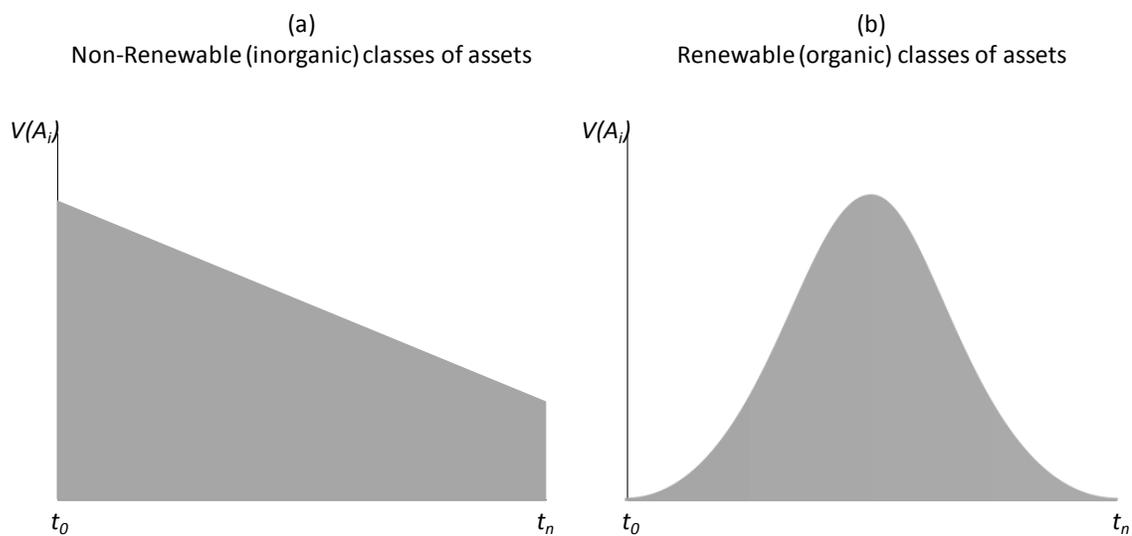


Figure 4.6. Volume extraction possibility frontiers from non-renewable and renewable classes of assets

Furthermore, a trade-off exists between the extraction of volume from a class of assets and its intertemporal potential for generating value. As discussed, absolute natural limits point to levels of volume extraction at which an asset will be fully depleted or destroyed; relative natural limits, in turn, point to levels of value extraction that, if surpassed (particularly in the case of renewable/organic classes of assets), endanger the mere existence of the asset. This relationship between volume extraction and

intertemporal value-generating potential (or what could be termed “health” of the class of assets) can be represented by curves of possibilities like the ones depicted in Figure 4.7 below.

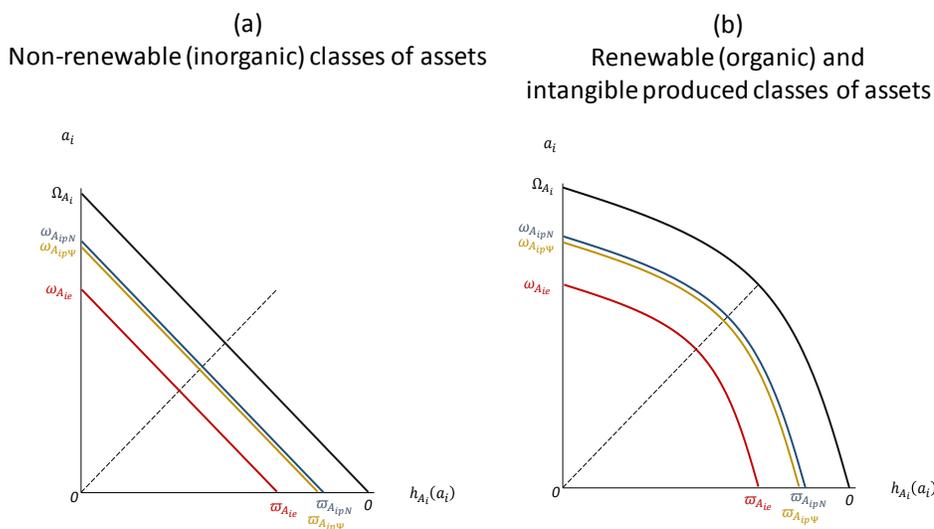


Figure 4.7. Possibility frontiers for non-renewable and renewable classes of assets

The outer frontier in Figure 4.7 represent the absolute natural limits. Extraction of volume at maximum level, Ω_{A_i} , would realize at once all the potential value embedded in the class of assets, A_i , while at the minimum level 0, no value will be extracted at all, although at 0 extraction, the potential of the class of assets to generate value will remain untouched. Both the frontiers created by natural and socio-material limits ($\omega_{A_{ipN}}$ and $\varpi_{A_{ipN}}$; and $\omega_{A_{ip\Psi}}$ and $\varpi_{A_{ip\Psi}}$, respectively) are drawn close to each other to showcase the fact that their position, relative to the other is not necessarily predetermined, and, at times, and/or for some classes of assets, natural limits might be higher than socio-material ones, or vice versa. Likewise, the representation of the effective relative limits

$(\omega_{A_{ie}}$ and $\bar{\omega}_{A_{ie}}$) is also illustrative, as being the joint result of both the natural and the socio-material limits, could either be above or below them (given all relative limits are considered to be stochastic). The line at 45 degrees represents the midpoint in the possibility space created by each one of the possibility frontiers.

Consistent with Figure 4.6, the choice of representing the possibility frontiers of renewable (organic) classes of assets with a convex curve is made to simplify the analysis. In reality, different classes of assets will have different types of curves representing the trade-off between value extraction and the maintenance of its potential to generate value (see Table 3-3). For example, renewable organic resources do not usually display decreasing marginal returns but graded ones with either one or several inflexion points or thresholds that may have a more than proportional effect on the asset's potential to generate value (Common, 2014; Daly, 2004; Sengupta, 2013). Identifying a more accurate possibility space requires, then, a more complex dynamic analysis that considers the variety of possibility frontiers of each one of the assets in the ecosystem (Sengupta, 2013).

By making the assumption that there is a simple inverse relationship between the quantity used of a class of assets and the health of this class of assets (as determined by the quantity of a class of assets that remains after the extraction of a portion of from the total available), for the purposes of the proposed conceptual framework, this relationship could be represented mathematically as follows,

$$h_{A_i}(a_i) = (1 - a_i)^{\alpha_{A_i}} \quad [4.1]$$

Where, $h_{A_i}(a_i)$ represents the health function of a class of assets, A_i , which is determined by, a_i , the quantity extracted from the class of assets, A_i , and on the *health*

elasticity, α_{A_i} , which represents the impact on the class of assets' value generating potential, of extracting a quantity a_i out of the stock of the class of assets, A_i .

Normalizing a_i to factor-in the maximum potential extraction of units from the class of assets, A_i given effective relative limits, $\omega_{A_{ie}}$ and $\varpi_{A_{ie}}$, Equation 4.1 becomes,

$$h_{A_i}(a_i) = \left[1 - \left(a_i \left(\frac{1}{\omega_{A_{ie}} - \varpi_{A_{ie}}} \right) \right) \right]^{\alpha_{A_i}} \quad [4.2]$$

Health elasticity, α_i , is constrained by,

$$\alpha_{A_i} > 0 \quad \text{and} \quad \Omega_{A_i} \geq \omega_{A_i}, \omega_{A_{ie}} \geq a_i \geq \varpi_{A_i}, \bar{\omega}_{A_{ie}} \geq 0$$

Note that the stock of the class of assets is represented in Equation 4.2 by the denominator, $(\omega_{A_{ie}} - \varpi_{A_{ie}})$, which showcase the maximum potential quantity extraction considering both natural and socio-material limits (that is, the effective relative limits). Perhaps it is important to clarify, then, that given the constrains above, effectively, this denominator could be in certain cases equal to $(\Omega_{A_i} - 0)$. However, choosing the former denominator will ensure integrating in the understanding of value extraction from wealth, not only natural limits but socio-material limits as well. Ultimately, the function gradients of the classes of assets are more fully reflected through their effective relative limits and the health elasticities than merely through their natural limits).

If, $\alpha_{A_i} = 1$, the relationship between extraction and health is proportional; if, $1 > \alpha_{A_i} > 0$, there are increasing opportunity health costs for the class of assets, A_i , per each unit extracted, a_i ; and if, $\alpha_{A_i} > 1$, there are decreasing opportunity health costs for the class of assets, A_i , per each unit extracted, a_i .

After establishing the trade-off between the health of a class of assets and the

quantity extracted from it, an output function, $\rho_{A_i}(a_i)$, could be defined as follows,

$$\rho_{A_i}(a_i) = [(a_i)^{\alpha_{A_i}}]^{\beta_{A_i}} \quad [4.3]$$

And, normalizing a_i again,

$$\rho_{A_i}(a_i) = \left[\left(a_i \left(\frac{1}{\omega_{A_{ie}} - \bar{\omega}_{A_{ie}}} \right) \right)^{\alpha_{A_i}} \right]^{\beta_{A_i}} \quad [4.4]$$

Where, a_i , represents the quantity of the class of assets, A_i , used to produce output, and, β_{A_i} , represents the *output elasticity*, which is constrained by,

$$\beta_{A_i} > 0 \quad \text{and} \quad \Omega_{A_i} \geq \omega_{A_i}, \omega_{A_{ie}} \geq a_i \geq \bar{\omega}_{A_i}, \bar{\omega}_{A_{ie}} \geq 0$$

If, $\beta_{A_i} = 1$, the relationship between quantity and output is proportional; if, $1 > \beta_{A_i} > 0$, there are decreasing returns to scale per each unit used, a_i ; and if, $\beta_{A_i} > 1$, there are increasing returns to scale per each unit extracted, a_i .

Additionally, it is important to note that both health elasticities and output elasticities, α_{A_i} and β_{A_i} , respectively, are class of assets' specific, as well as time specific (this will be further developed later in the chapter).

So far, in this chapter, the possibility of extracting value from assets has been analyzed as it occurs at a specific point in time, under some constraints. Figure 4.5 illustrated how the *possibility space* for extracting value given by effective relative limits would look like at a given point in time. Figure 4.8, instead, showcases how at each point in time t , over time intervals, t_1, t_2, t_3, t_4 , a different configuration of limits could be in place, reflecting both the effects of extracting value, over time, from the various classes of assets (which have an impact on the stock of these assets and therefore on its limits), as well as the effects of the complex inner workings of the ecosystem, which, as a stochastic

system accommodate dynamically to changes experienced by its components, as well as exert influence, as a system with emerging properties, into its components.

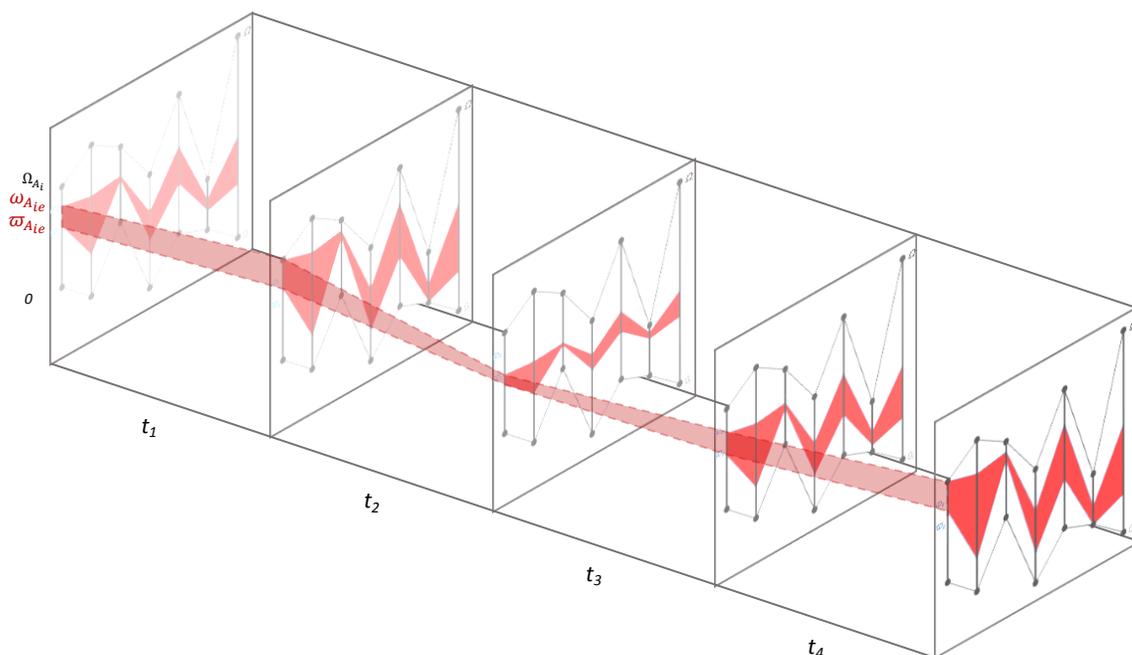


Figure 4.8. Ecosystem's effective relative limits over time

After each time interval, t_1, t_2, t_3, t_4 , the effective relative limits of the ecosystem change. The light red band on the outer side across the time intervals in Figure 4.8, exemplifies the evolution in time of these limits in the case of the leftmost class of assets in the array; the band can broaden or narrow given its dynamic relationship with the other classes of assets and the ecosystem which contains them. All, as a result of the process of social, economic, and political change.

As in the case of the red possibility space contained within effective relative limits on Figure 4.5, the light red band on the outer side of Figure 4.8 is, in itself, the

four-dimensional representation of this possibility space, now additionally bound by the passing of time and how it impacts the ecosystem through human and nature intervention. This provides a more comprehensive image of the possibility space in which social, economic, and political change takes place. It is important to note that there is a stochastic process by which the proposed effective relative limits shape social, economic, political change; a change which, in turn, tends to modify such limits and the possibility space they create.

Furthermore, it is important to note that, while on the two-dimensional possibility space in Figure 4.5, a mix of actions and policies might be put in place, its results in shaping this possibility space will mostly be seen at a later time—a lag exist between policies, actions, and the effective shaping of the possibility space through the results of such policies and actions. It is expected that a proportion of such change (see Figure 4.9 below) will be planned (through the policies and actions mentioned above); another portion will be random due to the impossibility, discussed in Chapters 2 and 3, in predetermining the exact way in which policies and actions will be interpreted and adopted into routines (as it is expected from a complex system); while the remaining portion of the change will be due to the path-dependence imposed by the socio-material limits that result from social and material structures (see Tables 3-4 and 3-5 and the text preceding them). There is also the potential that increasing public and private debt over time that is not matched by taxes or the proceeds of additional produced capital, could narrow down the possibility space by absorbing wealth through the demand for interests and the constraints imposed on credit that could limit the prospects to form or maintain wealth. This potential effect could be intensified if the investments financed through such

public and private debt fail to produce sufficient returns, or if, public and private debt financed present consumption rather than wealth creation.

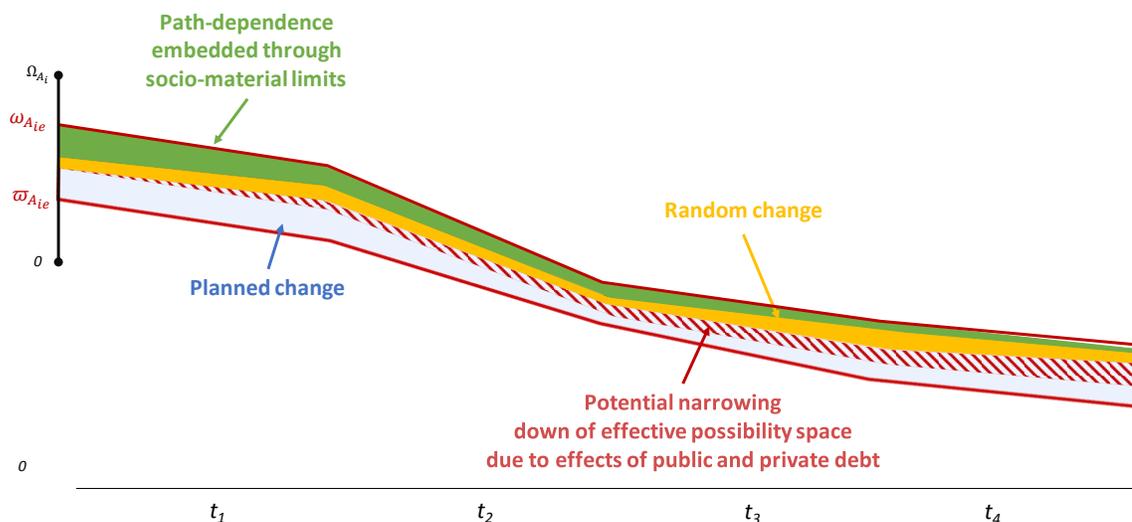


Figure 4.9. Path-dependence, and planned and random change in the possibility space of a class of assets

Over the previous sections, the shaping of the two-dimensional possibility space depicted in Figure 4.5 was discussed as being the result of the interaction of a number of natural and socio-material limits in the context of an ecosystem. The shaping of the possibility space is, in itself, bound, at a first level, by this two-dimensional possibility space and, in practical terms, the collection of all the possibility spaces across time, which in turn, represent the four-dimensional possibility space.

Figure 4.10 helps showcase the effect of effective relative limits on the formation of some classes of assets. On the left side of Figure 4.10, (a), the absolute and relative natural limits of the class of assets are shown— Ω_{A_i} and 0, and, ω_{A_i} and ϖ_{A_i} , respectively. The upper bound limits of both categories are considerably higher than the

effective relative limits represented by $\omega_{A_{ie}}$ and $\bar{\omega}_{A_{ie}}$, on the right side of the figure (b). This means that while potentially the class of assets could have ripped-off benefits represented by the entire grey area on (a) (as per the natural absolute limits only), or by the entire dark yellow area on (a) (as per the natural relative limits only), the effective relative limits showcased on (b), had the effect of considerably reducing the grey and dark yellow areas, and therefore the potential value that could be extracted from the class of assets (for comparison purposes the original maximum area, as given by absolute natural limits, is shown in light off-blue on (b)).

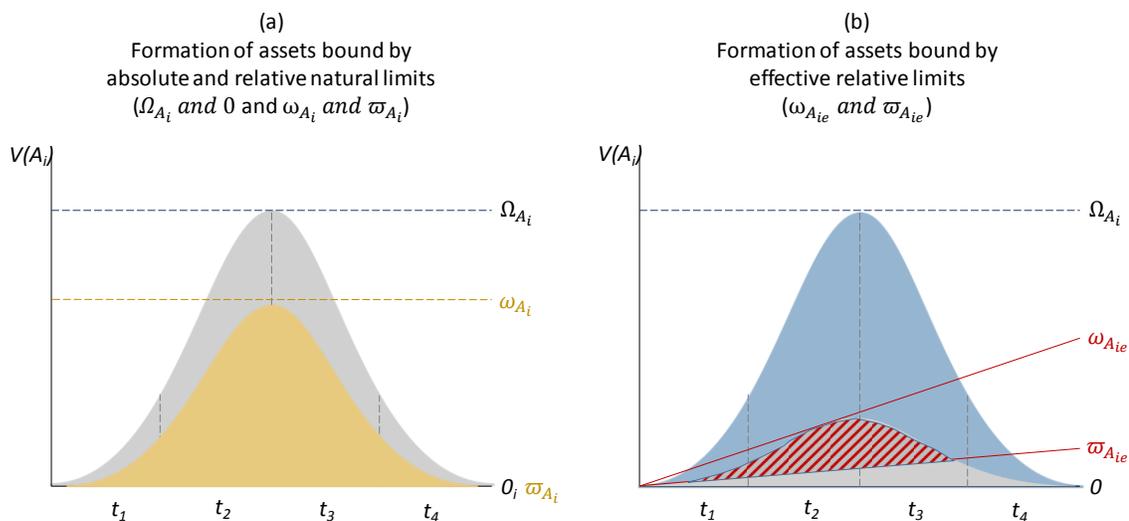


Figure 4.10. Impact of effective relative limits on the value generating potential of a class of assets

If Figure 4.10 was representing, for example, human capital, (b) would paint a picture of a generation of human beings, who due to limitations in terms of nourishment and education, as well as in terms of opportunities throughout their lifetimes, could only

produce, through the course of their lifetime a fraction of the value they could potentially have (showcased by the grey red-stripped area between $\omega_{A_{ie}}$ and $\bar{\omega}_{A_{ie}}$). Furthermore, the figure shows how their lives were made shorter than it could have—only having reached time interval t_3 , rather than t_4 .

Likewise, the socio-material limits incorporated into the effective ones, can dramatically constrain or expand the effective value generating potential of a class of assets. For example, gender impacting social norms can easily reduce by up to half the value generating potential of a human generation: a country in which female employment or ownership of property or business is forbidden or discouraged, both passively or actively; or, a country in which education reinforces socially biased gender roles.

As explained in the previous sub-sections of this chapter, since the ecosystem is a complex system, the under-performance of human capital due to the constraints imposed by the effective relative limits, would also have consequences for the overall performance of the system. Within the formalization of the conceptual framework proposed in this chapter, such under-performance will further narrow down the possibility space: under-performing classes of assets can act as bottlenecks and create a critical-path that further bounds the possibilities of social, economic, and political change.

This analysis could also be applied, for example, towards understanding the impact of natural and social forces. A natural or man-made disaster or a human disease could have similar effects on the function gradients of one or more classes of assets. For example, continuing with the illustration of human capital formation, it could be conceived that a highly contagious disease that affect children and ends killing or seriously and negatively impacting their functions gradients, could have a similar effect

than that shown on the right side (b) of Figure 4.10. Furthermore, one could think of a natural disaster in which the absolute natural limit, Ω_i , of a renewable resource, is seriously impacted, displacing the horizontal line representing such limit downwards.

War and violent conflict, as well, can have serious consequences in the function gradients of several classes of assets and therefore create real and opportunity costs that will need to be dealt with by future generations.

An Attempt to Overcome the Incommensurability of Assets in an Ecosystem.

A difficulty in managing a diverse collection of classes of assets in an ecosystem, lies on their incommensurability. As discussed in Chapter 3, assets differ in terms of their space and time characteristics, given that they also differ on their nature.

For example, timelines for the productive life of different assets vary widely. Infrastructure lasts for decades, perhaps even centuries; computers, on the other end of the spectrum, perhaps last up to five years. Similarly, the output functions of different types of assets can be very different. Usually, the efficiency of a bridge remains very similar throughout its productive life (i.e., the same number of cars can cross over it during the same unit of time given a constant flow of cars); on the contrary, the efficiency of a computer can be drastically reduced by the contextual requirements of new software. In the case of the bridge, an increased flow of cars may require the building of an alternative bridge to divert part of the flow, but nevertheless, the bridge will still be able to handle the same flow of cars for which it was designed. In practical terms, this means that the additional alternative bridge could be designed to handle the extra flow rather than the overall flow. In the case of the computer, if the new software has to be used, there might be no other alternative than to substitute the old computer for a new one.

While the old computer might still be able to contribute to other tasks, it is likely that these other tasks would produce less value-added, impacting the lifetime productivity of the computer. Money, pricing, and markets are for the most part, the means through which tangible and intangible things (including classes of assets, of course) in our world today are commensurate. However, as it has been already argued in this dissertation, the benefits these means provide come as well with considerable restraints that create troublesome biases.

As discussed in Chapter 3, while there is some evidence about the existence of economic cycles that are tied to those that are social and political, still a considerable debate continues about their nature (for assessments of these debates see, for example, Barnett, 1998; Devezas, 2005, 2006; Devezas & Corredine, 2001). Nevertheless, two important reasons suffice to use economic cycles in the forthcoming attempt to commensurate the diverse classes of assets that form the wealth of nations. First, the Wittgensteinian epistemological and ontological approach adopted in this dissertation imposes the need to having a point of reference against which assessments can be made: the contextual (Horwich, 2012; Klagge, 2011; Tyler, 2011). Second, the incommensurability problems described at the beginning of this section require the use of a constant that can serve as a point of reference to allow for all the classes of assets in the ecosystem be commensurate. In particular, Kondratiev understanding of these cycles has been chosen due to its more interdisciplinary nature and the nature of the literature about them which tend to integrate political and social variables into the economic analysis (Devezas, 2006; Modelski, 1998; Modelski & Thompson, 1996). This choice will also allow for following the methodological approach proposed in Chapter 1 of combining

both elements of economics and its modelling approach, as well as the more traditional political economic analysis. Furthermore, the identity between value and wellbeing proposed in Chapter 3, will also contribute to substantiating the forthcoming attempt to commensurate classes of assets.

Kondratiev, a Russian economist, and Schumpeter (through Kondratiev), suggest that there are overarching economic cycles called long-waves. These waves are driven by innovations—particularly disruptive ones (see Chapter 3 for a discussion of the social, economic, and political cycles literature and some of the debates around them). A disruptive innovation will push economic power from those who benefit the most from the previous wave, towards the disruptors creating a new wave. During a rising ebb, economic forces will push change throughout the fabric of the society: skills not previously in high-demand will start to increase in importance, raising demand, and incentivizing individuals to seek training and expertise in these skills; disruptors' activity will start to showcase deficiencies or holes in the regulatory frameworks and institutional basis that will slowly come to be addressed by governments. Investments will tend to become increasingly allocated towards the disruptive sectors as their potential for financial return will be higher compared to traditional ones. Some sectors will become less dynamic than others, creating shifts in jobs and generating a social impact (the cost of structural transformation) that will also translate into political consequences.

As disruption takes hold and starts taking over the economy in terms of its relative importance, previous trends accentuate further, cementing winning and losing situations for different social, economic, and political sectors. Once settled as the driver of the economy, and once a social, economic, and political change and equilibrium seems to

have been reached and take hold through an internalization process, pressure for remaining competitive and continuous growth, changes the focus of the new disruptive sectors from innovation towards consolidation and survival. Incentives of these sectors change towards maintaining the status quo they created. Smaller firms and new entrants have less chance to compete in the established sectors and have, instead, incentives to disrupt the current order (this is consistent with “new trade theory”—see Helpman & Krugman, 1985; and Krugman, 1987—and even with Minsky’s analysis of the financial sector—see Minsky, 1978, 1986). As the pressure from these new disruptors start to build up, the previous leaders find it hard to transform, usually entering into a declining ebb which will open up space for innovation and more considerable social, economic, and political change towards accommodating the needs and demands of the newly disruptive sectors.

Relating this dynamic to the analysis of the previous sections on the natural and socio-material limits, it could be theorized that the possibility space depicted in Figure 4.5, will tend, in time, to narrow further for some cohorts of the classes of assets, while broadening for others, as the economic powers of the disruptive sectors gain political influence and start pressuring for embedding of rules and routines into social structures that are favourable to them (this process of narrowing or broadening of the possibility space was illustrated in figures 4.8 and 4.9). This includes for example the push to recognise or reinforce intellectual property rights or leave certain loopholes open to allow for creeping monopolization. (This idea is also consistent with Minsky (1978), and with Acemoglu, Egorov, & Sonin, (2011).) The tightening of social structures towards social and material choices consistent with the disruptive sectors, and their effect on the

effective relative limits of the ecosystem, is showcased in Figure 4.11 (while Kondratiev long-waves are usually considered to be s-shaped, they will be represented in this dissertation, for simplicity, by regular *sin* curves).

In the Figure, effective relative limits, $\omega_{A_{ie}}$ and $\bar{\omega}_{A_{ie}}$, in t_1 , narrow down, respectively, towards, $\omega_{A_{ie}(t_2)}$ and $\bar{\omega}_{A_{ie}(t_2)}$, further reducing the potential value that a class of assets can generate, which is represented by the smaller red-dotted area between the new bounds.

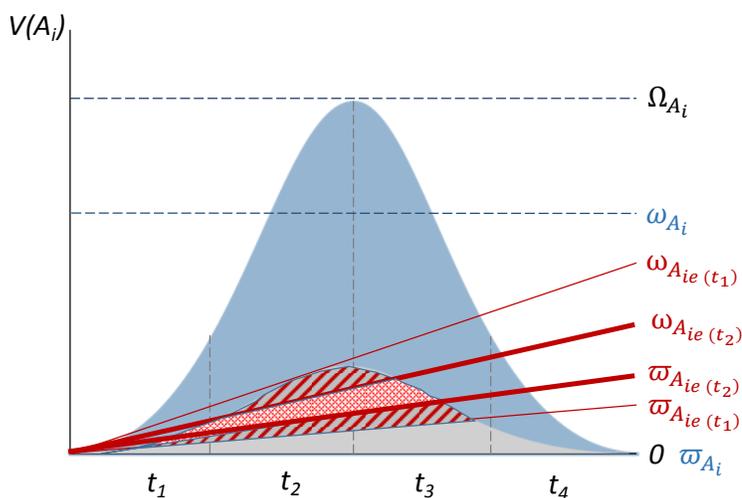


Figure 4.11. Narrowing of the possibility space during the rising and consolidation phases of a long-term cycle (e.g. a Kondratiev long-wave)

It is important to note that such narrowing does not necessarily translate into a contraction in the monetary denomination of the economic activity, but rather into further concentration of the economic activity around certain activities that better match certain socio-material structures. It might, as well be, then, that while the area in the graph is reduced, such concentration may even generate provisional growth as the monetary

rewards provided by those material and social structures for the use of those particular assets with specific characteristics are increasingly higher (the opposite, a broader area but reduced monetary rewards, is also possible). Still, the clear impact such narrowing of the possibility space has is that of creating inertia or path dependence in the ecosystem, partially consolidating winning and losing positions among social, economic, and political sectors and actors (this was also illustrated in Figure 4.9). Furthermore, as discussed above, the narrowing of effective relative limits, affects in different ways the cohorts within each class of assets based on how they match the stage of the cycle. That is, the situation depicted in Figure 4.11 could be different even for different cohorts of the same class of assets given that the structural transformation of an economy would have differential effects.

On the contrary, as the ebb starts its decent and the previously disruptive sectors start scrambling for market share and efficiency so they can maintain their competitive positions, new disruptors will start building pressure towards opening up the possibility space. Disruptors will start tapping into dormant potential to produce value outside the effective relative limits of the ecosystem. As they gain economic ground, they will tend to gain social and political ground, and then the push to widen the possibility space will begin again, as shown in Figure 4.12.

As showcased in Figure 4.11, the new effective relative limits are represented in Figure 4.12 by $\omega_{A_{ie}(t_2)}$ and $\varpi_{A_{ie}(t_2)}$.

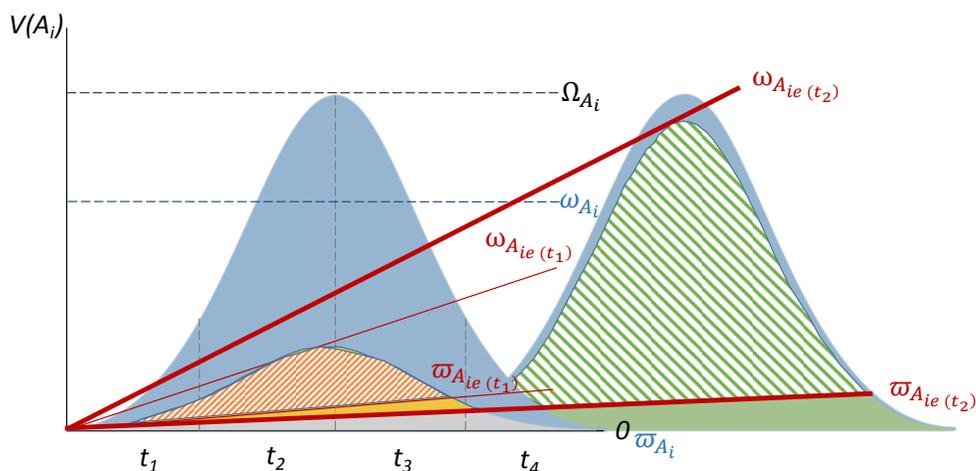


Figure 4.12. Broadening of the possibility space during the downside phase of a long-term cycle (e.g., a Kondratiev long-wave)

In comparing Figures 4.11 and 4.12, a highly significant observation emerges. That the effective relative limits can be narrowed or broadened down does not mean that the different classes of assets can respond all swiftly to such changes. In the original example discussed around Figure 4.10 (b), the smaller grey area bounded by effective relative limits ($\omega_{A_{ie}}$ and $\bar{\omega}_{A_{ie}}$) represented the medium- and long-term effects narrow limits could have in reducing the absolute intertemporal natural potential of a cohort of a class of assets to generate value. Inappropriate nutrition or lack of education, for example, shaped the grey area into a small fraction of what it could have been. The generation represented by it has been physically bound to a lower intertemporal value generating potential compared to its theoretical possibilities. This means that, at least for this same cohort or generation, the broadening of the effective relative limits will have little effect in reshaping its respective value curve (as shown in Figure 4.12, the limit $\omega_{A_{ie}(t_2)}$ passes considerably above the possibilities of the grey curve that was also

represented in Figure 4.11 (capped by $\omega_{A_{ie}(t_1)}$), reflecting that, in spite of the new effective relative limits increasing the theoretical value extraction potential of the class of assets, this theoretical potential exceeds the real potential currently possessed (i.e., embedded) by this class of assets and, therefore, reflecting as well the fact that the recent limit shift has not immediate consequences in its value generating potential. New generations will be able to benefit, as showcased by the green curve added to the right, (b), in Figure 4.12 to represent them. Through the widening of the effective relative limits, upcoming generations are allowed to develop closer to their absolute potential (the green and light-off-blue areas are almost the same size), and, therefore, they can be expected to contribute much more to creating value, and therefore, helping attain wellbeing.

At this point, Figure 4.8 can be revisited to show how the original idea of the evolution of the effective relative limits over time showcased in it, relates to the ideas illustrated throughout Figures 4.10, 4.11, and 4.12. Figure 4.13 below now shows: (a) how the possibility spaces given, respectively, by the effective relative limits at t_2 and t_3 (represented by two-dimensional planes), are connected to each other through an intertemporal possibility space (partially represented by the red rectangular area against the grey backdrop), as well as, (b) how these possibility spaces at t_2 and t_3 , exist at specific points in time in the lifecycle of a class of assets, represented by the value generating potential curves in the grey backdrop (the possibility space at t_2 is at the rising ebb of one of the lifecycles of the class of assets, while the one at t_3 is on the falling ebb).

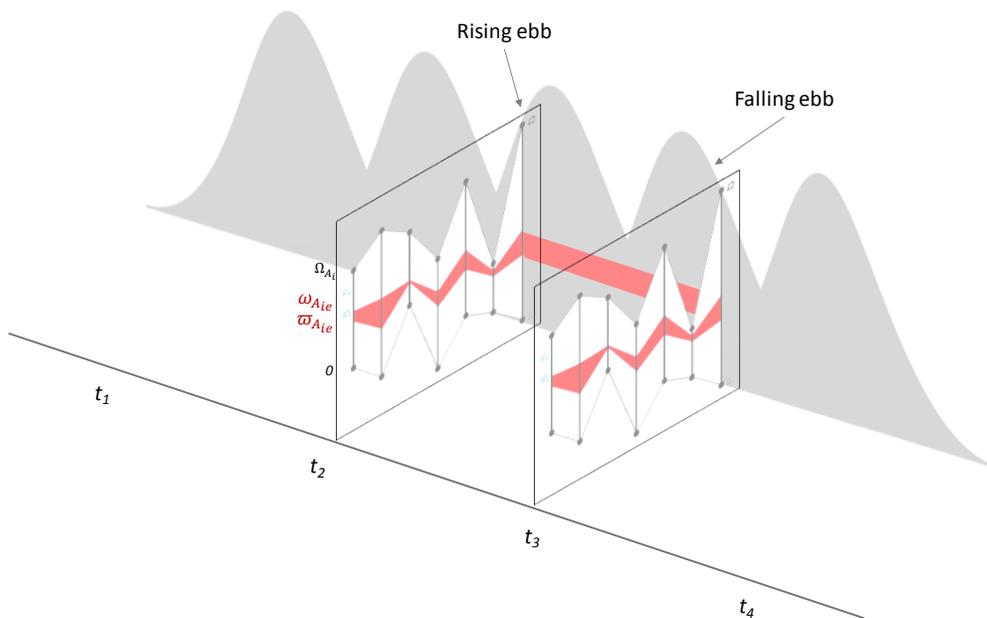


Figure 4.13. Four-dimensional representation of the possibility space on the backdrop of a class of assets' lifecycle

Rather than serving to directly commensurate different classes of assets, the Kondratiev long-waves provide a space-time continuum and a common reference point to situate all the collections of assets in an ecosystem, in the same two-dimensional space. This approach is highly consistent with the Wittgensteinian epistemological and ontological framework adopted in this research, which is, precisely, highly contextual and calls for clear points of reference against which ideas and assessments can be validated (Klagge, 2011; Tyler, 2011).

For example, using two axes, Figure 4.14 combines both three Kondratiev long-waves and its four stages (termed: creation, growth, maintenance, destruction: t_1, t_2, t_3, t_4 , respectively) on the horizontal axis; and several human generations on the vertical axis, which are also assumed to go through four stages mimicking those of the

Kondratiev cycle. For simplification purposes, each Kondratiev long-wave is estimated to last for about 60 years (4 stages of 15 years each); each human generation is assumed to be at their peak for about 30 years, with generational shifts every 15 years. (Note that the human generation curves do not represent its full life cycle, but only their productivity peak.) What this juxtaposition allows, in this case, is to unearth the composition, or “fabric”, of the human capital at any given stage on the Kondratiev long-wave (or for that matter, other classes of assets, as this analysis could be extended to all of them).

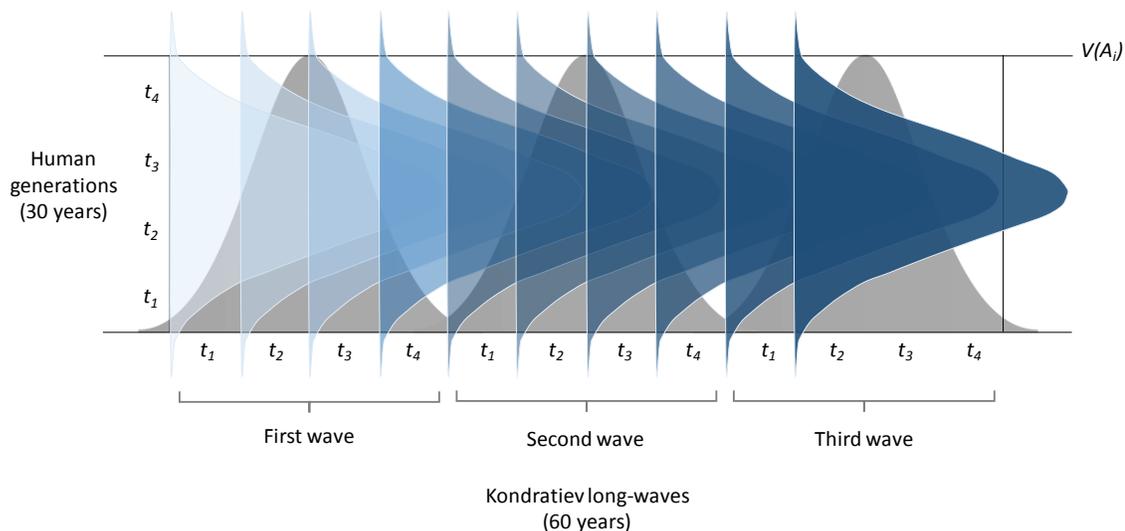


Figure 4.14. Long-term cycles (e.g., Kondratiev long-waves) and human generations in a two-dimensional space

In the literature, there is evidence (see Chapter 3) that given the different set of incentives reigning during each one of the stages of the long-waves, human beings also tend to behave differently due to these incentives. This reality translates to the social, economic, and political realms. Human beings’ response is also attuned to the stage of

their own life-cycle in which they are at any of those particular stages of the Kondratiev long-waves. Figure 4.15 helps to illustrate this point.

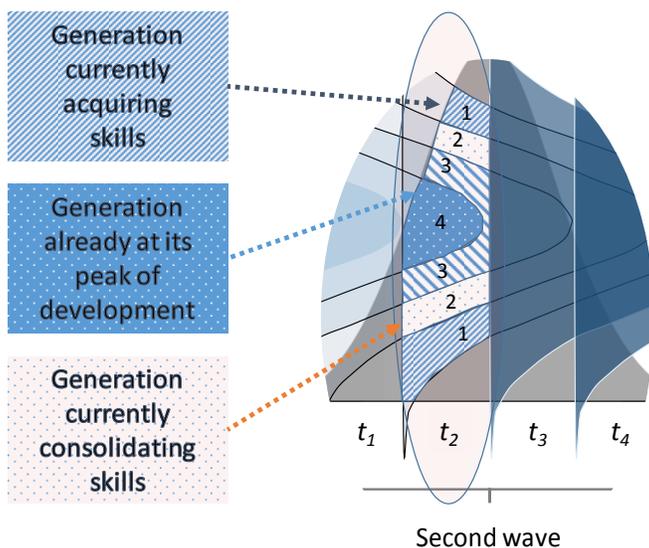


Figure 4.15. The composition of human capital in a stage of a long-term cycle (e.g., a Kondratiev long-wave)

Intertwined at the t_2 interval, the figure shows four human generations at different stages of their own life cycles. In the vertical middle (the darker blue area with the white dots, identified by the number 4), there is the crest of a generation which is already at its peak. It is likely that these generations' set of skills is not entirely aligned with the sets of skills required by the rising ebb of the second Kondratiev long-wave, t_2 (the growth stage). This is a generation where skills were probably molded by the needs favoured during the previous long-wave.

On the contrary, the generations represented by the area in white crossed with narrow thin blue diagonal lines (identified by the number 1), or even the ones represented

by the white area with the small blue dots (identified by the number 2), are on their own rising stage, starting to acquiring and consolidating skills, and integrating into productive activities. It is likely that members of these generations will follow the incentives in place to develop skill sets valued during the current stage of the Kondratiev long-wave. The generations represented by the area identified by the number 3, are somewhat in between the two sets of generations discussed above and could go either way, depending on policies and actions taken.

The risk profiles of older and newer generations are different as a consequence. The making of social, economic, and political winners and losers starts taking shape. Job demand will begin to shift favouring some and creating headaches for others.

At this point, the importance that managing the possibility space has, as a proxy for managing the process of development, can be further highlighted. Development is a process of shifts and transitions. The speed at which each class of assets can adjust to the changes varies. Their malleability or elasticity is dependent on three factors: (a) function gradients embedded in the shaping of the class of assets, creating a sort of *in-class* (cohort specific) effective natural relative limit (as illustrated in Figures 4.10, 4.11, and 4.12); (b) how the shape of the value generating potential function of the class of assets fits into the possibility space defined by the ecosystem's effective relative limits (*out-class* limits); and (c) match or mismatch between the stage in which the class of assets is in its own life cycle, and the stages of the Kondratiev long-wave (lifecycle stage *match* or *mismatch*). Figure 4.16 illustrates this further (see also Figure 4.18).

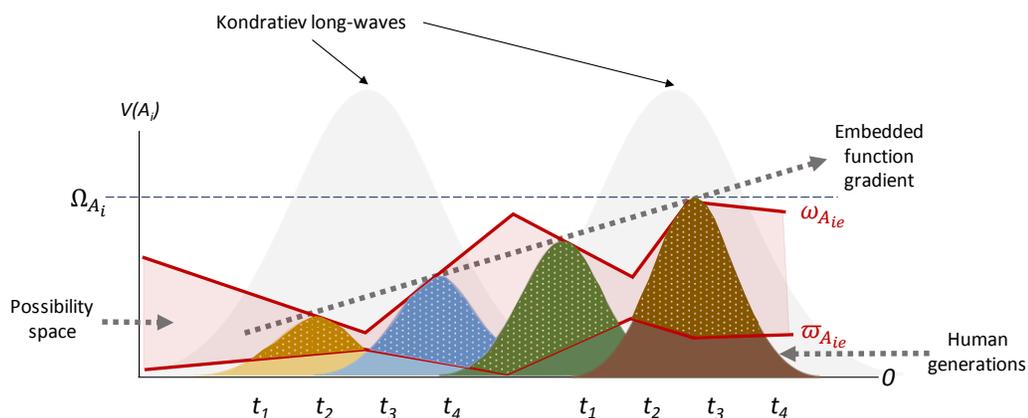


Figure 4.16. Elasticity of a class of assets against social, economic, and political change

The function gradient embedded in the shaping of the class of asset through the impact of the ecosystem's effective relative limits (point (a) discussed in the previous paragraph—the effect of *in-class* limits) is depicted by the increased area of the value generating potential curves, representing, in this example, four consecutive human generations (in yellow, blue, green, and brown). The increasingly higher ecosystem's upper effective relative limit, $\omega_{A_{ie}}$, as well as the broader possibility space created by its distance from the ecosystem's lower effective relative limit, $\varpi_{A_{ie}}$, allows for the human generations to form increasingly closer towards their absolute natural limit, Ω_{A_i} . (this is showcased by the increasingly bigger area of the curves representing each human generation, as well as by the rising embedded function gradient that touches the highest points of each one of these generations).

Likewise, Figure 4.16 showcases how an increasing proportion of each generation's potential for generating value fits within the possibility space—the transparent red area between $\omega_{A_{ie}}$ and $\varpi_{A_{ie}}$ (point (b) listed two paragraphs above—the

effect of *out-class* limits). Three elements combine to increase the potential of human generations for generating value: (a) broader ecosystem's effective relative limits ($\omega_{A_{ie}}$ and $\varpi_{A_{ie}}$) that broaden the possibility space; (b) ecosystem's effective relative limits ($\omega_{A_{ie}}$ and $\varpi_{A_{ie}}$) that track closer to the absolute natural limits— Ω_{A_i} and 0 (without exceeding the relative ones— ω_{A_i} and ϖ_{A_i} —when they differ); and (c) human generations' intertemporal value generating functions ($V(A_i)$) closer to their potential absolute natural limits— Ω_{A_i} and 0 (without exceeding the relative ones— ω_{A_i} and ϖ_{A_i} —when they differ).

Finally, Figure 4.16 also shows how each generation can exist at different stages of the Kondratiev long-waves, while they themselves are simultaneously at various stages of their own lifecycles (point (c) listed three paragraphs above—the effect of lifecycle stage *match or mismatch*). For example, the second and third human generations out of the four in the figure (blue and green) take place (their entire lifecycles) respectively in the downward ebb of the first Kondratiev long-wave (“destruction” or t_4) and on the upward ebb of the second Kondratiev long-wave (“creation” or t_1). Both these stages of the long-waves are characterized by deep change and transformation, with the old traditional sectors increasingly being challenged and replaced by the new disruptive ones.

In contrast, the last human generation of the four (indicated in brown) takes place, for the most part, both in the “growth” and “maintenance” stages of the second long-wave (t_1 and t_2 , respectively): its own increasing half takes place on the former, while its decreasing half occurs on the latter. These two stages of the long-waves are characterized by more stability than the other two. The disrupters have already started to take and

consolidate their dominant position, and the ecosystem's effective relative limits start narrowing down, in turn, narrowing down the possibility space of cohorts of classes of assets that don't quite match the disrupters' preferences (supporting their own interests and blocking or interfering those of others), and giving clearer signals and incentives to make it easier for the growing generation to "ride" the wave to their biggest advantage. In the case of this last human generation, both its location within the stages of the long-wave, as well as the considerable proportion of the generations' intertemporal value generating potential curve area that is located within the ecosystem's possibility space, presents, theoretically, better opportunities for social mobility, inclusiveness, and overall improvements in the social, economic, and political standing of this generation. Given the stochastic and mutually influencing nature of the relationships of the classes of assets within the ecosystem, a generation such as this seems to be poised to further push the ecosystem's relative limits, as well as the relative natural limits of one or more of the classes of assets in the ecosystem, towards further stabilization of the status quo.

Optimality of matching and synchronicity between a class of asset's own lifecycle and that of the stages of the Kondratiev long-wave is represented in more detail in Figure 4.17. Part (a) of the figure includes the same depiction of the possibility frontiers for a class of assets illustrated in Figure 4.7, (b), but inversely juxtaposes the Kondratiev long-wave on the 45-degree line. The outer Kondratiev long-wave (represented by a darker shade of blue) touching the outmost edge of the farthest possibility frontier (given by Ω_{A_i}) with the wave's highest point, showcases how absolute matching and synchronicity allows for the highest potential contribution of the class of assets within the course of the long-wave. This point of intersection, Ω_h , is represented in more detailed on the right side

of the figure at (b). As is shown, matching and synchronicity allows for the formation of the class of assets to be fully informed by the rising ebb of the long-wave (“creation” and “growth” stages, t_1 and t_2 , respectively). Given that an assumption was made that a Kondratiev long-wave lasts for 60 years, while a human generation lasts 30, section (b) of Figure 4.17 shows a complete overlap between the generation’s productive lifecycle and stages “growth” and “maintenance” of the wave (t_2 and t_3 , respectively). (Note that, while not shown in the Figure, this human generation was born during the “creation” stage of the long-wave.)

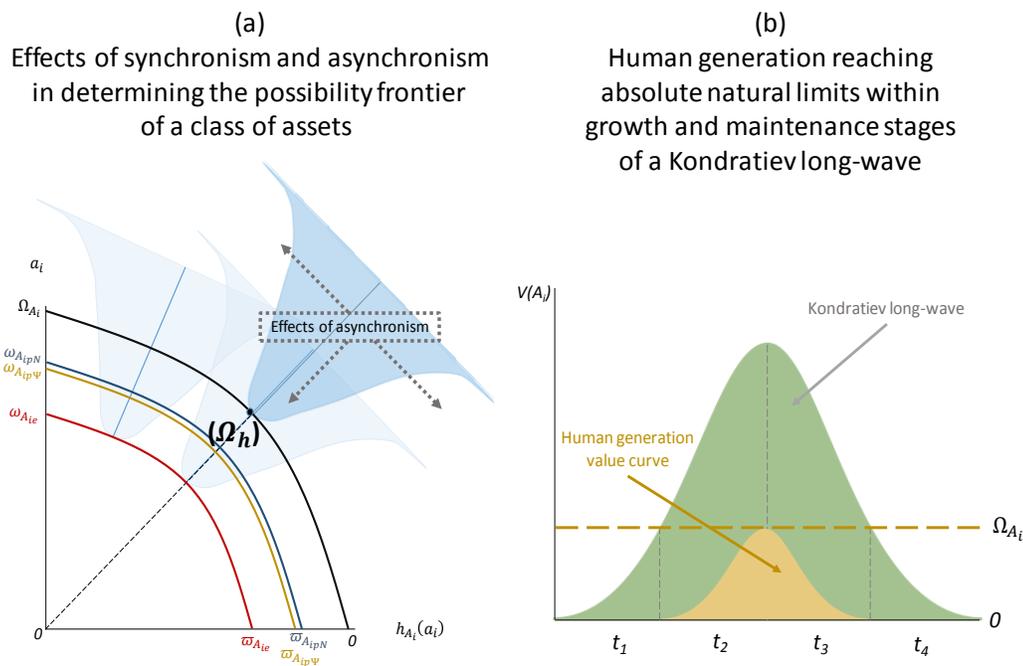


Figure 4.17. Effects of the degrees of matching and synchronicity between the stages of a long-term cycle (e.g., a Kondratiev long-wave) and those of the lifecycle of a class of assets

The Kondratiev long-waves (represented as a lighter shade of blue, in section (a)

of Figure 4.17), which highest points are intersecting with the frontier of possibilities given by $\omega_{A_{ie}}$, showcase the mutual influence that the ecosystem's effective relative limits and the long-waves have on each other, given the different levels of matching and synchronicity between them. Ultimately, less matching and synchronicity reduces the potential contribution of the classes of assets in producing value, and, hence, the downward shift of the possibility frontier from the one defined by, Ω_{A_i} , to the one defined by, $\omega_{A_{ie}}$. In this sense, the Kondratiev long-wave is yet another factor that through the natural and socio-material limits ($\omega_{A_{ipN}}$ and $\varpi_{A_{ipN}}$, and $\omega_{A_{ip\psi}}$ and $\varpi_{A_{ip\psi}}$, respectively), influence the determination of the effective relative limits ($\omega_{A_{ie}}$ and $\varpi_{A_{ie}}$).

First, at any given time, as it was previously discussed was the case for each country's natural relative limits ($\omega_{A_{ipN}}$ and $\varpi_{A_{ipN}}$), the global community is effectively limited by the interaction of all the countries' limits (global limits). Natural relative limits could then be split into two components: a global one and a local one. These could be, respectively, represented by, $\omega_{A_{ipNG}}$ and $\varpi_{A_{ipNG}}$, and, $\omega_{A_{ipNL}}$ and $\varpi_{A_{ipNL}}$. Given that the monetary denomination obtained at any given point for the use of physical units of a class of assets is given by how the entire money supply is allocated among the choices available, and given that in the highly unequal world of today, a majority of this money supply is in the hands of a few countries and within them, a few individuals, it is their preferences that influence the most the relative value that can be obtained through the use or exchange of wealth. These preferences are not only expressed in the present time through the completion of specific transactions, but also embedded throughout time into material and social structures and the resulting material and social limits in those

dominant countries that tend to permeate those of the other countries, given that adhering to the said structures tends to become an “entry” or “participation” requirement. As a consequence, it could be theorized that the bigger the distance between the global and local natural relative limits, the less value generating potential a class of assets has. (See, for example, Bruszt and McDermott (2014) where several authors discuss the dynamics between national and global standards and regulations.) Furthermore, the McKinsey Institute (2014) showcases how this degrees of matching and synchronization between a country and the global marketplace/order is related to incremental economic growth benefits (specifically, 40% higher to those countries that are more connected). Note that given that the monetary denomination is dependent on the timing in which it takes place, matching and synchronicity and their resulting effects in monetary denominations are particular to specific points in time; as a consequence, from this point on, all variables used in the formalization of the proposed conceptual framework will be time specific and identified by the subscript, t_n .

Global and local natural relative limits’ degree of matching and synchronicity, NS_{Ait_n} (the bigger the distance, the less matching and synchronizations exists between them), can be then defined by,

$$NS_{Ait_n} = \frac{\left\| \omega_{AipNLt_n} - \varpi_{AipNLt_n} \right\|}{\left\| \omega_{AipNGt_n} - \varpi_{AipNGt_n} \right\|} \quad [4.5]$$

Second, and as in the case of natural relative limits, the same logic and analysis can be applied to the socio-material limits ($\omega_{Aip\psi}$ and $\varpi_{Aip\psi}$). Separating them into global and local, $\omega_{Aip\psi Gt_n}$ and $\varpi_{Aip\psi Gt_n}$, and $\omega_{Aip\psi Lt_n}$ and $\varpi_{Aip\psi Lt_n}$, respectively, the distance

between them, as a proxy for their degree of matching and synchronicity, $\Psi S_{A_{it_n}}$ (the bigger the distance, the less matching and synchronicity exists between them), could be defined by,

$$\Psi S_{A_{it_n}} = \frac{\left\| \omega_{A_{ip}\psi L_{t_n}} - \varpi_{A_{ip}\psi L_{t_n}} \right\|}{\left\| \omega_{A_{ip}\psi G_{t_n}} - \varpi_{A_{ip}\psi G_{t_n}} \right\|} \quad [4.6]$$

Both, $NS_{A_{it_n}}$ and $\Psi S_{A_{it_n}}$, impact $v_{A_{it_n}}(a_{it_n})$ in the following manner: if they are both equal to 1, $v_{A_{it_n}}(a_{it_n})$, the value generating potential of the class of assets, A_i , would generate (in physical units of wealth, a_{it_n}) an equivalent amount of wealth to that extracted from the class of assets, A_i ; if they are bigger than 1, $v_{A_{it_n}}(a_{it_n})$ would generate wealth in excess of that extracted from the class of assets, A_i ; and, if they are bigger than 0 and less than 1, $v_{A_{it_n}}(a_{it_n})$ would generate lesser wealth than that extracted from the class of assets, A_i

This relationship between $NS_{A_{it_n}}$ and $\Psi S_{A_{it_n}}$, and $v_{A_{it_n}}(a_{it_n})$ could be represented by,

$$\theta_{A_{it_n}} = f(NS_{A_{it_n}}, \Psi S_{A_{it_n}}) \quad [4.7]$$

Where, $\theta_{A_{it_n}}$, represents the *value elasticity* as being a function of the degree of matching and synchronicity between local and global natural and socio-material limits.

As a consequence, using Equation 4.4 and Equation 4.7 as points of departure, the value generating potential, $v_{A_{it_n}}$, at a point in time, t_n , of a class of assets, A_i , when using a quantity, a_{it_n} , of physical units of wealth of the said class of assets, can be now represented by,

$$v_{A_{it_n}}(a_{it_n}) = \theta_{A_{it_n}} \left[\left(a_{it_n} \left(\frac{1}{\omega_{A_{iet_n}} - \varpi_{A_{iet_n}}} \right) \right)^{\alpha_{A_{it_n}}} \right]^{\beta_{A_{it_n}}} \quad [4.8]$$

And simplifying,

$$v_{A_{it_n}}(a_{it_n}) = \frac{a_{it_n}^{\alpha_{A_{it_n}} \beta_{A_{it_n}} \theta_{A_{it_n}}}}{(\omega_{A_{iet_n}} - \varpi_{A_{iet_n}})^{\alpha_{A_{it_n}} \beta_{A_{it_n}}}} \quad [4.9]$$

$$0 < \alpha_{A_{it_n}}, \beta_{A_{it_n}}, \theta_{A_{it_n}} \quad \text{and} \quad \Omega_{A_{it_n}} \geq \omega_{A_{it_n}}, \omega_{A_{iet_n}} \geq a_{it_n} \geq \bar{\omega}_{A_{it_n}}, \bar{\omega}_{A_{iet_n}} \geq 0$$

Equation 4.9 showcases three different trade-offs that extracting value from a class of assets present. These are also illustrated on Figure 4.18. The first trade-off (on the upper-right section of the figure's quadrant, (a)) is between volume extracted from the class of assets and the effect of this extraction on the overall health of the class of assets; this health elasticity is represented by, $\alpha_{A_{it_n}}$. The second trade-off (on the lower-right section of the quadrant, (b)) is between volume extracted and the output that could potentially generate value; this output elasticity is represented by, $\beta_{A_{it_n}}$. Finally, the third trade-off (on the lower-left section of the quadrant, (c)) is between the output generated and the value received for such output; this *value* or *income elasticity* is represented by, $\theta_{A_{it_n}}$. Both $\alpha_{A_{it_n}}$ and $\beta_{A_{it_n}}$, embed in them the state of technology related to the extraction of value from a class of assets, as well as to the production of output from a given quantity extracted from a class of assets. The variable $\theta_{A_{it_n}}$, as discussed in the previous paragraphs, reflects that, ultimately, in an interconnected world, the monetary denomination of any output obtained will be given by the matching and synchronicity or lack thereof, between such output and the output that is favored at local or global scales (as reflected by the decisions of those who possess the bulk of money). This monetary

denomination impacts the balance of the exchange in terms of physical units of wealth, and therefore ends up impacting the stocks of wealth of a country and its ability to fulfill the wellbeing of its citizens.

(It is important to reiterate that from this point on, to reflect the importance that contextual time plays in determining the wealth of nations, all variables are not only class of assets specific (as identified by the subscript i), but also time specific (as identified by the subscript, t_n .)

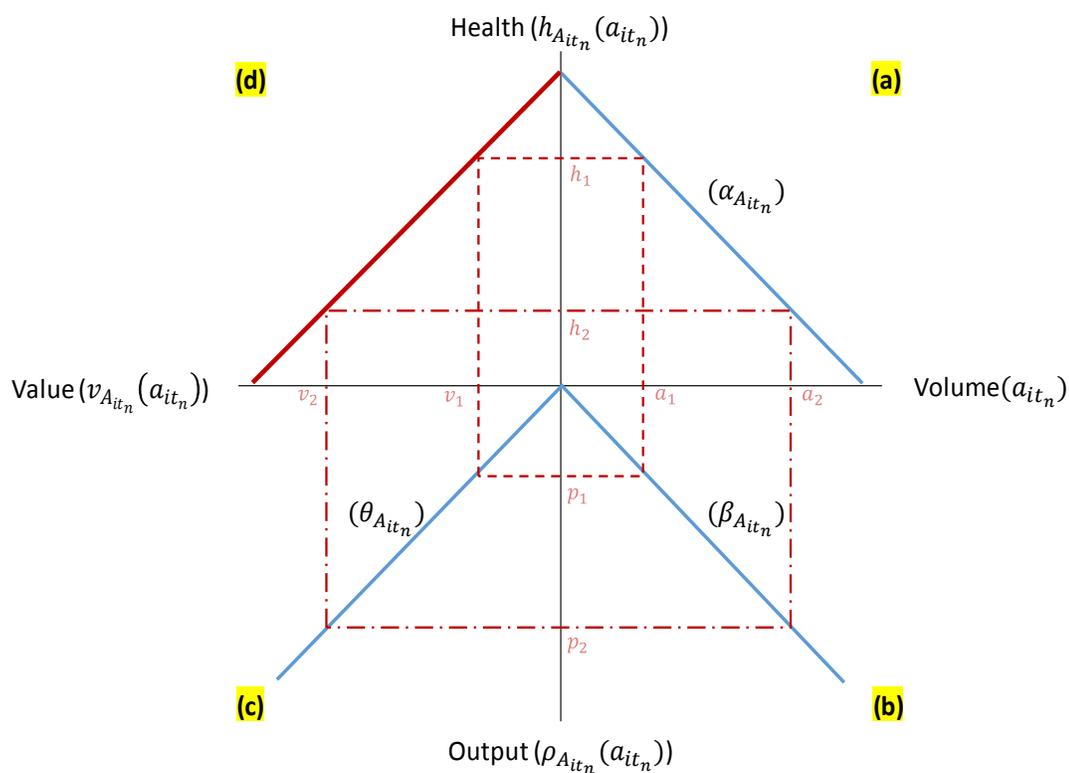


Figure 4.18. Trade-offs in the generation of value from a class of assets

Ultimately, what Figure 4.18 showcases, is support for one of the central arguments of this dissertation: value, and as a consequence wellbeing, are dependent on

the possibility and ability of extracting value from wealth, which, in turn, is dependent on how healthy this wealth is (represented through the fourth elasticity that emerges from the figure as shown on the upper left quadrant, (d), and that summarizes the effect of the other three elasticities in generating value). The figure shows the nature of this relationship at an specific point in time, and hints at the potential intergenerational implications that draining wealth's health can have in reducing its potential to generate value. The nature of these relationships, through time, between wealth's health and its ability to generate value (in physical units of wealth) are then given by the *bounded* elasticities identified by $\alpha_{A_{it_n}}$, $\beta_{A_{it_n}}$, and $\theta_{A_{it_n}}$ (bounded since they have an aggregated impact that build on each other's).

The health and output functions (given by $h_{A_{it_n}}(a_{it_n})$ and $\rho_{A_{it_n}}(a_{it_n})$) impact the classes of assets' effective relative limits. These effective relative limits, in turn, drive changes in the health and output functions through the scarcity they impose (incentivizing improvements in productivity, $\beta_{A_{it_n}}$, as well in the ability to extract physical quantities of the classes of assets, a_{it_n} , imposing an increasingly smaller effect on the classes of assets' health—through an improved health elasticity, $\alpha_{A_{it_n}}$). Through these impacts, as well as through changes in relative natural limits, the possibility frontiers shift upwards or downwards. Lastly, it is the value elasticity represented by $\theta_{A_{it_n}}$ (matching and synchronicity), that ultimately determines the value in physical units of wealth (and, as a consequence, the intertemporal implications of present extraction of value from wealth). This value is ultimately validated or invalidated by its ability to satisfy wellbeing (once again, given the central premise made in this dissertation that, intertemporally, value

equals wellbeing). Since they affect each other (as shown in Figure 4.18), these three elasticities could be considered bounded elasticities.

Being key for defining a path of development towards self-reinforcing state, these elasticities are essential variables that can inform and contribute to wealth management efforts. It is clear at a first level of analysis, that favorable elasticities are not only a sign of good wealth management but also a contributor in fulfilling wellbeing and attaining self-reinforcing state. However, being these elasticities defined at the class of assets level, further consideration makes it evident that good management requires more than simply optimizing these elasticities for each class of assets on its own (or the cohorts within them). In fact, the optimal configuration of elasticities across the classes of assets, A_{it_n} , in the ecosystem, ε_{t_n} , is farther more impactful than narrowly focusing on the individual classes of assets. Moreover, the optimal configuration of these elasticities across time, is one of the ultimate objectives of wealth management. This is illustrated in Figure 4.19 below,

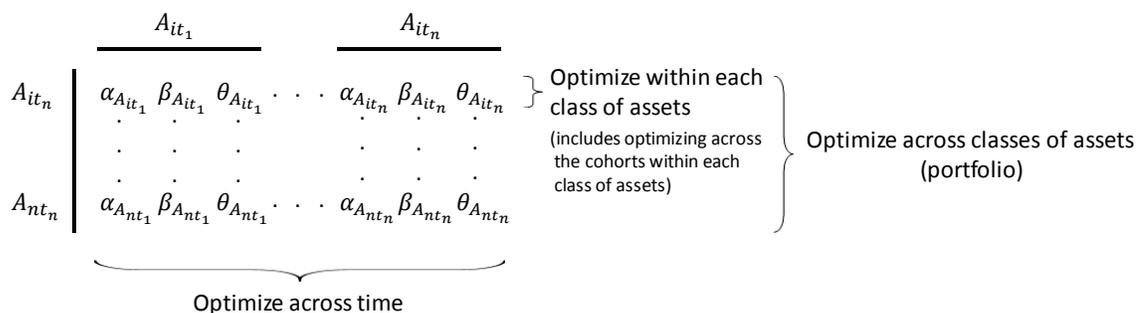


Figure 4.19. Optimization of bounded elasticities

That matching and synchronicity plays an important part in determining the

overall value (and as a consequence the wellbeing that a country can obtain from its wealth) raises questions, both about the scale of the costs a country has to assume to match and synchronize its socio-material relative limits to global ones, and about the economies of scale limitations that small countries face in terms of natural relative limits (and as a consequence, in terms of their capability to match and synchronize their natural relative limits with global ones). After all, as described by Spence (2011) there are a considerable number of very small countries in the world: about 146 with populations below 2 million (68 of those with populations below 1 million). These limitations have important consequences for the possibility of convergence between better-off and worse-off countries towards the self-reinforcing state, and therefore, need addressing.

While matching and synchronicity has been defined above in terms of natural and socio-material limits, ultimately, as it was previously argued, both these limits are also dependent on the overall lifecycle stage-synchronicity between that of a class of assets and that of the Kondratiev long-wave: the growth and maintenance stages of the Kondratiev long-waves are usually related to narrower socio-material limits for some, while the creation and destruction stages are usually related to broader socio-material limits for others (this is in relation to current and previous leading sectors). Comparing the Kondratiev stages, which will be denoted by $K_{t_1}, K_{t_2}, K_{t_3}, K_{t_4}$, with the stages of the lifecycle of a class of assets (in this particular case, a renewable/organic one), which will be denoted by $A_{it_1}, A_{it_2}, A_{it_3}, A_{it_4}$, perfect matching and synchronicity could be defined by the diagonal in the matrix A_{it_n}, K_{t_n} below (highlighted in yellow—this was also graphically showcased in Figure 4.17),

$$A_{it_n}, K_{t_n} = \begin{pmatrix} A_{it_1}, K_{t_1} & A_{it_1}, K_{t_2} & A_{it_1}, K_{t_3} & A_{it_1}, K_{t_4} \\ A_{it_2}, K_{t_1} & A_{it_2}, K_{t_2} & A_{it_2}, K_{t_3} & A_{it_2}, K_{t_4} \\ A_{it_3}, K_{t_1} & A_{it_3}, K_{t_2} & A_{it_3}, K_{t_3} & A_{it_3}, K_{t_4} \\ A_{it_4}, K_{t_1} & A_{it_4}, K_{t_2} & A_{it_4}, K_{t_3} & A_{it_4}, K_{t_4} \end{pmatrix}$$

As per the discussion above with regards to the relationship between the Kondratiev long-waves' stages and the broadening and narrowing of the effective relative limits of the possibility spaces, it would be expected that perfect matching and synchronicity as defined by the diagonal of the matrix, A_{it_n}, K_{t_n} , would also be linked with a value elasticity, $\theta_{A_{it_n}}$, of 1, or very close to 1.

The analysis made in this section, while focusing on limited number of classes of assets, is perfectly applicable, with some minor modifications, to all of the other classes of assets in the ecosystem. Evidently, given their different timelines and different characteristics; the shapes of the areas representing their value extraction functions; the locations and shapes of their possibility curves; the intersections of the areas representing their value extraction functions and the Kondratiev long-waves (the “fabric” mentioned above and showcase in Figure 4.15); and the potential degrees of matching and synchronicity they can have with the long-waves; each class of assets will showcase different realities and possibilities. Furthermore, this could be applied at different levels of analysis to understand the degrees of matching and synchronicity between individuals and their communities, regions and countries, and countries and the global context, among other levels of aggregation. This gives considerable flexibility to the proposed conceptual framework.

The multi-dimensional critical-path of development.

Up to this point, the analysis has concentrated on understanding the nature of the

limits that bound the possibility space, as well as the implications these limits have on individual classes of assets. However, already in discussing figures 4.4 and 4.5 above, the interrelationship between different classes of assets was signaled as extremely important. This interrelationship means that even when one class of assets' individual absolute and relative limits might be at their optimal maximum (or for that matter, those of most classes of assets), if the limits of another class of assets on which its (or several classes of assets') potential to generate value is dependent are constrained and as a consequence constrain too the said class of assets, such optimal maximum limits become irrelevant for value extracting purposes. In the end, the constraining limits of one class of assets can theoretically be responsible for defining the shape of the possibility space due to their pre-eminence over the others. This pre-eminence, while in absolute terms defined by natural structures, in relative terms is contextual (as discussed in the previous subsection, based on the degree of their matching and synchronicity with the long-term cycles), and, as a consequence, it can shift in time. In the final analysis, the possibility space will always have an absolute shape that will be given by the natural structures. Nonetheless, its relative shape will be stochastic and the result of the interrelationship between and among all classes of assets and the ecosystem across time.

Putting this in the context of the classes of assets discussed in this and previous chapters (natural, human, fixed produced, mobile produced, and intangible produced), it is clear that besides natural assets and human capital, all other classes of assets being "produced" depend precisely on natural and human capital. In turn, as was also discussed previously in this chapter, human capital is dependent on natural capital and the ecosystem as a whole.

The one-dimensional critical-path is, then, that of each class of assets individually. Each asset has absolute and relative gradient functions which are determined by their own nature but realized through their interaction within the ecosystem. This defines fairly precise critical-paths for the optimization of their individual value extraction potential. As was discussed through the example of human capital, the first two years of human life are critical in determining health, cognitive, and behavioural function gradients. While there are a couple more points in time in human beings' development paths during which such gradients can be influenced, room for doing so is limited. The critical-path for human capital is then defined by these first two years of life, and those other moments. There will be little use in trying to change function gradients out of those windows of opportunity, at least with the knowledge and technological progress we have achieved so far.

Consideration of the one-dimensional critical-path leads to a two-dimensional one. Continuing with the example of human capital, its survival and development are dependent on physical and emotional nurturing, both of which are external to a human life. Food, air, care and company of others are all exogenous to a human being, yet essential for its survival. This means that knowing that the first two years of life set a critical-path for human development is necessary but not sufficient. Having access to food, or to growing food, and having the knowledge to do so, knowing what to eat and how, all become, as a consequence, part of the critical-path of human development. This is what could be considered as the two-dimensional critical-path: a critical-path that results from the indissoluble relationship between a class of assets and others that make possible its existence, and that jointly determine its value or capacity to contribute to the

fulfillment of wellbeing. It is their mutual dependence what eventually determines the increasingly more accurate realistic two-dimensional critical-path.

However, it should be clear at this point that this is still not sufficient. The classes of assets on which another class or several depend, are themselves dependent on other classes of assets, and, therefore, further adjustment is needed to conceive the now two-dimensional critical-path as a three-dimensional one in which there are a multitude of relationships at different degrees that perhaps more indirectly, but influential nevertheless, impact the value generating potential of all classes of assets.

Finally, as was illustrated through Figures 4.8 and 4.9, when a three-dimensional possibility space is then projected in time to create a four-dimensional one, a four-dimensional critical-path emerges as well. While the independent creation, formation, maintenance, depreciation, depletion, and destruction of a class of assets can have its own logic in the space-time continuum, additionally, as part of an ecosystem in which it interacts with other classes of assets, the evolution throughout time of the whole system will further define the critical-paths of all the classes of assets, individually and collectively.

It is perhaps important to note the parallel between the analysis of the preceding paragraphs with regards to the critical-path of development, and the analysis made in previous sections of this chapter with regards to the setting of the limits of the possibility space. The logic behind both analyses is very similar, with layers of analysis adding complexity over each other, further constraining limits and paths more and more, making them dependent on an increasing number of stochastic variables. And just like in the end, the relative limits discussed make the possibility space stochastic, they also make the

critical-paths stochastic. Ultimately, these limits and critical-paths represent together the two ultimate limits by which all material objects are bound: space and time.

This line of thought can be extremely useful in understanding what could be an efficient path towards the attainment of self-reinforcing state. For example, investing in the education of children who were underfed and carry in themselves the constrained function gradients resulting from this sad reality, will be less beneficial than investing in their correct nourishment earlier in their life (the point is not to invest in the former but to invest more opportunely so the constrained function gradients are avoided). Investing in the information technology platforms that could enable the production of intangible capital, while, at the same time, the investment in human capital is lacking, is also inefficient. And while these examples have been used before in, for instance, development planning efforts or new growth theory (Romer, 1990), the insight that has not been fully considered and integrated in the analysis is, precisely, the conditionality that delineates the limits and critical-paths that define the possibility space.

Moreover, the prioritization of human life and ecosystems over everything else has not been a reality of the modern era. In framing the problem addressed by aid, at the beginning of Chapter 2, it was clear that the majority of statistics underpinning the Millennium Development Goals and the Sustainable Development Goals are concerned with the number of people dying or having limited physical and emotional development opportunities, rather than on the function gradients that are behind of many of the effects showcased by such statistics. Furthermore, the deplorable state to which the human race has brought the ecosystem is an even clearer sign of how far human action has been from considering the relative prominence of human lives and the ecosystem above everything

else. It is clear that the integration of a realistic, four-dimensional critical-path into the investment decisions made by national and international authorities is not yet a reality.

In the next chapter, the implications of this deficiency will be explored, not only in terms of what it means for development inducing aid efforts, but most importantly, in terms of what it means for the conception and delivery of the new paradigm of concerted wealth management.

Is the Possibility Space a Black Box?

So far, the proposed conceptual framework has progressively suggested the connection that exists between natural, social, and material limits, both at the level of an individual classes of assets and at the level of a collection of classes of assets (portfolio). It also has explored the role that international trade and the global natural, material, and social structures exert on these limits, and how the local and global social, economic, and political relative standing of a country, as well as its stock of local and global public and private debt, further influenced these roles.

A central premise of the proposed conceptual framework is that the possibility space created by both natural and socio-material limits (the effective relative limits) is where the real process of social, economic, and political change takes place: that is, where the process of development towards the self-reinforcing state takes place. It has been argued in this and previous chapters that what happens through the motions of natural and social forces in this possibility space can hardly be manipulated nor outsmarted, at least not beyond more immediate ways; that what happens in this space goes through a critical-path in terms of process and time that cannot be short-circuited if effective change is to be internalized and take hold. Furthermore, it has been argued that

the very specific outcome of this internalization process is unique and emergent, and cannot be fully predicted or arrived at forcefully through manipulation. The possibility space is like a river-bed or canal through which natural and social forces can flow and combine. This conception is consistent with Keynes' idea of providing clear signals to economic actors as a way to improve economic functioning and prevent booms and busts (Davidson, 2015). The flow and combination of natural and social forces is, by definition, an entropic process; the clear demarcation of a stable possibility space can, as a consequence, help minimize such entropy.

The particular implications of the premise discussed above could be summarized in the following resulting preferences. First, it makes sense to focus on setting clear limits—the conditions (consistent with the Wittgensteinian approach adopted). These limits are essential for our survival and we know enough about the space-time realities of our world to be able to do this in a meaningful and impactful way. This is one of those things about which we can say something and act in far more positive ways than many other things about which the current paradigm encourages development economists and aid actors to “ramble,” although instead, we should probably remain silent, instead.

Second, as a result of defining clear limits, a possibility space and corresponding critical-paths emerge. As discussed previously in this chapter, there are also meaningful things we can say and do about these critical-paths (and some of these have been stated in previous pages already). The characteristics that help improve the dynamic within such spaces, the management of bounded elasticities that both define and showcase the implications of natural and socio-material limits, and the priorities spelled by critical-paths that point to avenues to facilitate the optimization of value extraction, and therefore

of wellbeing fulfilment, are all meaningful and more certain ways to influence the process of development towards the attainment of self-reinforcing state than many of those pursued through the current paradigm (see Pinto (2014) who makes a similar argument).

Third, attempts to manipulating and meddling with the dynamics (i.e., the actions that derive from dispositions and conditions) that take place within a possibility space is a risky game, but perhaps more importantly, less effective and efficient as an avenue towards true development and the attainment of the self-reinforcing state (i.e., fully internalized) than the two preferred avenues to influence development discussed above. As such, this third alternative, it is argued in this dissertation, should only be pursued if the other two have been exhausted and only, as well, used for very specific and short-term bound attempts to influence development, although, preferably, should be treated as one of those aspects about which a Wittgensteinian approach recommends us to remain silent and passive.

In summary, it has been argued, so far, that given the difficulties, and perhaps even the impossibilities of manipulating this process of change, conceivably, the most important role of the organizations created to address the coordination and control challenges presented by human cooperation, is to focus on defining and managing the characteristics of the possibility space. This task applies both to local and global organizations, particularly given the way in which the world is currently connected.

The focus should then be in managing the conditions and improving the dispositions, rather than manipulating actions.

Defining and managing the characteristics of the possibility space means, as it has

been argued throughout this chapter:

1. Determining or at least approximating the absolute and relative natural limits of the assets, classes of assets, portfolio, and the ecosystem in which all of them are embedded (this is, for the most part, a fairly technical and scientific task).
2. Assessing the current material structures (i.e., the stock of technological choices embedded in existing produced classes of assets, as well as embedded in the intangible produced capital, both imposing practical constraints in innovation and change through increased costs and reduced incentives due to economies of scale).
3. Assessing the current social structures and how they relate to both the natural and material limits, in order to adjust them so these structures and the limits they impose are all better aligned, and perhaps, even more importantly, to ensure that no natural limits are exceeded, jeopardizing the potential of the country's wealth to generate value and sustain, intertemporally, the levels of wellbeing that the country needs and wants.
4. Reshaping the socio-material limits to focus on shaping the possibility space, rather than directly trying to manipulate what happens inside of it through the handling of natural and social forces. (Managing what happens inside of it does not mean directly influencing micro actions but monitoring them and adjusting the limits of the space as an indirect way to influence these micro actions. That is, the focus should be in managing the conditions and improving the dispositions, not on directly manipulating the actions without

really changing the dispositions at the core.)

5. In shaping the possibility space countries also need to understand the critical-paths by which their wealth's temporal dimensions are constrained, so the function gradients that will be embedded in it will increasingly get closer to the optimal natural limits, while the socio-material limits also get closer to optimally reflecting the preferences of their societies.
6. Improving the characteristics of the possibility space by enhancing and broadening connectivity at all levels; by increasing levels of trust at all levels; by balancing cohesiveness and commonality with diversity and plurality; by allowing for diverse and innovative forms of addressing cooperation and control issues which are structured in ways in which mutual benefits result that are equitable and that balance private and public returns; by ensuring equality of opportunity and standing that allows shared and widely spread comparable capabilities; by increasing the volume, veracity, accuracy, and transparency of information at all levels; by increasing accountability; by ensuring that limits that bound the possibility space are clearly understood by the majority and that they do not impose asymmetries favouring those who have greater social and material endowments nor embed contradictions that provide mixed and confusing signals; by enabling innovation through making widely available risk minimizing and return maximizing instruments; by managing the use of money and credit to provide intertemporal flexibility but avoiding excessive growth beyond natural limits; and by enabling and encouraging mutual solidarity (see Table 3.5). This also includes managing

the path-dependence, the public and private debt, and random intertemporal changes (see Figure 4.9) to provide a comprehensive and stable policy led possibility space; it also includes, as discussed above, avoiding the embedding of contradicting layers into the socio-material structures (i.e., regulations that remain in place, even when new regulations with opposing objectives are being enacted).

7. Reaching and maintain the self-reinforcing state.

While the previous seven points are extremely important, they depend, in the final analysis, on the human beings that operate within such possibility space. It is, in the end, their intellectual and emotional capabilities, health, aims of life, approaches, and attitudes towards difficulty and opportunity—everything that defines a human being—what matter the most within that possibility space. The relationship explored in Chapter 3 between wellbeing and human capital is of great significance at this point. Wellbeing can only be attained for the majority when what happens within the possibility space allows for it, and yet, given that what happens within such a space is conditionally dependent on human beings, there seems to be a circular relationship between the two; even knowledge generation is limited by the physics of our world (Wolpert, 2016). Hence, in complementing point 6 above, the most important way in which the possibility space's characteristics can be improved is by improving those of the human beings which operate within these spaces (i.e., their function gradients and their dispositions).

Given all of the above, this alternative focus on defining and managing the characteristics of a possibility space rather than what happens within such a space, has far-reaching consequences in terms of the traditional understanding of public policy. An

important part of current policy-making efforts aims at directly steering what is happening in such a space or at influencing it (Bowles, 2016). This approach leads, sometimes, to layering social structures on top of each other rather than truly transforming them in response to existing and changing realities. The proposed conceptual framework pushes the function of policy-making towards a different underlying mind-set: how do socio-material structures need to be adjusted to respond to internal pressures emanating from the possibility space, from expectations about the evolution and shape of the possibility space, and from both the current and expected state of the global context—all of these are to be considered, while carefully and zealously protecting the natural limits imposed by the ecosystem.

The possibility space is, then, not a black box. That what happens in that space cannot be controlled almost mechanically should not be a surprise. Human beings are not disposed of their own will. They are not fully predictable, and, while trends and commonalities clearly exist in all facets of social life, these trends are mostly descriptive rather than normative cause-effect explanations (see Chapter 2). Not being able to have the possibility to directly manipulate what happens in such a space does not automatically make the space into a black box. In fact Kishik (2008), argues in relation to Wittgenstein's idea of "form of life" already discussed in Chapter 2, that a human life cannot be separated from the space of possibilities between infancy and death:

...life is neither a space of necessities nor a space of impossibilities but only a space of possibilities. These possibilities become apparent only between the extreme cases of tautologies and contradictions...The logical space may be a space of possibilities, but "reality is as it were an island amidst possibilities"

(WVC, 261). Wittgenstein helps you not to drown in the sea of possibilities by directing you to the land of what is really the case in the world. (p.17)

Wittgenstein's epistemological and ontological approach, which is the basis on which the arguments developed in this dissertation are built, suggests the impossibility of devising a theory about causal relationships inside such possibility spaces. This idea of a possibility space is even consistent with the economics approach developed by Arrow-Debreu, through which our space-time reality is represented by infinite-dimensional spreadsheets considering every single intertemporal possibility and their probabilities (Warsh, 2006).

There is considerable literature explaining how social processes work; how individuals and groups interpret rules and internalize them into routines; how values and cultures are transmitted throughout generations; how power is protected by those who have it and contested by those who do not. And while a considerable part of this literature is descriptive and fails to provide cause-effect explanations that can always be replicated, that is perhaps the closest we can possibly get towards such kinds of causal explanations. In fact, recalling what was discussed in Chapter 2, Wittgenstein argues that there is no causal relationship between rules and actions. The point is perhaps to move away from the aspiration and approach towards controlling and manipulating human dispositions and actions to attain very specific outcomes: an approach criticized already in the 18th century by Adam Smith (2002). Instead, an approach towards understanding the processes in terms of their critical-paths and characteristics may add much more to policy-making than what the traditional approach has been able to accomplish (see Table 3-5 and preceding text). For example, if study after study were to show with a certain degree of accuracy the average time it takes in a particular society to internalize a specific kind of

law or practice, rather than focusing solely on controlling and manipulating such a process, a better public policy approach could put emphasis instead on managing the transition period and ensuring that throughout the said average time, the costs of transformation, as well as those resulting from the uncertainty created by the process of change, are reduced for all those impacted. This requires a shift in the conception and the addressing of change, from the simple theorization of a seamless shift from point A to point B, to a complex emerging process from A to an unknown but approximate or desirable state. The idea is not to presume to know *how people will act*, but to adjust policies based on *how they act*. In this sense, policies need to also become “transition-inclusive.”

The process that takes place within the possibility space is, by nature, an entropic process. Entropy is the cost of passing time required for natural and social forces to settle into specific stable temporal states. Reducing entropy means reducing the time to move from one stable temporal state into another, and this can be better achieved by managing limits than by trying to manipulate the process inside the possibility space (Page, 2011). In a sense, improving the possibility space is like having a broader genetic pool from which the chances of advantageous recombination are higher (Page, 2011).

Conceiving policy-making in the way proposed in the previous paragraphs requires a clear departure from the traditional ways in which it has been conceived and implemented. As the literature shows, there is considerable evidence of how the layering of laws continues embedding contradictions in the social structures, as well as furthering a complexity that benefits the most those who are already doing well, and those that have the economic and political power to make the most of these social and material

structures—considerably more than those who do not share such power. This reconceptualization of policy-making requires a new approach to frame policies, not as behaviour changing but as limit-setters, and to measure, as well, how they do that (including their specific impacts on natural and socio-material limits and their distributive outcomes).

A Few Implications About Achieving Self-Reinforcing State

The objective of the process of development is to achieve self-reinforcing state. Given that the process of development depends on the extraction of value from wealth, management of wealth is central in the attainment of self-reinforcing state. In a nutshell, managing wealth requires managing classes of assets, managing the composition of a portfolio of classes of assets through different timelines (including the cohorts of all classes of assets), and managing risks and events that could potentially shift any of the natural, material, or social limits, or directly deplete or destroy wealth.

The formalization of the conceptual framework proposed in Chapter 3 and carried out in this chapter provides some guidelines towards managing wealth. These are further developed and summarized in the following sub-sections.

The active creation and management of a possibility space.

- Every country is embedded in the same global ecosystem, although they simultaneously operate in regional and local sub-systems, among others.
- There are absolute natural limits that the global community of countries has to respect. Doing otherwise may not only have unequal effects in the present time; in the long-term, all countries might experience similar effects.

- There are relative natural limits that can be global or local. The ecosystem provides a number of services that are global in nature. As a group, countries cannot exceed these relative natural limits without compromising the ecosystem and human life. There are other services provided by the sub-systems in the specific space in which a country exists, which limits have to be respected. The level of control a country can exercise in respecting natural relative limits depends on whether they are local or global, and on their relative global social, economic, political relative standing, which gives it more or less influence in the global community.
- One of the most important tasks countries need to do in managing their wealth is to continuously, individually, and collectively through concerted wealth management, enhance their knowledge and understanding of the natural limits by which each asset is bound, as well about the characteristics of an asset given by its origins in terms of space and time dimensions.
- Furthermore, different classes of assets, due to their individual nature, have both absolute and relative natural limits of their own that need to be respected if their integrity is not to be compromised.
- The classes of assets that form part of the wealth of nations have among them synergetic effects. They can potentially enhance the value-generating potential of each other; however, they can also restrict it. Handling this interrelation between the classes of assets is an extremely important task a

country should pursue in managing its wealth.

- Throughout their history and through a never-ending process of social, economic, and political change, countries establish a social structure that is continuously evolving. As a result of this process of change that is made possible through the established social structures, a material structure is also built-up, over time, which introduces constraints to the process of change itself. Social, economic, and political change relies and is constrained by socio-material structures, but socio-material structures, in turn, change due to such processes of change. This is the essence of the stochastic nature of social, economic, and political change.
- International trade shifts the natural relative limits faced by a country in its process of development. Embedded in products and services traded are amounts of wealth exchanged between countries. Due to monetary denomination issues that impact exchange rates; the overall portion of a country's public and private debt that is global; and short- and medium-term global demand and supply pricing effects; a country's net balance in physical units of wealth resulting from trade might be positive or negative; negative balances shift the natural relative limits of certain assets downward, while positive balances effectively add wealth and shift these limits upward. The social, economic, and political relative standing of a country impacts its level of influence on defining and modifying global structures that determines the equality in exchange of wealth that result from trading within such structures.

- Natural forces can have an impact in shifting the natural limits. Given that most of the natural forces cannot be controlled, creating a safe and conducive possibility space requires planning for and managing the potential impact of natural forces. These efforts can involve accumulating knowledge about prediction and prevention of consequences, improved preparedness that can reduce consequences, improve resilience, facilitate recovery, creating insurance arrangements, and many others.
- Limits that effectively shape the possibility space can be grouped into natural and socio-material limits. It is within this space that human actions take place and all natural and social forces flow. Drawing on the ontological and epistemological considerations discussed in Chapter 2, realistically, there is not much more that can be done to influence (beyond the very short-run and very specific facets of reality) the deeply human and social process of interpreting the environment and its rules into routines that create a social order and a stable social dynamic. While some types of policies (e.g., cash transfers) might influence behaviour in the very short-term, no policy or incentive can short-circuit the natural process through which human beings interpret their environments and their fellow humans surrounding them, to negotiate with both a stable order, and operate conjunctively and functionally through rules and routines to establish and maintain such an order. Therefore, creating a clear, safe, broad, and distinct space for human beings to figure out their share of the process of social, economic, and political change, should be yet another

one of the most important tasks of governments. This includes among, many others, improving connectivity, information flows, transparency, accountability, clear rules, mechanisms for solving collective problems, and diversity and plurality. This maxim should not be equated or confused with that of libertarianism in which the possibility space is defined only by property rights and their enforcement (Ebenstein, 2015). As discussed throughout the chapter, the setting of the effective limits of a possibility space is the result of a complex, stochastic process combining natural and socio-material limits that reflect a considerable and broad array of natural and social considerations, beyond that of private property.

- Within the possibility space managed by a government, both positive and negative trends tend to appear. It is quite difficult for any social institution to predict when and how these trends will surface. Therefore, another one of the most important tasks of governments in enabling a process of development that can lead to self-reinforcing state is to monitor events that occur within the possibility space, so the bounds that create such a space can be stochastically adjusted through policy. The purpose of such adjustments is to minimize negative trends, maximize positive ones, and, further, fine-tune the perception within such a space of the persistence of intertemporal certainty. In particular, social interaction within the space created might create inequalities between individuals and different social groups. Such inequalities point to the need for changing social and material structures, as well as to managing costs both individuals and

groups face within such a space, due to the structural transformation of the social, economic, and political orders. Addressing these potential and actual costs of transformation might involve preventive, mitigating, and corrective actions. These might include skill-building, creating channels for social mobility, providing specific incentives to selected groups, and other similar measures that modify the effective relative limits by which each class of assets and its cohorts are constrained. It is essential to keep in mind that the build up, and transformation timelines and critical-paths of different classes of assets can be very different among them, and therefore, in realistic terms, these differences can result in differential benefits and costs among all classes of assets that prevent a smooth transformation process (hence the need to proactively managing the effect of such transformation).

- Ultimately, rather than trying to modify or manipulate human behaviour occurring within the possibility space (i.e., actions), a government should ensure that the possibility space allows for innovation and a reasonable level of chaos and complexity, while balancing the human and social need for certainty and solidarity, and ensuring the wellbeing of the majority, in particular of those who tend to lose because of their mismatch and lack of synchronicity with the current requirements within this probability space at specific points in time. This is perhaps one of the areas in which a clear differentiation with the libertarian approach of relying only on property rights to delimit the possibility space can be made (Ebenstein, 2015). The

conceptual framework proposed here relies on a much broader and more comprehensive definition of social structures; still, it draws a line precisely where the limits start blurring into efforts to manipulate human action. The emphasis of the proposed conceptual framework is in creating a space where human freedom, both individual and collective, is at the centre, although such freedom must exist within a viable and sustainable social order that is considerably more complex than property rights and the basic rights of the individual.

The projection of the possibility space through time

- Ensuring that the existing possibility space respects the limits imposed by the ecosystem we live in and, simultaneously, enables the majority of its citizens to contribute to the extent of their potential, as well as achieving their needed and desired levels of wellbeing, is only an ephemeral objective, if not embedded in a long-term vision that ensures the attainment of self-reinforcing state.
- The role of a government, after having facilitated the management of such a possibility space, should be to plan ways in which such a space will need to be adjusted to accommodate population growth and the need to maintain or increase levels of wellbeing given mostly fixed absolute natural limits.
- Given that both population growth and the natural limits of our ecosystem tend to follow very slow patterns of change, they are not difficult to plan for. This facilitates the projection of other relevant variables into the

future.

- Human beings, while intelligent enough to modify their environment, cannot yet control it. Bounded by their survival instincts, human beings, both individually and collectively, look for certainty and are better able to operate under it; particularly, they are better at taking the risks that lead to innovation under increased certainty.
- Certainty can be artificially created through insurance schemes embedded in the social structures. While they do not prevent the unpredictable, they help individuals and collectives manage it and plan ahead for negative outcomes. Furthermore, increased certainty can be achieved by embedding in social and material structures preventive and relief tools and mechanisms. Likewise, these cannot fully prevent the unpredictable; yet, firstly, these provide an increased sense of safety, and, secondly, they allow mitigating and reducing the impact of such unpredictables. Finally, government has to reassure individuals and collectives about its willingness and capacity to address the unpredictable when not preventive or corrective measures are available, and that in such addressing, the integrity of the possibility space will be reinstated as soon as possible, and the costs to both individuals and collectives minimized and fairly distributed, with those getting the winning end of the bargain showcasing solidarity with those on the losing end.
- Likewise, the costs of structural transformation that are inevitable in a stochastic process of social, economic, and political change need to be

planned and taken care for. Assurances that they will be so would also decrease uncertainty.

- Hence, another one of the most important tasks of governments in enabling and facilitating a process of development towards the self-reinforcing state, is to project the possibility space into the future, as an increasingly safer and broader one. The same way in which currently a government needs to ensure a clear, safe, broad and distinct present possibility space, it needs, as well, to create a similar future possibility space or corridor.
- Besides creating a clear, safe, broad, and distinct possibility space for individual and collective action, when looked through the lens of time, another primary task of governments is to aim at ensuring that each class of asset forms as close as possible to its absolute natural potential, and that, as a consequence, allows for the potential extraction of the maximum and optimal level of value from them towards the satisfaction of the wellbeing of the majority of its citizens. However, it is important to note that, independently, each class of assets can do very little in maximizing a country's potential to obtain value, even if its individual capacity is maximized. Ultimately, it is the configuration of the collection of assets in the ecosystem what optimizes the overall capability of a country to generate value. Each class of assets impacts the others, and all together enable or constraint each other in a stochastic process that although complex, can still be managed.

- Furthermore, contrary to the approaches followed by both environmental and ecological economists, the proposed conceptual framework relies not on the monetization of the stocks of wealth but on the clear definition and management of limits in terms of physical units of wealth. Ultimately, the value assigned to a country's wealth by these groups of economists faces the same limitations that any prices face—in particular, that they are relative to competing individual and social uses and preferences both, in the supply and demand side, as well as in a very particular point in time and timeframe. In this sense, prices are tautological and only reflect what the current state of the world and what its limited epistemological capabilities can fathom about the future, all scrambled through the complexity of socio-material structures. Sustainability is a long-term phenomenon and the pricing system has proven not to be most effective in allowing for intertemporal considerations that result into smarter long-term decisions. The current state of the environment is just but one of the proofs that can easily help sustain this argument.

The struggle to commensurate the incommensurable

- Managing a collection of classes of assets with very diverse natures, lifecycles, and characteristics is extremely difficult, particularly when there is a considerable disconnect between their lifecycles and those of the social, economic, and political processes. A human generation is on average 30 years long, and most democracies allow for political continuity for up 8 to 10 years. In the meantime, economic and innovation cycles

span through periods of 25 to 60 years; research and development activities also take place within periods of one or more decades; technological breakthroughs continue shaping the material and social world around them for many years even when new technological breakthroughs have replaced them; and, infrastructure choices constrain alternative paths for decades or even centuries.

- Incentive systems embedded in the material and social structures usually lack intertemporal considerations and mechanisms to incentivize and reward decision-making and actions that facilitate intergenerational equity.
- One of the most important tasks of a country is to embed into its material and social structures tools and mechanisms that introduce sufficient checks-and-balances as to make explicit the long-term consequences of short-term social, economic, and political decision-making. Ensuring that one of the suggested most important task of the government—projection of the possibility space into the future as an increasingly certain and broader one—is successfully carried over and deeply embedded into material and social structures, can facilitate the continuous and publicly transparent consideration of the long-term consequences of short-term actions (and it is argued in this dissertation that doing so by externalizing the consequences of government action and policy as measured by physical units of wealth can have a positive impact in achieving such government task).
- Another primary task of governments is to enable and facilitate the

transformation of the classes of assets it possesses (by influencing health, output, and value elasticities), and for them to retain the ability to create what is currently, and what it is expected to be, valued by both the local and global communities. Government should also aim to maximize the matching and synchronicity (or address the lack thereof) between stages of the broader social, economic, and political cycles (identified in this dissertation as long-term cycles), and stages of the classes of assets it possesses, as yet another mechanism to increase their ability to create what is valued by most individuals and collectives, both at the local and global levels.

The real space where countries can help each other

- As discussed above, the possibility to short-circuit the individual and collective human process that takes place within the confines of the possibility space is unrealistic. Achieving a stable social, economic, and political order and its social and material structures' underpinnings, takes time, and while efforts could be made to shorten such a timeline, the experience with aid over the last more than 60 years, does not seem to validate that this course of action might represent a sound investment.
- Alternatively, helping countries construct and maintain, stabilize, or broaden, or strengthen a possibility space for human action to take place at the pace dictated by its social reality, might be both more effective and efficient.
- Without any doubt, providing mechanisms and safeguards to reduce

uncertainty and address unexpected events is one of the most important and effective areas in which concerted wealth management can have a meaningful and sizeable impact.

- Finally, the real way in which the long development processes can be short-circuited is by addressing, as soon as possible, the constraints imposed in the formation of certain classes of assets through failures in investing in them at the critical points in which their function gradients are defined. Human capital is the most important class of assets that can be formed (natural capital can mostly be managed, not formed). For example, ensuring that the next two generations of children in Sub-Saharan Africa countries are perfectly nourished, emotionally protected and stimulated, and possess literacy, mathematical, technical, as well as social skills, could, perhaps, do much more for the sub-continent than the trillions of dollars that have already been spent in pursuing technocratic illusions, like those pushed forward by the current paradigm of aid.

Table 4.1. Most important government tasks in managing the wealth of nations

- | |
|--|
| <ul style="list-style-type: none"> • First: continuously, both individually and through concerted wealth management, enhance knowledge and understanding of the natural limits by which each asset is bound, as well as about the characteristics of an asset given by its origins in terms of the space and time dimensions. • Second: increase the understanding of the complementarity and substitutability among classes of assets as to ensure that the configuration of the portfolio can reach its natural potential to generate value. • Third: continuously monitor events that occur within the possibility space, so |
|--|

Table 4.1. Most important government tasks in managing the wealth of nations

the bounds that create such a space can be stochastically adjusted. The purpose of such adjustments is to minimize negative trends, maximize positive ones, and further, fine-tune the perception within such a space of the persistence of intertemporal certainty.

- Fourth: project the possibility space into the future as an increasingly safer and broader space. The same way in which, in the present, a government needs to ensure a clear, safe, broad, and distinct possibility space, it needs, as well, to create a similar possibility space or corridor projected in time. This includes, among many other things, improving connectivity, information flows, transparency, accountability, clear rules, mechanisms for solving collective problems, addressing of risks and transformation costs, and diversity and plurality. This means improving the conditions and the dispositions of social actors.
- Fifth: ensure that each class of asset forms as close as possible to its absolute natural potential, and that, as a consequence, it allows for the potential extraction of optimal levels of value from these assets towards satisfaction of the wellbeing of the majority of citizens.
- Six: enable and facilitate the transformation of classes of assets, as for them to retain their ability to create what is currently, and what it is expected to be, valued by both the local and global communities. Maximize the matching and synchronicity between the stages of the broader social, economic, and political cycles, and the stages of the classes of assets, as yet another mechanism to increase their ability to create what is valued by most individuals and collectives, both at the local and global levels.

Chapter 5

Aid Revisited: A Tale of Two Paradigms

Chapter Summary

This chapter presents a detailed comparison between the existing paradigm of foreign aid (and the conception of the process of economic growth on which it is based), and the proposed conceptual framework developed in Chapter 4—concerted wealth management.

To proceed with such comparison, the proposed conceptual framework is further developed to include the effects of public and private debt. Additionally, the concepts of optimal value extraction, Ξ (as an alternative formulation of economic growth), and optimal value allocation, P (as a conceptualization of the equality among citizen's wellbeing), are formalized. Resulting from these formalizations, the concept of self-reinforcing state, Z , is also formalized as one in which the two concepts of optimality defined above are simultaneously achieved. This results in the possibility to summarize the proposed conceptual framework, in its entirety, by the simple formulation, $Z \because \Xi \cong 1 \cong P$ (that is, self reinforcing state, Z , is attained because, \because , value extraction is almost optimal, $\Xi \cong 1$, and because the value extracted is almost optimally allocated, $1 \cong P$). As a new measurement of success, this formulation could substitute, or at least complement, the old paradigm's measurement of GDP growth as a sign of prolific social, economic, and political change.

Through a series of specific comparisons looking at how each paradigm (i.e., old and new) responds to some of the most important challenges faced in promoting

development, particularly from the aid enterprise point of view, a number of clear and important distinctions between these paradigms emerge. In this comparison, the words and meanings of both the old and new paradigms are used respectively, as to highlight their differences.

While for the old paradigm, growth and, therefore, the possibility of development derive from the limitless maximization of the present value of output, the new paradigm focuses on the optimization and maximization of the intertemporal value generating potential of each class of assets, and the portfolio of classes of assets, over their entire lifetime. Such potential is not defined in monetary terms (as, it has been argued, monetary denominations tend to be highly contextual and only reliable for limited periods of time) but in physical terms.

Furthermore, while both the old and new paradigms focus on addressing development constraints, the old is mostly driven and focused by current ones at the broader macroeconomic aggregate level (e.g., savings, investments, and balance of payment gaps and their short-term drivers, poverty, death, disease, etc.). Instead, the new paradigm looks at constraints from a pre-eminently intertemporal perspective, to then proactively design and manage a possibility space, guided by a clear understanding of the limitations that critical-paths impose. This difference between the paradigms mean that the old paradigm might be more prone to address the effects of aid-recipients not having achieved self-reinforcing state, rather than addressing the causes behind these countries' difficulty in achieving such state.

The old paradigm aims at helping aid recipients achieve self-sustaining growth as soon as possible (so aid can stop), without much practical concern for limits to growth,

the distribution of incomes (lacking the tools to deal with it), and the critical-paths that might constrain long-term growth and sustainability (particularly because there are mostly politically driven/determined issues about which the aid enterprise usually recuse itself). If such concerns are expressed by the old-paradigm aid, they tend to be more rhetorical and aimed at reducing reputational risks, particularly, because the theoretical constructs behind aid praxis do not always offer the technical tools to integrate them and devise comprehensive solutions that deal with them. The new paradigm, instead, starts by defining a possibility space given by natural absolute and relative limits within which, environmental sustainability is possible, as well as socio-material limits that reflect the physical impact of societal choices both in the ecosystem, and specifically, on human wellbeing. It also considers the critical-paths to which each class of assets is bounded, and the implications these have in terms of where and when aid can be more or less effective. It also makes the distribution of incomes into an essential requirement for attaining self-reinforcing state, the attainment of which (along with the convergence of most countries into such a state) is the most important objective of the proposed formulation of concerted wealth management.

Finally, among other additional differences, while under the old paradigm all classes of assets are mostly lumped into labour and capital (and increasingly knowledge, under new growth theory), are considered to be fully substitutable and complementary, and their contributions to growth are all lumped into the concept of total factor productivity, under the new paradigm, instead, more classes of assets are considered (each unique and therefore subjected to different critical-paths and function gradients, among others) and they are non-substitutable, only contextually complementary (with

their relevance and relative role determined by the state of affairs), and their contribution to growth and development uniquely determined by the context. This difference means that aid interventions (investments in general) designed following the old paradigm, and not considering the subtleties introduced by the proposed conceptual framework, might not only be suboptimal but perhaps even wasteful.

After these comparisons, the chapter ends by proposing an approach that could facilitate the adoption and therefore, the impact of the proposed conceptual framework. The proposed approach lends from the success the old paradigm enjoyed due to its infiltration into the core of the aid enterprise as a Trojan horse (discussed in Chapter 2). The new Trojan horse this chapter proposes, is the pushing for a new and complementary “language” built not on monetary denominations, but on physical ones: new national income accounts, and new accounting, trading, and labeling standards and practices, requiring both, the spelling in physical units of the wealth content in goods and services; and the spelling of the impact of policies and regulations in terms of these same physical units (these as a mean to more clearly define the natural and socio-material limits that bound the possibility space in which the process of development takes place). This new language can enable avoiding the distortions monetary denominations introduce. For example, if the ingredients of a Big Mac, or the water required to produce a kilo of meat are the same in two international locations, from an intertemporal perspective their equivalent monetary denominations should be similar (although they tend not to be) because, ultimately, the cost for the human race in terms of the impact these have in the ecosystem are also similar (and, in the long term, this reality is considerably more important than any other given our mere existence depends on it). After all, differences in

endowments are only an apparent comparative advantage as, in the ultimate analysis, the human race and the ecosystem on which it depends on, are only one and the same. If the monetary denominations of goods or services do not fully represent the embedded wealth in them, such distortions result in hidden net transfers of wealth that, unchecked, prevent the convergence between better-off and worse-off countries, as they tend to drain the wealth from some countries into others. They also hide and mask pernicious intertemporal effects on the ecosystem (understood in the broader sense in which it is used throughout this dissertation), which ultimately translate in pernicious effects in global wellbeing. This new proposed Trojan horse—a new language for the proposed new paradigm of concerted wealth management—can also help make public policy more transparent by making explicit its physical implications and the distributional consequences they have in terms of wellbeing.

Setting the Stage

Over the previous four chapters, it was argued that the difficulties that plagued the aid enterprise since its inception are not mainly due to effectiveness and efficiency issues related to its volume, allocation, and delivery, but due to its problematic conception. Specifically, in Chapter 2, evidence was presented about how an entrenched, narrow conception of economic growth around a very reduced number of ingredients, but not around the processes behind it, led to a similarly narrow set of practical tools (i.e., development planning and national income accounting), that permeated the aid enterprise to its core. Due to the silent assimilation of these ideas, as if they had infiltrated aid as a Trojan horse, not much debate about aid-effectiveness has focused on the implications they had, and continue having, on it.

Through Chapters 3 and 4, an alternative conceptual framework was developed and formalized, purposely conceived to address the shortcomings of economic growth theory, development planning, and national-income accounting; especially those that seem to negatively have impacted the aid enterprise. It was also developed to shift the received understanding, and, hence, the debate, about aid. (Chapter 6 will discuss the extent to which the proposed conceptual framework addressed these two challenges.)

In the following sections, the formalization of the conceptual framework derived in Chapter 4, will be used to reimagine economic growth, to, in turn, reimagine aid.

The Old and the New Paradigms

The received understanding of economic growth, planning, and aid.

As discussed in Chapter 2, one group of classical economists considered growth to be the result of certain factors being present and abundant, more than the result of a particular process (e.g., Adam Smith, Alfred Marshall). The other group, while focused on the process rather than on the factors or ingredients, held a very narrow view, which was centered on profits and surplus value as the drivers of this process (e.g., David Ricardo, Karl Marx).

The neoclassical synthesis, while still focused on the factors or ingredients, greatly reduced them in number. Its aim was to understand the relationship between them, and too many made this task excessively complicated. Likewise, regard for the process was dropped as part of the explanation of growth, and, like the classics, an implicit assumption was made that an increased abundance of ingredients will result in growth, particularly when free markets are functioning. Even when this assumption turned out to be unfounded, neoclassical economists turned their focus to the idea that the

marginal productivity of the ingredients was behind economic growth, in particular the idea that increases in Total Factor Productivity (TFP) were responsible for economic growth. Due to the central role the pricing system has in neoclassical economics and the assumptions behind many of its models, the neoclassical synthesis moved the attention away from the process of development, and even farther away from the socio-political debate, as it left to the pricing system and the markets to resolve the process of development.

In its most simple mathematical form, the neoclassical economic growth model (AK model of economic growth), as it has evolved from the Harrod-Domar model, can be represented by (Helpman, 2004; Kregel, 1972),

$$Y = AK^\alpha L^{1-\alpha} \quad [5.1]$$

This means that the total output (Y) in an economy is given by how capital (K) and labour (L) complement and substitute each other (given by the coefficient, α) in producing such output (Y), and how the knowledge and innovation that drives factor productivity (A) enhances both their potential to create output. Growth can then occur either by an increase in the total capital (K) and labour (L) available, and by changes in knowledge and innovation (A) that can both change, in turn, the way in which these two factors complement and substitute each other (given by α), as well as the way in which such combinations create increased output (Y). Given its simple form, other types of factors, like human capital, can be incorporated in the model in a similar fashion (H. A. Arndt, 1984; Helpman, 2004).

While a bit more complex than the Harrod-Domar model of economic growth, which did not integrate factor productivity, the AK model above still relies on the

assumptions that abundant (and not finite) resources are always available (this is, there are no limits to growth), and that the factors or ingredients are fully substitutable (Helpman, 2004). In fact, as Thirlwall (2011) demonstrates, it just takes to make the assumption that, $\alpha = \frac{1}{2}$, for both the Harrod-Domar model ($\frac{\Delta Y}{Y} = \frac{s}{c}$, where s is the savings ratio, and c the capital-output ratio), and the AK neoclassical model (as described in previous paragraphs) to derive the exact same results and become equivalent to each other.

Furthermore, while the idea of factor productivity has been embedded into the models of economic growth, not much is known about how to influence it, besides of course, the general notion that knowledge, innovation, and institutions are partially responsible for it, and, therefore, that investment in education and skills, as well as in improving the institutional setting are necessary. The importance of this gap in the understanding of factor-productivity became even more apparent when econometric studies indicated, for example, that at least half of the differences between countries' economic growth performance could be explained by it (Helpman, 2004); or that, in the US alone, about 80 percent of the long-term increase in per capita income was due to it (H. A. Arndt, 1984; Helpman, 2004; P. R. Krugman, 1996; Salvadori, 2003a).

In practical terms, and particularly for development planning, this limited knowledge about factor-productivity at the macro level meant that, it was implicitly assumed that if at the micro-level investment projects passing the investment threshold had positive rates of return, they will ultimately provoke economy-wide factor productivity improvements (Chenery, 1955, 1961, Jan Tinbergen, 1964, 1967). Nevertheless, besides the economic efficiency that would be implied in the rate of return

of these projects, planning for the institutional and incentive structures that could lead to innovation and technological progress was too complex to become part of development planning (H. A. Arndt, 1984; Helpman, 2004; Spence, 2011). In fact, most methods of development planning rely on the use of coefficients that are taken as given, and that are mostly fixed due to their computation being based on historical figures (Chenery, 1955, 1961; Jan Tinbergen, 1967).

Development planning is then mostly focused on maximizing national income (or, at least, increasing it by a certain amount with the least possible investment offering the highest rates of return) through the allocation of investment resources into particular projects (determined through the ranking of the projects' internal rates of return, be it economic, social, or a combination of both), based on the simple idea embedded in the models of economic growth, that increases in capital increase output (Chenery, 1955, 1961; Helpman, 2004; Jan Tinbergen, 1967). As a consequence, through development planning, an effort would be made to, through these investment decisions: (a) reduce disequilibrium between supply and demand, due to constraints in particular factors (these create bottlenecks); (b) reduce disequilibrium reflected by the balance of payments (these also create bottlenecks through shortages in foreign exchange to pay for capital and imported production inputs); (c) manage the structural transformation of the economy and its potential implications on future growth (to build on comparative advantages) (Chenery, 1961).

While development planning can help allocate the resources available in a way in which the best possible use of them is made (as measured by marginal rates of contribution and overall rates of return), reality is that, in practice, and particularly for

less developed countries, there is a gap between what can be done and what might need to be done in order to deal with the three objectives enumerated above. For example, the disequilibrium between supply and demand due to constraints in particular factors ((a) above), could be significant enough that the investments required to correct them might exceed by far the available in-country resources. If because of this limitation, certain investments cannot take place, some existing bottlenecks will remain, limiting the capacity of the whole economy.

This is the point where aid is presented as an alternative to fill such gap between investment needs and possibilities. The cut-off for investments (based once again on their ranking in terms of rates of return) can change if more resources are available to undertake more of the required projects. Aid, it is suggested, can help address what is known as the “investment limited growth” challenge (Chenery & Carter, 1973; Chenery & Strout, 1966a, 1966b). From this perspective, if a target rate of economic growth requires a certain amount of investment but the resources available do not allow for such investments, then the target cannot be met. If the gap between the required investment and the possible one is filled by aid, then, the rate of economic growth can be achieved.

Likewise, aid could also complement the efforts of development planning to, as suggested in point (b) above, reduce disequilibrium in the balance of payments by providing for the gaps in foreign exchange. If the challenge of “investment limited growth” was addressed both through local and foreign resources (aid), as a consequence, quick and relatively important rates of economic growth, sufficient to mobilize an economy towards self-sustaining growth, might exert pressure on the balance of payments due to imports of capital or production inputs that are not produced locally.

Inflows of aid can fill, as well, potential temporary gaps between exports and imports. If aid or other resources to deal with these gaps are not available, trade becomes, as a consequence, a limiting factor to growth. This situation is known as “trade limited growth” (Chenery & Strout, 1966a).

In simple mathematical terms, using the most basic economic output identity, $Y = C + I + X - M$, and if savings are considered, the following identity results: $I - S = M - X$, showing the interrelation between saving, investment, and trade gaps (Y , is income; C , consumption; I , investment; X , exports; M , imports; and, S , savings).

These ideas, which were at the core of Chenery & Strout’s (1966a) dual-gap model, have, as discussed in Chapter 2, shaped the way in which aid was conceived, delivered, and evaluated. Not only was aid seen as necessary as to fill both the investment and foreign exchange gaps, but was also seen as a mechanism to drastically reduce the time required for developing countries to achieve the rates of economic growth that, in time, will allow them to provide for the needs of a growing population and to save and invest increasingly more so they would not need aid soon enough.

Concerted Wealth Management.

What are the implicit understandings of economic growth, planning, and aid put forward by the conceptual framework proposed and formalized throughout Chapters 3 and 4?

In a nutshell, optimal value extraction (as a substitute conceptualization of economic growth) results from the process of social, economic, and political change that takes place within the possibility space; that is, the process of development. Through this process, societies extract value from wealth; that is, from the classes of assets that

compose wealth. Through this extraction of value from wealth, societies can attain the wellbeing they need and want. As a logical consequence, intertemporally, in the self-reliant state value and wellbeing are an identity.

As a consequence, according to the proposed conceptual framework, optimal value extraction is a function, in the short term, of how effective and efficient, within the possibility space, is this extraction of value from wealth. In the long term, it is a function of how the process of social, economic, and political change stochastically “negotiates” with the limits imposed by the possibility space and critical-paths, so as to enlarge them by moving the effective relative limits, $\omega_{A_{ie}}$ and $\varpi_{A_{ie}}$, closer to the absolute ones, Ω_{A_i} and 0; this, through innovation and technology, and through more effective and efficient social, economic, and political rules and routines (reducing entropy through improved social dynamics taking place within the possibility space—see Table 3.5 and its preceding paragraphs).

In the mid-term, optimal value extraction results from a combination of pushing the upper effective relative limits, $\omega_{A_{ie}}$, closer to its natural ones, Ω_{A_i} , plus broadening the space between the upper and lower effective relative limits, $\|\omega_{A_{ie}} - \varpi_{A_{ie}}\|$, particularly for those classes of assets that might impose constraints on the others, and, as a consequence, on the portfolio as a whole. These avenues leading towards the achievement of optimal value extraction, which draw from Table 4.1, and Figure 4.19, are illustrated in Figure 5.1, below (the thick yellow line at the core of the possibility space represents the imagined current value generation function).

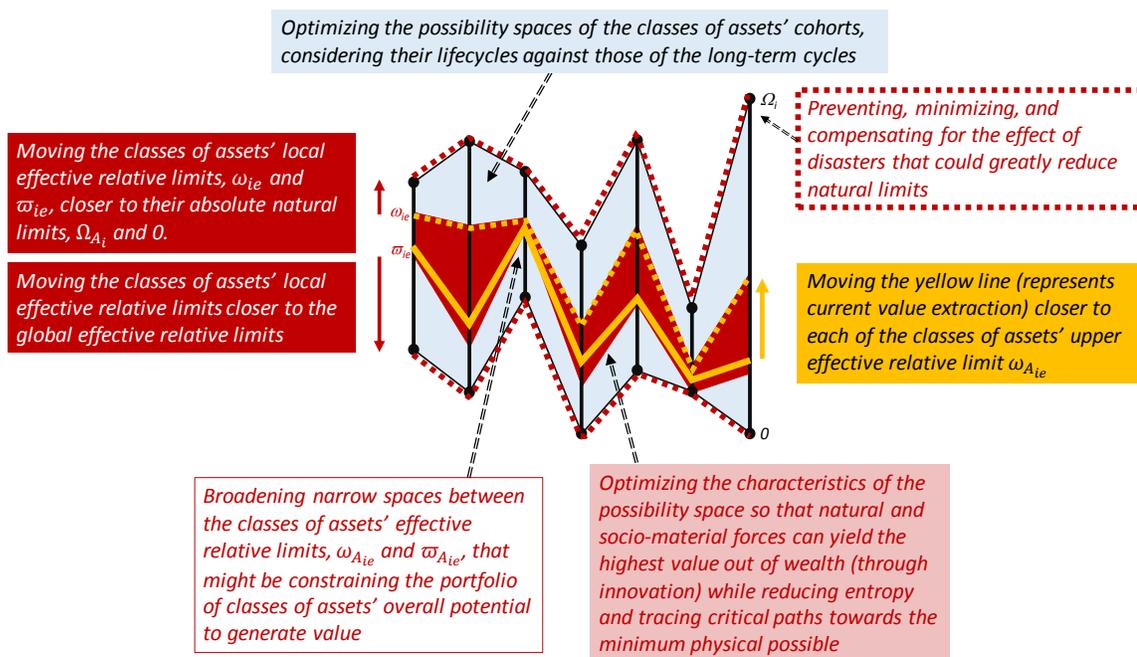


Figure 5.1. Avenues towards optimal value extraction

An optimal-value-extraction-inducing process of social, economic, and political change is one that, within the confines of the possibility space and critical-paths, continuously brings about innovation and technology that help find and implement more effective and efficient ways to combine and recombine wealth with the purpose of extracting enough value from it, allowing to fully satisfy the wellbeing needed and wanted by the majority. Such optimal-value-extraction-inducing process is, as well, one that turns itself into continuously improving the rules and routines that guide it, so as to make it possible to perform at a level that allows society to achieve and maintain self-reinforcing state.

This proposed approach, which establishes a time-bound distinction between the value generating potential of wealth and the dynamics within the possibility space, can

help reframe the argument that Mankiw and Romer advanced in comparing the different notions of “knowledge” held by the neoclassical and the new growth models (Warsh, 2006). What Romer (Mankiw, 1995; Romer, 1990) calls knowledge under new growth theory, is more in line with the kind of dynamic improvements that according to the propose conceptual framework are experienced within the possibility space, and that are often hard to predict and understand, but, once they are, they get formalized and become intangible produced capital. What Mankiw (1995) suggests, instead, under neoclassical growth theory is that what happens within these possibility spaces is shared by all human beings, perhaps reminiscent of Wittgenstein’s “forms of life”, and therefore, common and widely available to all, hence somewhat exogenous to the growth process (that is, it is not necessarily converted into private property). The proposed conceptual framework integrates both the neoclassical and new growth theories into one by separating the space and the process from which the intangible capital is produced, from that of the existing intangible produced capital itself, uniting in this way both theories’ distinctions of knowledge.

As discussed in Chapter 3, this possibility space in which change takes place is given at the highest level by natural limits, and then, pushed mostly inwards, by constraints imposed by portfolio considerations, trade, material structures, and overall local and global social structures. Given that the effective relative limits of this possibility space embed in them the limits of value extraction given by the ecosystem, the process of development informed and contained by it, can theoretically, and potentially, be more effective in fostering effectiveness and efficiency in the use of wealth, as scarcities are clearly articulated and known by everyone in such spaces. This transparency can lead to

efforts to discover additional sources, alternative sources, or ways to improve efficiency in extraction and productivity in their use (represented by the optimization of health— α , output— β , and value— θ —elasticities, among other variables—see Figure 4.19).

Building on the formalization of the conceptual framework developed in Chapter 4, mathematically, the value generating capacity of a society at time t_n , could be described as a reformulation of Equations 4.9, as follows,

$$v_{A_{it_n}}(a_{it_n}) = \frac{a_{it_n}^{\alpha_{A_{it_n}}} \beta_{A_{it_n}}^{\beta_{A_{it_n}}} \theta_{A_{it_n}}}{(\omega_{A_{iet_n}} - \varpi_{A_{iet_n}})^{\alpha_{A_{it_n}}} \beta_{A_{it_n}}} \quad [4.9]$$

$$\sum_i^n v_{A_{it_n}}(a_{it_n}) = V_{\mathcal{E}t_n} \quad [5.2]$$

$$0 < \alpha_{A_{it_n}}, \beta_{A_{it_n}}, \theta_{A_{it_n}} \quad \text{and} \quad \Omega_{A_{it_n}} \geq \omega_{A_{it_n}}, \omega_{A_{iet_n}} \geq a_{it_n} \geq \bar{\omega}_{A_{it_n}}, \bar{\omega}_{A_{iet_n}} \geq 0$$

Where, $V_{\mathcal{E}t_n}$ represents the total value extracted from all the classes of assets, A_{it_n} , in the ecosystem, \mathcal{E} , at time, t_n , at quantities, a_{it_n} , in which a set of time specific natural and socio-material relative limits, called effective relative limits, $\omega_{A_{iet_n}}$ and $\varpi_{A_{iet_n}}$, bound human activity, and are in turn bounded by absolute natural limits, $\Omega_{A_{it_n}}$, and, 0. (It is important to note that the summation of the value extracted from each class of assets is made possible, regardless of their substantial incommensurability, due to one of the central assumptions at the core of the proposed conceptual framework: that in the self-reinforcing state, value and wellbeing are an identity.) This means that given wellbeing can be defined in physical units of wealth, a comparison can be made between the value obtained from wealth (measured in physical units of wealth) and wellbeing, showcasing in this way the net-wealth effect of the value extraction process. Therefore, what the summation shows is the overall wellbeing that was extracted from wealth.

Please also note that the summation represented by Equation 5.2 is made possible given that Equation 4.9 has been normalized.

As discussed in Chapter 4, $\alpha_{A_{it_n}}$, $\beta_{A_{it_n}}$, and $\theta_{A_{it_n}}$ in Equation 5.2 above are, respectively: the health elasticity, which represents the impact in terms of the health of the class of assets, of extracting, a_{it_n} out of the stock of the class of assets, A_{it_n} (is constrained by, $\alpha_{A_{it_n}} > 0$); the output elasticity, which represents the productivity with which a unit of the class of assets, A_{it_n} , can be converted into output (is constrained by $\beta_{A_{it_n}} > 0$); and value elasticity, which represents the trade-off between the output extracted and the value received for such output in physical units of wealth (is constrained by $\theta_{A_{it_n}} > 0$).

As discussed in Chapter 4, if health elasticity, $\alpha_{A_{it_n}} = 1$, the relationship between extraction and health is proportional; if, $1 > \alpha_{A_{it_n}} > 0$, there are increasing opportunity health costs for the class of assets, A_{it_n} , per each unit extracted, a_{it_n} ; and if, $\alpha_{A_{it_n}} > 1$, there are decreasing opportunity health costs for the class of assets, A_{it_n} , per each unit extracted, a_{it_n} .

If, $\beta_{A_{it_n}} = 1$, the relationship between quantity and output is proportional; if, $1 > \beta_{A_{it_n}} > 0$, there are decreasing returns to scale per each unit used, a_{it_n} ; and if, $\beta_{A_{it_n}} > 1$, there are increasing returns to scale per each unit extracted, a_{it_n} .

And if, $\theta_{A_{it_n}} = 1$, the relationship between output and value would mean that an equivalent amount of wealth to that extracted from the class of assets, A_{it_n} , is obtained in exchange; if $\theta_{A_{it_n}} > 1$, the output produced per each unit extracted, a_{it_n} , would generate

wealth in excess of that extracted from the class of assets, A_{it_n} ; and, if $1 > \theta_{A_{it_n}} \geq 0$, the output produced per each unit extracted, a_{it_n} , would generate lesser wealth than that extracted from the class of assets, A_{it_n} .

The health and output functions (determined by $\alpha_{A_{it_n}}$ and $\beta_{A_{it_n}}$) impact the classes of assets' effective relative limits and these effective relative limits, in turn, drive changes in the health and output functions through the scarcity they impose (incentivizing improvements in productivity, $\beta_{A_{it_n}}$, as well in the ability to extract physical units of wealth, a_{it_n} , imposing an increasingly smaller effect on the classes of assets' health given by the health elasticity, $\alpha_{A_{it_n}}$). Through these impacts, among others, as well as through changes in relative natural limits, is that the possibility frontiers shift upwards or downwards. Lastly, it is the value elasticity represented by $\theta_{A_{it_n}}$ (matching and synchronicity), what ultimately determines, at any given point in time, the value in physical units of wealth of the output produced, and, as a consequence, the implications that the value extraction that led to such output may have in terms of a country's intertemporal capacity to generate value from wealth (given that such value extraction and trade could engross or drain a country's stock of wealth).

In the old paradigm (Equation 5.1), A or TFP, in lieu of the proposed coefficients, $\alpha_{A_{it_n}}$, $\beta_{A_{it_n}}$, $\theta_{A_{it_n}}$, of the new paradigm was presented as exogenous. Yet, as Warsh (2006) explains it citing Robert Solow,

[Solow's] "manna from heaven" shorthand for technological change had been widely misunderstood. "Exogenous does not mean either 'unchanging' or 'mysterious' and certainly not 'unchanging and mysterious.'" It is a temporary

designation, meaning that we try to workout in detail how the rest of the model adjusts to the exogenous elements, but not the other way around.”. (p. 374-375)

In a way then, the old and new paradigms agree in that both, A , in the former, and, $\alpha_{A_{it_n}}$, $\beta_{A_{it_n}}$, $\theta_{A_{it_n}}$, in the latter, are not fully explained but actually explanatory.

However, while the old paradigm leaves it still as an externality, the new paradigm, building on Wittgenstein’s epistemological and ontological approach, sets clear limits with regards of what can and what cannot be theorized. It is precisely in setting clear limits, that the new paradigm offers a more specific understanding of development that allows focusing on those things that matter the most as subjects of policy, while letting the rest follow a course that, regardless how much policy makers want to control and manipulate, relies on its internal logic and timeframe rather than exogenous meddling or manipulation. For example, in the old paradigm elasticities are given by prices and the changes in the quantities supplied or demanded that shape these prices; on the contrary, mindful of the limitations and distortions of the pricing system and monetary denominations, the new paradigm relies on real variables and physical properties (reflected through socio-material structures, limits, and forces) to determine its proposed elasticities. Furthermore, under the old paradigm, development planning relies on coefficients of variation that summarize in them, in a highly simplified way, a considerable number of variables (although theoretically, these variables are only labour, capital, savings, investments, and output). The new paradigm instead, given that the bounded elasticities are defined by class of assets, allows for development planning based on a contextual optimization of the portfolio of classes of assets that take into

consideration health, output, and value elasticities within classes of assets, across classes of assets, and across time for both these categories—including as well the different cohorts that make up each class of assets (see Figure 4.19).

As also discussed in Chapter 4, that matching and synchronicity of local and global natural and socio-material limits, plays an important part in determining the overall value generated from wealth (and as a consequence the wellbeing that a country can obtain from its wealth) raises questions, both about the scale of the costs a country has to assume to match and synchronize local socio-material relative limits to global ones, as well as about the economies of scale limitations that small countries face in terms of natural relative limits (and as a consequence on their capability to match and synchronize their local natural relative limits with global ones). These limitations have important consequences for the possibility of convergence between better-off and worse-off countries, particularly for smaller and less endowed countries. Therefore, an aid enterprise that neglects dealing with this important aspect of the development process is considerably constrained in contributing to the achievement of such convergence.

Equation 5.2 above represents only the value generating capacity of a country at time t_n . While a summation of the function $V_{\varepsilon t_n}$, that is, $\sum_{t_1}^{t_n} V_{\varepsilon t_n}$, could, notionally, represent the intertemporal value generating potential of a country's wealth, it is argued in this dissertation that such a representation would be illusory. As it has been previously argued, given the distortions in the pricing system and the dependence of monetary denominations on contextual aspects at specific points in time, relying on intertemporal monetary based calculations only can be misleading. Monetary denominations are, it is argued in this dissertation, matching and synchronic-stage dependent and therefore only

realistically valid for periods of 15 to 20 years in the sense that they would hardly capture complete information, as it is often assumed in neoclassical economics. This is particularly the case, given the impact class of assets' lifecycles and long-term cycles have in creating specific and unique contexts for pricing. As a consequence, a stable point of reference, a physical one as suggested in the previous chapter, is necessary as a reliable constant to make sense of a changing world. In the long-run, what indicates to a great extent the value generating potential of a class of assets is not the old paradigm's summation of the expected monetary proceedings from it, but the closeness of its function gradient(s) to that which is given by absolute natural limits. In the case of this dissertation, these reference points or constants are provided by the relation between the lifecycles of the classes of assets and long-term cycles, as well as by the intertemporal identity between value and wellbeing.

Within these periods of time corresponding to stages of the long-term cycles (represented in this dissertation by Kondratiev long-waves), the value extracted from the classes of assets is negatively impacted through the portion of it that needs to be spent in paying the interest over the stock of public and private debt, and through the reduced flexibility in having less potential to access credit. As discussed in relation to Figure 4.9 in Chapter 4, intertemporally, interests on public and private debt, particularly if growing vis-à-vis the size of the collection of assets and if interest rates are rising, can have a creeping effect in diminishing the proportion of value that can be extracted by a country in order to fulfill the wellbeing of its citizens.

Drawing from Equation 5.2, the impact of the stock of public and private debt in the value generating potential of a country could be represented as follows. First, in order

to commensurate interest payments (which are denominated in monetary terms) with value extracted, a conversion needs to be made,

$$\mathcal{M}(V_{\mathcal{E}t_n}) = Y_{t_n} \quad [5.3]$$

Where, \mathcal{M} , is the function that translates into a monetary denomination, $V_{\mathcal{E}t_n}$, which, as per Equation 5.2, represents the total value extracted from all the classes of assets, A_{it_n} , in the ecosystem, \mathcal{E} , at time, t_n , using quantities, a_{it_n} . This monetary denomination, Y_{t_n} , can be equated to the traditional, Y , through which the annual output of an economy is represented by most economic models (which is also equivalent to GDP).

Now, Equation 5.4 below, represents the output per capita, y_{t_n} , for time, t_n ,

$$y_{t_n} = \frac{Y_{t_n}}{\Pi_{t_n}} \quad [5.4]$$

Where, Π_{t_n} , represents the total citizenship, at time, t_n .

The per-capita interest paid on public and private debt, r_{t_n} , at time, t_n , is,

$$r_{t_n} = \frac{R_{t_n}}{\Pi_{t_n}} \quad [5.5]$$

Where, R_{t_n} , is the total interest paid on the public and private debt during time, t_n . As in Equation 5.4, Π_{t_n} , represents the total citizenship.

Now, the proportion of how much the per capita interest paid on public and private debt, r_{t_n} , at time, t_n , represents out of the output per capita, y_{t_n} , for time, t_n , or, λ_{t_n} , can be written as,

$$\lambda_{t_n} = \frac{r_{t_n}}{y_{t_n}} \quad [5.6]$$

Using Equations 5.4 and 5.6, net output per capita, \hat{y}_{t_n} (that is, net of interests), at

time, t_n , can be calculated as follows,

$$\hat{y}_{t_n} = (1 - \lambda_{t_n})y_{t_n} \quad [5.7]$$

Which, in turn, can be translated into total net output,

$$\hat{Y}_{t_n} = \hat{y}_{t_n} * \Pi_{t_n} \quad [5.8]$$

And finally, by using the inverse of the, \mathcal{M} function (Equation 5.3), \hat{Y}_{t_n} , can be translated back into non-monetary value extracted, although this time, net value extracted, $V_{\varepsilon t_n}$, that is, net of interest,

$$\mathcal{M}^{-1}(\hat{Y}_{t_n}) = \hat{V}_{\varepsilon t_n} \quad [5.9]$$

Now, Equation 5.9 is the equivalent of Equation 5.2 minus the value extracted reduction due to the interest paid on the stock of public and private debt.

Consistent with the definitions in which the proposed conceptual framework is built (see Chapter 3), self-reinforcing state is partially attained when optimal value is extracted from the collection of classes of assets. Optimal value refers to that which allows for the fulfilling of the wellbeing (both needed and wanted) of the majority of citizens intertemporally. (It is important to remember at this point that, as per the definition of the self-reinforcing state in Chapter 3, a central tenet of this dissertation is that value and wellbeing are an identity.)

In practical terms this means that the value extracted has to be enough to: (a) pay for the interests on the public and private debt; (b) to make-up for the depreciation and physical units extracted from the classes of assets, as well as to further build these or additional classes of assets if currently not enough value generation potential is available to fulfill the wellbeing of the majority, or if the population is growing and additional

value generating capacity is expected to be needed; and, (c) to pay for the wellbeing of the majority of citizens.

The optimality of value extraction, ξ , at time, t_n , can then be represented by,

$$\xi_{t_n} = \left[\left(\frac{\Phi_{t_n}}{\hat{V}_{\varepsilon t_n}} \right) + \left(\frac{\Delta_{t_n} + \left(\Gamma_{t_n} * \frac{\Delta_{t_n}}{\Pi_{t_n}} \right)}{\hat{V}_{\varepsilon t_n}} \right) \right] \quad [5.10]$$

Where, for time, t_n , $\hat{V}_{\varepsilon t_n}$, represents the net total value extracted from all the classes of assets, A_{it_n} , in the ecosystem, \mathcal{E} , at quantities, a_{it_n} ; Φ_{t_n} , is the total wellbeing needed and wanted by the majority of citizens (see Chapter 3); Δ_{t_n} , is the total depreciation of all the classes of assets in the ecosystem, \mathcal{E} (this is, the reduction in their capacity to generate value due to use, decay, disasters, shocks, or similar reasons—the summation of each class of assets' depreciation, $\delta_{A_{it_n}}$); Γ_{t_n} , is the additional citizens that will be added to the citizenship from time, t_n , to time, t_{n+1} ; and, Π_{t_n} , represents the total citizenship at time, t_n . The first component of the equation (the left side) expresses how much of the wellbeing needed and wanted, Φ_{t_n} , is the value extracted at time, t_n , $\hat{V}_{\varepsilon t_n}$, able to fulfill. The second component of the equation (the right side), spells how much of the value extracted at time, t_n , $\hat{V}_{\varepsilon t_n}$, is required to ensure intertemporally, the capacity of the country's wealth to fulfill the wellbeing needed and wanted by its citizens. In summary, Equation 5.10 represents how far the net total value extracted, at time t_n , goes in fulfilling the needs and wants of the country, without affecting its intertemporal capacity to do the same. If $\xi_{t_n} < 1$, less value might need to be extracted (i.e., more than required is being extracted); if $\xi_{t_n} > 1$, more value extracted might be needed (less than required is being extracted); and if $\xi_{t_n} = 1$, the value being extracted is in equilibrium

with the country's intertemporal needs (i.e., optimal value extraction).

Optimal value extraction is only one of the characteristics of self-reinforcing state. How well does the value extracted allow for the fulfilment of the wellbeing needed and wanted by and for the majority of citizens, is the other. This latter characteristic, however, is more complex given that, even if optimal value is being extracted, the entitlements each citizen gets might be highly unequal. This means that equality in entitlements over value extracted depend both on, first, whether there are enough entitlements to cover for the wellbeing needs and wants of every citizen, and, second, on the way in which the total value extracted is allocated to every citizen. Furthermore, these wellbeing entitlements would probably be linked to the distribution of the ownership over the classes of assets themselves.

Following Sen (1976, 1997), and further developments by Shorrocks (Jenkins, Kapteyn, & Van Praag, 2010; A. Shorrocks, 1994; 1995), the optimality in the allocation of the value extracted, q_{t_n} , will be developed using the concept of deprivation profiles.

Figure 5.2 shows that the concept of deprivation profiles is modelled after the Gini coefficient and the Lorenz curve (Sen, 1997; A. Shorrocks, 1994). One of the difference between them, however, is that while for the Gini coefficient the 45-degree line represents the equal distribution of all income among all individuals, in the case of the deprivation profiles, the 45-degree line represent that of the normative fixed poverty line of choice (in the case of the proposed conceptual framework, maximum allocation of value extracted is represented by the 45-degree line). The other difference that derives from the one above, is that rather than a full Lorenz curve below the 45 degree line, the deprivation profiles produce a poverty gap profile that starts growing, less and less, until

it reaches a point where no additional individual's income (in the case of the proposed conceptual framework, the individual's allocated value extracted), is below the normative fixed poverty line. Finally, the population share below the poverty line, is represented by

π_{t_n} .

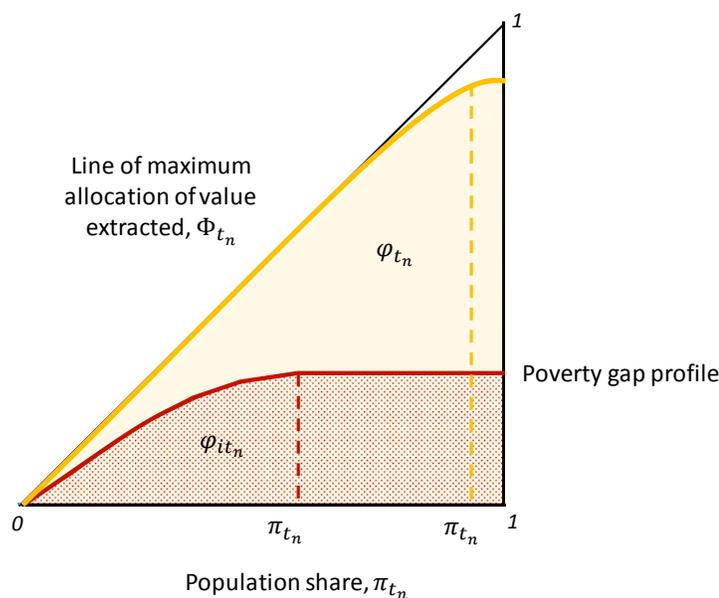


Figure 5.2. Deprivation profile

Building on the previous paragraphs, and consistent with the idea of the self-reinforcing state developed in Chapter 3, achieving and maintaining such a state requires the fulfillment of the levels of wellbeing needed and wanted by and for the majority of citizens. It is possible then to define four different profiles (not all would be levels of deprivation, but nevertheless, levels that could be analyzed through Sen's and Sharrocks' framework mentioned above). For each one of these four profiles, a line of maximum allocation of value extracted for period, t_n , would be defined, such as the area above

them, and before the next one, will represent: (a) citizens that fulfill their wellbeing needs, identified by φ_{1t_n} ; (b) citizens that fulfill their wellbeing needs and wants, φ_{2t_n} ; (c) citizens that exceed their wellbeing needs and wants, φ_{3t_n} ; and (d) all citizens, φ_{4t_n} (therefore, equal to $\widehat{V}_{\varepsilon t_n}$). As per Figure 5.2, linked to each one of these maximum allocations of value extracted, there is one corresponding population share, all adding up to the entire population or citizenship, Π_{t_n} ; these are, respectively, π_{1t_n} , π_{2t_n} , π_{3t_n} , and π_{4t_n} , such that,

$$(\pi_{4t_n} - \pi_{3t_n}) + (\pi_{3t_n} - \pi_{2t_n}) + (\pi_{2t_n} - \pi_{1t_n}) + \pi_{1t_n} = 1$$

Given that the maximum allocations of value extracted, φ_{1t_n} , φ_{2t_n} , φ_{3t_n} , and, φ_{4t_n} , progressively include the allocations below them, isolating the population share for which the allocation of value extracted allows them to fulfill both, and solely, their wellbeing needs and wants, requires a simple mathematical operation,

$$q_{t_n} = (\pi_{3t_n} - \pi_{2t_n}) \quad [5.11]$$

Equation 5.11 presents, then, the proportion of the citizenship for which their wellbeing needs and wants are being fulfilled, not more, not less. The higher the proportion, the more optimal the allocation of the value extracted is. q_{t_n} , is then a proxy for the optimality of the allocation of the value extracted in period, t_n .

Hence, in its most basic definition at period t_n , the self-reinforcing state, ζ_{t_n} , is considered to exist if Equation 5.10, ξ_{t_n} , is 1 or almost equal to 1, and, if simultaneously, Equation 5.11, q_{t_n} , is also 1 or almost equal to 1. At time t_n , the self-reinforcing state, ζ_{t_n} , could be represented as,

$$\zeta_{t_n} \because \xi_{t_n} \cong 1 \cong \varrho_{t_n} \quad [5.12]$$

That is, at time t_n , self-reliant state has been attained because, \because , optimal value extraction, ξ_{t_n} , and optimal value allocation, ζ_{t_n} , are almost equal, \cong , to 1, and therefore, both have been almost attained. (Note that given the dynamism of the process of social, economic, and political change, the attainment of all variables above is considered to be only imperfectly possible.)

Under the proposed conceptual framework, however, such a time specific (t_n) self-reinforcing state can only be conceived as a partial definition given that what may be the case in a particular period, t_n , might not necessarily mean an intertemporal self-reinforcing state is maintained (characteristic which in the final analysis is at the core of what self-reinforcing means). Therefore, it would make more sense to define such a state only intertemporally, with the understanding that it represents the continuous attainment of self-reinforcing state over the time periods, t_n .

Such a definition of an intertemporal self-reinforcing state can encapsulate the entire alternative conceptual framework developed in both this chapter and Chapters 3 and 4, as simply as,

$$Z \because E \cong 1 \cong P \quad [5.13]$$

This is, self-reinforcing state, Z, can be attained because optimal value extraction, E, and optimal value allocation, P, are achieved simultaneously. This could be used as an alternative to the traditional GDP growth measure of success on which most of the economic, social, and political analysis, action, and rhetoric of the present relies. In fact, one of the virtues of using Equation 5.13 as a complement or substitute of GDP is that the

proposed analysis of the self-reinforcing state can be done at multiple levels of aggregation, from the local level, all the way up to the global level.

Nevertheless, the above is considered to be a basic definition of Z , given that no consideration is made about savings and investments, as well as other important aspects that play a role in shaping inequality.

For example, an $\xi_{t_n} < 1$, reflects that, at time t_n , excessive value extraction is taking place. While the most immediate policy suggestion would demand reducing the extraction of value, such policy might or might not be granted, depending on how the excessive value extracted is used. If it is consumed within period t_n , and this consumption is not undertaken by those whose wellbeing is not met, it will indeed be advisable to reduce it or procure its redistribution, particularly if there is still inequality that needs to be addressed. However, if it is being invested, and if due to effects that matching and synchronicity (as reflected by value elasticity, $\theta_{A_{it_n}}$) may be having in value, pricing, or other factor advantages lead to advantageous trading terms, it might be appropriate to keep exceeding the theoretical optimal value extraction. If the investment allows for an improved distribution of the ownership of the classes of assets, it might also be advisable to keep exceeding optimal value extraction, at least temporarily.

Likewise, when it comes to inequality, the proposed definition of optimality of the allocation of the value extracted, q_{t_n} , is also a basic one. A more comprehensive definition would consider the role excessive value extracted could have in terms of addressing inequality. It would also consider linking this consideration to the one discussed in the previous paragraph, that is, whether the excessive value extracted is

being consumed or invested, as well as who is consuming and what it is invested in. Notionally, and drawing from Figure 5.2, the poverty gap line, φ_{2t_n} (representing the minimum value level required to fulfill both the wellbeing needed and wanted), could be compared to the poverty gap resulting from subtracting, φ_{3t_n} , from, φ_{4t_n} . This comparison would result in the quantification of the excess of value extracted enjoyed by the population share, $(\pi_{4t_n} - \pi_{3t_n})$, that is, beyond the level of wellbeing needed and wanted, and, therefore, in the possibility to determine how much of the poverty gap for the population share, π_{2t_n} (which represent the population share not being able to fulfill their wellbeing needs and/or their wellbeing wants), could be filled by this excess value generated consumed by some. Such comparison could also help understanding whether after using such excess value to fulfill the unmet wellbeing of that population share, π_{2t_n} , there is a remnant, and whether this remnant is being used for consumption or investment, or whether there is still a gap, confirming the need for additional value extraction. All important considerations in determining whether value extraction should be reduced or increased and what kind of actions could be more effective in attaining optimal value allocation.

Furthermore, not only the allocation of value extracted is important, but the distribution of the stocks of classes of assets themselves from which this value is extracted, a distribution that surely impacts the way in which the former distribution takes place.

Finally, the same approach used before in separating global and local socio-material limits, can be applied in the analysis of the concepts of optimality and self-

reinforcing state. Even when a country can theoretically be in self-reinforcing state, a real and sustainable state will require consideration for all countries, particularly given that all absolute and relative natural limits are bound by the one ecosystem that is shared by all countries.

Figures 5.3 and 5.4 below, summarize some of the preliminary policy choices that result from the limited analysis proposed in the previous paragraphs.

		P	
		< 1	$\cong 1$
[E]	< 1	\downarrow, \uparrow	$\downarrow, =$
	$\cong 1$	$=, \uparrow$	$=, =$
	> 1	\uparrow, \uparrow	$\uparrow, =$
		(Ξ, P)	(Ξ, P)

Figure 5.3. Macro-policy considerations resulting from the level of attainment of self-reinforcing state

As discussed before, the political implications of the analysis of the temporal attainment of the self-reinforcing state are highly contextual. Nevertheless, Figure 5.3 showcases the notional standard responses that different combinations of achievement of optimal value extraction, Ξ , and optimal allocation of value extracted, P , might direct towards. Given that, $0 \leq P \leq 1$, the table only show two possibilities, $P < 1$, and, $P \cong 1$. In the case of, Ξ , given that it can be both above or below 1, three possibilities are shown, $\Xi < 1$, $\Xi \cong 1$, and $1 < \Xi$. Inside the table, the symbols, $\uparrow, \downarrow, =$, represent respectively that, Ξ and P , most likely should be increased, decreased, or maintained from current levels. This is perhaps clearer if attention is paid to the cell on the right of the middle row

where the symbols are \approx, \cong . As per the definition of self-reinforcing state if both optimal value extraction and optimal allocation of value extracted are close to 1, $\approx 1, \cong 1$, then self-reinforcing state has been achieved and now the focus could be put in maintaining it (hence the \approx, \cong). In the other situations portrait in the table in Figure 5.3, adjustments are required in either one or both of these variables (Ξ , and, P).

As suggested earlier, this analysis could be applied to different levels of aggregation. This means that in following the approach to policy design suggested by Figure 5.3, different political actions could be designed at different levels of aggregation, aiming at micro-macro consistency towards achieving self-reinforcing state for the majority of citizens within the majority of countries.

Figure 5.4 below, offers a more complete but more complex framework to conduct a similar policy analysis. As discussed a few paragraphs before, ultimately, decisions about what policy options are optimal for the context will not only be impacted by whether the value extracted is optimal or whether the allocation of the value extracted is optimal. Considerations with regards to whether the surplus and deficits on one or the other variable should be addressed, and how, or when, should also consider whether they are being spent on consumption (C), or are instead being invested (I) by the different population shares of each one of the poverty gap levels, π_{1t_n} , π_{2t_n} , π_{3t_n} , and π_{4t_n} , and whether their consumption or investment are rebalancing the allocation of assets or the entitlements over their proceedings towards the self-reliant state.

		P							
		< 1				$\cong 1$			
		π_1		π_2		π_3		π_4	
		C	I	C	I	C	I	C	I
[E]	< 1	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)
	$\cong 1$	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)
	> 1	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)
		(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)	(E,P)

Figure 5.4. Macro-policy framework considering consumption and investment choices

These are all extremely important considerations for policy making, but will require significant effort and length to develop further. This is out of the reach of this dissertation (hence, contrary to Figure 5.3, Figure 5.4 does not include the symbols, $\uparrow, \downarrow, =$, in any of the situations depicted by the cells or boxes contained in the array).

Nevertheless, for practical purposes, having these considerations present allows for further discussion in the remainder of this chapter, as well as in Chapter 6.

All of the previous considerations about the self-reinforcing state are essential because they point out to the fact that the allocation of wealth and entitlements over its proceedings, is not a “natural occurring” phenomenon, but in fact, is driven by natural and socio-material structures and the elasticities, both embedded and resulting from them, that impact the use and ownership of wealth by a society, and, as a consequence, the implications these have themselves in those structures and elasticities.

Economic growth under the proposed conceptual framework is not conceived as a temporal event of maximization of output but as an intertemporal one of optimization of wealth extraction and allocation—optimal value extraction throughout time. Furthermore, it is not conceived as an increase in output, as it is the case under the old paradigm, but as

an increase in the value generating potential of the wealth of a country. Real economic growth is registered under the new paradigm, once the overall potential for generating value of the classes of assets in the ecosystems shifts upwards. This is proposed in this dissertation as true economic growth. The need for socially driven decision of how to spread that value over the years is then, under the new paradigm, out in the open. The way in which a society decides about this spreading or allocation, gets embedded in the possibility space through socio-material structures, and the limits they impose in shaping such space.

This latter consequence of the proposed conceptual framework has huge implications in the way in which value is understood. A great deal of the economic development related decisions made in present time rely on the calculation of present values (this is the present discounted value of flows to be received in the future). Under the proposed conceptual framework, economic development decisions need to rely on the intertemporal potential of wealth to generate value throughout time as expressed by its physical reality (limits) and how close these limits track absolute or relative natural limits (as to insure intergenerational equity).

Within this conception of economic growth, and considering that development was defined in Chapter 3 as the process of social, economic, and political changes towards the achievement of self-reinforcing state, then, under the proposed conceptual framework, development planning should be mostly focused on enhancing a society's capacity to extract wealth from the classes of assets it possesses as to allow it to achieve and maintain self-reinforcing state. In a sense, the purpose of development planning could be, under this view, related to the pursuing of the objectives summarized in Table

4.1, Figure 4.19, Figure 5.1, and figures 5.3 and 5.4.

As a consequence of the conceptions of economic growth and development planning resulting from the proposed conceptual framework, the role that the transfer of foreign resources in the form of aid could have are: (a) helping improve the effectiveness and efficiency with which recipient countries extract value from wealth; (b) helping recipient countries address as early as possible any constraints that the effective relative limits of one or more classes of assets might be imposing, on the rest, and, therefore, on the whole portfolio; (c) helping recipient countries broaden the possibility space, as well as improve its characteristics; (d) helping recipient countries protect the integrity of their wealth; and (e) ensuring that the wealth exchanged through inter-country flows does not produce a disproportionate negative effect on the stock of wealth, and therefore, on its value generating potential.

How do the old and new paradigms compare in their approaches?

The old paradigm's main theoretical premises about aid are that it can increase the speed at which developing countries achieve self-sustaining growth, because, it not only translates directly into economic growth when filling investment needs that, unfulfilled, limit this growth, but because it also fills the foreign exchange gaps that an economy moving towards industrialization may face, and that, unattended, might also constrain the speed of growth. While in principle valid, these affirmations are too broad to mean much at all; in praxis, aid is not implemented at this macro level. Establishing the causal link from the micro actions of aid's praxis to this broad measures of success (i.e., incremental and more immediate growth) is problematic, to say the least.

The new paradigm, instead, starts from the premise that there is a critical-path

towards the attainment of self-reinforcing state that cannot be short-circuited. Aid might help recipients get closer to the timelines imposed by such a critical-path, but it cannot speed up the process beyond that. This critical-path is set by natural, material, and social structures, and, as a consequence there are also limited windows of opportunity to influence the severity of the constraints this critical-path will impose in approaching the attainment of self-reinforcing state. Within those windows of opportunity, aid contributions that can fill resource gaps faced by their recipients (gaps that can prevent them from increasing their value generating potential), can have a more significant impact than those aid contributions that do not. In instances where the critical-path allows for a relative rapid shift in the value generating potential of one or several classes of assets or the entire portfolio, and which addressing is constrained by lack of resources, aid might again have a more significant impact, if it were to fill such a gap. Note that both these situations are also faced by better-off countries (those who already are closer to attain self-reinforcing state). However, in their case, these not only tend to be relatively minor in proportion to their overall wealth, but they are as well dealt with through existing resources or through new resources coming from the issuance of public and private debt. From this perspective, then, aid could also have a more significant impact by filling resources gaps (through grants), if the recipient countries cannot incur in new debt, or if, even if they can, doing so may impose further intertemporal constraints that might reduce, offset, or exceed the benefits of borrowing. Finally, aid could also fill gaps a recipient may face in combating the deterioration, depletion, or destruction of some of its assets, as well as in helping recipients improve the ways in which they manage their wealth to extract value from it. Even at this general level, and although the distance

between today's rhetoric of aid and the tenets of the proposed conceptual framework is shorter, the differences between both paradigms are still clear and substantial, particularly when considering the praxis of aid, not its rhetoric.

Firstly, while under both of these paradigms, aid aims at addressing constraints, under the old paradigm the emphasis is mostly on current constraints at the broader, macroeconomic aggregate level (e.g., savings and investment gaps, balance of payments unbalances, poverty, death, health deficiencies, etc.) rather than on the underlying causes behind them. The new paradigm, instead, looks at constraints, first from an intertemporal perspective, to then act on the shaping of the possibility space, guided by a clear understanding of the critical-paths faced by each one of the classes of assets from which the aid-recipient extracts value. This means that the old paradigm might be more prone to address the effects of the aid-recipient not having achieved self-reinforcing state, than the causes behind the aid-recipients' impossibility to achieve it. For example, without being driven by critical-path considerations, aid, as conceived under the old paradigm may miss important windows of opportunity and end up simply ameliorating, rather than preventing or correcting, the negative consequences that having missed such windows of opportunity might have imposed on current and future value generating potential.

Secondly, under the old paradigm, one of the ultimate objectives of aid is to bring the recipient to self-sustaining growth sooner than it might have on its own. This objective, however, does not show consideration for the limits to growth imposed by the ecosystem, or considerations of a critical-path and the realistic timeline it imposes on the process of development, or consideration about the distribution of growth, nor considerations about the intertemporal sustainability of the level of growth pursued. The

new paradigm, instead, starts from a well-defined possibility space that ensures sustainability, and that clearly frames the spaces and timeframes in which aid can have a more substantial impact through the consideration of the critical-paths. Starting from the consideration of such a possibility space and critical-paths, the new paradigm ensures respect will be given to the limits to growth imposed by the ecosystem, as well as to the ultimate objective of attaining the wellbeing of the majority, which is at the center of attaining self-reinforcing state. Achieving such a state is, under the new paradigm, the single most important objective of wealth management.

Thirdly, there is a subtler, although not less important difference, in the way aid's role is conceived under the old and new paradigms. In the old paradigm, not only are the classes of assets considered severely simplified (mostly labour and capital), they are also treated both as if they could fully complement and substitute for each other, and as if the timelines they are bound by were similar. Furthermore, improvements in their contribution to growth are lumped in a single figure of total factor productivity that not only includes the individual contributions of each class of assets, but also masks any time considerations with regard to when those productivity changes were originated (a change in productivity might have resulted from a series of changes building onto each other over time, but only reflected years after). As a consequence, under the old paradigm, theoretically, aid that fills investment gaps directly impacts growth, almost in real-time, regardless of the timing, context, and the focus of such investments, besides what is fathom through their rates of return.

Under the new paradigm, instead, each class of assets is different in nature and it is subjected to different natural limits. Each one is also bound in different ways by socio-

material structures and limits. The nature of each class of assets impose different critical-paths and their development is bound, at the same time, by specific function gradients that ultimately impact their value generating potential. Under the new paradigm, there are more disaggregated classes of assets (besides capital and labor) interacting with each other at different stages of their individual development, all enmeshed in a “fabric” of assets at different stages of their lifecycles (cohorts), which combine, complement, and constrain each other. This means that under the new paradigm, not all investments are created equal, and that the timing and context of the investments are extremely important, but not always captured and reflected by rates of return. Hence, aid-funded investments that do not consider these complexities are likely to be, compared to those undertaken with the new paradigm’s approach, considerably less effective in the best case, and perhaps even wasteful in the worst case.

Finally, and perhaps in what is one of the most important differences under the new paradigm, the impact that investments funded through aid have, is not measured, as in the old paradigm, by their contribution to the not-time specific and broad factor of total productivity, or the total present value of wealth, but through the intertemporal projection of the value generating potential of a class of assets over its lifetime, as reflected by its function gradients.

These differences, their consequences, and some additional ones are summarized in Table 5.1 below,

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
Economic growth and other planning considerations are mostly supply-side based.	Considerations about economic growth and development planning are framed within natural and socio-material limits, and incorporate the impact on both the supply- and demand-sides.
Comparative advantage is driven by productivity, endowments, and economies of scale.	Comparative advantage are also driven by bounded elasticities of health, output, and value that depend on the matching and synchronization between local and global economies.
Ultimate objective is for an aid-recipient to achieve self-sustaining growth (growth without the requirement of aid). The path towards structural change requires securing a certain level of economic growth that aid could enable (by filling current investment and balance of payment gaps that constrain growth), allowing for subsequent increased investments to drive structural change.	Ultimate objective is for aid-recipient to achieve self-reinforcing state (intertemporal optimal value extraction and allocation). Structural transformation means affecting the classes of assets' gradient functions (bringing them closer to their natural limits) that lead to true economic growth (e.g., bringing the classes of assets' effective function gradients closer to their absolute natural limits), and to the improvement of the possibility space and what takes place within such space. Growth does not automatically lead to structural transformation, but is a symptom instead of such transformation.

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Effects of trade on potential intertemporal growth are ignored as the exchanges of wealth that take place through trade, are not fully reflected through monetary denominations.</p>	<p>By focusing on the classes of assets and their limits, transactions and policies are judged by their impact in terms of physical units of wealth. Trade creates real wealth transfers between the parties that can add or deduct from their overall wealth, therefore, shifting the effective relative limits that define the possibility space, ultimately impacting a country's wealth and its capacity to extract value from it.</p>
<p>In spite of its pervasiveness, path-dependence is considered exogenous and not modelled into economic growth and planning considerations.</p>	<p>The concepts of critical-paths, as well as socio-material structures and limits, replace the idea of path dependence and provides a theory for understanding how they create social, economic, and political inertia.</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Aid macro success is measured in terms of induced economic growth and impact on poverty reduction. Inequality is discussed in rhetorical terms but not fully integrated in aid praxis due to the welfare theorems that are embedded in the neoclassical economics models on which many aid decisions are based, as well as due to the political nature of the potential solutions for inequality, which fall outside the scope and realm of aid interventions.</p>	<p>Wealth management success is measured in terms of overall effects in the capacity of classes of assets to allow for value generation and the attainment of the wellbeing needed and wanted by the majority of citizens.</p>
<p>Policy tend to impose limits to social forces, as well as to incentivize certain kinds of behaviors (i.e., dispositions). These tend to layer on top of each other, creating and furthering internal contradictions in the social, economic, and political order (i.e., conditions).</p>	<p>Policy does not aim at manipulating natural and social forces (i.e., actions), but at constraining them through the establishment of a clear possibility space bounded by natural and socio-material limits (i.e., the conditions and the dispositions). The aim is at changing conditions and dispositions, not at manipulating dispositions.</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Mostly concerned with increasing rate of growth, here and now. Not fully concerned with long-term cycles' impact on growth and development, and therefore unable to offer much in terms of policy recommendations on how to deal with them.</p>	<p>Mostly concerned with increasing the intertemporal capacity to generate value of the different classes of assets over the entirety of their lifecycles. Classes of assets' lifecycles are embedded into long-term cycles (i.e., Kondratiev long-waves) that serve as a reference point. This treatment leads to considerable understanding of the dynamics of the process of development and its implications in terms of the cost of the transformation it produces (specific to each cohort within each class of assets). As a consequence, offers policy alternatives that are grounded on relevant timeframes and contexts.</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Does not consider limits to growth and, therefore, may lead towards unsustainable situations and structures. Without prices accounting for accurate and complete environmental and other intertemporal costs, investment gaps filled through aid (which are decided using, among others, the pricing system) might negatively affect the intertemporal capacity of a country to generate economic growth.</p>	<p>Entire approach starts from the limits to growth as understood through current knowledge and technology. As knowledge and technology improvements allow for higher limits, the possibility space can be expanded to reflect increased potential for value generation. By setting a possibility space clearly defined by natural and socio-material limits, the probability that investment decisions made within this space can have negative impacts on the ecosystem, are significantly reduced.</p>
<p>Distribution and equality considerations come as an afterthought and are second to the maximization of efficiency (as per economics welfare theorems driven by Pareto efficiency considerations).</p>	<p>Distribution and equality considerations of both wealth and the entitlements over value extracted from it, are an integral part of the idea of development, the concept of self-reinforcing state, and the resulting conception of concerted wealth management.</p>
<p>Based on the idea of “ideal” and “naturally occurring” markets and their allocative implications. Social and political variables are usually considered exogenous and not part of the theoretical toolbox on which the praxis of aid relies.</p>	<p>Markets, as well as intellectual property and other social constructs are ultimately demarcated by regulations and institutions that have an allocative impact. Socio-material structures are made endogenous through socio-material limits defining, along natural ones, the possibility spaces.</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Several incommensurable classes of assets are lumped into capital and labour, while making assumptions that they are fully substitutable, and that their timelines or lifecycles, and physical and space characteristics are the same.</p> <p>Furthermore, any specific changes in factor productivity are lumped into one figure: total factor productivity.</p>	<p>Is based on the detailed analysis of the nature of several distinct classes of assets with different lifecycles and critical-paths, different function gradients, and different absolute and relative limits. The suggested modelling for the portfolio is stochastic, with all classes of assets being influenced and influencing the others. The value generating potential of each class of assets is given by its specific function gradients and its specific bounded health, output, and value elasticities at specific points in time.</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Investment allocation decisions rely on a number of coefficients that are used to project factor substitution and inputs-outputs between sectors. These are calculated using historical data. By relying on historical trends to make investment decisions, these decisions carry with them the path-dependence contained in the calculated coefficients themselves. Decisions made along this way reinforce path-dependence.</p>	<p>The role of the planner is to define clear and stable possibility space. Her/his role also consists in expanding the area of such space and to improve the characteristics within that space allowing for more effective and efficient allocation of resources, and leading as a consequence to the attainment of intertemporal wellbeing for the majority. Investment decisions aim at pushing the function gradients of each class of assets towards their upper absolute or relative natural limits (as required by each class of assets); which unequivocally increases the class of assets intertemporal value generating potential. However, investment decisions are also made conscious of the limits imposed by critical-paths which are also reflected through bounded health, output, and value elasticities. Under the new paradigm, the planner, in shaping the possibility space, monitors these elasticities and adjust policies to aim at their in-class, across-classes, and across-time optimization.</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Allocations and distribution are usually perceived as naturally occurring and therefore subject to a posteriori adjustment only.</p>	<p>Allocations and distributions are determined by socio-material structures and limits. The morphing of these structures and limits present an explicit trade-off between intertemporal efficiency and equity objectives.</p>
<p>Mostly concerned with current constraints, linked to gaps in investment and balance of payments capacity. Intertemporal considerations are limited to those related to social and economic returns reflected in the present value calculated through the pricing system. Investment decisions made only on grounds of present value and with consideration for projects, sectors, and the allocation of capital and labor, may lead to depletion or destruction of assets due the limitations of the pricing system in incorporating public goods, very long-term timeframes, and linking diverse and highly disconnected markets. The cost-benefit analysis implicit in investment decision making mostly relies on the flows within the economy rather than on the stocks of wealth.</p>	<p>Mostly concerned with intertemporal constraints, addressed by positively influencing function gradients during the appropriate windows of opportunity given by the critical-paths. Constraints are not considered to be the result of insufficient present investment but of deficient function gradients (due to insufficient opportune investments) that impact not only a point in time but the entire lifecycle of the classes of assets affected. Investments are meant to improve the overall intertemporal value generating potential of the classes of assets (in physical units of wealth, not monetary terms), rather than to maximize monetized economic growth through specific projects or sectors.</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>At the theoretical level, aid that fills investment and foreign exchange gaps is not concerned with its impact on social, economic, or political equity.</p> <p>Furthermore, lack of consideration for the effects of matching and synchronicity between the life cycles of the classes of assets and the long-term cycles in the way aid is allocated, potentially misinforms the timing and characteristics of the most productive investments. The value of an investment is contextual, only as captured by the pricing system through which such investment decisions are made.</p>	<p>Concerted wealth management aims at facilitating the attainment of self-reinforcing state, in which the majority of a country's citizens attain the levels of wellbeing they need and want. Equity is embedded in the purpose of concerted wealth management, as well as in the process of development (through the requirement for optimal value allocation embedded in the attainment of self-reinforcing state). Furthermore, by focusing on improving the function gradients of all classes of assets, including human capital, equity is also embedded in allowing for the maximization of the value generating potential of every human being. Finally, by focusing on managing transition costs presented by limited matching and synchronicity between lifecycles of a class of asset, and long-term cycles (Kondratiev long-waves), as well as between local and global natural and socio material limits, equity is also embedded in the purpose of concerted wealth management and in the process of development. Policies are "transition-inclusive."</p>

Table 5.1. Differences in economic growth, planning, and aid approaches between the old and new paradigms

Old Paradigm	New Paradigm
<p>Sensitivity about timing is given by overall objective of speeding the process of achieving self-sustaining growth (so aid flows are not needed anymore), and by the theoretical assumption that additional investments translate directly into growth (as long as they pass the rate of return threshold). Decisions about these investments are informed by symptomatic constraints rather than by the understanding of the underlying causes behind these symptoms.</p> <p>Timelines for the achievement of self-sustaining growth are not realistic by virtue of the assumption that investments have a short-term and almost unequivocal impact on growth.</p> <p>Timelines are also unrealistic due to the lack of consideration of the critical-paths and the effects of path-dependence.</p>	<p>Sensitivity about timing is at the core of any wealth management intervention. Wealth management aims at changing the overall, intertemporal value generating potential of all the classes of assets, as informed by the critical-paths; by the possibility space in which social, economic, and political change takes place; and by the degrees of matching and synchronicity between the lifecycles of the classes of assets and the long-term cycles as well as between the local and global natural and socio-material limits.</p> <p>Investment can impact growth, but it does not necessarily; adequate timing, adequate levels, and adequate contexts, can all determine its potential impact on growth.</p> <p>Timelines are derived from limits imposed by natural, material, and social structures and by the critical-paths they impose, and finally by the windows of opportunity opened by these two in the context of the long-term cycles.</p>

Illustrative examples of the differences between paradigms.

Natural and socio-material limits: function gradients and the critical-path. As

was argued over the previous chapters, all value, and, therefore, all wellbeing, is

extracted from wealth. The value generating potential of a class of assets is determined by its function gradients. These function gradients are, in turn, determined by the way in which, in the context of natural, and socio-material limits that bound them, each class of assets is created, formed, and developed, and how through such processes, specific characteristics are embedded in them that determine its lifetime or lifecycle potential to generate value in a given context. Once set, these function gradients reflect the total value that, using existing knowledge and technology, could possibly be extracted over the lifetime of the class of assets (which can be spelled out through the bounded elasticities of health, output, and value, as discussed in Chapter 4).

However, as important as these individual function gradients are, the value generating potential of individual classes of assets also depend on their complementarity and substitutability with other classes of assets, and how these relationships enhance or diminish it, in a particular context (given by long-term cycles, in this dissertation, showcased by Kondratiev long-waves). This context is given by natural and socio-material limits and by the events taking place inside of, and simultaneously re-shaping the limits of the possibility space these limits create.

Using several of the figures already included in Chapter 4 to justify the points made in the paragraphs above, Figure 5.5 illustrates the way in which natural and socio-material limits ultimately create a possibility space within the bounds of effective relative limits. Figure 5.6 (also from Chapter 4) illustrates the impact these limits have in determining the function gradients of the classes of assets, and, therefore, their intertemporal value generating potential.

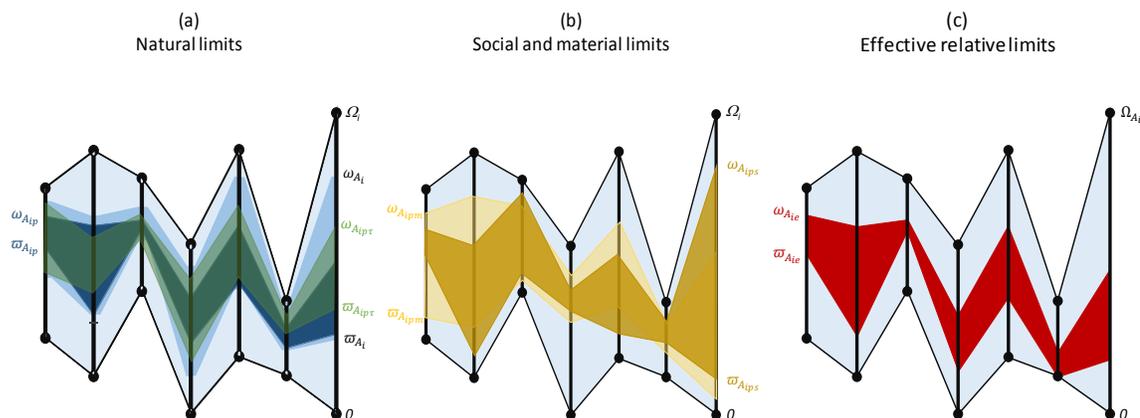


Figure 5.5. Interrelation between natural, socio-material, and effective relative limits

The practical implication of the new paradigm in terms of the relevance of capital accumulation, a central tenet of the old paradigm, cannot be clearer. The return on investments in capital accumulation is dependent on: (a) current function gradients of the class of assets in which investments are being made; (b) stage of development which the class of assets being invested in is going through; and (c) context in which the investment is taking place—the stage of the long-term cycle (i.e., Kondratiev long-wave), as well as the relations between local and global natural and socio-material limits, and between the different classes of assets.

For example, contributing to the formation of human capital through investments in education and the infrastructure required to deliver it, will have differential returns for different generations of children. If an important portion of the children who are currently attending school suffer from malnutrition and stunted growth, education efforts are either less effective and efficient, or, alternatively, more expensive than it would be for children who were well nourished, if a certain level of performance and skills is sought. Their

return on the investment for the generation of children currently in school will be potentially less than that it might be for newborns, once they get to school. However, this will only be true if this new cohort or generation of children is better nourished. If they are not, it is probable, then, that the return on the investment will not be superior for this other group of children either.

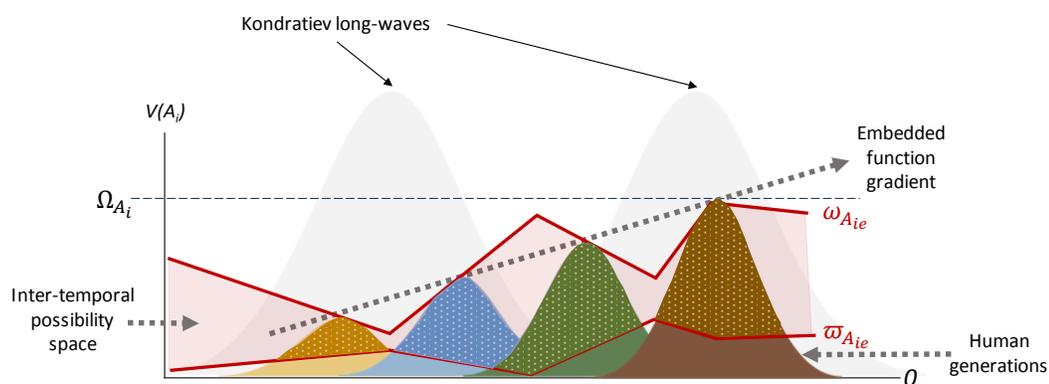


Figure 5.6. Effective relative limits, gradient functions, context, and value generating potential

The new paradigm forces considering that investing in education might be better served initially, not by investing directly and in the first place in education, but in nurturing children. Figure 5.6 above, shows how it took four human generations for the last to finally reach its absolute natural limit and, therefore, to maximize its value generating potential (each human generation is represented by the yellow, blue, green, and brown curves). The embedded function gradients will depend on the choice and mix of investments. Too much investment in education without enough investment in nutrition means a lower gradient and slower transformation; too much investment in nutrition with

not enough investment in education means as well a lower gradient and slower transformation towards reaching the absolute natural limit. Furthermore, the context in which the investment takes place also impacts the function gradient: towards the destruction stage of the Kondratiev long-wave, it might not yet be clear what kind of skills and expertise will be in high demand, while on the creation stage, this is already clear. It might be more productive to invest in nourishing the newer generations, which will be at school age during the creation stage, so they can have higher-function gradients, and, therefore, higher returns on education that can give them the skills to take the new wave and ride it more successfully. Simultaneously, investment in education oriented towards the older generations of children during the destruction stage might have higher returns if focused on providing broader skills that might make them more adaptable to navigate the ebb out of the old wave, as well as the ebb into the new one.

Finding such balance requires managing the entire portfolio of wealth, considering how each class of assets and its cohorts affect the other. There exist critical-paths that need to be considered in order to maximize the return on an investment. These critical-paths, as well as the possibility space inside which all of these investment decisions are made and take place—while ultimately bound in absolute terms by natural limits—stochastically, move along a chain of socio-material limits and contexts. This means that investment decisions are highly particular and that, while their ultimate return is highly influenced by the considerations made in the previous paragraphs, the above is general guidance rather than a specific and broadly applicable technocratic solution. What the proposed conceptual framework showcases is, precisely, the diversity, uniqueness, and complexity of each decision and therefore showcases as well, the limits

of unrealistic technocratic approaches.

By using this conceptual framework behind the new paradigm, it is easy to confirm why, under the old paradigm, aid effectiveness has been challenging. First, towards the beginning of the aid enterprise, without other economic growth model than that of Harrod-Domar, with no consolidated national income accounting system, or model of development planning, each investment project funded through aid relied too heavily on the pricing system (which was also likely to be hindered by distortions) and its limited capacity to pick up on the elements discussed above which, according to the new paradigm, are essential in maximizing the impact of an investment. That is, the pricing system needed to pick up on natural limits of all the assets used and impacted by the investment project; it had to pick up on both the effects of the existing material limits on the investment, as well as on the effects on this investment on the material limits themselves; it had to pick up on the social preferences and choices; and on the long-term cycle's (i.e., Kondratiev long-waves) impact over the lifecycle of the investment and beyond. Only if it did, would the net present value of the project be representative of reality, and it would ensure that the investment have a minimum level of impact on economic growth (as one of the main goals of aid under the old paradigm).

However, not even today can the pricing system pick up on the aspects discussed above. Lacking in a capacity to reflect these aspects, the investments resulting from its guidance are likely to focus in one class of assets and its individual performance and contribution, rather than in the context of the entire portfolio's performance and contributions, as well as in intertemporal considerations. This was the first important deficiency that impacted the effectiveness of aid since its inception (and perhaps it still

does to some degree). Furthermore, with the limitations still imposed by the pricing system, factoring in socio-material limits into investment decisions might be even less possible.

This leads to the old paradigm's second most important deficiency: if the pricing system cannot pick up on information or signals about classes of assets, material, and social considerations, it cannot pick up either on the resulting critical-paths bounding the return of an investment. Investments made this way, then, will also have limited returns if the timing or the specific objectives of the investment are not attuned with the critical-paths and the overall impact the context has on these paths.

Later on, when national income accounting and development planning became part of the aid enterprise and helped guide aid allocations, some of these limitations were partially addressed. Overall ranking of investment projects and the evaluation leading to these rankings was, at this point, based on a more complete view of the economic system, with input-output coefficients linking different investments, and all investments connected to the overall economic system, contributing with a quantifiable expected growth. Additionally, by development planning efforts considering periods of five years, and, in some cases, longer, some of the intertemporal effects of investments funded through aid could be integrated into the decision-making. Regardless of these improvements, however, lack of direct consideration for the stocks of wealth, for its function gradients, for the lifecycles of the different classes of assets and their cohorts (which clearly exceed the five-year mark), for the context and the contextual stage in which the investments were taking place, would all ultimately continue limiting the effectiveness of the aid allocation process and, hence its effectiveness. Still, too much

reliance is put on the pricing and monetary systems, with little being done in proactively addressing the biases and limitations they impose.

Figure 5.7 below illustrates some of the points made above. On the left side of the figure, (a), the dotted red line showcases a hypothetical investment directly using/influencing the three classes of assets represented by the last three vertical lines. Given the limitations of the economic growth model, development planning, national income accounting, and the pricing system, old-paradigm aid funded investments are likely to occur beyond the possibility space, or what amount to the same thing, beyond the effective relative limits. In Figure 5.7, (a), from right to left, a hypothetical aid-funded investment (represented by the thick dotted line in red and blue) might have respectively exceeded the first class of assets relative limits, might have been within those, in the case of the second, or might have been below them, in the case of the third.

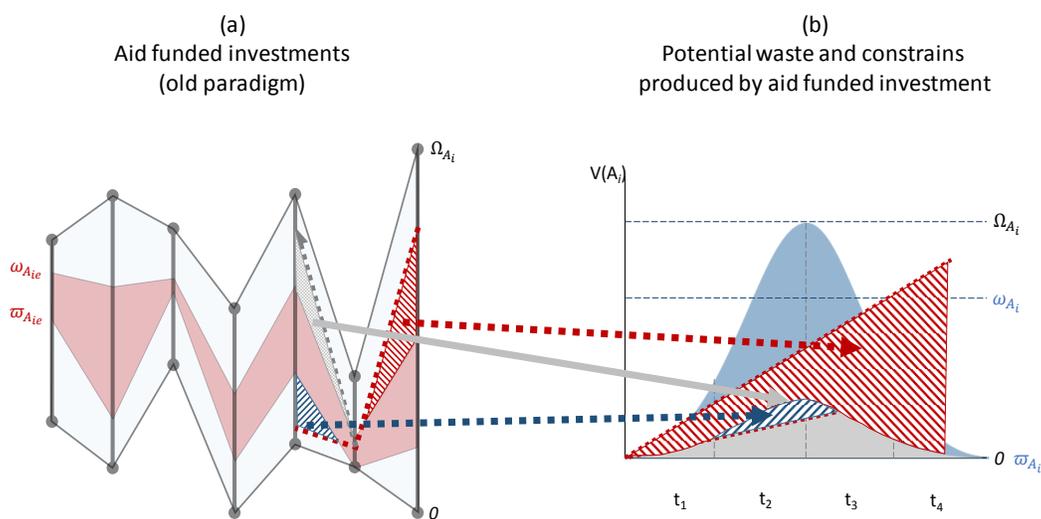


Figure 5.7. Potential effects of old paradigm aid on the value generating potential of a class of assets

The red-striped area represents wasted investment resources because the recipient's natural, and socio-material limits allow it to rip benefits from the investment up to the upper relative natural limit, but not beyond it (where actually the investment is). The blue-striped area represents investment resources that, while they might not have been wasted, as they seem to have brought the lower effective relative limit closer to the lower absolute natural limit (broadening the in-between-relative-limits space), they might not have contributed to eliminate constraints that might have made possible to extract more value from the class of assets represented by the third left vertical line from the right. As showcased on the right side of the figure (b), while the value generating potential of the latter class of assets is represented by the grey curve, the portion of its area, covered with blue-stripes, represents the portion of the potential that was constrained by the portfolio limits represented on the left side, (a). For illustrative purposes, it could be argued that, if the aid funded investment on the third class of assets from the right had not had the impact of further lowering the lower effective relative limit, but instead its upper one (as represented by the dotted grey line and the greyed area expanding the possibility space and the upper effective relative limit), then the blue-striped portion of the value generating potential curve on the right side, (b), would have not existed and, therefore, not reduced the total return from the aid funded investment.

While, evidently, this is a theoretical construction conveniently built to demonstrate potential limitations in the effectiveness of aid under the old paradigm, it is still a well-founded one, particularly given the limitations that the tools of old-paradigm aid introduced in its volume, allocation, and delivery considerations. Without specific regard or tools for natural limits, function gradients, context, stochastic relationships

between classes of assets, and other sophistications introduced through the new paradigm, it is very likely that situations like the one illustrated in Figure 5.7 occur under the old paradigm. The analysis provide important insights, through the light of the new paradigm, about why these limitations might have contributed in making aid ineffective.

Technocratic and non-contextual generalizations' impact on aid effectiveness.

The frame of reference and tools underlying old-paradigm aid's volume, allocation, and delivery decisions, resulted in the pursuit of replicable and scalable technocratic solutions, based on generalizations about the history of economic growth (and its underlying assumption of a linear-staged path from an economy dominated by agriculture to one dominated by services).

As it was discussed in Chapters 2 and 3, for example, the work of Hanushek (2015) has showcased how the traditional focus of aid-funded investments in education on increasing enrolment and permanence, and even literacy, was ineffective in promoting economic growth, and how, instead, an alternative approach towards building and measuring relevant skills had proven to be more effective.

As it has been argued in this and previous chapters, constrained by specific ideas and tools, old paradigm aid has been largely non-contextual, and because of its underlying assumption of a linear path towards economic growth, fairly atemporal in the design or delivery of its interventions. The example from Hanushek above illustrate these unfortunate traits.

Figure 5.8, below, showcases the potential effects of aid-funded investments that incorporate little regard for the implications that context and timing, when seen from the perspective of the new paradigm, might have in their effectiveness. Similar to Figure

4.16, it shows four human generations over the space of two Kondratiev long-waves. Between the red lines, shaded in red, is the area showcasing an almost secular trend from old-paradigm aid funded investments that along the lines of those discussed by Hanushek (2015), focused on the technocratic and atemporal conception that literacy, enrolment, and permanency were both necessary and sufficient in every context or stage. It is not that such investment may not still have a return; they could possibly solidify education institutions, maintain or improved the infrastructure required, attract more and better teachers, and have other impacts. However, by not following a more dynamic strategic approach, making the most of contextual information, considerable opportunity costs are incurred.

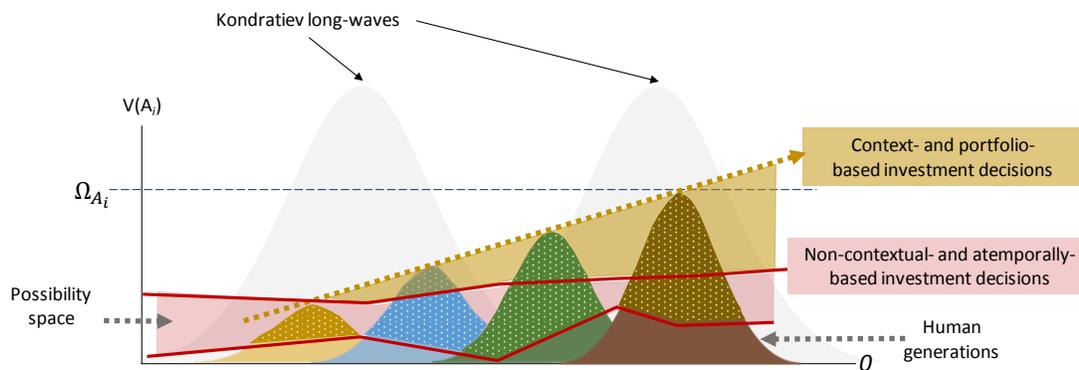


Figure 5.8. Potential impact of contextual and temporal considerations in the effectiveness of aid

These opportunity costs are illustrated by the pale-yellow area on top of the red. By being responsive to the different characteristics of the Kondratiev long-waves stages, not only could the same investment have had a more sizeable effect on the function gradients, and, as a consequence, on the progressive value generating potential of the

human generations, but, by doing so, it might have also created an opportunity for a country to have taken a more prominent and relatively important global position within upcoming waves. Ultimately, this could have created a multiplier effect on the rate of return of the original investment.

Intra- and inter-country trade flows and wealth transfers. In previous chapters, evidence was presented to establish the relevance of the volume of wealth that is exchanged through trade. It was also suggested that, in spite of this relevance, and that because of the limitations and shortcomings of the pricing and monetary systems, such exchanges of wealth may not be fully factored in the trading prices, and, therefore, for some countries, international trade may be conducive to their wealth, and hence their capacity to extract value from it, draining towards their trading partners.

Under the proposed conceptual framework, the new paradigm of aid would focus on managing both the stocks and flows of wealth (in terms of physical units), rather than managing and maximizing the flows in monetary terms only. If the limits imposed by nature are quantifiable and measurable in physical terms (notwithstanding that pricing might provide another useful point of view), there seems to be no reason why they should be primarily monetized, particularly when prices have proven to be unreliable and volatile. Conceived in this way, and under the main premise of the new paradigm that all value and wellbeing comes from wealth, it is easy to see that embedded in each product or service are physical units of wealth that are exchanged through trade, hidden under the ignorance that the current choices about measurement, labeling, reporting, pricing, and monetization create.

Figure 5.9 below illustrates these effects more clearly. On the left side (a) of the

figure, the possibility space is shown for several classes of assets. On the right edge, the green arrows show the effect that a trade surplus, not in monetary but in actual physical units of wealth, can have on the natural relative limits (ω_{ipN} and ϖ_{ipN}). A trade surplus increases the effective quantity of one or several classes of assets a country has at its disposal for value extraction and attaining wellbeing. Hence the enlarged area, now represented by the original light blue one, plus the two additional areas added at the top and bottom of it (with the white background and the light blue diagonal stripes). This enlarged area means that the original possibility frontier, this is, the one without the effects of international trade, is shifted upwards allowing for increased potential value extraction and increased “health” of the class of assets. This shift is showcased on the right side (b) of Figure 5.7, through the green arrow shifting forward and the overall effect of the shift being represented by the area with the white background and the light blue diagonal stripes.

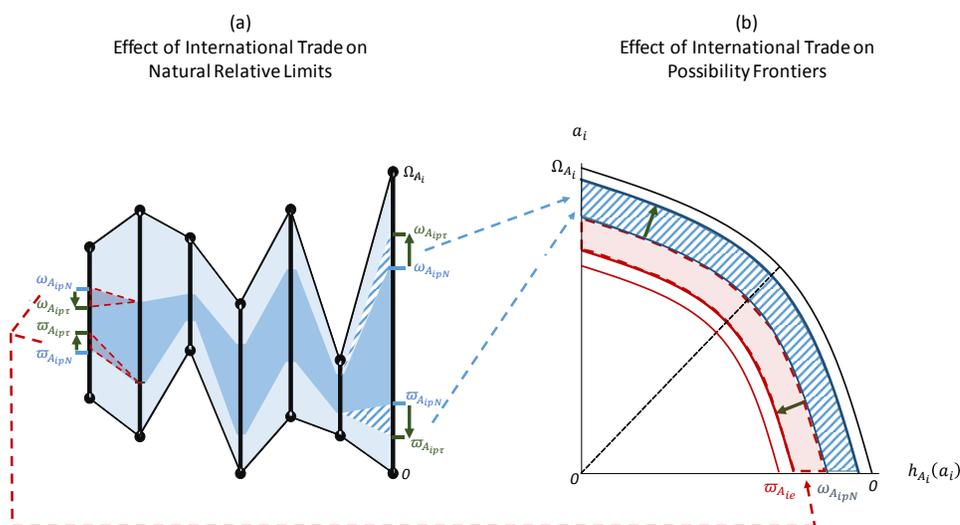


Figure 5.9. Effects of international trade on natural relative limits and classes of assets possibility frontiers according to the new paradigm

Likewise, although with the opposite effect, the left edge of the possibility space depicted on the left side (a) of Figure 5.7, shows the effect of an international trade deficit in physical units of wealth shrinking the natural relative limits, and consequently, on the right side of the Figure (b), in shifting downward the possibility frontier (signaled by the downward green arrow) and illustrated by the area in light red.

As discussed in Chapter 4 and shown in Figure 5.9 above, by integrating the impact of international trade on the derivation of the natural relative limits, the new paradigm make these effects endogenous and ensures that local and global policy can be negotiated and formalized within the possibility space, through the availability of information about physical units traded that, unlike prices, are not dependent on speculations about their intertemporal value. Wealth accounting based on physical units might paint a very different picture of international trade than that painted by prices, but, nevertheless, be much more objective, particularly in relation to intertemporal dimensions, and, therefore, much more conducive to create a more balanced world order and, for sure, a viable ecosystem. Ensuring precisely that this balanced order exists is, according to the new paradigm, one of the most important objectives of concerted wealth management (see Table 4.1).

In contrast, the old paradigm has used aid to promote trade by not only aiming at increasing the exporting capacity of recipient countries, but also by pushing for improvements in efficiency and regulation related to trade. If successful, aid might contribute to its recipient's increased participation in international trade, and for the relative importance of trade in their economies to increase, even, perhaps, helping to alleviate balance of payments pressures (as originally intended through the conception of

the dual-gap model). In this sense, it could be said that if these achievements were realized, aid could claim to have been effective against the measure of success it set for itself. Yet, evidence shows that not every country benefits in the same ways from trade, and that, in fact, due to deteriorating terms of trade, some countries do not see an improvement in their international position even if they continuously increase their volume of exports (Harrison, 2007). This is, precisely, one of those cases, like the ones discussed in Chapter 2, where the meaning of words “muddy” the waters. Would it be correct to say that aid has been effective because a country’s participation in international trade has increased, because trade is now relatively more important in the composition of the aid recipient’s economy, and because increased trade has alleviated balance of payment pressures? This would be correct, indeed, if success was to be measured without consideration of sustainability. However, as argued throughout this dissertation, doing so would only be an illusion. Present benefits that come from the hidden and creeping drain of the intertemporal potential of a country to extract value from its wealth, and through it, wellbeing, are unsustainable.

If the old paradigm approach is judged from the perspective of the proposed conceptual framework underlying the new paradigm, it is possible to think that the inefficiencies in the pricing and monetary systems and the limitations that are still experienced in internalizing natural endowments and other classes of assets, as well as the distortions created by it not considering critical-paths, are all contributing to misrepresenting the real exchange of wealth occurring beneath these prices, and, therefore, that some countries might be transferring more wealth than that they received in exchange, reducing their overall wealth-levels and, *ceteris paribus*, their intertemporal

value generating potential. This is not a concern figuring in the approach of old-paradigm aid, and here again, may be another reason for its limited effectiveness.

As explored in this and Chapter 4, the degree of matching and synchronicity between the global and local natural and socio-material limits, as well as between the stages on which the lifecycles of the classes of assets are in relation to the stages of long-term cycles (i.e., Kondratiev long waves) have a direct impact on the value generating potential of a country. Similar physical unit extractions from wealth leading to similar output can lead to very different values obtained from such outputs, all due to this degree of matching and synchronicity. Hence, it becomes a strategic consideration to determine the best timing possible for extracting value from wealth. The old-paradigm approach misses these kinds of subtleties in the process of development and hence produces standardized approaches, like promoting exports or increasing a country's share in world trade, that may lead to results that hinder, rather than promote, development. Perhaps more importantly, the old paradigm gives little consideration to the implications, and even impossibilities, that trying to conform with global socio-material limits present to small countries, which happen to be a considerable portion of all countries (Spence, 2011). The cost of conforming to such structures may be too high both in absolute and per-capita terms, for it to be a real possibility to these countries. Conforming to global standards not only limits the possibility space but may also shift it towards realms in which these worse-off countries may have reduced potential to extract value from wealth. Yet, if they can't conform, their possibility to obtain higher value from their wealth is constrained. Furthermore, when putting into perspective the breadth of these countries' absolute natural limits vis-à-vis those of bigger and richer countries, the proposed

conceptual framework points to the practical implications these differentials may have on the ability of countries to converge towards a self-reinforcing state. Once again, these considerations are, under the old-paradigm, not given simultaneous consideration to the more traditional approaches of increasing savings and investments, and addressing balance of payments issues.

Targeted multiple interventions on the same subject. Chapter 4 suggested that the proposed conceptual framework could offer an alternative to commensurate different classes of assets and different stages in the lifecycles of these classes of assets by transposing these lifecycles with those of the long-term cycles—specifically, the Kondratiev long-waves.

Previously, the interaction between the lifecycles of one class of assets and the Kondratiev long-waves was explored. In this subsection, the subject of the analysis are the implications that a cohort of classes of assets within one of the stages of the long-wave have in determining what an effective aid intervention could look like.

Figure 5.10 below (which comes from Figure 4.15), illustrates the meaning of coexisting cohorts of a class of assets within a stage of the Kondratiev long-wave. For example, if the transposed value-generating potential curves on t_2 represent human capital, the labour force at this point in time is composed by human beings at different stages of their lifecycles belonging to four different generations. These would include very young people starting to acquire skills to allow for integration into the labour force. It would also include seasoned professionals who have proven to adapt to the present requirements for skills and expertise. It would include, as well, older people, whose skills might no longer be aligned with those required by leading sectors.

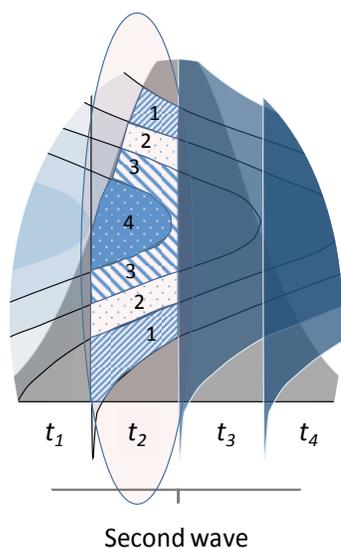


Figure 5.10. Coexisting cohorts of a class of assets in a stage of a long-term cycle (e.g., a Kondratiev long-wave)

Having such a detailed understanding of the overall composition of the labour force at a given stage of the long-wave provides considerable information for designing policies and aid programs that address differences in and between cohorts. (As discussed in Chapter 4, each of the Kondratiev long-wave's stages not only has distinct characteristics, but it also provides different kinds of incentives and spaces that can influence the way individuals act.)

Under the new paradigm, then, a concerted wealth management led intervention to address the opportunities and challenges related to human capital would probably include interventions to minimize costs faced by older generations, because their skills might no longer align with those in higher demand; it might, perhaps, even include efforts to offer programs to upgrade their skills, as well as also include interventions to change curricula for the youngest generations so their skills will be better aligned with those

required in the current stage of the Kondratiev long-wave. For example, Figure 5.11 shows the effect that the lack of matching and synchronicity between a human generation and a Kondratiev long-wave could have in its value generating potential. Without the proper policies to address the mismatch, a considerable portion of the value generating potential of a class of assets would be missed, and therefore, the potential to attaining wellbeing reduced.

The above analysis provides for a richer framework to understand both the causes and the implications of development constraints and development paths faced by different countries. The old-paradigm, again, misses these subtleties and tends to offer standardize technocratic alternatives that might as well have the opposite effect to that intended.

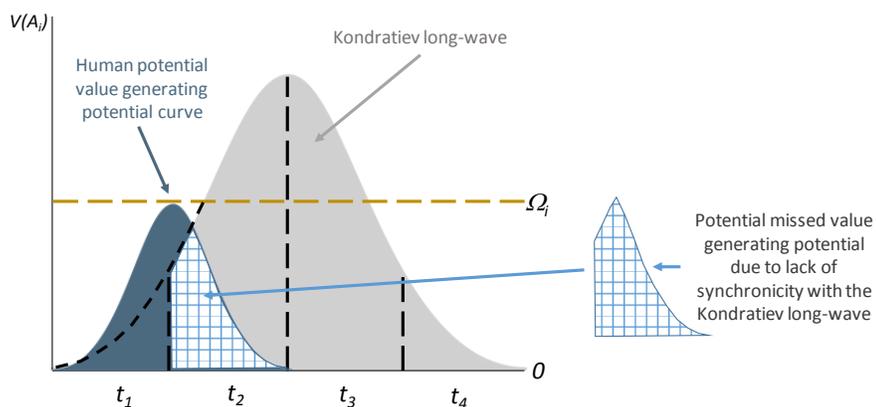


Figure 5.11. Effect of lack of matching and synchronicity between a stage of a class of assets' lifecycle and a stage of a long-term cycle (e.g., a Kondratiev long-wave)

The more linear and technocratic approach of replicable and scalable solutions of the old paradigm tends to ignore this complexity of cohorts of classes of assets that

cohabit with each other at different stages of their own lifecycles. As well, this oversight has an impact on the potential effectiveness of old-paradigm's aid, because it ignores the specific costs of not addressing the particular implications that the long-wave has on the classes of assets' value generating potential. As Page (2011), points out, policy makers are increasingly using quantile regression techniques. The proposed conceptual framework, however, is superior than such an approach in that it not only dissects the cohorts as quantile regression techniques might, but also provides a point of reference (in the form of Kondratiev long-waves) against which the analysis and potential policy making can be better framed and informed.

In terms of policy implications, the proposed conceptual framework provides a way to look at the different kinds of elasticities embedded in socio-material structures and limits that impact the socio, economic, and political structure of a country. It makes it possible to explicitly showcase the trade-offs between efficiency and equity that take place in shaping socio-material structures and limits.

Disaster and humanitarian relief versus developmental aid. Conceptually, under the old paradigm, every dollar of aid that fills an investment or foreign exchange gap, translates directly into economic growth, at least in theory. On the contrary, according to the same theory, disaster and humanitarian relief does not translate directly into growth. It is not difficult to understand why, then, throughout the history of the aid enterprise, development aid has received the biggest share of funds. In 2014, humanitarian and disaster relief was close to US\$25 billion (High-Level Panel on Humanitarian Financing, 2016), while development aid was about US\$135 billion in 2013 (OECD, 2014).

When viewed from the new paradigm perspective, preference for development aid

cannot be taken for granted. First, even when all the considerations that the proposed conceptual framework proposes are considered (e.g., possibility space, critical-path, contextual assessment based on long-term cycles are considered), investing in increasing the value generating capacity of one or more classes of assets involve a higher risk than preventing its deterioration, depletion, or destruction. While it might take years of investment to finally increase the intertemporal value generating potential of a class of assets, a disaster or any other sort of exogenous shock might take just a few minutes to drastically reduce it. The longer the formation period of a class of assets is, the more impact a disaster could have into its intertemporal value generating potential; the timelines of both are so different that what is destroyed in seconds may take decades or centuries (e.g., environmental impact) to rebuild. It is clearly most cost-effective investing in preventing and mitigating disasters and other shocks first, than on rebuilding afterwards.

The new paradigm allows for an easier visualization of this trade-off, given that classes of assets are managed not only intra- but inter-temporally (something that in practice is not as clear cut under the old paradigm). What really matters is the intertemporal value generating capacity of the class of assets and how to improve it through interventions aimed at improving function gradients and long-term capacity near its natural limits. Nevertheless, the prevention of deterioration, depletion, or destruction of these classes of assets as to protect additional investments and overall value generating potential, occupies also an essential place in the new paradigm.

Figure 5.12 below illustrates how a disaster or shock will shift downward the possibility frontier of a class of assets, towards the thick green curve (a), and how the

value generating potential of the class of assets, represented by the area in light grey, loses a considerable portion (the portion crossed in diagonal green lines) due to such disaster or other sort of shock (see side (b) of Figure 5.12). This is the case, given that disasters or shocks not only have a present impact, but that in destroying part of the existing wealth, they also destroy the value that over time could have been extracted through it. Furthermore, rebuilding their value generating capacity diverts resources that, pre-disaster, could have been adding towards classes of assets' intertemporal value generating capacity.

As discussed in Chapter 3, Managi (2015) estimates that in 2012, the damages imposed by natural disasters were in the order of US\$250 billion. Aid flows might, then, cover the most important and immediate consequences of such disasters, particularly in the humanitarian front, but, at only a fraction of the entire impact they had, it is hard to see how the old paradigm's approach is really responding to such a tangible problematic.

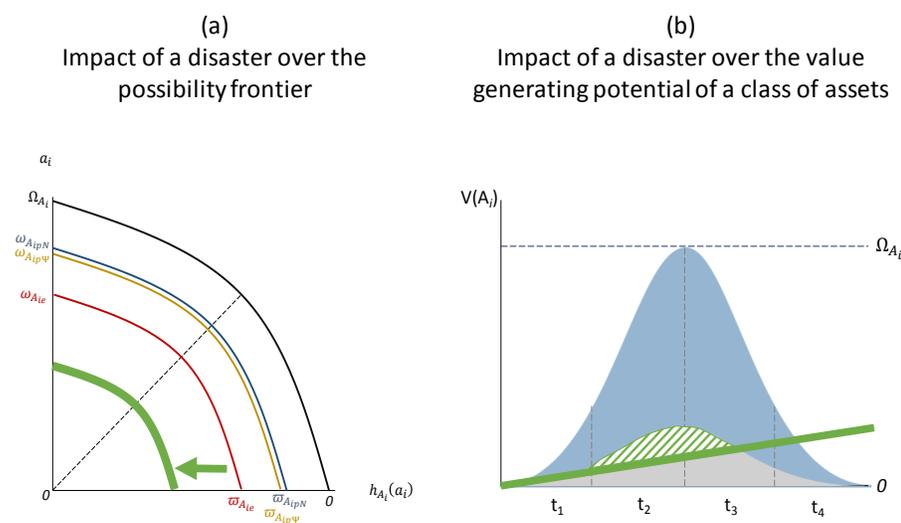


Figure 5.12. Impact of a disaster in a class of assets' possibility frontier and intertemporal value generating potential

Building a New Trojan Horse: A Possible and Realistic Way to Change Aid

An important argument made in Chapter 2 was that economic growth, development planning, and national income accounting served as Trojan horses that shaped aid praxis. Aid, in turn, served itself as a Trojan horse through which specific ideas and tools linked to a specific vision of how economic growth takes place, were embedded in the framework used by both aid-giving and aid-receiving countries in managing the process of development. Ideas and tools that might have been highly contentious from the ideological point of view, took hold in virtually all countries which at some point were recipients of aid, even in those in which such contentiousness seemed unavoidable. That this happened, for the most part, throughout the Cold War period, further solidifies the argument that aid served indeed as a Trojan horse that spread such ideas and tools around the world. Even more so that it was the United States itself, which in fact made it a requirement for their aid recipients to implement such tools, right in the middle of the Cold War, particularly when planning was at the core of the Soviet Union's economic model.

Seen as a technical and operational requirement for receiving aid, these tools were widely accepted and implemented. But also as shapers of a language of their own, these ideas and tools also ended up shaping a considerable part of the practical aspects behind the process of social, economic, and political change (including policy-making), and undoubtedly, the praxis of aid.

The case for the importance that words and meanings have in driving both our understandings and our actions was also supported in Chapter 2, using Wittgenstein's epistemological and ontological approach. The fact that humanity is still struggling with

changing the ways in which it deals with the environmental costs of its actions has been influenced by how absent these consequences have been, and continue to be, from the main ways through which we “measure” our personal and societal performance and success. They are absent from the language that frames and drives our praxis.

The debates, negotiations, and actions that take place as part of the process of social, economic, and political change, even when addressing environmental issues, lack the strength required to move beyond rhetoric and limited consequences, given how difficult it is under the current “language game” to translate words into specific, measurable, and accountable plans and actions, and perhaps more importantly, given how conflicting many times those consequences are with the “illusions” created through the current language. Even when by now, a considerable portion of human beings are aware of the environmental consequences societies have caused, the specifics of how these consequences are built-up from the micro level, and, therefore, of what is every person’s and organization’s share of the macro environmental consequences, are still unfathomable and incalculable, although they don’t have to be as shown by some examples presented in Chapter 3. As a result, and in spite of more and more people’s wishes to the contrary, the environmental consequences of human preferences and actions remain on a similar destructive path, with much more rhetoric than deeds taking place.

Changing the way in which social, economic, and political change takes place requires a new language that revolves around measuring and reporting, from the micro to the macro level, on the creation, formation, use, maintenance, depreciation, and destruction of the assets and classes of assets on which countries’ wealth is built. Being the real limits by which human life is bound of a physical nature, there does not seem to

be a need to complicate or expose to the distortions of the monetary and pricing systems, variables for which there is enough understanding and tools to measure their physical dimensions. When it comes to natural endowments and ecosystem services, it is of little relevance whether the price of water or the overall cost of manufacturing is lower in one country than in another; what matters, intertemporally, is that a certain physical volume of water and other natural resources are being used, and that a certain physical volume of different types of pollutions (not only carbon dioxide) are produced and need to be dealt with. Prices might be lower in one location than another, but the intertemporal costs for the human race might be similar; lower prices might just be an illusion caused by the partial blindness resulting from our lack of physical measure, or from our less than optimal efforts to measure and drive our decisions through those measures. It may be true that there might be productivity and technological differences among countries which allow them to use more or less of the same physical units of wealth to produce the same product or service or even to pollute less; nevertheless, currently we assume, at the lack of physical evidence, that all of the resulting price differences can be fully explained by traditional comparative advantages, rather than by distortions and biases in the pricing system.

The timeless debate about differences between use and exchange values that it is still unresolved, and which some have argued cannot be solved (Meikle, 1995, 1996, 2000), was put aside from the mainstream economics debate after the marginal revolution settled for using the concept of utility as a commensurability artifice (Meikle, 1995). Yet, it is clear that the issue is far from resolved, as for example, the Big Mac Index points to clear differences between use and exchange values around the world (Clements & Lan,

2010; Ong, 1997). This divergence can be clearly expressed as follows: the cost for the ecosystem of producing a Big Mac is very similar regardless of the country in which its ingredients are manufactured, yet prices differ considerably among them (Clements & Lan, 2010; Ong, 1997). Furthermore, these prices most certainly do not capture the whole environmental costs they produce anyway. As Bowles (2016) explains the requirement for market prices to lead to Pareto-efficient outcomes is that contracts have to be “complete” (that is, they have to specify all the benefits and costs for the parties). Evidently, contracts aren’t complete as they seldom price all externalities that have to do with environment, social, and political variables: “...incomplete contracts are the rule not the exception...” (p. 31).

Table 3-3 and the paragraphs preceding it, summarized an extremely relevant example showcasing the impacts of the lack of physical measurement in the use of natural resources and ecosystem services: Japan’s yearly consumption-levels requires in excess of 1,000 percent more water than all the in-country sources can provide. This water is embedded in products consumed, coming from other countries. It is very unlikely that prices of these products reflect the real water scarcity in Japan, and in the world as a whole, when the above information is not widely and opportunely available for the pricing system to integrate it in the price of such commodities, and when there exist practical stances with regards to environmental issues that are still ambivalent, contradictory, and certainly incomplete. Is not clear, then, that the price received by the producing countries for their products will reflect either the real cost of water in terms of its potential to generate intertemporal value. Countries are using their wealth to produce manufactures or services for export that provide foreign exchange that, in turn, helps

satisfy their wellbeing (mostly in the present); but are they being paid for the real intertemporal value their water has? Are they even aware of how much of their wealth they relinquished so they can at least reinvest an equivalent amount in other assets that will bring back the overall intertemporal value generating potential of its wealth to the amount it was before such hidden exports of water took place? Even if the pricing system might work in brokering apparent mutually beneficial exchanges between countries, given it has not been successful in integrating the cost of natural endowments and services, why would these exchange prices reflect the real intertemporal value of the water used, particularly when the real scarcities faced by countries and consumers are not openly calculated and known, as in the case of water resources in Japan? Without imports, Japan's consumption would have to dramatically adjust downwards as water would become a bottleneck in satisfying current consumption levels.

Another way to think about this, is through the use of a thought experiment. What is the difference between oil and water? They are both naturally occurring liquid substances that are scarce. However, their scarcity is substantially different. The cycle by which oil is formed is very different and goes through a timeline that is also very different from those of water. Given how essential water is in substantiating human life, what would happen if the space-time scarcity of water far exceeded that of oil? What would happen if only ten countries possessed 90 percent of the fresh water available in the world and if they were grouped together in an OPEC (Organization of the Petroleum Exporting Countries) like organization/cartel to setup minimum prices? Would then the difference between water and oil be, for all practical purposes, as we understand it today? Evidently not. But this begs the question of whether our current understanding is

absolutely correct or if it is relative and simply the result of our current biases and blindness. The point is that if such powerful organization/cartel were to exist, it might push and succeed on embedding in our socio-material structures, elements that would enable those “owning” water to rip considerably more value from it than what they do now. Not only absolute or relative natural scarcity, but socio-material limits, impact pricing. After all, as was discussed earlier, intellectual property and ownership, for example, are not naturally occurring but a result of choices embedded in socio-material limits.

The new language that is needed will require an expanded system of national income accounts along the lines of the United Nations System of Environmental-Economic Accounting (SEEA) (Kreimer, 2000; Sengupta, 2013; United Nations, 2012); and accounting, trading, and labeling practices that require the reporting of the use and content of assets and classes of assets, as well as the intertemporal entitlements in the use of these classes of assets goods and services embed in them. All of this at the micro-, meso-, and macro-levels (e.g., consumers; intra- and inter-industry both at the local and global levels; and, country, regional, and global). That is, the content of the different classes of assets in each good and service, and their intertemporal entitlements on these classes of assets, needs to be accounted for and reported.

This new language will also have to reshape the way in which public policy is conceived and implemented. To complement updated national income accounts and updated accounting, trading, and labelling practices, public policy would also have to explicitly provide quantitative physical guidance about the limits by which the use of assets and classes of assets will be bound, as well as a quantification of its impact in the

allocation of wealth and its proceedings. This is what Chapters 3 and 4 partially meant by social limits shaping the possibility space through societal agreement about preferences in using these assets and classes of assets in relation to their absolute and relative natural limits.

Likewise, material limits will also have to become part of the new language, through the quantification of their implications in terms of the use of assets and classes of assets they embed and entail. Currently, for example, appliances and electronics specify their power consumption. Yet, there is little accounting, tracking, and reporting of how wide-spread certain technologies' uses are and, therefore, of the hidden material limits by which societies seem to, slowly and almost unknowingly, bound their future through decisions made in the present. Each toilet produced embeds in itself an entitlement over the use of water resources; each car produced embeds an entitlement over the property of minerals, carbon fuels, and even environmental services that will be required, at some point in the future and over a time span, to process back the inputs required to build the car into their original or alternative states that makes them useful again. This means that every time a car or a toilet is built, we are further solidifying the material limits created by society; every time a highway is built, it solidifies the demand for cars; every time a car is built, it solidifies the demand for oil; or, in the case of electric cars, for batteries and electricity. Not only has the human race been failing to measure the use of the assets that makes it possible for it to survive and satisfy their desired wellbeing; it has, as well, failed to account for the accumulated impact these decisions have in its intertemporal freedom to choose and to innovate and survive. An optimal possibility space is one in which the costs of having multiple alternatives to solve a collective action problem, are

balanced with the costs of increasingly relying on only one. Yet, this important trade-off is not debated about or acted upon under the old paradigm.

Changing our accounting, labeling, and reporting can change the debates and our policy approaches. It can change our macro-, meso-, and micro-decision-making processes. It can improve the way in which the pricing system works. It can change the perception that the allocation and distribution of stocks of wealth, as well as claims over the flows they generate, are naturally occurring, when in the end, they are the result of the socio-material limits that are clearly defined by every country and by the international community. New measurements can shift our debates and actions towards a conception of aid closer to the one proposed in this dissertation. While laborious and costly, such changes are not impossible. For example, for years now, many OECD, and increasingly non-OECD countries have adopted regulatory impact assessment regulations that require such assessments to be not only made an essential input in the regulating and legislative processes, but also an essential output of that process that needs to be embedded in the resulting laws and regulations (OECD, 2015). As a result, the public is informed about the expected costs they will face in terms of regulatory compliance, and is also given a point of reference to frame their rights and their expectations from regulatory institutions. Likewise, laws and regulations could embed in them the impact they have in the allocation of wealth and its proceedings, as well as their impact in ensuring our long-term survival through the management of wealth and its limits.

While the final outcome of such change in measurement, labeling, and reporting cannot be fully predicted or manipulated, as it will definitively have emerging properties, it is more likely that humanity can agree on improving the way in which “ways of life”

are measured than on directly changing such highly entrenched and polarized “ways of life.” Efforts to change those “ways of life” have demonstrated through, for example, the debate about aid (in)effectiveness, not to foster enough and opportune change. Seeing our “ways of life” through a renewed lens and different vantage points can perhaps be more effective in helping change our ways and in better helping us understand how to so.

Chapter 6

Concerted Wealth Management: One Wealth, One World

Chapter Summary

Over the previous chapters, three important arguments about the problematic behind aid were advanced. First, while the evidence of aid's (in)effectiveness is inconclusive, the fact that the volume, allocation, and delivery challenges it continues facing today are awfully similar to those identified fairly soon after its inception more than 60 years ago is, in itself, a clear sign of deep-rooted problems, and of considerable opportunity costs incurred. Even if it may not be possible to affirm conclusively that aid is ineffective, it can be affirmed, without hesitation, that the debate about its effectiveness has been appallingly ineffective. Second, it has been substantiated that volume, allocation, and delivery challenges are not the true causes behind aid's problematic effectiveness, but rather an effect of the true cause behind its likely ineffectiveness: a flawed and muddled conception based on the limited world in which its praxis was constrained by the faulty language that economic growth theory, development planning, and national income accounting imposed on it. Third, that since the received theory underpinning aid put undue emphasis on capital accumulation and growth maximization, and gave little practical regard to limits to growth, to the process of social and political change, or to the impact of the global context, aid praxis tended to replicate this approach and its limitations (which were also reinforced by the constraints imposed by the political and institutional architecture behind it), even if rhetorically it tried covering the actual tracks and narrowness of its praxis.

In analysing these aspects of the problematic behind aid effectiveness, a Wittgensteinian epistemological and ontological approach was followed. First, through the analysis of language games, a successful attempt to disentangle confusions embedded in the discussion of aid effectiveness, as well as to specify the impact that language limits imposed on the aid enterprise, provides considerable clues on potential avenues to dissolve these confusions and, hence, opens up a world of possibility to improve aid effectiveness. Second, through an evaluation of the soundness of the theoretical basis on which aid was conceived, it was possible to determine severe limitations in this basis, and, therefore, to offer alternatives to overcome them (among these alternatives are ones related to the consideration of: the existence of a critical-path determining social, economic, and political change; the impossibility of replicable and scalable technocratic/hydraulic solutions to the problems of development; the futility of adhering to the illusion that change towards a stable new social order can be achieved through manipulation that leads to a specific predetermined state; and the need to specify reference points against which reality can be made sense of).

As a result of this Wittgensteinian analysis of the aid enterprise, as well as an analysis on the roles of ideas in producing social, economic, and political change, the proposed research questions of this dissertation were answered by, among others: (a) defining the limits by which human activity is bound; (b) defining the limits imposed by human beings through the material and social structures they create; (c) establishing a relationship of identity between value and wellbeing and specifying an ideal state—self-reinforcing—in which this identity makes the most sense; (d) determining the critical-paths by which the wealth of nations is bounded; and (e) establishing a possibility space

and its characteristics, recognizing that beyond the limits that encapsulate them and the rules that are given, how both these limits and rules shape these spaces and what happens inside of them, is driven by an inner logic and a critical-path about which little can be said and not much effective intertemporal manipulation can be performed.

The resulting proposed conceptual framework—concerted wealth management, a new paradigm to replace aid—implies that: (a) the distinctions between developing and developed, or North and South countries, are irrelevant and misleading; it makes more sense to understand the development path as a continuum in which some countries are better-off than others but on which, regardless of these differences, the self-reinforcing state can only exist when the majority of countries are closer to such self-reinforcing state; (b) inter-country flows convey real transfers of wealth which modify a country's natural limits and, therefore, have intertemporal effects in their capacity to fulfill the wellbeing of their citizens; (c) better-off countries can help those worse-off to safeguard, manage, and enhance their wealth, as well as enable their capacity to benefit from inter-country flows; and (d) considerable risks are posed on the long-term survival of the human race and the ecosystem by the insistence of relying only on monetary denominations that give the illusion that absolute limits might be relative.

Rather than just relying on increasing the ingredients and improving the markets (so ingredients can better mix), the new paradigm starts by establishing clear priorities and limits (e.g., the ecosystems comes first, then human beings, then the other classes of assets). The conditions that delineate the possibility space, first, then the formation of dispositions, and perhaps only then but highly discouraged, the meddling with actions. The new paradigm debunks the idea that the allocation and distribution of wealth, and

entitlements over the flows it generates, are naturally occurring, and, instead asserts that they are the result of natural, material, and social structures that impose limits to natural and social forces. The new paradigm gives a realistic consideration to critical-paths, and then provides a framework to build realistic timelines on which, in turn, change can actually take place. Furthermore, within these factual realities, the new paradigm offers a typology of actions that could lead to expanded limits and a broader and better functioning possibility space. It also offers a diagnostic of the difficulties a direct process of global coordination and agreement on the traditional problematic of aid entails (given known social, economic, and political constraints), but it also provides some light about the less-explored limitations of the aid market (e.g., supply driven, asymmetric power and information, among many others). Based on this diagnostic, the new paradigm offers an alternative, a sort of Trojan horse that, by focusing on embedding measures of physical units of wealth in every aspect of our daily lives, could potentially and indirectly circumvent and break the vicious circle in which old-paradigm aid has remained trapped. In practical terms, the new paradigm does not offer, as was originally thought possible, a “recipe”—since the possibility of one existing has been disproved—but, instead, an approach to “cooking.”

The proposed framework fulfilled most of the requirements set forth in Chapters 1 and 3 (e.g., explaining impact of inter-country flows on wealth; expanding the categories of wealth considered; considering not only flows but stocks as well; relying on processes of change other than those offered by the markets; avoiding linearity in its logic; and, integrating exogenous variables, among many others). Due to time and resource constraints, no empirical validation of the model proposed was possible, although a clear

research program for such validation is suggested, including a detailed list of stylized hypotheses to be tested. Nevertheless, it was carefully and meticulously researched and built on state-of-the-art knowledge which in itself has been empirically substantiated and submitted to falsification.

Perhaps even more importantly, the model proposed in Chapter 4 and further developed in Chapter 5, achieved the methodological objective set forth in Chapter 1 of combining the advantages of both economic modelling and political economy approaches. Throughout the dissertation, serious consideration was given to the social and political aspects of development. They were, in fact, integrated into the formal model proposed through the concept of socio-material limits. The implications of taking political economy seriously resulted both in specific recommendations that go beyond simple traditional economic variables and mainstream economics approaches, as well as in a number of testable hypotheses that make the proposed conceptual framework empirically falsifiable.

This dissertation has contributed to the literature by confirming that when looked at from a different point of reference, in this case, an alternative conception of economic growth and development, a conceptualization of aid that is not only different but much richer, emerges. Furthermore, this dissertation has also contributed to the literature by demonstrating that, when the current paradigm of aid is evaluated through a comparison to the proposed new paradigm, clearer reasons explaining its problematic effectiveness emerge.

While these two are considerable contributions to the field of international development studies, perhaps an additional third and final one has the most relevance due

to its strictly practical nature. This last contribution consists of the idea of pushing for the implementation of an already viable and tested modified national income accounting system, as well as of accounting, trading, and labelling standards, both of them as part of a potential Trojan horse that could do more to change aid, the development enterprise, and humanity's approach to environmental issues, than what sixty years of circular debate have been able to do so far.

Revisiting the Research Question and the Thesis Statement

This dissertation started from the premise that, at best, not only is the evidence about aid effectiveness inconclusive, but that the fact that over the last sixty years there has been little progress in terms of addressing aid's recurrent and long standing shortcomings is, in itself, evidence that further tilts the balance of its effectiveness towards problematic territory. This, of course, does not mean that aid has achieved nothing (see Chapter 2), but it certainly means that if not entangled by a complex historical background, a mix of conflicting motives, and a weak and misleading theoretical basis, it is very possible it could have achieved considerably more. The opportunity costs of its problematic have been enormous, even if only because this same problematic has dragged on for so long.

As suggested in the Preface, this dissertation does not present a case against aid as a concept or as an enterprise. In fact, it proposes untested avenues to make it better. It does, however, present a strong case against continued pretending that we know more than what we really do, or that 60 years is not more than enough to know by now that there is something inherently wrong with our approach to the task.

Previous chapters offered evidence supporting the assessment of aid summarized

in the preceding paragraph. Furthermore, the evidence provided supported yet another important argument made throughout this dissertation: that the volume, allocation, and delivery issues plaguing aid delivery are more an effect than a cause of its ineffectiveness. The real cause, it has been argued and supported, is the problematic conception of aid that resulted from the ingredient-based and process-less understanding of economic growth and development received from the dominant neoclassical school of economics. As a Trojan horse, economic growth theory, development planning, and national income accounting infiltrated and permeated the most practical aspects of the aid enterprise and, by limiting its language, limited and shaped its world, too.

Besides ignoring the global context and its asymmetric impact on less developed countries, the old paradigm's understanding of the world engrained into the core of aid's praxis, placed an undue emphasis on the accumulation of capital and the maximization of growth through productivity increases and their technological progress underpinnings, as well as the institutions supporting them. This emphasis relegated both limits to growth, and the process of social, economic, and political change behind such growth (except of course, as it relates to productivity increases), including the consideration of the critical-paths leading to it, to the background.

Furthermore, the vision of wealth underlying the neoclassical understanding of growth had no bearing on space and time realities, either at a level at which could be considered a valid simplification required by any sort of mathematical modelling, or, more importantly, at a level at which such simplification could not have resulted in engraining an unrealistic and irresponsible stance about our ecosystem and all the assets in it from which human survival and progress depends. Ultimately, this understanding of

wealth and its relationship to growth shaped in very subtle but pervasive and wide-ranging ways, the conception of aid, its overall approach and praxis, and the tools behind them.

By comparing this conception, approach, and praxis with those that would result instead if the neoclassical understanding of economic growth were to be replaced by the one suggested through the proposed conceptual framework put forward by this dissertation, Chapter 5 showcased the kind of limitations and implications the received understanding has had in constraining the effectiveness of aid. Many of these limitations and implications were precisely and directly linked to the severely inaccurate and misleading assumptions about the space and time characteristics of the wealth of nations that are embedded in the neoclassical model of economic growth.

To respond to the specific research questions proposed in Chapter 1, considerable evidence supporting the proposed conceptual framework was presented in Chapters 2 and 3.

Of particular importance in developing the arguments put forth by this dissertation was the use of a Wittgensteinian epistemological and ontological approach. Among other things, this meant that emphasis was given to: (a) separating that which something could and should be “said” and done about, from that which not much could be “said” or done about, and, therefore, that which we must remain silent about (leading to the proposal of delimiting a possibility space through the setting of natural and socio-material limits, as well as to make a clear distinction between physical denominations and monetary ones, among others); (b) shifting the “muddied” and unproductive analysis and addressing of the aid (in)effectiveness problematic by putting forth a rather different set

of “pictures” that could change the way in which this problematic is viewed (Wittgenstein, 1958, p. 57, Paragraph 144), this leading to the proposition of a new language, composed by new words and meanings, and also by a framework grounded on the physical realities of the wealth of nations; and (c) avoiding putting forth a causal theory of how to make development happen, and adopting, instead, a descriptive approach of the variables and dynamics about which something could be said and done. This last point, in particular, reflects a conclusion from this dissertation that differs from one of the original ideas set forth in Chapter 1: that a focus on the recipe, rather than on the ingredients, was necessary. It is clear now, however, that such an idea is inaccurate and misleading, and that it was still influenced by the received understanding of development. A recipe, while different in name, is, in the end, yet another way of expecting that a magic formula or Holy Grail, a technocratic, clinical, or hydraulic approach, can be found. If anything, this dissertation and, specifically, the paradigm proposed, shows that there cannot be a recipe for development, but only “cooking” towards it—that we can understand a great deal more about the ingredients behind it; their potential interactions, complementarities, and substitutions; their space and time nature and possibilities, but that, essentially, since all of these are highly contextual and complex, there can be no recipe and most definitively not a unique recipe.

Development workers and institutions can contribute by supervising the “slow-cooking” process, through long-term engagements, drawing from and making the most of the wealth that is available. If anything formulaic or recipe-like in nature resulted from this dissertation, it is the attention and discipline with which natural and socio-material limits, as well as critical-paths, need to be addressed. These are the real and relevant

variables and areas about which something could be said and done, and not the many others suggested by old-paradigm aid into which so much effort and resources have been poured, without seemingly ever leaving the unproductive vicious circle into which they seem to be locked. Rather than a recipe or a comprehensive theory of change, this dissertation offers tools to understand the fragments, areas, and spaces that offer the possibility to get things done by separating them from those in which the mud will trap us and get us stuck in endless unproductive debates like the ones of the last 60 years.

Furthermore, the Wittgensteinian approach helps in situating aid effectiveness's vicious circle within the idea of confusing language games; helps frame the problematic that the language created by the economic growth model, development planning, and national income accounting ensued by limiting the world of aid, therefore shaping it and constraining it; it also helps epistemologically and ontologically supporting the argument against a technocratic/hydraulic/clinical approaches common to aid that implicitly assume there is only one explanation for every problem of development and that implementing the unique solutions that allegedly derived from this explanation always results in the same outcome as if they were driven by immutable mechanical laws. A Wittgensteinian approach also helps support the idea that problems and solutions are engrained on each other through the people who face them and, hence, that aid's approach to impose preconceived solutions is nonsensical, as the core of the solution has to come from the practice of those affected (not by the presumed knowledge being transferred, which Wittgenstein rejects as knowledge if devoid of practice—even acknowledging the benefits of knowledge sharing and transfer, such knowledge would have to go through an internalization process which will set a critical-path that cannot be

short-circuited and which is usually ignored by old-paradigm aid).

Adopting a Wittgensteinian approach also helps to lay the ground for what the proposed conceptual framework calls the possibility space which, ultimately, is the space where change and development takes place as a practical process following its own internal logic, not the illusory vacuum in which “proven” mechanical solutions externally devised by the aid enterprise are assumed to always provoke the same result.

Finally, the use of a Wittgensteinian approach in combination with the use of economic modelling and political economy analysis helps dissipate the “fog” (P. R. Krugman, 1998) that has, on several occasions throughout the history of development theory and practice, “muddied the waters” of the debate (to use a Wittgensteinian expression). For example, rather than engaging in the debate of whether government intervention or deregulation of markets are required, this dissertation and the proposed conceptual framework proposed, starts from the realization that markets and the allocation and distribution of wealth (and its proceeds) are not naturally occurring, in the sense that they do not exist in a pure and untouched state. Instead, they are always defined and determined by natural, material, and social structures and the limits they impose. It is, then, not only possible to address the issues that derive from markets’ allocative and distributive outcomes, but additionally, to more proactively focus on understanding the consequences that structures and limits will have in the outcomes of markets before they are created, as well as during their operation.

Both the evidence in previous chapters and the proposed conceptual framework resulting from all of the above can now be used to explicitly respond to the research questions suggested in Chapter 1.

Managing and safeguarding the wealth of nations.

The first research question in Chapter 1 asked about the theoretical grounds on which the management of the wealth of nations should be based. It also asked for the specific challenges faced by aid-receiving countries and the potential ways in which aid-giving countries could cooperate with them in dealing with these challenges.

As it has been continuously argued throughout this dissertation, one of the most important theoretical and empirical foundations on which the proposed conceptual framework is based, is the fact that the ecosystem that sustains life is finite in physical terms and, as such, is bound by space and time. This reality becomes more pressing when a contrast is made between geological and ecological times (e.g., hundreds, thousands, and millions of years), and a realistic timeline for the human race where finitude and fragility might constrain it to not survive itself for millions of years. This, it has been argued, means that in terms of hierarchy, the ecosystem is at the highest level of importance, because without it there cannot be life. At the middle is the human race: without it, all other organic and inorganic life would only have served their natural purpose as part of the cycle of nature, and, as a result, would be dependent only on the events that naturally shaped the universe, and not on the human race's capacity to use and transform them. Human beings possess the ingenuity to find value in their surroundings by using them for their own benefit; they can't, however, live without the ecosystem.

By extension, this important basis for the understanding of the wealth of nations and its management, leads to a necessary consequence: there are absolute natural limits, and there are critical-paths by which human beings themselves, as well as their surroundings, are bound. Within those natural limits, more can be done and ingenuity can

certainly improve the way in which the space between those limits can be used. Yet, the absolute limits cannot be crossed both in terms of their space and time dimensions. This also means that everything is connected and that the value of one thing depends on that of another, and all of these values themselves depend on human beings, who, in turn, are dependent on the ecosystem. As a consequence, following the existing paradigm of economic growth and development which is based on a premise that these natural limits have not yet been reached, and that ingenuity will have already found a way to extend them once we get there, is an existential gamble. In fact, following it today, knowing what we know, amounts to a gamble with the pre-emptive knowledge we will lose.

In the final analysis, all these limits are shared equally by all human beings: distinctions of countries and geographies become irrelevant when dealing with such an absolute reality. To survive, humanity needs to concertedly manage its wealth.

These previous two considerations (e.g., finiteness of the ecosystem and interdependence within the ecosystem) lead, in turn, to yet another: as humanity uses its ingenuity to its benefit, the material structures and the limits resulting from them embed themselves into the ecosystem, and simultaneously enable and constraint further both ingenuity and the space within which humanity can survive. These material structures allow for time and costs savings, productivity increases, connectivity, replicability, and expandability. However, the more these are embedded over time and become more important in scale (in relative terms), the less space there is for change and disrupting innovation. They create both path-dependence and a critical-path: that is, they create material limits.

Another important stepping-stone on which the grounds for the proposed

conceptual framework rests is that of the social limits by which the process of managing the wealth of nations is bound. Human collectives are based on trust. The bigger and more complex they become, the more this trust rests on the organizations that support them. These institutions are the result of iterative and stochastic processes of establishing and settling rules and routines that operate as trust-creating mechanisms. This process is bound, as well, by a critical-path and, ultimately, by natural limits. This is a process that cannot be forced from the inside or imposed from the outside. Organizations and their rules and routines can be transplanted to different collectives, but they do not immediately and automatically change anything, and, if they do, the change will be emergent; this is, it will be different in different contexts.

This leads to yet another relevant stepping-stone on which the proposed conceptual framework is based: that of the existence of a possibility space. This space is one delimited by the above-mentioned natural, material, and social limits. It is a space where human individuality, human interaction, innovation, change, and progress take place. It is a space through which natural and social forces flow and combine to shape the world we live in. This is also the space from where material and social limits are influenced (pushed and pulled) and where humanity can progress towards reaching closer to natural limits without, however, having the possibility to exceed them.

The less friction and inertia that exists within this possibility space, the less entropy natural and social forces create. Yet friction and inertia can only be reduced from the inside, through the inner logic and workings prevailing in such space, as well as through the improvement of the “conditions” and “dispositions” of those agents operating within them. Attempts to manipulate such “actions” taking place within such possibility

space, it is argued in this dissertation, are intertemporally ineffective, and can even be detrimental in spite of apparent immediate benefits.

Finally, the proposed conceptual framework is built on a simple but relevant identity: *wellbeing equals value*. What gives meaning to anything human beings do, is how it contributes to their wellbeing. Wellbeing has two facets: a basic one that relates to the space and time realities of human life (the most material ones), and that impose specific conditions for its development, survival, and optimal functioning—the needed level of wellbeing. A second facet is relative and determined by the perceptions, preferences, context, and aspirations of the country's citizens themselves—this is the wanted level of wellbeing (which, while less tangible, can nevertheless be expressed in terms of material consequences, that is, in terms of physical units of wealth).

The image of the world resulting from these theoretical grounds on which the proposed conceptual framework is based, is the reality faced by the entire human race, not just by one or a few countries. Nevertheless, given that navigating through such constraints is dependent on the relative level of wealth already possessed by a country, different countries find themselves in different positions with respect to those constraints.

This is why it is argued in this dissertation that the distinction between developing and developed, or North and South, is irrelevant and misleading. Given that the achievement and conservation of the self-reinforcing state is the ultimate objective of the process of development, it makes more sense to understand countries based on the following distinction: *better-off countries* are those which are closer to attaining and sustaining the self-reinforcing state; *worse-off countries* are those which are further away from doing so. Development is a continuous, perhaps never-ending process. Proximity to

a self-reinforcing state could be seen as a matter of relative importance: unfulfilled wellbeing and lack of optimality in the extraction of value from wealth pervades every country and the entire world. What varies is how pervasive this is at each country's level. Development is, then, a common, concerted process, rather than an independent one. The true self-reinforcing state is not that of one country, but that in which most countries share a similar standard and a similar outlook.

The proposed idea of self-reinforcing state represents a condition in which, intertemporally, a country, and more broadly, the world, is capable of extracting enough value from wealth—conceived as optimal value extraction—so as to fulfill, for the majority of its citizens (conceived as optimal value allocation), the levels of wellbeing needed and wanted—nothing more, nothing less. A country closer to the self-reinforcing state is able to maintain the integrity of its wealth by continuously investing, innovating, replacing, upgrading, protecting, and using it in increasingly creative and efficient ways. In fact, better-off countries already generate enough value to not only care for themselves but also to potentially cooperate with other countries that are comparatively worse-off.

In contrast, worse-off countries, those that are further away from achieving the self-reinforcing state, are not only characterized for not being able to provide the levels of wellbeing needed or wanted to the majority of their citizens, they are additionally trapped by very limiting function gradients that severely restrict the intertemporal value generating potential of several (if not all) the classes of assets composing their wealth; a situation that, in turn and in emergent ways, limits the value generating potential of their entire portfolio of classes of assets. Furthermore, their already constrained capacity leaves them extremely vulnerable to natural, social, economic, and political shocks. In

summary, worse-off countries tend to hold wealth which intertemporal value generating potential is considerably below its absolute natural potential, while, simultaneously, their capacity to extract value is also constrained by the limited value generating potential of this wealth. This is indeed, a vicious circle.

It is precisely because they are in this vicious circle that worse-off countries require assistance from better-off ones. For example, given that produced capital formation depends on human capital, and that, in worse-off countries, human capital is usually constrained due to low function gradients resulting from malnutrition, reduced emotional and intellectual stimulus, and health issues, among others, the potential to increase produce capital is low. This further reduces the possibility of extending, through the use of produced capital, the value generating potential of human capital. Likewise, low-produced capital stocks can also limit a country's structural value generating potential, further reducing chances to address malnutrition and other key factors, and, therefore, keeping its human-capital function gradients low. Breaking this vicious circle requires investments in nutrition, education, and health that cannot be completely afforded by worse-off countries, not even through issuing of public debt, as most better-off countries are able to do.

Better-off countries' contributions can potentially break such vicious cycles (not in the old-paradigm's sense of capital investment as increases in capital, but in the new-paradigm's proposed sense of improving capital's function gradients). However, to do so, natural, material, and social limits, as well as relevant critical-paths all need to simultaneously guide the conception, development, and delivery of such contributions, if they are to maximize their potential impact. This is what is meant to be achieved through

the proposed idea of concerted wealth management.

Another area in which better-off countries can potentially contribute to worse-off ones moving closer towards the self-reinforcing state, is that of dealing with natural, social, economic, and political shocks. For countries already not able to extract enough value to satisfy their citizens wellbeing, it is extremely difficult both planning to reduce risks of shocks, as well as mitigating the impacts of these shocks. Most of these shocks have immediate and severe consequences in the stocks of wealth possessed by a country, both in terms of their size and their function gradients. Given the creation and formation timelines of most classes of assets, recovering wealth lost through these shocks takes considerable and sustained investment over several years, many times over decades, that is usually several times that which would have taken in preventing or ameliorating such impacts. Yet, with their already limited capacity to generate value further reduced through a potential shock, the possibility for these countries to both reach and maintain previous levels of wellbeing, as well as engaging in the sustained investment required to recover its previous capacity, is extremely limited.

Better-off countries' contributions towards planning for shocks and reducing worse-off countries' exposure to them, as well as to dealing with their inevitable consequences are, in summary, yet another way in which they can contribute to worse-off ones.

Finally, better-off countries can contribute to worse-off ones by sharing wealth management knowledge and expertise. As stated earlier, the proposed conceptual framework posits the processes of economic growth and development as more of a continuum, rather than a discrete collection of separate states. Both better-off and worse-

off countries are subjected to the same reality and logic, to similar limits and critical-paths. Better-off countries still struggle with structural change, both internally and globally; they still deal with shocks; they still keep struggling with reaching and sustaining the self-reinforcing state; and this means they still have to ensure that the majority of their citizens achieve both needed and wanted levels of wellbeing.

The difference, as argued above, is not only one of scale (i.e., the relative size of the challenge faced) but also of possessing the capacity and freedom to do so. Hence, both the lived experience and resulting acquired knowledge through such processes obtained by better-off countries can be of great help to worse-off countries, not because worse-off countries have to go through and replicate the same linear process better-off countries have, but because they are both perfecting their own processes to extract value from wealth. Likewise, the knowledge and technologies better-off countries have developed in order to increase the effectiveness and efficiency with which they extract value from wealth can provide considerable help to worse-off countries.

The impact of global social and material structures on the wealth of nations.

As it is usually the case with any interaction between human collectives, a set of rules and routines and the organizations to support and uphold them, is required in order for this interaction to be effective and efficient. The sort of contributions that better-off countries provide to worse-off countries towards their faster transitioning towards the self-reinforcing state requires such rules, routines, and organizations as well. However, as argued above, when it comes to the space in which social, economic, and political change takes place, the setting of these rules, routines, and organizations cannot be forced or imposed. It has to rely, instead, on an iterative and stochastic process that, given its

emergent characteristics, cannot be forced, or its specific outputs manipulated or predicted in full (this is consistent with the Wittgensteinian epistemological and ontological approach adopted throughout this dissertation).

Contrary to this, both existing global organizations and the rules and routines they follow remain, in spite of the continuous criticism and commitments to reform, driven by aid-giving countries. Voting powers at most, if not all, international financial institutions still give better-off countries a majority, and their management and key staff still tend to be dominated by the citizens of these countries, or at least by aid-recipient countries citizens who attended aid-giving countries' best universities (i.e., staff selection remains biased towards mainstream and unified thinking around the same subjects). In fact, the heads of both the World Bank and the International Monetary Fund are still de facto selected, in what shows an unfortunate double standard and appalling anachronism, by the United States, the European Union, and Japan (in the case of the Multilateral Investment Guarantee Agency).

The same criticism can be made about the global rules related to trade, intellectual property, migration, and others (see Chapters 1 to 3), which is precisely the subject of the second, and last, research question proposed in Chapter 1: the impact inter-country flows have in enabling or disabling worse-off countries in transitioning towards the self-reinforcing state, and the role better-off countries can have in enabling or disabling this impact.

Throughout this dissertation, convincing evidence is presented about the relatively superior importance inter-country flows have in terms of both the size of worse-off countries' economies, as well as the size of aid flows. Indeed, aid flows pale in

comparison to the size of other inter-country flows, as well as in comparison to the size of the issues it aims to address, and, as a result, aid can no longer afford to sustain the tenet that it can have a catalyzing effect without at least proposing a proper theoretical framework as explanation. Chapters 2 and 5 provide evidence, respectively, that both aid's size and role in most worse-off countries have diminished, and that the theoretical framework on which it is based—the dual-gap model—is built on a macro-level theory that, from the start, presupposes a positive effect of aid-flows on economic growth by virtue of increasing investment or making up for foreign exchange gaps.

Furthermore, convincing evidence in regards to the role inter-country flows have on the wealth of nations through the wealth transfers they convey, and, consequently, in their capacity to achieve self-reinforcing state, is presented both in Chapters 2 through 5 (i.e., the role trade has in shifting natural relative limits and therefore, on the value generating capacity of a country)

Consequently, the proposed conceptual framework at the centre of this dissertation considers the direct effects of inter-country flows as modifiers of the relative natural limits on which material and social limits depend, and which, together, determine the possibility space in which a country manages its wealth. Additionally, limits imposed by global social structures are embedded together with the local, into the socio-material limits mentioned above.

Given the problematic discussed at the beginning of this section with regard to the rules, routines, and organizations behind aid, as well as behind the ways in which, traditionally, the potentially negative effects of inter-country flows have been ignored, it is not surprising, then, that a new international mode of coordination seems to be

required, and that the rules, routines, and the organizations underlying it, would have to come as a result of a well-balanced interaction between better-off and worse-off countries, and not as an imposition.

A structure in which one party is trying to achieve something on its own terms, often leads to other parties attempting to do the same—that is, trying to achieve something on their own terms. This leads to an interaction with two or more objectives rather than a common one, something more akin to a market transaction than to the kind of concerted wealth management that is now imperative for the survival of the human race. If, at the very least, the conditions for such a market for aid were aligned with those that have been demonstrated to make markets more efficient, perhaps the current results would be better. Unfortunately, they are not: currently, the “aid market” is characterized by asymmetric information and power, uncertainty in the supply and demand of resources, limited standards on implementation and disclosure, limited accounting and reporting, and unsystematic and unstandardized measurement and reporting of results, among many others (see Chapters 1 through 3).

Over the preceding chapters, it was also suggested that modifying national income accounting standards, as well as accounting, trading, and labelling standards, could be of considerable help to worse-off countries and the world as a whole. Reconceiving international trade and other kinds of inter-country flows in terms of the physical units of wealth embedded in every product and service, lends a very different lens to the evaluation of what these flows really entail for better- and worse-off countries. If value equals wellbeing, and value is extracted from wealth, then the direct impact inter-country flows have on a country’s wealth impacts their capacity to extract value and attain

wellbeing, as well.

As long as inter-country flows continue being measured only in terms of their monetary denomination rather than in terms of their wealth content as well, the problematic in capturing through the pricing system disjointed markets and exceedingly long timeframes will also trickle down to affect the degree and speed at which the convergence of countries towards self-reinforcing state can occur. A certain degree of proportionality in the transfers of wealth that inter-country flows entail is required for this convergence to take place.

As this dissertation demonstrates through Chapters 4 and 5, the degree of matching and synchronicity between local and global natural and socio-material limits plays an important role in the determination of the opportunities and the rewards that are reaped by different countries through their international dealings. Given the nature of these limits and what it means in terms of their inertial evolution, it is argued that development planning techniques under the old paradigm will tend to be ineffective. Under the new paradigm, comparative advantage is the result of a much more complex mix of bounded health, output, and value elasticities that are fully dependent on the context. The degree to which local and global natural and socio-material limits relate to each other, both in terms of their relative breadth and of their relative size, plays an important role in enabling or disabling countries' potential to converge towards self-reinforcing state. Development planning is then, under the new paradigm a process of tracing an intertemporal local-global evolving fit. As a result, development planning is not fully possible without concerted wealth management.

The previous paragraphs summarized the ways in which throughout this

dissertation the originally suggested research questions are addressed. Evidently, given the size of the undertaking required to reimagining a theory of economic growth and aid against which current theories could be evaluated, more research is required to further refine the proposed conceptual framework. Nevertheless, the progress made has provided plausible and internally consistent answers for these research questions. These answers have, as well, provided a reasonable argument to confirm the thesis that the cause of aid ineffectiveness does not rest as much on aspects relating to its volume, allocation, or delivery, but in the narrowness of its conception.

The impacts that the current paradigm has had in terms of aid's praxis focusing on the ingredients rather than on the process behind economic growth, as well as on the endogenous rather than on the exogenous constraints faced by worse-off countries, have both been well-documented and supported throughout the previous chapters. Chapter 5, in particular, provides a macro comparison of the old paradigm and the new one resulting from the proposed conceptual framework, as well as several specific examples of how both their approaches and the potential impact of the development inducing interventions they advocate, would differ under both paradigms.

What this research helps conclude is precisely what the thesis proposed originally states: a new approach to understanding economic growth that revolves around the management of wealth, provides a more solid and comprehensive theoretical framework on which to reimagine aid. When the resulting conceptual framework is used to both evaluate the existing paradigm of aid, as well as to propose plausible and considerably more elaborated explanations and justifications about the role that development inducing interventions could play, it is fairly clear why the aid enterprise has struggled and

continues to struggle: the conceptualization on which it relies has severely limited its own effectiveness. Besides becoming a filler of investment and foreign-exchange gaps faced by worse-off countries, there was nothing else specific enough that the narrow and simplistic conceptualization of aid could suggest: growth meant adding more resources when locally unavailable. Such general guidance meant almost anything could be justified as aid.

In contrast, the proposed conceptual framework suggests the need to prioritize the ecosystem and human capital over the other kinds of wealth; it provides sound arguments on the importance of the critical-path for both, holding realistic expectations about the timelines required to make progress, and using resources more effectively by both investing opportunely and by following sequences that could maximize the benefits of such investments. It also suggests a typology for how to expand the possibility spaces. It evidences the importance of not only focusing on current but intertemporal constraints too (i.e., function gradients). It bounds the pursuit of optimal value extraction, as a substitute of economic growth, within realistic limits, and through such framing, it further narrows and pins-down the potential roles aid could play in the form of concerted wealth management. These and other differences between the old and new paradigms, as well as some of the complexities the proposed conceptual framework contributed with, are summarized in Table 5.1.

Likewise, as it is suggested in the thesis statement, the proposed conceptual framework confirms that the areas in which concerted wealth management (as a substitute for old-paradigm aid) should focused are: (a) improving the ways in which wealth is managed and value is extracted from it (enhancing); (b) helping protect the

integrity of wealth (safeguarding); and (c) ensuring that wealth exchanges resulting from inter-country flows does not consistently create disproportionate exchanges of wealth, particularly from worse-off to better-off countries (enabling). In addition to these originally proposed areas, throughout this dissertation, two additional areas for concerted wealth management to focus on were identified: (a) managing the critical-paths towards maximizing as soon as possible the function gradients of all the classes of assets composing the wealth of a country; and (b) managing the possibility space as to improve its internal characteristics, broadening its limits closer to the natural ones, as well as moving them as close as possible—matching and synchronizing them—to global ones (these two tasks are, of course, related to the three other functions described above: enhancing, safeguarding, and enabling).

In summary, while additional research is required to further advance and connect the ideas proposed through the conceptual framework developed in the preceding chapters, already this new paradigm helped uncovered implications of the narrowness in the historical conception of aid. It seems, indeed, that taking aid's problematic as issues of volume, allocation, and delivery is confusing the effects as causes. This dissertation provides support for the thesis suggested in Chapter 1, in that it is instead the narrow conception of aid, that creates volume, allocation, and delivery related problems.

Assessing the Proposed Conceptual Framework Against the Set Requirements

Chapters 1 and 3 propose a number of requirements the alternative conceptual framework would need to comply with in order for it to differ from the existing paradigm, and therefore, potentially offer a better explanation for its problematic (in)effectiveness.

Specifically, in Chapter 1, it is suggested that the proposed conceptual framework should provide the foundations for: (a) the basic structure of a more comprehensive theory of wealth management; (b) a conceptual framework for understanding the nature of the value transfers resulting from the different kinds of inter-country flows; (c) a basic understanding of concerted wealth management outlining a typology that corresponds to a new broader and alternative understanding of aid; (d) a better understanding of the relationship between the proposed typology for concerted wealth management and the existing taxonomy of aid, as well as the gaps between them; and (e) a better understanding of the implications all of these consideration have in terms of the architecture through which aid is currently being delivered, and in terms of the changes that might be required in this architecture in order to focus instead on the proposed broader concept of concerted wealth management.

Chapter 3, in turn, suggests that the proposed conceptual framework would have to overcome the main shortcomings of the existing paradigm, so as to: (a) go beyond the broader economic factors categories used in the old paradigm; (b) consider both stocks and flows of wealth; (c) focus on the intertemporal optimization of wealth rather than the maximization of growth; (d) consider the need for planning and managing potential emergencies that could impact wealth; (e) move beyond the simplistic consideration of the ingredients to grow to a more thorough understanding of the process of change behind it; (f) move beyond the duality of markets and governments thinking to focus on the underlying issue of addressing the coordination and control problems of cooperation; (g) address the costs of transformation resulting from the process of development; (h) consider the levels of aggregation and disaggregation of social interaction—micro and

macro levels—as well as the implications these have in terms of the forces they possess and release; (i) not be devoid of considerations about the local, regional, national, and global structures in which the process of development takes place, particularly through the wealth-value transfers that result from inter-country flows; (j) integrate both the endogenous and exogenous factors that impact the capabilities and freedom of countries to develop; (k) not assume a catalytic effect; (l) focus on supporting countries to manage their wealth as a unique mandate implemented through one architecture with only one driving motive and consistent incentives; (m) provide a typology of specific activities and actions that can be taken to achieve its ultimate objective of enabling most countries to attain self-reinforcing state (e.g., convergence); and (n) not rely on an underlying assumption that the process of development is a linear enterprise that require countries' development to be driven progressively by their primary, secondary, and tertiary sectors.

This and previous chapters provide enough details about the proposed conceptual framework to make it clear that it has, indeed, adequately addressed and fulfilled these requirements. Evidently, while some are addressed in more comprehensive ways than others, nevertheless, all have been addressed.

For example, the proposed conceptual framework moves beyond the simplistic duality-of-capital-and-labour in the neoclassical growth model, to include, instead, five different classes of assets (i.e., natural, human, fixed produced, mobile produced, and intangible produced), as well as three modifiers of their value generating capacity (i.e., stock of local and global public and private debt, socio-material structures and limits, and local and global social, economic, and political relative standing of countries).

Furthermore, rather than focusing on the flows only, as the neoclassical growth model

does, the proposed conceptual framework gives prominence to stocks of wealth across time, and equates economic growth, not just to changes in the flows but also to intertemporal changes in the stock and its capacity to generate value. Moreover, it offers an alternative conception of economic growth via the concept of optimal value extraction.

Another example of how the proposed conceptual framework addresses the original set of requirements in Chapter 3 is in the way it focuses on the definition of a possibility space in which the process of social, economic, and political change can take its natural course, rather than relying on the apparent but ineffective manipulation of the process of change that, as the neoclassical economic growth model proposes, is portrayed as to take place in a limitless natural, material, and social mechanical order. This provides a dramatically different point of reference for public policy, moving from direct incentives and disincentives linked to behaviours, towards a setting of clear limits that is in tune with the realities of the physical and temporal world inhabited by humanity. The points of reference for such limits also shift thanks to the proposed conceptual framework, from setting them in reference to a unique conception of “markets” or any other preconceived-as-optimal or “natural occurring” social structure (without any consideration for natural limits), to setting them in reference to natural limits first, and only then, to socio-material limits stochastically related to them.

Rather than fostering the illusion that natural, material, and social critical-paths can be short-circuited, the proposed conceptual framework offers the alternative view that it is not the efforts to manipulate what happens inside the possibility space (e.g., actions) what works, but the stabilization of the possibility space through both limit-setting and the management of the transition costs of intertemporal transformation. Ultimately,

contrary to the dominant neoclassical conception of economic growth which gives prominence to the ingredients required for growth, the proposed conceptual framework gives prominence to the space in which growth can happen. Rather than relying on a unique recipe, the proposed conceptual framework sets up a *possibility space* in which multiple and unknown recipes can emerge; a space where *cooking* takes place. That these recipes emerge within limits that ensure sustainability, rather than in a limitless world, is indeed one of the major ways in which the set requirements in Chapter 3 are met through this dissertation's contribution.

Perhaps the two requirements addressed the least are those related to the levels of (dis)aggregation of social interaction and their implications in the process of development, and those related to extending the analysis to the local and regional levels. In Chapter 4, the argument is made that the proposed conceptual framework is flexible enough to be applied to analyses at every level—from micro, to meso, to macro—as well as for any kind of country, aggregate of countries, or other disaggregations within them. The problematic presented by quantifying the limits by which a possibility space is bound, as well as the impact flows have in further adjusting such limits (be it inter-local, inter-regional, or inter-country), is very different in scale although very similar in principle. The basics of managing wealth are likewise similar in principle and different in scale at different levels of analysis. Given these similarities, and the resource constraints faced in completing this research, further developing these nuances would not have added considerable value at this point.

A final set of requirements is also discussed in Chapter 3. It includes addressing some of the most important current limitations that the market, or other cooperation

mechanisms, create for countries in the process of development: (a) the diversity of the time horizons, critical-paths, and other temporal and physical limits of wealth that no single market can coordinate; (b) the coordination of uncoordinated markets through the provisioning of consistent and systematic signals and information that can extend the effective time dimensions under which markets operate; (c) the process of shaping through policy the elasticities of different kinds of wealth, so their formation, complementarity, substitution, and transformation can be strategically and intertemporally managed so as to enable the attainment of self-reinforcing state (this implies managing both stocks and flows of wealth to achieve intertemporal optimization of their value generating capacity); (d) the management of the entropy created by uncoordinated markets, and by the structural transformation of the economy that ultimately degrades the relative stocks of wealth, and that generates shifts in the material and social structures that create winners and losers; (e) the coordination and management of the implications that the global social structure has on local and international markets; on countries' flows and stocks of wealth; as well as on the flows and stocks of public and global goods; (f) the management of the process of distributing a country's stocks and flows of wealth among its citizens, as well as of the value extracted from them (rather than the traditional focus on managing sectors, projects, and the allocation of labour and capital—the ingredients); and (g) the minimization of excessive upswings and downswings in the functioning of a society that create social costs that, in turn, are not necessarily fairly distributed.

With regards to these, the proposed conceptual framework is also successful. The different time-horizons that characterize different classes of assets are coordinated

through the artifice of transposing them against the background of long-term cycles (in the case of this dissertation, the Kondratiev long-waves). This allows for the conceptualization of a cohort of classes of assets at different stages of their own development—the “fabric” of the wealth of a country at different stages of long-term cycles. Such understanding, it is argued, provides a very useful tool to comprehend the process of structural transformation that underpins the process of development, and to address, in a timely manner, the mitigation of the costs of such transformation, including the supporting of those who absorb the highest cost throughout it.

Additionally, the proposed conceptual framework gave prominence to the importance of the possibility space and the need for it to provide a clear and stable intertemporal environment for the process of social, economic, and political change to be more effective and efficient (e.g., by avoiding excessive up and downswings of the economy) in leading the country towards the achievement of self-reinforcing state. This possibility space, and the corresponding critical-paths, provide the basis for the analysis between the complementarities, substitutability, and transformability of the different classes of assets.

Finally, by introducing the impact of inter-country flows, and by giving prominence, not to their monetary denomination, but to the physical units of wealth embedded in products and services, as well as their intertemporal entitlements on wealth, the proposed conceptual framework also accomplishes integrating, the impact of global natural, material, and social structures and their limits, in distributing and allocating wealth and wellbeing among the population.

In terms of the economic modelling key messages discussed in Chapter 3 (see

Table 3-12), the proposed conceptual framework succeeds in capturing the stochastic and thermodynamic nature of the process of social, economic, and political change behind development. It also succeeds in bridging intra- and inter-temporal dimensions through the artifice of using long-term cycles (e.g., the Kondratiev long-waves) as a reference point to transpose the value curves of the different classes of assets against the different stages of such cycles. Furthermore, it also bridges the micro- and macro-dimensions of the development process by focusing on defining macro-limits (the possibility space), to allow for micro-actions to take place within them (the process of social, economic, and political change). Furthermore, the proposed model in which the suggested concerted wealth management is conceived (developed in Chapter 4 and further refined in Chapter 5), provides a frame of reference for understanding the transitional dynamics of change, and, therefore, for managing the process of development, where the currently predominant neoclassical model does not. Finally, the proposed model avoids relying only on monetary denominations and, instead, combines actual physical variables and equivalencies to determine the intertemporal value generating potential of the classes of assets, which compose a country's wealth. The relative value of those quantities is influenced by the stages of the economic cycles, as given by the long-term cycles and, therefore, not constant at every point in time. The only constant, the model argues, is that given by the ecosystem physical realities.

Finally, the proposed model clearly defines what self-reinforcing state means through the identification and definition of optimal value extraction and optimal value allocation. These give the process of development a clear success path and the means to measure progress towards attaining self-reinforcing state in a much more effective way

than that in which the old paradigmatic measure of GDP has or could.

The Social, Economic, and Political Consequences of the New Paradigm

Previous chapters suggest some implications of the proposed conceptual framework. For example, Chapter 4 discusses the shift in conceiving policy-making as a limit setting enterprise, rather than as an incentive or disincentive provisioning one. Likewise, Chapter 5 suggests measuring economic growth, not as the difference between output from one year to the next, but as the overall change in the intertemporal value generating potential of all classes of assets. Chapter 3 similarly introduces the idea that, rather than continuing focusing on economic growth, the idea of optimal value extraction is a far more appropriate way to align a society towards the attainment of self-reinforcing state (this concept is further developed in Chapters 4 and 5). Chapters 2, 3, 4, and 5 all touch on the implications that the proposed conceptual framework has in terms of making the managing of the costs that result from the structural transformation of a society, a central function of wealth management: a function that can have extremely relevant implications in enabling or constraining the attainment of self-reinforcing state. Finally, Chapter 5 offers a clear conceptualization of the optimal allocation of value extracted, and offers specific insights on potential policies that could also enable the achievement of self-reinforcing state.

Summarizing in this section all of the consequences that, if implemented, the new paradigm would have, will require repeating a considerable portion of this dissertation. However, other practical implications exist that have not been addressed in previous chapters. These will be developed over the next sub-sections.

Setting the limits of the possibility space.

In the first place, the process through which the determination and the setting of natural, material, and social limits that is at the core of the conceptual framework proposed, is not fully specified.

In Chapter 3, a number of approaches to measure the limits imposed by the ecosystem are discussed. Given the already vast knowledge accumulated, it is perhaps in the area of natural limits where the challenge faced in adopting the proposed conceptual framework is most manageable. Conceivably, one of the main limitations that still exists in this respect is that, given the ways in which the carrying capacities and availabilities of natural resources are calculated, difficulties may arise in applying the proposed conceptual framework to different levels of aggregation. For example, it might be possible that the calculated limits for a specific class of assets are available at the micro but not at the macro level, and that, on the contrary, for another class of assets, they might be available at the macro but not at the micro level. As a consequence, setting meaningful limits at one common level would require the conversion of one or more calculated limits, so as to ensure that all the limits are consistently referring to the same levels of aggregation. This kind of conversion might not always be straightforward, and, therefore, it may introduce biases and a level of uncertainty that would require risk management techniques to account for them, as well as to account for the potential impact they may have on decision making.

When it comes to material limits, though, the challenges are considerably bigger. While some aspects of these limits exist about which enough information is available (for example, the energy consumption required by all physical products, or the type of

connectors embedded in these products, or the water or energy inputs required to manufacture or produce certain goods, or the relationship between urban centers and the levels of public infrastructure), there are others which are infinitely more complex to assess, for which limited or no information is available.

For example, the portfolio of public infrastructure is composed of a considerable large and diverse array of assets with different useful lives, different purposes, and different degrees of complementarity and substitutability among them. Even if the proposed conceptual framework required us to only narrow the material limits at the broader level of each class of assets, translating the complexity of this portfolio of public infrastructure and other material structures into a specific volume limit for each class might prove to be too complex. A potential solution could lie in estimating the intertemporal potential demand of classes of assets' stocks by relying on a standardization of estimated demand over their lifetime, based on a reduced number of broader categories of infrastructure.

In setting the material limits for intangible produced capital, the influence that the consideration of physical infrastructure has would be multi-dimensional: intangible produced capital requires physical media for storage, sharing, and usage. If, for example, there were two options for storage—physical and digital—it would be clear, then, that digital storage will require less physical space. Thinking about the material limits imposed by physical storage could require adding up all the available physical storage space as well as all of the existing codified knowledge, and determining whether space limitations impose any limit towards the accumulation of additional quantities of the intangible produced capital. Similarly, the kinds of physical storage and codification of

knowledge available might also introduce logistic limitations that might impose limits to the accessibility to these intangible produced assets.

Given that more dimensions could be further added to the analysis, evidently, there is a great degree of complexity in translating all of these dimensions of real material limits into a specific material limit for a specific class of assets; particularly, if these limits are to be both representative and relevant, in terms of their role in effectively limiting the process of social, economic, and political change. Nevertheless, perhaps a targeted survey conducted for a representative sample of key individuals or enterprises that influence the creation of intangible produced capital might help reveal their perceptions about the present and future limitations they are facing, or might yet face in this regard. The point is that the setting of different limits will require different techniques in order to determine them.

For social limits, the difficulties are also considerable. In this particular case, the challenge would be more of achieving coordinated change, than true complexity in the task. This means, specifically, that if, as suggested in Chapter 4, policy-making would become a limit-setting endeavour rather than an incentive/disincentive one, then each policy would clearly stipulate specific implications in terms of the limits imposed to all the classes of assets affected by the policy (quantifying them in terms of physical units of wealth). An analysis and adequate aggregation of all the limits imposed by all the existing laws over a class of assets will provide an accurate picture of the social limits by which a specific class of assets is bound. This could also apply to global social limits, if international agreements were required to state such limits.

However, since this is not actually the case, consolidating the effects that policies,

organizations, and the rules and routines they embed will have in each class of assets, presents considerable difficulties. Proxies, like corruption or governance indices, might provide an overall framework for assessing such limits, but even these are usually calculated with an entire country as the unit of analysis. As a consequence, dissecting how these translate at the class of asset level, will again make the process difficult.

As in the case of material limits, several methods might be needed in order to approximate social limits. None of them, however, are likely to produce the specificity that modifying national income accounting, labeling, and other related standards, as well as the approach to policy making, could have. Hence, the argument that changing them can become the required Trojan horse that could finally create change in the way we manage the development process and, therefore, aid or its substitute: concerted wealth management. After such changes are introduced and, as a result of them, the information of content and entitlements over classes of assets of every good and service, every law, every activity, and everything that draws from wealth would be available from the start and would create the possibility for aggregations to be made at any level, for limits to be set at any level, and for possibility spaces to be defined and monitored at every level.

Measuring wealth.

As a centerpiece of the proposed conceptual framework, it is argued that there is not that much benefit in measuring wealth using a monetary denomination. Doing so can not only present a number of technical difficulties likely to result in biased valuations; it can also, in turn, negatively affect the allocation of resources through those biased valuations. Furthermore, such monetization will also feed into the illusion that absolute limits imposed by nature, can be made relative through money, or that, because they are

“correctly” priced, such limits would be automatically protected. Chapter 5 alerts about the risks in believing that just because the monetary costs of manufacturing a product or providing a service in different countries diverge, they do not embed in them very similar amounts of wealth, and represent very similar costs to the ecosystem. Natural limits are bound by space and time and cannot be overcome; relativizing them through their representation in monetary terms creates the illusion that they can be, and this is a very risky avenue that has already brought humanity into an environmental crisis.

Nevertheless, not all classes of assets are easy to quantify in terms of their physical aspects, specifically because their physical dimension does not necessarily capture their true capacity to generate value. This is the case, for example, of intangible produced capital (as its value generating capacity depends on ever changing social structures that give certain rights and obligations to their owners). In this particular case, however, approaching such a challenge from the epistemological and ontological basis of Wittgenstein’s philosophical thought can be enlightening.

Natural and tangible produced capitals are both defined by their physical characteristics. These characteristics, in turn, determined their lifecycles and useful lives. Social structures can build on these space-time realities to create bounds regulating their use; yet, it cannot really change them.

On the contrary, in the case of intangible produced capital, it can only exist if its existence is embedded in the social structures. Furthermore, both its space-time characteristics need to be specified by such structures as well, as per se, this kind of capital does not possess meaningful characteristics on its own; its potential to generate value is intrinsically linked to social structures that are in themselves not timeless nor

absolute but time-bound and contextually relative.

This means, as a consequence, that the value-extracting potential of a class of assets such as intangible produced capital, is determined by the social structures. Without them, it would still be useful, but without the status of being private property and, therefore, scarce, its value in monetary denomination would be close to zero (e.g., open-source software that is freely available over the Internet). On the contrary, stringent social structures that provide strong proprietorship rights, as well as an artificial long proprietorship life, can make intangible produced capital to become almost invaluable in monetary terms. Furthermore, ownership characteristics allowed by social structures have a direct implication in the distribution of wealth and wellbeing in a society. It is not markets nor only fortune what determines the value of intangible produced capital, but the social structures behind it.

This is yet another reason why measuring wealth and using such measures as the yardstick to evaluate sustainability and equality, are essential. Without such measures, the impact of social structures gets hidden, lost in monthly and yearly flows of money, as well as in price figures. With the proposed measurement in physical units of embedded wealth and entitlements over wealth, it can be clearly put in evidence how social structures can create wealth and determine its allocation and the allocation of its proceedings. Intellectual property laws raise the price individuals would have to pay if such laws did not exist. Therefore, this kind of law effectively dictates the transfer of wealth from those who are not given such intellectual property to those who are.

How Does the New Paradigm Relate to Other Development Paradigms?

So far, and purposely left until the end, the discussion of highly contested and

ideologically charged concepts, as well as existing development paradigms, have been avoided. The use of Wittgenstein's epistemological and ontological framework demanded it. As previously quoted, in *Philosophical Investigations* (Wittgenstein, 1958, p. 57, paragraph 144), he states,

I wanted to put that picture before him, and his acceptance of the picture consists in his now being inclined to regard a given case differently: that is, to compare it with this rather than that set of pictures. I have changed his way of looking at things.

Likewise, the quotation from Keynes included in the Preface of this dissertation showcases the importance that “struggling to escape from habitual modes of thought and expression” (Keynes, 1957, pp. v–vii) was expected from the attempts from the readers of this dissertation in assessing its content.

Up to this point, it is probable that readers have consistently and systematically questioned many of the statements put forth throughout this dissertation. In doing so, they probably are tempted to use “that” set of pictures, the ones they have before them from their past readings and studies, rather than “this” set of pictures; that is, the ones put before them throughout this dissertation. The reason why Wittgenstein was so adamant about constantly reminding his audience about the reference points against which they were evaluating his remarks, was precisely because using different “pictures” distorts and confuse the essence of what is being communicated. He was not looking for understanding (which could mean many different things), but for changed “ways of looking”: this is, changed behaviours and practices. And this is precisely, as also discussed in the Preface, the suggested measure of success for this dissertation: stopping

what does not make sense continuing and putting us on our way to getting things done.

Chapter 3 introduces a number of words and meanings on which the proposed conceptual framework is built. Such words and meaning were carefully chosen so as to help the reader adopt new pictures that ultimately would allow them to see anew. Nevertheless, it is quite impossible not to use a few terms which can bring back the reader's inclination to revert to old pictures. Among such, *development*, *wellbeing*, *sustainability*, and *self-determination*, could be mentioned. In spite of this possibility, no explicit meaning for some is provided, precisely to avoid falling back into debates that would not only "incline" the readers towards, but might have ended up even reverting them back to their old frames of reference. Furthermore, where no precise meanings are provided, a silent point was being made, just as Wittgenstein states that the most important part of his philosophy could never be written (Flowers & Ground, 2016). The intention of remaining silent about those reflects, most of all, the epistemological and ontological conclusion that discussions surrounding them cannot lead to any real and practical conclusion—this purposeless exercise is far away from the objective behind writing this dissertation. They ultimately rely on axioms that cannot be reconciled. As already discussed in Chapter 2,

Where two principles really do meet which cannot be reconciled with one another, then each man declares the other a fool and heretic. (Wittgenstein, 1969, paragraph 611, p. 81)

A great deal of the senselessness of the debates about aid effectiveness and development paradigms, as well as the opportunity costs they imposed, comes precisely from the fact that they could hardly ever be settled. In the most Wittgensteinian fashion, it is much

more productive to dissolve their existence through the realization that if such debates were to be taken to their ultimate consequences, they will reach incompatible axiomatic stances which no side of the debate is willing to compromise, and about which unequivocal truthfulness or falsehood could not probably be established, anyway.

The temptation in the social, economic, and political sciences is to be specific, and, confusingly, both precise and generic, as a mark of scientific achievement. However, trying to agree, for example, on a precise definition of wellbeing might be more detrimental than beneficial. Agreeing, perhaps, in the explicitness about each party's definition, as well as about being mutually respectful about their differences, could be a more conducive approach to move past those things which can hardly be widely agreed on.

With this in mind, the proposed conceptual framework and its mathematical formalization are flexible enough to allow different parties, relying on different axioms, leading to different words and meanings, as well as different standards, to still guide their development efforts in a concerted fashion with others. As has been argued throughout this dissertation, a need exists to stop trying to manipulate what happens within a possibility space (e.g., actions), and instead, to start trying to understand its inner logic to, in turn, improve its limits (e.g., conditions) and its characteristics (e.g., dispositions).

More specifically, in regards to its position against other development paradigms, the proposed conceptual framework cannot be fully compared. After all, following Wittgenstein's logic, something cannot be seen for what it is, if a different set of pictures is used in "seeing" it, rather than the set of pictures on which it was constructed. Nevertheless, a few things can be said.

The next few paragraphs draw from an assessment of the history of development theory, based on several renowned development economics textbooks (De Janvry & Saoudoulet, 2016; Anthony P Thirlwall, 2011; Todaro & Smith, 2015); some others books which critically look at the development, progression, and complementarity or divergence of ideas in the field (Hunt, 2002; Meier & Stiglitz, 2001); and, on a recent paper by Collier (2015) in which he discusses the most recent developments and trends in the field. The purpose of this historic assessment is twofold: first, to find commonalities and differences between the methodological approaches of existing development paradigms, and that of the proposed conceptual framework emanating from this dissertation; and second, to account for apparent practical similarities and differences between these old paradigms and the new one proposed here.

In a nutshell, the history of development ideas showcases: (a) a preference for macro level and partial explanations without much micro foundations, usually in the forms of monothematic fashions; (b) considerable reliance on strong assumptions, sometimes not fully disclosed but implicitly sustained; (c) proposed solutions that, while consistent with the theoretical frameworks or the diagnostics offered, are plausible but not uniquely necessary and, therefore, display some biased preferences of their exponents; (d) deeper understanding of the movement of the variables and the interrelation between their movement, rather than a deeper understanding of the functioning of the underlying system to which these variables belong (resulting in limited and partial mechanistic explanations); (e) considerable focus on the description of an undesirable state (a point A), a desirable one (a point B), and the definition of a unique set of policies that aim at transforming the undesirable state into the desirable one (from

A to B) without specificity about the transitional dynamics and the costs these impose; (f) a mostly linear and historically determined conception of the development process; (g) as previously discussed, a many times implicit reliance on axiomatic beliefs, sometimes obviated enough that it may give a paradigm the appearance of divergence from others, although in the final analysis it may not be that different—many of the differences end up being about biased preferences; (h) an “us” and “them” duality of exclusive development states (e.g., developed, developing; North or South); and, (i) lack of usage of explicit and consistent space and time reference points that can ensure soundness in the analysis and help avoid confusion through the mixing of divergent and incommensurable reference points.

A few examples illustrate the points made in the previous paragraph. With respect to the use of assumptions, it is clear that not only mainstream economists incorporate them into their models. Theorist from the left, such as Emanuel, Amin, and Cardoso, also incorporate them, although less explicitly. For example, Emanuel’s analysis of unequal exchange relies on three important assumptions: capital is mobile but labour is not, the rate of profits is assumed to be equal across countries, and products exported from the periphery cannot be exported from the centre (Hunt, 2002). These are as unrealistic as many of the assumptions made by mainstream economist, but without them, Emanuel’s whole theoretical justification of unequal exchange falls down. Similarly, Amin makes another highly contestable assumption: the centre is capable of autarky but the periphery is not. Finally, Cardoso’s historical analysis of dependency contains the implicit assumption that, in spite of continually morphing, dependency is a permanent state in the sense that it cannot be overcome without revolutionary change; dependency is conceived

then as a state from which no gradual exit is possible.

Evidently, economics-based development paradigms also rely on assumptions. For example, the discussions about inequality are usually focused on a posteriori fixes. There is a hidden and implicit assumption behind this approach: that inequalities are naturally occurring and that not much can be done to preventing them, but only to correct them after they express themselves. In fact, there is an assumption that if corrective actions are taken, it is not only likely that inequalities will not be prevented but, furthermore, that due to such corrective actions everyone would end up being worse-off (as Pareto-efficiency would be prevented).

All of these assumptions from the left and from the right showcase that, regardless how comprehensive, open, and explicit each theorist wants to be, there are still a number of assumptions lying so deeply underneath, that they become hard to trace. This lack of unity in the method and in the scientific standards followed, “muddy the waters” (to use once again a Wittgensteinian expression) and, within the confusion it ends up creating, it gives room to apparent, but unreal, problems that get discussed and debated over and over again, seldom arriving to practical conclusions. Given hidden but essential axiomatic assumptions, such debates could never lend such practical conclusions. A Wittgensteinian approach to “dissolve” these problems, focuses on unearthing assumptions like those discussed above, to then establish that ultimately, many of these disputes are axiomatic and cannot be settled in spite of all the apparent intellectualism surrounding the arguments of both sides.

Another example that results from comparing different development paradigms helps illustrate the point made in Chapter 2 with regard to the possibility of the same

phenomena being explained by multiple and concurring explanations. It is precisely because of this potential coexistence that most explanations do not really offer an account of causality, but only a plausible account of reality. This means that, ultimately, many explanations provided by development paradigms can coexist, and if they can, then none can claim correctness while claiming erroneousness of the others. That is, they become a matter of belief and interpretation of how the world works, and therefore, of axiomatic preference. For example, within the structuralist and dependency schools, some basic tenets are shared: trade is problematic for developing countries and the possibility to develop; and, comparative advantage theory does not apply in the case of developing/dependent countries. These tenets are also shared, for the most part, by others on the left, including Marxist and neo-Marxists, even if they may not agree with the particular explanations and solutions proposed. They agree on the principles but differ on the specifics, and, therefore, on the solutions. Prebisch, for example, justifies the failure of comparative advantage due to differences in demand elasticities, while Emanuel does so on the grounds of divergence in exchange prices among countries. In turn, neo-Marxists, rather than focusing on comparative advantage, explain the problematic of trade through the role social class plays in the distribution of surplus value and how a position in the periphery guarantees unequal exchange (mostly through monopolistic and monopsonistic trade) (Hunt, 2002).

The collection of plausible explanations discussed in the previous paragraph showcase, again, more belief and interpretation than truly testable hypotheses (at least not in the way some of the “high-development theories” were conceptualized and developed). In fact, as Popper has criticized, when rebutted by empirical evidence, some scholars who

put forth such explanations tend to change their underlying theories and resulting explanations, making them non-falsifiable (Popper, 1965). Furthermore and as previously argued, by taking the commonality in these paradigms' explanations to their last consequences, it is clear that in the ultimate analysis, they rely on the same axiomatic assertions. Therefore, behind the scientific appeal and intellectualism of their theories, what really matters and makes a difference in the diagnostic and solutions proposed, are those underlying unscientific and untestable premises. (See, for example, Sen's (1960) analysis of balanced and unbalanced growth and how when looked at independently they both seem right, when looked at from each other's point of view they both seem wrong, but, in reality, they both share a great deal of common ground and, therefore, the alleged differences unreal.)

Some additional examples could illustrate this further. The idea of *basic needs* is, in principle, similar to that of Marx's *cost of reproducing the working class* (Hunt, 2002). They differ as a matter of degree and point-of-reference used. Usually, the concept of basic needs is not only related to the most basic biological requirements for the survival of human beings (as would be the case from the Marxist perspective), but includes, as well, longer-term concerns related to education, health, and overall capabilities and freedom. This is a matter of diverging degrees, as well as diverging explanations, about the reasons and motivations behind the need to fulfill them. From a Marxist perspective, an exploitative motivation exists based on the self-interest of capitalists who, in order to obtain surplus, require labour (which, for Marx, is the only source of value). From this point of view, the degree to which basic needs are then logically derived is dependent on the minimum investment required to sustain labour. Furthermore, if the supply of labour

is abundant, such minimum investment may be even lower, as it is likely that the definition of basic needs will be temporally limited so as to allow short-term, rather than long-term survival and development of the labour force (new and healthy labour can always substitute for old and sick labour).

On the contrary, from the basic needs paradigm perspective, the motivation for fulfilling such needs is grounded on a human-centric conception of progress which views human capabilities and freedom as an end in itself (Sen, 2000).

Nevertheless, embedded within this latter paradigm is an implicit and systemic view that capitalism, perhaps with a more human face, is still at the core of the solution to fulfill these basic needs. As such, addressing and fulfilling basic needs is mostly seen as an afterthought. It is a corrective effort to tame capitalism's wild instincts and *modus operandi*.

In summary, both paradigms draw from the scientific and irrefutable fact that human nature requires physical nurture; yet, they depart as soon as their space and time points of reference come into play. Once again, these points of reference tend to be axiomatic, and, therefore, a matter of belief and preference. Behind the cloud of scientism and intellectualism, the debate can be ultimately reduced to aspects about which agreement cannot probably be reached. In practical terms, this means that there are considerable opportunity costs in pretending they can be. This is precisely the kind of pseudo-problems that Wittgenstein method is particularly helpful in "dissolving" (Horwich, 2012).

A final example to illustrate some of the trends and common characteristics shown by development paradigms is that of lacking or inconsistent space and time points

of reference. When economists discuss, for example, increasing or decreasing returns to scale, implicit in their discussion is a consideration of space and time, otherwise the concepts of increasing and decreasing would be meaningless. Yet, in a complex economic system, returns not only exist in reference to the unit of analysis of the economist but in reference to how this unit of analysis fits within its macro-context, both from the dimensions of space and time. The specific dimensions used in any analysis of increasing or decreasing returns will change any resulting assessments; yet, often, considerations about these frames of reference are overlooked. Likewise, empirical validation of theories and models are influenced by the space and time dimensions of the data used. In a similar fashion, theories that rely on a linear conception of development tend to depend on space and time dimensions that although tautological in nature within the logic of the paradigms, are nevertheless used to support them.

For example, many theories from the left and the right implicitly assume that industry will always generate more value added than agriculture, and, therefore, that development requires a transition from the latter to the former as the predominant sector of the economy. It would only take a thought experiment imagining a world in which a nuclear winter has decimated power sources on which some produced capital rely, to realize that in such a world, agriculture might be the key wealth generating sector, at least for some time. Ultimately, development is not about the sectors but about value added, productivity, and demand, among others; and these are all highly contextual. A vision of sectoral transformation as an avenue towards development creates confusion as to where the real path towards development lies.

A final example on how the choosing of space and time reference points have

considerable impact on the formulation of theories can be given by the confusion several Marxist paradigms make between real and money wages. For example, Emanuel's analysis of unequal exchange is based on money rather than real wages; as a result, his analysis fails to account for the role of productivity and how simultaneous changes in both productivity and money wages may not affect real wages. His argument is only possible because he is using a reference point that allows him to back up his claim (Todaro & Smith, 2015). However, once the illusion is broken, his claims dissolve. Likewise, the dependency paradigm relies on a space-time reference point that situates countries in two distinct and impossible-to-join states using a notional rather than exact differentiation. Critics of this paradigm have suggested that, from a different point of reference, it is more plausible to affirm that all countries are dependent on others, and that the real problem is not really dependency as portrayed by the paradigm but something deeper about the way all countries relate (Hunt, 2002; Lall, 1975; Anthony P Thirlwall, 2011). If all countries are dependent on others, then the point would be to determine the degree and the qualities of such dependence, as well as how different degrees of dependence influence the levels of development achieved by different countries. It is clear then that, whatever reference points are used to conduct such an analysis, will also influence the results of the analysis.

To summarize this part of the section, it is not hard to see why Krugman (1998) argues that not only were many of the development theories incorrect in their predictions, but also, that when their predictions turned out to be correct, the real explanations of the events that took place differed from that offered by the theory making the prediction. Being based on axiomatic beliefs and preferences, many of the theories of development

seem to try fitting reality within their preconceived notions of the world, rather than fitting their theories within a more objective (in the degree that is possible) conception of it.

So far, only an assessment of other development paradigms has been offered without any reference to the new paradigm proposed in this dissertation. The best way to bring them together is, perhaps, by offering a comparison of their potential similarities and differences. A number of points can be made in this respect.

First, the new paradigm does not claim to offer a recipe but the tools to cook. As such, it does not provide predetermined states and transitions. The self-reinforcing state which is at the core of the paradigm is both precise and flexible; it focuses on those aspects about which something can be said and done, and then, creates a space for those about which it is senseless to be precise (e.g., wellbeing). Likewise, the possibility space, which is a central concept of the new paradigm, is delimited but not completely or precisely defined. Overall, the new paradigm offers an opportunity for unimagined solutions. This is very different from other existing development theories, which offer only linearity, predefined paths, and specific normative states (e.g., A and B). For example, some theories from the left can only imagine radical change through a revolution and a more-or-less predefined dynamic towards such a revolution taking place. This is why they tend to focus ad nauseam on the analysis of the problematic, rather than on the solutions (as only one seems possible).

Second, the new paradigm is clearly nested among absolute and relative natural limits, which then nest it, in turn, within socio-material limits. Ecological and environmental concerns are considered as necessary but not sufficient. There are other

limits that, while ultimately capped by the physical limits of our world, need to be considered as limits in their own right. For example, the proposed conceptual framework relies on the idea of function gradients as the practical expressions of the individual potential limits of each class of assets and their specific cohorts. Human capital, as much as intangible produced capital, are all capped by their own specific and unique sets of limits. Most existing paradigms instead have either no consideration at all for limits, they include them through proxy mechanisms, like prices, or they include only some limits but not all. For example, among the classical political economists (De Janvry & Saoudoulet, 2016), Malthus was perhaps the only one who theorized under the presence of absolute limits. Smith, Ricardo, and Mill all saw in innovation, market expansion, and specialization, means for continuous growth. Implicitly, then, the limits were imposed by the variables defined within the paradigm, rather than by specific space and time realities. Most other schools of thought had similar takes on limits; however, neoclassical economics have lacked any such considerations. As for environmental economists, given that they rely on the pricing system, it can be said that they consider such limits in as much as the prices manage to account for them. Ecological economists are more explicit about limits but given they are narrowly focused on the environment, they tend to miss the broadness of the socio-material limits proposed by the new paradigm.

Third, in the new paradigm, the allocation of resources and proceeds is contextual on the transformation process taking place. Each transformation is unique, as they occur through the simultaneous intersection of many different variables. There is no predetermined path offered, but a method to understand and manage the process. Instead, for the most part, some of the other paradigms leave it to tautological mechanisms to

determine such allocations: prices, markets, interest rates, profits, surplus value, and productivity, among others. These vary mostly in the approaches they take to either manage or manipulate such mechanisms, based on their understanding of how they work and what their influence is.

Fourth, the new paradigm explains the impact of trade as a result of real exchanges of wealth that impact a country's capacity to fulfill, intertemporally, the wellbeing of its citizens. It argues that, regardless of the biases introduced by prices and other considerations (including the overlooking or misrepresentation of any natural limits), any exchange of goods and services implies a real exchange of wealth that modifies a country's natural relative limits. This approach is quite different from many of the other paradigms that rely on pricing and markets to determine the terms of an exchange. Even those paradigms that criticize the mechanism determining such terms tend to offer solutions within the same mechanism, so terms can be improved.

Fifth, under the new paradigm, development is conceived as a continuous and never-ending process without exception. What changes is the scale of the portion of a country's society which is behind, as well as the distance towards self-reinforcing state. Likewise, development is defined as a collective process that is only possible through concerted wealth management. In contrast, almost all other development paradigms rely on the conceptualization of two or more different exclusive states with no clear intermediate possibilities or even transitional dynamics that could allow for the switching of states.

And finally, the proposed conceptual framework integrates in full the practical implications that social and political variables have in the process of development.

Through the socio-material limits that result from both existing socio-material structures and present policy decisions that get gradually embedded in them, these variables play a direct role in determining the value generating potential of all classes of assets. On the contrary, most alternative paradigms which have an economic basis do not consider social and political variables, and if they even discuss them, they do so by treating them as externalities, or as utility assessment modifiers that fit within the homo economicus paradigm. On the other side, the development paradigms inspired by the political economy analysis from the left, focus mostly on such social and political variables, although relinquishing to some degree the economic ones. They also tend to be less systematic and lacking of testable hypotheses that can lead to their potential falsification.

In summary, while a detailed comparison of the proposed conceptual framework with existing development paradigms is not possible in principle, a comparison of the methodologies and of their most practical implications, shows considerable differences between them. The new paradigm strives to dissipate some of the fog created by alternative paradigms by simply avoiding debates that seldom achieve practical results, and by focusing, instead, on drawing attention to the areas in which the biggest impact can be had.

Limitations

Due to resource and time constraints, this dissertation had to focus only in producing a solid conceptual framework on which future research could be based. There was not sufficient time to conduct an empirical validation or to explore, more in detail, how to operationalize the variables required to setting reliable limits that define the possibility space.

Nevertheless, the analysis that has already resulted from it has been extremely encouraging. The potential shown by the conceptual framework to offer a platform for serious inquiries, not only about aid, but also about the process of development and economic growth, has been established.

Future Research

Given the ambitious scope of this dissertation, from the outset, it has been established that the main objective was to develop a basic conceptual framework that would shift the received understandings of economic growth, development, and foreign aid towards a new paradigm.

In this light, the contribution made not only accomplished the development of said conceptual framework, but also provided a solid foundation for future research.

Three main tasks are necessary in order to further substantiate the proposed conceptual model. The first is to fully develop the mathematics into an internally cohesive system of inter-linked equations that fully support all of the conclusions derived from the diagrammatic/geometrical analysis performed. Second is to operationalize the determination and setting of natural, material, and social limits through adequate variable proxies. Third is to rely on the previous two tasks and on relevant data, to empirically test the proposed model through econometric techniques. This validation could empirically demonstrate the validity of the assessment of the conceptual problems of old-paradigm aid that negatively affect its effectiveness, as theorized throughout this dissertation.

Ultimately, the proposed research should lead to the testing of, among others, the following stylized hypothesis:

- Effective relative limits tend to broaden up for some while they narrow

down for others as the long-term cycles enter the destruction stage, and narrow down and broaden up, as well, for different groups, as they enter the creative consolidation stage.

- When compared to those of worse-off countries, the possibility space of better-off countries is broader and closer to the class of assets' natural limits, and have less or no classes of assets constraining the value generating potential of other classes.
- The function gradients of most classes of assets possessed by worse-off countries, in particular human capital, are less conducive to value generation than those of better-off countries. Furthermore, their function gradients are on average, proportionately farther away from their assets' natural limits than those of better-off countries.
- Better-off countries' resilience against the disruptive effects of both the destruction and creation stages of the long-term cycles, has consistently improved with time and is considerably better than that of worse-off countries.
- Natural, material, and social limits are stochastically related to each other. These, in turn, are stochastically related to the process of social, economic, and political change that takes place within the possibility space they delimit.
- Changes in the intertemporal value generating capacity of the classes of assets that compose a country's wealth are more accurate and stable predictors of a country's capacity to attain wellbeing than sustained

changes in economic growth.

- Countries which economic output consistently require exceeding the optimal value extraction levels that characterize the self-reinforcing state, are less able and less likely to sustain, intertemporally, the levels of wellbeing being enjoyed by the majority of their citizens in present time.
- At a given stage of the long-term cycles, there are higher average levels of matching and synchronicity between better-off countries' cohort of classes of assets' lifecycles and characteristics and the characteristics that are rewarded during that stage of the cycles, than between the latter and those characteristics and lifecycles of the classes of assets' cohorts belonging to worse-off countries.
- Better-off countries are more effective and efficient at matching the local and global demand for classes of assets with specific characteristics, as well as at matching the global socio-material structures, than worse-off countries are.
- Natural, social, economic, and political shocks, as well as inter-country flows, in the case of worse-off countries, have a more than proportional negative impact on their intertemporal value generating potential, than they have on that of better-off countries.
- Worse-off countries for which the function gradients for human capital have been closer to those of better-off countries for a longer period of time, have outperformed other worse-off countries (over the same period) in terms of multi-dimensional indexes like the Human Development

Index.

- Minority and disadvantaged groups in developed countries showcase similar function gradient differences against their countries averages than those that exist between worse-off and better-off countries. In-country convergence dynamics mimic those between-countries.
- Countries with a more stable and better-featured (i.e., better characteristics) possibility space outperform those with a less stable and inferiorly featured one.

Epilogue

This dissertation contributes to the literature by confirming that when looked at from a different point of reference—in this case, the alternative paradigmatic conception of economic growth and development advanced throughout the previous chapters, in itself, a considerable contribution to the literature—a conceptualization of aid that is not only different but also much richer, emerges. Furthermore, this dissertation also contributes to the literature by demonstrating that, when the current paradigm of aid is evaluated through a comparison to the proposed new paradigm, clearer reasons explaining its problematic effectiveness emerge as well.

While these two are considerable contributions to the field of international development studies, perhaps an additional third and last one has the most relevance due to its strictly practical nature. This last contribution consists of the idea of pushing for the implementation of already viable and tested modified national income accounting standards, as well as new accounting, trading, and labelling practices, both as part of a potential Trojan horse that, in conjunction with the proposed conceptual framework, could do more to change the aid and development enterprise, and humanity's addressing of environmental issues, than sixty years of circular debate have been able to do so far. Armed with new measurements and the proposed conceptual framework, humanity will have better information and tools to realistically, and more successfully, aim at ensuring its long-term survival and wellbeing.

But how do these contributions and this vision for the future fit into the world of aid today? How are the current institutions, actors, and praxis of aid supposed to be

influenced and changed towards adopting such a vision? To answer these questions, is advisable to restate the core of the arguments made throughout this dissertation.

The proposed conceptual framework is both pragmatic and relevant because its overarching purpose is to contribute to the intertemporal fulfillment of the wellbeing of the majority of human beings. Figure 6.1 below and the next few paragraphs illustrate how the new paradigm is aligned with such overarching purpose.

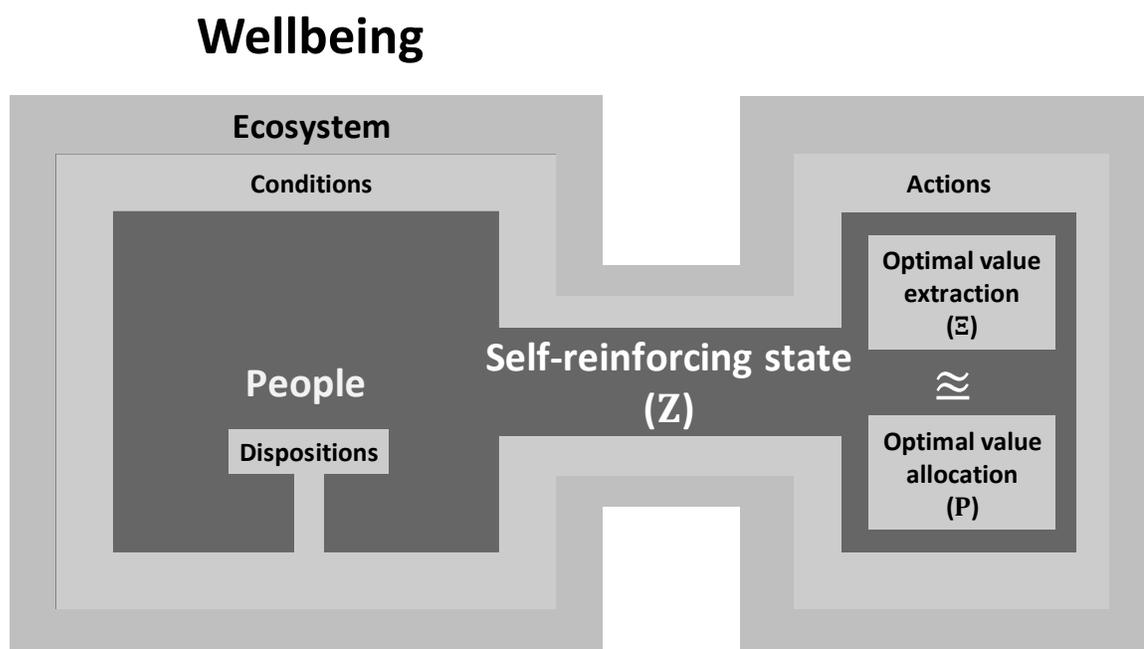


Figure 7.1. Concerted wealth management, the self-reinforcing state, and the attainment of wellbeing

In this dissertation, it is argued, the overarching moral human objective of fulfilling the wellbeing of the majority, can be realized through a two-tiered, three-purposes formulation. Given that the realization of wellbeing is dependent on the extraction of value from wealth, as well as on the allocation of this value among the

citizenry, the second tier of the formulation focuses on “optimal value extraction” (first purpose) and “optimal value allocation” (second purpose). This is represented on the right side of Figure 7.1.

The first tier, represented by the “self-reinforcing state” ensures that the previous two purposes in the second tier (i.e., optimal value extraction and optimal value allocation) are not disjointed. This is a key logical requirement given that the identity, value equals wellbeing, is one of the axiomatic principles on which the proposed conceptual framework is built. This means that optimal value extracted from wealth but unevenly distributed would not really equal wellbeing; and that, likewise, optimal allocation of value when such nominal value is too low, would not allow for value to equal wellbeing, as everyone might die of starvation rather than at least a few surviving. Hence the formulation of the self-reinforcing state, $Z \because E \cong 1 \cong P$, which is meant to bring us closer to the overarching purpose described above of fulfilling the wellbeing of the majority.

The third purpose, and hence the choice of “self-reinforcing” to qualify the “state” or condition represented by the above formulation, is that of empowering or enabling the group of individuals living within the possibility space (in whatever choice of unit of analysis—e.g., community, country, global) to act towards the attainment of wellbeing through a process of development (i.e., “actions” on the right side of Figure 7.1). These acts are the result of dispositions and conditions by which they are bound. In turn, wellbeing leads to better dispositions and conditions, which reinforce better actions, thus creating a virtuous circle. In this view, such virtuous circle is one in which wellbeing begets wellbeing: the self-reinforcing state.

Nothing of the above can truly be achieved if it does not come from the will and determination of groups of individuals; and this can only come from within, not from imposition or from social, economic, and political manipulation. The idea that such a group has to rely on themselves and themselves only to come up with the collective will to achieve such a task is the ultimate enabler of the realization of potential wellbeing. One could think, for example, of an idealistic world order in which there is global agreement to fully respect perfectly calculated and accurate natural and socio-material limits, but in which the population within smaller units of analysis is failing at resolving their own coordination and control problems of cooperating among them, and are, therefore, unable to simultaneously approximate optimal value extraction and optimal value allocation. Without such will and resolve from within, the rest is ornamental; even that beautiful and idealistic orderly world suggested above would be useless. Conceiving the process of development, concerted wealth management, and their ultimate purpose of attaining the intertemporal wellbeing of the majority, makes it impossible to deny or obviate that, in the final analysis, it is because of us, human beings, that development doesn't often work and, hence, it is only us who can make it happen. There are no magic formulas, no short-cuts, or short-circuits that can relieve us from our responsibility towards changing ourselves and towards, together, changing our collective.

Finally, Figure 7.1 illustrates another building block on which the proposed conceptual framework and its resulting paradigm rest. In the context of our ecosystem, people's dispositions and actions influence the conditions that human collectives impose on themselves. Through the interaction of the ecosystem and these dispositions and conditions, as well as the actions these beget, bounds are created: the natural and socio-

material limits that define the possibility space. Within this space, people act and their actions determine the outcome of their efforts in achieving wellbeing. Dispositions, conditions, and actions are then intrinsically linked to each other; they not only influence but determine each other. They also interact with the ecosystem through a two-way relationship in which the ecosystem bounds them, and through which the ecosystem is cared for or destroyed due to them. In the end, this relationship between people's dispositions, conditions, and actions, and their ecosystem, determines how well humanity caters to their own wellbeing needs and wants. This is the nature of the self-reinforcing dynamic through which the new paradigm claims to be central to the achievement of wellbeing.

This delineation of limits resulting in the logical definition of a possibility space is one of the main outcomes of having adopted a Wittgensteinian epistemological and ontological approach. The purpose of such separation between what is inside and outside of such space, aims, in the same fashion Wittgenstein did for philosophy, to separate for a reimagined new paradigm, what should or should not be the subject of its praxis (or at least to separate those subjects on which we know enough to make a difference—in a Wittgensteinian way this means our praxis leads to its intended results—from those for which the history of our praxis has demonstrated our lack of real knowledge—given it does not necessarily lead to its intended results).

The natural and socio-material limits proposed throughout this dissertation recognize that we live in a material world in which everything around us has material consequences. This approach does not deny in any way that an immaterial reality might exist, or that if it does, it may have an impact on the material dimensions of life within

the ecosystem. However, the approach followed in this dissertation does set a limit between this potential immaterial world and the material one, again, in the same fashion Wittgenstein advocated for philosophers to move away from their obsession to find metaphysical answers to everything. It does so because the existence of the former would have the logical consequence that we can know it only by approximation and that as such, our experiences and rationalizations of it would be axiomatic and therefore prone to endless disagreement. The riddle of the immaterial world, to paraphrase Wittgenstein, lies outside space and time (Wittgenstein, 1922, p. 89 para. 6.4312).

In practice, this means that while not denying that there might be immaterial variables that could play a role in the process of development, and while recognizing that on many occasions, development decisions can be driven by them, there is always a moment in which such drive faces the realities of the material world: praxis require resources that are bound by space and time; its interventions and outcomes are also bound by considerations of space and time. Of these material realities, we can say and do meaningful things. In fact, we possess considerable practical knowledge to be meaningful in our actions about them. Of the immaterial ones, we know little, at least in the Wittgensteinian conception of knowledge as expressed through practice. Furthermore, the point at which these immaterial aspects and the praxis of development merge, are highly contextual and therefore problematic in leading to any kind of universal knowledge that could be prescribed from the outside of the possibility space. In line with Wittgenstein's ideas about words and meanings, as well as the relationship between rules and routines, the working out of those issues that emerge in the praxis of development through the immaterial, can only take place within the confines of a possibility space. In the same

way that laws have to be general enough in order to be applied (and therefore, a social process of interpretation and internationalization through the setting of stable rules and routines is required for them to be adopted and upheld), development praxis could only, in the best case, share knowledge, leaving it to the inner logic that reins in each possibility space to interpret and internalize it. This means that the outcomes of such sharing will not only vary in terms of their internalization timelines but also in terms of their emerging outcomes and characteristics.

The immaterial realities are then those things about which, preferably, aid's praxis should remain silent. If we insist in not doing so, at the very least, we should do so after, and only after, the other things about which we do really possess knowledge have been taken care of.

The possibility spaces that are delineated within the proposed natural and socio-material limits, are accordingly, non-normative, except perhaps and only partially, with regards to the characteristics that due to our human nature are engrained in the ways in which we relate to and collaborate with others (this relates to Wittgenstein's idea of "forms of life").

At the core of this extremely important distinction on which the proposed conceptual framework is built (i.e., the limits of what should and should not be the subject of aid's praxis), are the ideas of dispositions, conditions, and actions introduced in Chapter 4 and illustrated in Figure 7.1. above. In Chapter 4 it was argued that a possibility space is not a black box. Just because we cannot manipulate or fully capture the causalities between actions and outcomes within such space, this does not mean that we do not possess knowledge about the nature of human interaction to foster the

improvement of the characteristics or dispositions within such space that can potentially lead to better actions and outcomes. Throughout this dissertation, it has been argued that setting clear limits and improving the characteristics of the possibility space these limits create, both lie on the side of what development praxis should say and do something about (i.e., setting the conditions and fostering better dispositions). On the contrary, throughout this dissertation, it was argued that the impression that we could manipulate what happens within such spaces (e.g., actions) is an illusion that needs to be dissolved, and that such manipulating attempts should not be the subject of aid praxis. In a sense, it has been implied that a considerable part of the ineffectiveness of development efforts, and more specifically aid, has resulted from our obsession to control an inner logic and process that cannot be (e.g., the unrealistic timeframes behind the change expected from aid interventions; the transfer of knowledge and institutional forms that fail from being internalized, etc.). It is in fact highly contradictory that even when many times we recognize how much there is still to know about the social, economic, and political realm, we believe that we can perform an action that would lead to a specific result, as if the space where human action takes place was a vacuum in which mechanical laws applied over mechanical beings, resulting in invariable outcomes. There is only so much we can expect from this kind of praxis. Moreover, when it comes to these kinds of manipulations, many times the biggest risks lie, not on the realm of what we know, but on that of what we do not know. The real dimensions on which our existence has come into what is today are beyond our limited comprehension even if only because our knowledge of the past cannot ever be perfect or complete. Therefore, intervening in the present in ways in which nature itself has intervened in the past through thousands or

even millions of years, opens up a Pandora box that not only tests the limits of our knowledge, but it is very likely to throw our ignorance back in our faces.

Consequently, and as argued above and throughout this dissertation, our efforts should only be allocated to this kind of manipulative action only after we have focused on the conditions (e.g., limits) and on fostering better dispositions. Likewise, it is suggested that we should only attempt these kinds of manipulations on very specific cases in which we are looking to achieve very specific and short-term objectives.

An analogy could be used to illustrate this dynamic between limits and the spaces they delineate. We could think of riverbeds and the rivers that flow through them. In nature water flows from high to low elevations, following the path of least resistance, which is given by the geological conditions of the land through which it flows, as it relates to the characteristics of the body of water flowing. As the water flows, it creates and consolidates, with the passage of time, a riverbed. As the riverbed is consolidated into the ground, it bounds more and more the flow of water. As long as there is an equilibrium between the riverbed characteristics that were created by the interaction of the geological conditions, and the volume and force of the flow of water, the riverbed will contain the flow within itself, and the flow will further consolidate the riverbed. Changes in one will undoubtedly lead to changes in the other.

A similar relationship exists between the natural and socio-material limits and the possibility space they delineate. The force of natural and social forces that flow through the possibility spaces follow their own logic, the possibility space is just a reflection of such logic within the limits imposed that created such space in the first place (an iterative process). In time, however, given that such possibility space and limits exist in unison,

one influenced by the other (as riverbeds and flows of water), the possibility space starts embedding rigidities that accumulate through time and that tend to constrain the forces, although only within certain ranges (just as the riverbed contains the river as long as the volume and force of the water remains within certain parameters). Changes in the natural and social forces will change the possibility space, but these changes will be more or less transformational depending on how the balance between limits, space, and forces remain, or are altered by changes in one or the other that alter, in turn, the original relationship.

This illustrates the rationale behind the proposed conceptual framework: it makes more sense to focus on the delineation of the limits and the improvement of the characteristics within the spaces they create, than changing the inner logic of what flows through them. Doing the opposite would almost equate to trying to change the watercourse of a river by changing the properties of the water in them, rather than through changing the riverbed. Would it not make more sense, as humanity does, to change the riverbed and let the same water flow through the new course?

Changing the riverbed, as scientifically based as it can be, will nevertheless generate unintended, unforeseen, and emergent consequences. The specifics of the interaction between the water and the new riverbed will likely point to limitations in knowledge and the analysis, and to required adjustments to deal with such limitations, as well as with emergent characteristics resulting from the real, not theoretical, interaction of water and riverbed. Still in this situation, it would be hard to think that it is advisable to focus on changing anything in the water itself, rather than focusing on the riverbed.

At this point, we can finally address the questions presented at the beginning of this section: how do the ideas proposed throughout this dissertation fit into the world of

aid today? How are the current institutions, actors, and praxis of aid supposed to be influenced and changed towards adopting the ideas proposed?

With respect to the first question, as discussed in Chapter 5, the consequences of adopting the proposed conceptual framework as a substitute of the current paradigm, impose considerable changes in the praxis and institutional basis of aid. For example, the new paradigm would require rebalancing the inferior priority that emergency related aid has vis-à-vis development aid. The new paradigm argues it is more cost effective to ensure that wealth is not deteriorated or destroyed, than investing in its formation (as described in Chapter 3, the costs of natural disasters considerably exceed the flows of aid). Such rebalance between emergency and development related aid would also be called for given that a sizeable portion of what is considered development aid is spent in actions that directly or indirectly aim at manipulating dispositions and actions, rather than at changing and improving the conditions, and at forming dispositions.

The new paradigm is based on an alternative formulation of the ideas of economic growth and the tools that are based on them (i.e., development planning and national income accounting), which are an essential part of the current aid paradigm. This means that a considerable change in the approach to volume, allocation, and delivery decisions would result from the adoption of the new paradigm (see Chapter 5). For example, as discussed in Chapter 2, the World Bank, other international financial institutions, as well as some bilateral donors still use the Revised Minimum Standard Model (RMSM) and the World Bank Country Policy and Institutional Assessment (CPIA) to make or at least inform (but nevertheless, heavily influence) the broader debate about the volume and the allocation of aid. Given that decisions about delivery are bound too by available funding,

these models and the ideas of the old paradigm that underlie them have also considerable influence over them. These tools are incompatible with the new paradigm and therefore would need to be substituted, resulting, as stated above, in important changes in the decisions that the aid enterprise makes about volume, allocation, and delivery. For example, rather than growth targets, the proposed conceptual framework requires considering, simultaneously, the optimization of value extracted from wealth and the allocation of such value among the population.

Finally, the new paradigm requires a very different approach from the current one in terms of the delivery of aid. Given the consideration of the critical-paths that are also central to the proposed conceptual framework, the timelines of traditional aid interventions would have to change. This may imply that certain interventions would have to span several political cycles both within the aid-receiving and the aid-giving countries. This means that to be able to achieve realistic results, donors and their stakeholders may be required to change the way in which they monitor and evaluate success, and particularly how they do such evaluations in time, that is, which timeframes they use. Similarly, the delivery of aid would have to change, as expressed above, from the manipulation of short-term actions aiming to achieve shorter-term successes, towards conditions setting and disposition formation focused interventions which provide limited opportunities for short-term success but that can ripe larger and more stable internalized change. Likewise, the delivery of aid would have to stop focusing only on the endogenous limitations of the aid-receiving countries, to also address the exogenous factors that affect their capabilities and freedom to move towards the self-reinforcing state.

In terms of the institutional foundations of aid, the current fragmentation that exists would need to be addressed. To facilitate the adoption of the new paradigm, this could be done by rerouting most of the funding towards unified multilateral mechanisms and towards addressing the asymmetries introduced by aid-giving countries that negatively impact aid-receiving countries. Given the need to unify the motivations behind aid, other than relying on a multilateral scheme will invariably introduce as many motivations and variations of them as bilateral donors exist. The rules of the multilateral mechanisms would also need to change, as well as their operations. Moreover, the institutions of aid would have to take over the task of ensuring that new national income accounts, as well as the proposed accounting, labelling, and trading requirements are implemented without exception and as soon as possible across those countries that are better-off, and gradually across worse-off countries. Finally, efforts to unify aid institutions into the least number possible, would be required. These institutions would have to finally be designed following a set of standards that, once and for all, address the problematic of aid that has been identified for several decades now, but have yet to be solved.

With respect to the second question, that is, how such radical changes can be pushed through the current institutions so they can finally be adopted, offering other than the proposed strategy of introducing a new Trojan horse, would be logically inconsistent and epistemologically and ontologically impossible under the proposed conceptual framework. As it has been argued through this dissertation, at different levels of aggregation, each social collective functions within the possibility spaces created by natural and socio-material limits, which are in turn affected by the actions that such

collectives take within such spaces. How these collectives solve the problems of coordination and control that their cooperation present is an emerging result of their characteristics and the inner logic that at any given time drives their dynamic. Suggesting a specific course of political action that allegedly could lead to the implementation of the proposed framework would not only go against the core of the epistemological and ontological basis of the framework proposed; more importantly, it will simply mean joining the countless analyses and the many proposals for reform that have failed over the last few decades, as was showcased in Chapter 2. As stated at the end of the same chapter, even if the cleverest ideas ever were proposed, why would these new ideas be more successful than those that have already been waiting for fifty years or more to be implemented? The answer already given is that they won't because the architecture and knowledge base on which aid relies will not allow it, just as it has not allowed any of the countless previous proposals to succeed. Our only hope is changing the way we see our world—so our actions may change—through new national income accounting and new accounting, trading, and labelling standards. Seeing the world anew would provide for different points of reference, alternative analyses, and, hopefully, different actions.

As for the institutional capacity that worse-off countries have to their avail to adopt the proposed conceptual framework, it is important to dissect the different facets that the impact of such adoption could have on them.

First, the implementation of accounting, labelling, and trading standards would be meaningful worldwide as long as they cover a considerable portion of, initially, the most common kinds of goods and services that exists, and consequently, of the actual goods and services exchanged locally or globally. Given that economic activity is highly

concentrated in better-off countries and in multinational corporations, implementing new accounting, labelling, and trading standards only within those countries and corporations will already cover a sizeable proportion of all global activity. Furthermore, the information available in better-off countries would help initially estimate the information related to worse-off ones. Given that the accounting and labelling is to be done in physical units of wealth, it is likely that the content of wealth across products and countries will be similar for similar goods and services. Hence, while still important that worse-off countries also start implementing these new standards, there is no rush to go beyond the capacity each worse-off country have.

Second, the implementation of complementary national income accounts based on physical units of wealth, while an additional burden, should not be an excessive one. Furthermore, the standards already exist (although perhaps some modifications might be needed) as the System of Integrated Environmental and Economic Accounting, SEEA (see Chapter 2). Efforts to implement them are already underway in a few countries and these, interestingly enough and consistent with the argument put forward in this dissertation, are already functioning like a Trojan horse. Countries that might more or less supportive about measures to counter humanity's environmental impact are all moving forward with their commitments to the United Nations in implementing such accounting standards. An additional push in accelerating its adoption might be needed and, therefore, it is likely that better-off countries would have to offer additional resources to worse-off countries. Nevertheless, is the kind of information generated through the accounting, labelling, and trading discussed in the previous paragraph, the one that, between these two efforts requires the most resources, and, in this last case, the

burden will fall mostly on better-off countries and multinational corporations, so they can do so in a shorter timeframe.

Consequently, it could be expected that the capacity demands of introducing new national income accounts, and new accounting, labelling, and trading standards for worse-off countries could be minimal, while the benefits they can get from the progress made by better-off countries are considerable.

As for the capacity demands in implementing the wealth management tools offered by the new paradigm, there shouldn't be any incremental ones as rather than adding over the tools used under the existing paradigm, the new tools are meant to replace them. Nevertheless, there would be costs involved in transmitting, absorbing, and implementing the knowledge required, so in this respect additional help from better-off countries could be needed.

To conclude, it is important to reiterate the objective behind this dissertation. In the Preface, I stated that the success of this dissertation needed to be measured by its influence in getting things done, right now. Why would, then, we follow the same illusion of the very same proposals that have been criticized as unsuccessful throughout the previous chapter, or morph this contribution into another offering of one of the many potential ways in which the problems of control and coordination from which the aid enterprise has suffered almost since its very inception, could be addressed. As it has been argued, the outcome of the aid enterprise, just as any outcome of a collective operating within any possibility space, can only be solved and improved from within. What this dissertation is offering is a strategy and the analytical tools to change the conditions that delimit the possibility space of the aid enterprise, so changed conditions, and the change

dispositions that can result from the adoption of a different conceptual framework and possessing different data to see the world anew, can hopefully help changing its actions. Introducing new national income accounts, and accounting, labelling, and trading standards, as well as new analytical tools used for determining the volume, allocation, and delivery of aid, is an attempt to shift the riverbed of the aid enterprise, hoping that the new watercourse will better resemble those characteristics that could guide it towards better results, and away from the problematic with which it has been plagued by for so many years now (its current watercourse).

A central tenet of this dissertation is that while social change is a collective affair, social change also requires personal change. Our social, economic, and political practices are always looking for the short-cuts, the magic formulas, the possibility to control our societies; “everybody thinks of changing humanity, and nobody thinks of changing himself” said Tolstoy (1900, p. 75).

The proposed conceptual framework offers is a mirror so each and every one of us can no longer avoid realizing that there are no short-cuts to changing ourselves, and through our collective change, the world we live in.

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