

**S&P 500 Index Analysis: The effects of the 2008 financial crisis**

By

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**Abstract****S&P 500 Index Analysis: The effects of the 2008 financial crisis****By****Fahad Balubaid****January 10, 2015**

The Standard and Poor 500 index is one of the most popular indexes in the world and its fluctuations have a lot to say about indices in general and about the international stock market. This paper will attempt to analyze the Standard and Poor 500 index in terms of its survival of the 2008 financial crisis, considering all the variables that are made publically available. Furthermore, this paper will use complex models as well as simple graphing to check the veracity of claims made about S&P around the time of the financial crisis. The purpose of this paper is to deduce where the S&P is headed. The 2008 financial crisis scandal had hurt the S&P in many ways and it had lost both credibility and face. However, in deciding whether or not the S&P is useful and profitable as an index, a colder, more objective approach is required. Furthermore, this paper will analyze the cause and effect of the precursors of the stock market crash to both show whether S&P could have prevented it and to prevent it from happening in the future. Hopefully, this paper will serve to clarify the situation as well as define the changes in the S&P over time and relate them to the changes in other stocks as well, such as the Dow Jones Industrial Standard.

## **Chapter 1**

### **Introduction**

One among the most commonly used stock market indices globally is the Standard & Poor's 500. It was founded in 1957. The basis of formation of this index was the market capitalizations of 500 large companies that had common stock listed on the NY and NASDAQ stock markets. It is a dynamic index that could be mended over time. Companies are being removed and added to it as it's committee sees fit. As opposed to the famous Dow Jones Industrial Average, the S&P 500 follows companies that are very widely followed by the public and by investors, thereby producing a much clearer image of the current market. A lot of mutual funds attempt to follow the S&P index in terms of stock prices and a lot of pension saving plans offer to track the total return of this index.

It is given that the S&P has provided investors with the smart choice for many years in the past, but through its ups and downs, no damage to the S&P has been greater than that suffered during the 2008 financial crisis. Simply put, the S&P has been held responsible by many that depend on it for investment input, due to the inaccurate projections on the financial crisis. Oddly enough, a federal lawsuit was filed against the S&P, as late as 2013, based on the alleged consumer fraud committed by them. In the allegation by the lawsuit, it was mentioned that the investors were defrauded by S&P through the inflation of ratings and the risk understanding in relation to the mortgage-backed securities (Campbell, 2013).

### **1.1. Background**

There were doubts by S&P in 2007 regarding the possible implosion of the housing market and the significant number of defaults and foreclosures due to this. The value of the multitrillion-dollar pool of mortgages, which had low value constructed in the period 2003 to 2006 was undermined by the housing price collapse (Altman, 2009). The S&P executives had apparently held a meeting to decide a further course of action (Gandel, 2013). One would assume that at this point, it would be logical to blow the whistle, so to speak, but the S&P did not make any noise on the subject whatsoever. That is exactly what they were later sued for (Grey, 2013). The department of justice believed that the S&P had purposefully helped Wall Street investors in getting out of the long since subprime mortgage loans. In other words, there were effective transfers of significant dollars in billions by S&P from the Wall Street and lenders of mortgage that accumulated them in the first place, to community banks, municipalities and individual investors around the country.

An interesting question that went unanswered was the question of why the warnings were ignored. S&P aside, there were many red lights going off across the globe, more particularly in the United States. There could have been preemptive action, but there was none, and an interesting perspective can be found in the reputed book *Pearl Harbor: Warning and Decision* by Roberta Wohlstetter (Wohlstetter, 1962). In this book, it is stated the receipt of information by the military in America on the chances of Japanese attack on Pearl Harbor. However, the information was given by people who were very different and living in places far from each other. The collection

of important information was difficult for them due to the very large details and the high noise. Furthermore, there was very little confidence in individual information bits, especially if the person transmitting them is a low ranking officer, therefore this information never made it to the high ranking officers of the army. This form of incident might have occurred with S&P before the crash in almost the exact same way. Signs and symbols were ever present, but no-one was around to collect them and make sense of them. And of course, no-one was around to light the beacon, so to speak, for others to know that something foul was going to happen to the economy that year.

## **1.2. Aim and Objectives**

Given the above background, the purpose of this paper is not to criticize the responsibility or ethics of the S&P executives. Rather, the purpose of this paper is to deduce where the S&P is headed. The 2008 financial crisis scandal had hurt the S&P in many ways and it had lost both credibility and face. However, in deciding whether or not the S&P is useful and profitable as an index, a colder, more objective approach is required.

The research question for the study is whether S&P is a useful and profitable index, given the background of the recent global financial crisis. The aim of the study is to examine the effects of the recent financial crisis on the S&P index. The specific objectives of the study are the following:

(1) To examine the effects of the global financial crisis on the credibility of S&P Index.

(2) To examine the effects of the global financial crisis on the profitability of S&P Index.

(3) To suggest recommendations regarding the usefulness of S&P Index.

### **1.3. Relevance of the Study**

In recent years there has been quite a turnaround for S&P, especially in the ongoing 2014. There was a record high closure for S&P for 4<sup>th</sup> week, at the end of August, for what has been its best August since the year 2000 (Carrig, 2014). The index itself rose by 6.63 points. Basically, the index has been breaking records this year, but for how long this pattern will continue is a question of projection. The S&P must be studied with great mathematical scrutiny as it is, more than anything, an index that follows the obvious pattern and plays it safe, so to speak. Therefore, it is important to analyze the numbers carefully and deduce down what path the 2008 financial crisis has sent the S&P index.

## **Chapter 2**

### **Literature Review**

#### **2.1. Introduction**

In this chapter, the existing studies on the usefulness and credibility of the S&P index in the context of the global financial crisis are discussed. Based on the review of the theoretical and empirical studies in this regard, the research gaps are identified and the research questions already developed are reformulated for the present study.

#### **2.2. Theory**

According to the theory of Holthausen and Verrecchia (1988), information with low credibility is discounted by the participants in the market in the debt decisions based on a Bayesian updating model, where weights are assigned by the participants in the market to different sources of information, which are competing with each other according to the each item quality expectations. The revisions for the new release of a data in terms of price and belief relies on the relative credibility of each signal, based on this theory. The accounting reports credibility is assessed empirically in different empirical studies, based on this theory using the price response tests in the management and accounting literature. Thus theory shows two methods through which the credibility changes in the ratings of corporate credit in the post crisis periods affect the links between the debt ratings of the corporate credit and the observed debt prices. First one is the chance for decline in the information content for the corporate rating changes for



the prices of the debt according to the reduction in the weight put on the credit rating signals by the market participants (Dehaan, 2013). Second one is the chance for the rise in the weight placed on the signals on credit rating with the decline in the weight put on ratings of corporate credit (Dehaan, 2013). There exists the chance for weakened relation between ratings of corporate credit and the levels of debt price in the period after crisis if the signals about default risk provided by the credit ratings and alternate information are not identical, based on this theory.

The next section discusses the empirical studies on the effects of the global financial crisis on the credit rating agencies in general with particular focus on the S&P.

### 2.3. Empirical Studies

The problem with S&P's actions preceding the 2008 financial crisis is very specifically the fact that S&P had downgraded the debt projections of the incoming year. They had very specifically duped all the investors that relied on them for information into investing against a wave that would surely crush them financially. However, this is only one perspective on an index that primarily has the function of informing and suggesting, rather than guiding or leading. A lot of major figures have actually spoken out against these allegations. Billionaire and mayor of New York City, Michael Bloomberg has said that it is the District of Columbia that is to blame and not S&P. This was in 2011 when he also stated that Washington has been doing more to damage the economy than help it (Einhorn, 2011). "The attorney general told reporters S&P could now be liable for as much as \$5 billion. Holder said that amount is equal to the losses suffered by federally insured financial institutions as a result of the firm's alleged misconduct." (Breslow, 2013). This statement alone adds fuel to the suspicion that

federal action against the S&P is nothing more than a vendetta against a corporation that did not actually contribute to the crisis. Even during the most critical points of the trial, when S&P were facing the possibility of settling for a flat amount, they still insisted that it was impossible to give an admission of guilt (Breslow, 2013).

Choudhury (2011) examined the effects of the global financial crisis on the stock price behaviors based on the thirty one major US stocks daily returns and the S&P500 equity indices in the period 2007 to 2008. The analysis is based on four unconditional moments, correlation, portfolio risk reduction benefit of diversification, beta, explanatory power of market model, Alpha, dynamics of conditional variance and Value at Risk. The entire sample period was again divided into three sub periods namely pre-crisis, early and the crisis later stages. Thus, a comparison of the effects between pre crisis and after crisis periods was done in the study. The study showed that in the post crisis period, there was a decline in the unconditional mean daily returns to negative levels as well as rise in the unconditional volatility to more than three times in the pre-crisis period. There was significant decline in the financials in the post crisis period compared to the pre-crisis period. Non financial stocks also declined significantly while the loss was less than that of the financial stocks. The differences between the horizons in the short and long terms as well as the need for separation between these are shown by the results of this analysis. There was significant decline in the correlation between financial and non-financial stocks following the crisis mainly due to the rise in the financial shocks news stream in sector terms. This resulted in the rise in the portfolio risk reduction benefits of diversification during the period of the crisis. This necessitated the financial stock short selling subjected to the combined naked and blanket bans on

short selling starting from July 1, 2008. At the same time, the study showed no significant price support as expected by the short selling bans on the financial stocks. The beta risk increased after the crisis for the financial and non financial stocks which were studied following the crisis. However, this rise was negligible for the non financial stock compared to the financial stock. This showed significant rise in the cost of equity capital for the financial institutions at a time of scarce capital and the period when they required high cost of capital. The study also showed significant reduction in the importance of market risk for the financial stocks due to their rise in non market risk caused by the developments in specific sectors. There was also significant reduction in the average R square value for the market model from the period before crisis to the period after crisis. At the same time in the case of non-financial stocks, there was a significant rise in the average R square value for the market model from the period before crisis to the period after crisis. There was significant rise in the value of Jonson's alpha for the financial stocks inspire of the significant rise in the beta risk, compared to the period before the crisis. However, the authors themselves showed the stronger investment performance of the financial stocks as confusing due to the large problems deep rooted within the financial institutions. The estimation of the GARCH and the EGarch models showed the variance persistence of S&P index and the financial stocks as significantly increasing. The study showed mixed trends for the non-financial stocks, at the same time. The Garch model declined to be overall good fit in the periods after the global financial crisis. The study showed greater leverage effect in the later stages of the crisis period than in the pre-crisis period. This effect was not found significant and persistent in the study. For the S&P500 index options, it was obtained stronger implied

volatility skew in the post crisis period, compared to the pre crisis period, which was an interesting result. There was a large decline in the ketosis of the aggregate index, while this was mixed for individual stocks, as shown by the study. The implied volatility average for the S&P index 500 increased significantly in the later stages of the crisis compared to the earlier stages of the crisis period. The results for value at Risk showed that it was higher for the financial and non financial stocks in the post crisis period compared to the pre crisis period. The portfolio of the financial stocks was the most affected by the crisis, as shown by the results for the Value at Risk. There was a common thread which was strong and significant, in the effects after crisis compared to the pre-crisis period. Based on the results, an extended Value at Risk measure was proposed in the study in terms of increased transparency, accessibility and comparability across different institutions.

Jaballah (2012) in his study examines how the global financial crisis has affected the reputation of the rating agencies including the S&P. This was using event study method for the analysis of the reactions of the stock market to the credit rating changes before and after the crisis. This was in the context of the earlier studies showing reactions as positive to upgrade ratings and reactions as negative to downgrade ratings by the rating agencies during the normal periods. In this study using the event study methodology, the study showed insignificant upgrade effects on the stock markets in Europe and America during the crisis. It was also obtained negative effects which were significant of the downgrade ratings on the stock market in Europe while no significant effect on the stock market in America by these downgrade ratings. Negative and insignificant effects of both the upgrade and downgrade ratings on the stock market in

Europe were found by the difference in difference estimator, based on the findings in the study. The neglect of investors on the changes in the ratings during the crisis was proved in the study. The study showed an indication of decline in the information content in the ratings by the agencies rather than the confidence loss in the ratings by the investors.

Menon and Ullatil (2012) examined the correlation between different macroeconomic variables like the growth in real GDP, current account reserves, foreign exchange reserves, portfolio inflows, credit ratings of S&P, stock traded, number of listed companies, legal rights index strength, market capitalization, type of economy and listed companies based on annual cross sectional data of 31 countries in 2009 immediately after the global financial crisis. The analysis was done using correlation and regression methods. The study showed the main variables explaining the variations in the index as the variables foreign debt, credit rating, inflation, forex reserves and interest rates. More specifically, the variables, foreign debt and forex reserves positively affect the variations in the index while the variables credit ratings, inflation and interest rates negatively affect the values of the index. However, the main limitation with the results is that the study is cross-sectional and the variations over time of the indices are not captured by the study. This needs to be analyzed in detail based on the changes before the financial crisis and after the global financial crisis to get complete and fruitful results in this regard. Moreover, the country specific effects are not captured in the study which needs to be analyzed in detail to get a clear and complete picture on the effects of global financial crisis on the S&P equity indices.

In the study by Aleer et al (2013), it is examined whether the risk management has improved during the global financial crisis by the Basel II Accord based on the S&P

500 Composite index. The main risk management measures based on the Basel II Accord include the communication of banks and other authorized Deposit Taking Institutions about their risk forecasts daily to the concerned monetary authorities based on the models of risk for the Value at Risk measurement. The requirements for capital and the capital costs of the authorized deposit taking institutions associated with these are determined using the estimates of risk from these models. The prediction of Value at Risk is made using a new approach which includes the combination of different models of risk. The VaR model selection is done using the comparison of strategies which are conservative and aggressive. The performance of the risk management strategies during the recent financial crisis is examined here based on the S&P 500 composite index. The best strategies for risk management are affected by the global financial crisis through the optimal model change for the daily capital charge minimization. The combination of models suggested in this paper is supposed to provide coverage risk, which is appropriate, replicating S&P 500. However, in this paper, there is no direct testing regarding the credibility of S&P during the global financial crisis.

Velthuis (2013) examined the different credit rating agencies, their role in the global economy and the change in their position after the recent global financial crisis. This was examined in the context of the prominent role played by these credit rating agencies in the recent financial crisis and the Eurozone crisis, previous studies have showed the dominant role played by the credit rating agencies in the global finance due to the prominence given to their views by the governments, market participants and the companies. However, this study did a sociological analysis of the dominant role played

by the credit rating agencies in the global economy. This study showed that the rating by the credit rating agencies including S&P to the new complex instruments played a main role in the emergence of the recent global financial crisis. This resulted in the loss of trust among the investors in the S&P index since this showed a basic flaw in the rating given by the credit rating agencies like the S&P about the lack of default risk predicted in the boom period, resulting in the financial crisis. Thus, the study showed the financial crisis demonstrating the chances of wrong predictions of the credit rating agencies like the S&P.

Similarly in the study by Dehaan (2013), the effects of global financial crisis on the information content in the ratings of corporate credit were examined using univariate regression analyses for the non-financial firms. It showed a decline of around 46 percent maximum in the period after the crisis for the non financial firms. There was obtained a reduction of the average information content of the credit rating status changes up to a maximum of 58 percent. The results remained robust from the analysis with different subsamples, thus showing the decline in the credibility of the corporate ratings by the credit rating agencies like the S&P in the period after the recent global financial crisis. The next stage analysis was to examine the effects of the financial crisis on the credit ratings viewed by the participants in the market as biased optimistically or of low quality. The results showed this as optimistically biased as viewed by the market participants. In spite of these, the results showed continuous use of the credit ratings in the debt price decisions even after the crisis showing the loss of credibility as not absolute. However, the study shows there are arguments for and against the participants

in the market to lower their expectations about the credibility of the ratings, which needs to be examined in more detail empirically in the future studies.

Corbet (2014) examined the effects of the downgrades by the credit rating agencies including the S&P on the financial markets in Europe from 2005 to 2012. The contagion effects presence were examined using the Vector Auto regression techniques based on the downgrade rating across different equity indices, five year Credit default swaps and the ten year government bonds of the European states under investigation. The study showed the rise in equity returns and rise in the cost for debt insurance through the Credit Default Swaps and the government debt yield. The downgrades in the countries like Greece and Ireland were reported to have affected the whole European financial market .It was obtained a rise in the spreads of the credit default swaps of the German market with the downgrade in the European state . This showed the usage of the downgrades by the investors as a parameter of the defaults in the Europe, based on the findings in the study.

The vested interests issue was also recognized. There are less chances for the financial economists to favor regulation due to their consultancy contracts with derivatives, hedge funds, and financial innovative firms, which are profitable(Hodgson, ,2009). This statement connects very aptly to the notion that S&P knew what would happen and decided to hide this information from the public. However, even if they did anticipate the 2008 crash, the very nature of the event makes it impossible for them to have had knowledge that could have prevented it. Therefore, their only responsibility at the time was to their clients and to the public, whom they disappointed to no end by



assuring them into a state of trust that led to bad investments and lost funds.

Furthermore, the financial economists whose job it is to speak up get to choose when to speak up and what to say. After all, it is up to them to prognose, and as such their job allows them to say whatever they wish, especially when they decide to say nothing on the matter of incoming crisis. The economists in the mainstream declare about the self-interests in everyone and hence there is no reason for expecting ethical behavior from anybody (Hodgson2009).

The S&P defended themselves by stating “Although we deeply regret that these 2007 CDO ratings did not perform as expected, 20/20 hindsight is no basis to take legal action against the good-faith opinions of professionals,” (Murphy, 2013). Therefore, their side of the story is that they simply couldn’t have acted in any different way. However, what is fascinating about this statement is not what they knew, rather, how they describe their own process. They directly admit to their job being nothing more than a collection of statistical projections, which is very apt, considering that is exactly what they do. Ironically however, the department of justice seems to believe that they had exclusive knowledge of the financial crisis that they refused to share, and the argument becomes a matter of selecting only one part of the story to believe.

On the other hand, the argument against S&P is very strong in that statistically, they failed in a way that is inconceivable. While they had been one of the most promising indices in history up until that point, in the months preceding the financial crisis they had rated a large number of mortgage-backed CDO’s, all of which not only underperformed, but actually failed completely (Campbell, 2013). This is the point

from which the department of justice made the leap to concluding that the S&P had outright lied.

What is truly unfortunate however is the fact that S&P had every right to do so, as the models that they used were more than acceptable at the time. They didn't outright lie, rather, they chose a model that people trusted and they published the results. One way or another, it can be considered that the S&P reports were earnest, or rather, as earnest as they had to be.

The government pushed for an admission of guilt, however the S&P board refused to either admit or deny guilt directly, thereby washing themselves clean of any guilt on the matter. Furthermore, they were blamed for misrepresenting the very companies that were in charge of paying them for their services. They were locked in a very unfortunate relationship where the same people that they had benefited were the people that signed their paychecks, so to speak, which led to an obvious conflict of interest. However, this conflict of interest hadn't come up before and that is reason to believe that it was a fluke. That there was no real conflict of interest, rather, an exploitable perspective that the government jumped on eagerly.

There exists the need for information clarity, consistency and availability for the true efficiency of financial markets. The assumption behind the efficient market hypothesis variations is the accuracy and transparency of information (Dreibelbis and Jonathan, 2012). The efficient market hypothesis is a very crucial one in considering how the S&P board had to project their assumptions about what was going to happen next with the stock market, on an international level. One very important element of the efficient market hypothesis is understanding the role that simple psychology plays in

creating positive and negative waves in purchasing and selling a given stock at a given time. An example is a rise in the stock prices seen by the individuals and are attracted to the market based on “bandwagon effect.” (Malkiel, 2003). Shiller (1981) explains U.S. stock market surge during the late 1990s based on the psychological contagion with result as irrational high spirits. In other words, he attributed the rise in stock prices to the simple societal movement of frivolous purchasing of stocks that have no realistic promise, and in doing so these investors gave the stocks a brighter future. It’s a case of extreme tautology where the stocks succeeded simply because they succeeded, and they did so through the faith that they would succeed and so forth. Another theory on how trader behavior directly influences the tides of the stock market states is the idea that traders often undervalue new information on the stock market and that information gains momentum very slowly. This is mostly because investors do not wish to give credence to idle banter, even if most of the time idle banter within the right scope is right on the money and could have saved a lot of money. Unfortunately, this projection does line up with how the S&P fared during the crisis. Warnings were issued, but very few investors seemed to care and that led to a lot of bruised investment funds.

However, this shouldn’t lead to a conclusion that markets are simply inefficient. It is obvious that the stock market is not perfectly predictable as it does not follow a perfect mathematical pattern. It is important to realize that there is a battle to be fought on two different fronts. When investors decide whether or not to push forth with S&P or any index for that matter, they face two different sets of data. One set of data represents the statistical history of the index along with proposed models for what will occur next, through mathematical extrapolation and graphs. This set of data is more or less

completely useless, because investors cannot gamble on the off chance that their numbers will come up. Those that do, do not realize excess returns (Odean, 1999). This is tantamount to playing roulette with serious funds. However, the other set of data that is freely available to everyone is financial data, which represents the realistic situation of the index, observed in the real world, with consideration towards outside factors.

Therefore, people could receive a more accurate prediction of the future by analyzing the current situation of the financial market, even if the mathematical probabilities are at an all time low. Moreover, even if there is some vague pattern to be followed and ridden to profit, the actual costs associated with chasing that momentum are so high that they nullify the potential profits that might be gained (Lesmond, 2001). The 2008 crash was a perfect example of financial situation vs statistical projection. None of the numbers spoke towards the crash occurring. In fact, it was completely inconceivable. However, it happened, and it made perfect sense in retrospect since the financial model connecting all the responsible parties had crashed and failed in the wake of the 2008 financial crisis.

#### **2.4. Research Gaps**

The above reviews shows that there are two views on the effects of the global financial crisis on the S&P .One is the loss of confidence of the investors in the credibility of the index while the other view shows that it has resulted only in a decline in the information content in the ratings and not in a loss of confidence of investors in its credibility. This needs to be examined in more detail using empirical methods.

Thus, the research questions can be reformulated as follows.

(1)Whether the global financial crisis has resulted in the loss of confidence among the investors on the S&P index and ratings.

(2) Whether the global financial crisis has resulted in the decline in the information content in the S&P index and ratings.

Based on these research questions, the next chapter discusses the methodology for the present study.

## **Chapter 3**

### **Methodology**

#### **3.1. Introduction**

In this chapter, the research methodology for the study is discussed. The research question of the study is whether the S&P index is still a useful and profitable index given the recent financial crisis. The aim of the study is to examine the credibility of S&P Index given the background of the 2008 financial crisis. The specific research objectives are:

(1) To examine the effects of the global financial crisis on the credibility of S&P Index.

(2) To examine the effects of the global financial crisis on the profitability of S&P Index.

(3) To suggest recommendations regarding the usefulness of S&P Index.

The research hypothesis based on the research question and objectives is that the S&P index has lost its credibility and face due to the recent financial crisis. In this chapter, the justification for the choice of methodology for the present study is given based on the review of alternative methodologies. The analysis methods, the variables used in the analysis and the data sources are used in the study.

### **3.2. Choice of Methodology**

There are two alternative research methodologies namely positivism and interpretivism (Weber, 2004). The positivism is an objective method where the results are based on observed facts (Myers and Walsham, 1998). The analysis is done using the quantitative methods. In the case of interpretivism, the method is a subjective one based on the ideological positions of the individuals. The analysis is done using qualitative methods here. There are no reliable methods for verifying the results in the case of interpretivism (Weber, 2004).

In this study, positivism is used as the method since an objective criteria for understanding the credibility of S&P index, given the recent financial crisis is needed. The ideological positions of the researchers have no role here .Moreover, the reliability of the results can be tested using alternative empirical methods under positivism. All these justify the choice of positivism as the methodology for this study.

There are two types of research strategies namely quantitative, qualitative and mixed research strategies (Weber, 2004). In the first case, empirical methods are used for the analysis while in the second case, analysis is done interpretively using qualitative methods. This is mainly subjective analysis and can vary depending on the ideological positions of the researcher. Mixed strategy consists of the combination of both qualitative and quantitative strategies in the study. The quantitative research strategy is used in this study as compared to its alternatives qualitative strategy and mixed research strategy. This is again since objectivity is needed in our study and our study is deductive

which consists of deriving hypothesis and it's testing using different statistical procedures. There is no role for the ideological positions of the researcher in the study.

### **3.3. Analysis Methods**

Primarily, the index analysis of the S&P will take into account the change over the years and very specifically between the months of the years 2007 and 2008. The very clear dip in price in 2008 has much to say about how the financial crisis influenced the S&P. In this regard, trend between that dip and the current direction of the S&P value will be examined.

All projections will be plotted out and defined mathematically, so that the patterns are justified. Logically, the projections on S&P will be compared against the Dow Jones Industrial average, the popular counterpoint to the S&P. Further, the model will attempt to find any key points that link up with the specific events within the actual financial crisis, as there must undoubtedly be at least a few that clarify the cause and effect process of the time.

Ultimately, it will also be necessary to create a detailed financial forecast, whilst taking into account the current events in US and international finance. Any pending changes in international economy will be factored into the model to accurately deduce where the S&P value will go in the following few years. The index seems to be on a clear upward trend, but with the current lawsuits and the further possible lawsuits to

come, there is a chance that the index will go down and hopefully the charts will attest to this.

Finally, the model will mathematically analyze the rules of adding and removing companies to and from the S&P 500 list, since there seems to be quite a lot of buzz generated on the matter of their decisions back in 2007 and 2008. It is relevant to the paper to assert whether or not those decisions were accurate or simply a brutal attempt at boosting personal gain. However, that's a secondary issue that is not primal to this paper in particular. The focus would be to paint a mathematically accurate depiction of the S&P and where it is headed. In this regard, the following analysis methods are used in this study.

There are two types of analysis method mainly descriptive and inferential statistics. Descriptive statistics summarizes the data using various measures and gives a brief picture on the available data (Healey, 2012). However, it does not give any picture on the relationship between the variables. Inferential statistics discusses the relationship between different variables using different statistics after generalizing sample characteristics to a population (Healey, 2012). In this study, both descriptive and inferential statistics are used for analysis. This is because the trends need to be summarized and at the same time the relationship between the variables need to be analyzed.

The main analysis methods are representation using line graphs, scatter plots, linear regressions and the application of Black-Scholes model. The trends in both S&P index and Dow Jones industrial average indices are represented using line graphs. How closely these two are moving are examined using scatter plots of the two. The effect of



S&P on the Dow Jones Industrial Average Index is examined using a simple linear regression model with the Dow Jones as the dependent variable and the S&P as the independent variable. This also gives the significance of one variable in explaining the other variable. In addition to these, the trends in the variables earnings and dividends of S&P 500, S&P 500 price to book value and the growth rates of S&P500 Indies for a long period are examined using line graphs.

The ratios like price to book ratio, present value of stock and current dividend yield are also used to examine the trends in the index. The trends before and after crisis are examined in the study. The main analysis is done using Black and Scholes model, as the only non-observable market parameter through it is the underlying asset's future volatility in average. This is used for examining the asset price uncertainty in the S&P Index. Thus both descriptive and inferential statistics is used for the analysis in this study. All analysis is done using the statistical package Stata. The next section discusses the data sources for the analysis.

The main data sources for the analysis are Yahoo Finance and Bloomberg. In Bloomberg all the major indices, gainers and losers by index and the stock prices are given for a long time period. It also contains S&P earnings and dividends and the current dividend yield. Based on the results obtained from the analysis, recommendations on the credibility of the S&P poor index are discussed in the study.

### **3.4. Conclusion**

In this chapter, the research methodology for the study is discussed. The discussion shows positivism as the method with quantitative analysis as the research

strategy. The data is analyzed using both descriptive and inferential statistics. The data sources here are Bloomberg and Yahoo Finance. The next chapter discusses the parameter estimates and the results analysis.

## Chapter 4

### Analysis

Firstly let's take a look at the numbers of the S&P in the past few years.

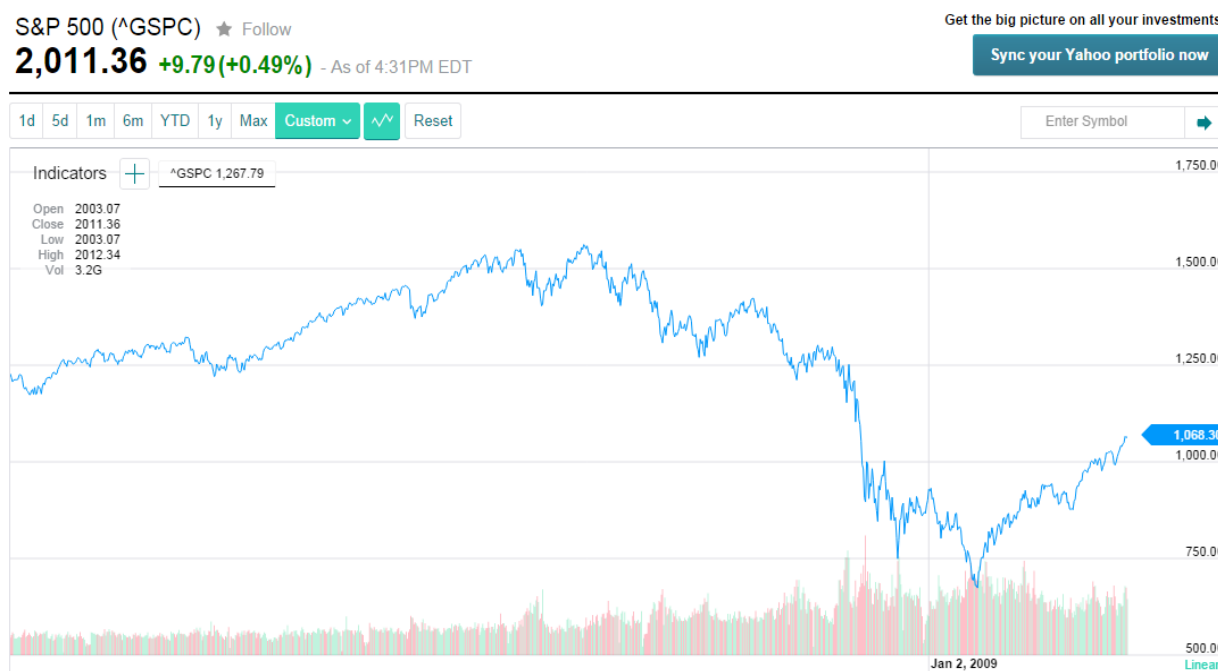


Image retrieved from Yahoo Finance

The above graph shows the change in value of the S&P 500 from the year 2005 to the year 2009. The S&P very was in a very clear increase until the financial crisis of 2008, after which it dropped incredibly. The problem with this scenario is that instead of

dropping instantly in the year 2007, the S&P went down a good half of its value the next year, unlike most of the other indices that dropped almost instantaneously. This might somewhat affirm the blame placed on S&P, since they seem to have avoided the initial blow of the crash. However, it is undeniable that the crash had a direct effect, as falling to half of its value is a crisis and shouldn't occur under normal circumstances.

It is important to note, in defense of the S&P board that there doesn't seem to be a spike in profits around the year 2007, but simple a steady decline. This means that the S&P did not necessarily profit from the financial crisis, or at least not as much as the media liked to claim. In fact, the S&P hadn't been that low since the year 1997 (Twin, 2008).

When the S&P plunged down to less than half its value, treasury prices were rallying while investors were on the lookout for the comparative safety of government debt. The dollar had been mixed against other major currencies. And of course, oil prices had gone down as well. S&P was of course, one of many indices to plummet. Dow Jones's industrial average had tumbled as well, by 5.6%. The Nasdaq (COMP) composite fell by 5.1%. Both of these indices closed at their lowest point yet, since the year 2003.

Firstly, it is pivotal to analyze the change in S&P over a given period of time. For that purpose I am using monthly figures over a period of 2004 to 9.2014. In layman's terms, I entered the values of the S&P over this time frame, for every month, and started with a regression analysis of the values. The below information is the STATA regression analysis.

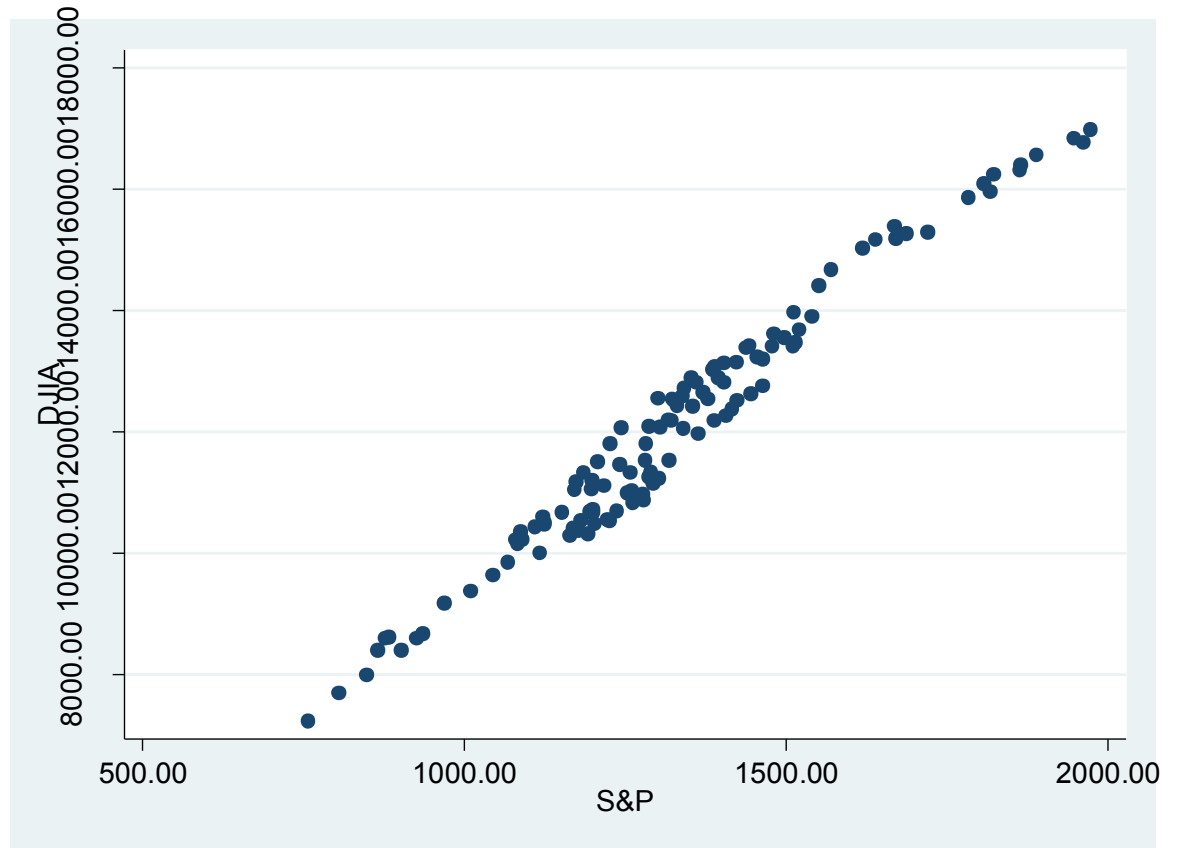
Source	SS	df	MS	
-----+-----				F( 1, 117) = 3744.14
Model	521553926	1	521553926	Prob > F = 0.0000
Residual	16297948.4	117	139298.704	R-squared = 0.9697
-----+-----				Adj R-squared = 0.9694
Total	537851875	118	4558066.74	Root MSE = 373.23

DJIA	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
SP	8.334099	.1362017	61.19	0.000	8.064359	8.60384
_cons	998.5425	183.7463	5.43	0.000	634.6426	1362.442
-----						

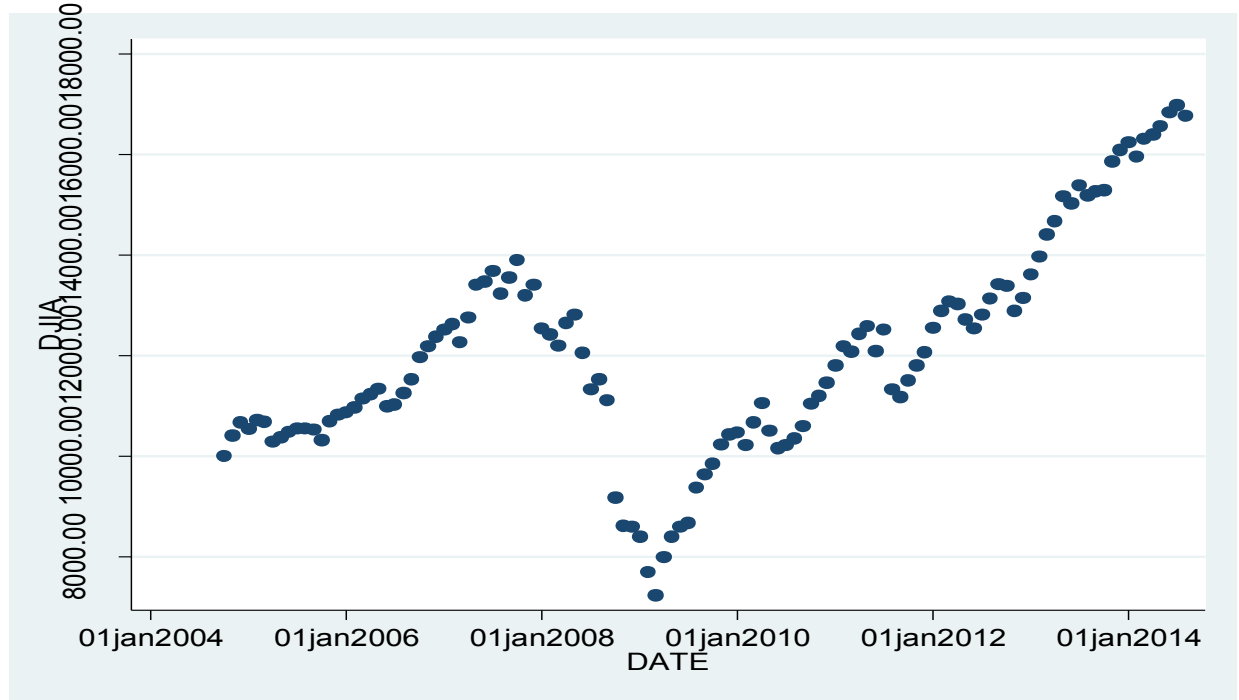
Simply put, a regression analysis analyzes the relationship between variables. There are many techniques included for the modelling and subsequent analyzing of several variables. The entire point of a regression analysis is to understand how one

variable affects another. It analyzes the dependencies of these variables between each other, hence analyzing their relationships. The below graph is a simple scatter plot of the DJIA and the S&P plotted against each other to show how closely related they are.

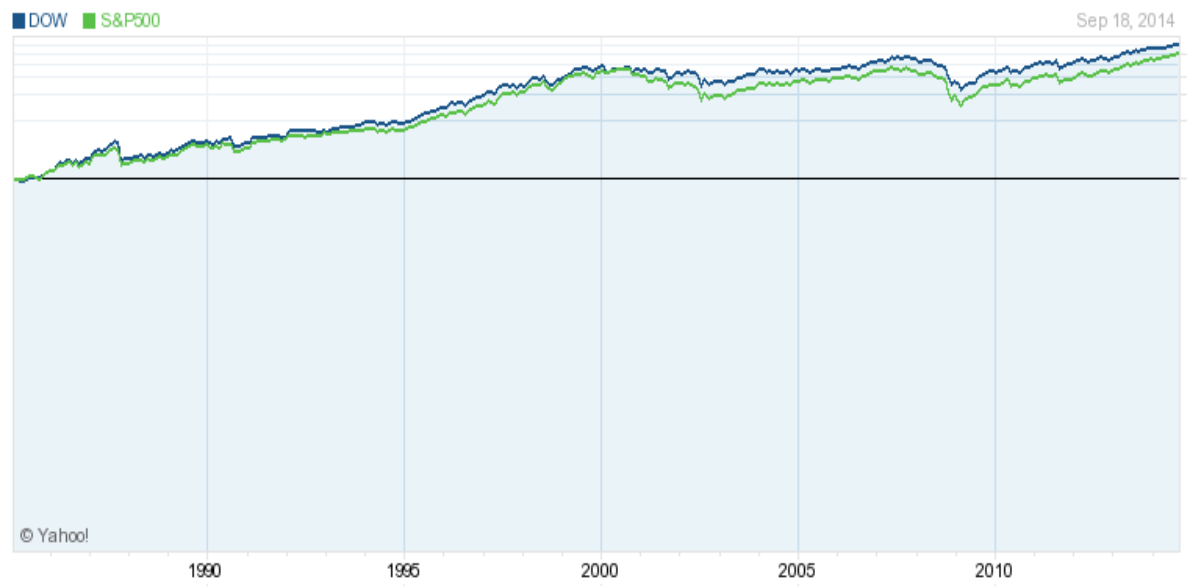


It would appear that the S&P and the DJIA have a very close relationship in value, as they closely follow each other. However, towards the 1400 point, there appears to be a very dispersed cluster of values, which means there is more to their relationship than meets the eye. This must further be analyzed. The reason I chose DJIA is because the Dow Jones Industrial Average is one of few indices that are considered an international example alongside the S&P, therefore, if there is any variance within S&P specifically, the DJIA should offer sufficient counter point.

The DJIA's graph of change over time can be seen below



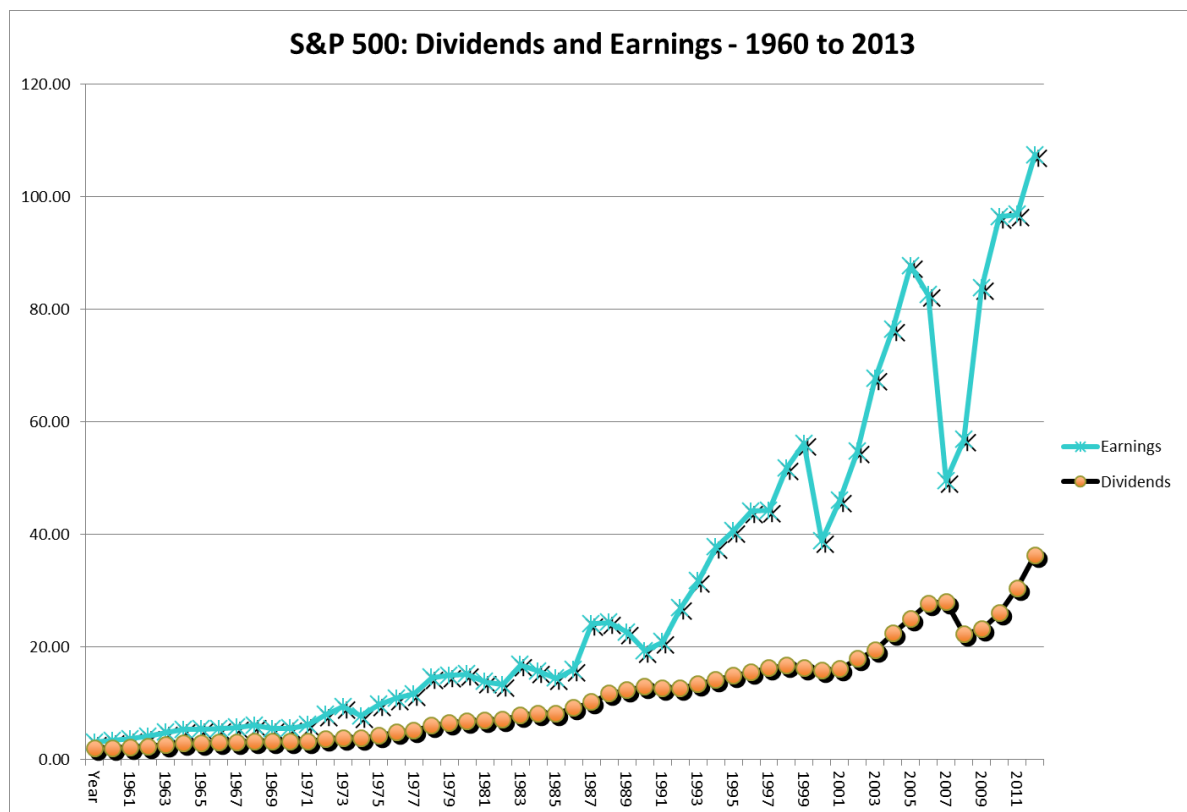
From this graph, we can clearly deduce that there was a huge dip in value in the year 2009, but what makes this graph truly surprising is the comparison against S&P in the same perspective.



Not taking into account mild overlaps like in the year 2000, it seems obvious that DOW Jones Industrial Standard has remained a few points above S&P, at all time, in the past two decades. This further includes any variations, as it is very obvious that whenever one index spikes, so does the other one in proportion. Therefore, the accusations against S&P profiting off of the 2008 crisis appear to be greatly exaggerated.

I believe that a very important aspect that needs analysis are the common indicators of S&P, over time, specifically around the time of the financial crisis, as I believe graphs of key financial indicators could clarify the situation as well as shed light on future decisions regarding S&P. It is also very important to analyze the movements made by other indices at the time as S&P appears very closely related to Dow Jones and other similar indices.

Firstly, a bit of information on what these variables mean. When looking at the values of a company, stock or index, it is hard to make a decision right off the bat, due to the overload of information. Normally, this occurs because there are many factors to be considered and it is hard to aggregate them all into a single category. Therefore, many indicators exist, for the purpose of clarifying the nature and the success of the stock or index to the would-be buyer. Some examples for indicators are per share data, price/book value ration, price/cash flow ration, price/earnings ratio and so forth.



The above chart shows the dividends and earnings of S&P holders over the entire existence of the index. One very interesting aspect of the above chart is that even though it shows several dips in earnings over the years, the dividends keep rising regardless. Except of course, for the infamous 2008 crisis, where there is a very visible dip in dividends as well. In fact, that particular crisis sent the dividends value back a good three years and it took nearly three years for the value to rise back up. However, the S&P has been doing much better since then which means that the dividends value will continue to rise, even with dips in value in earnings.





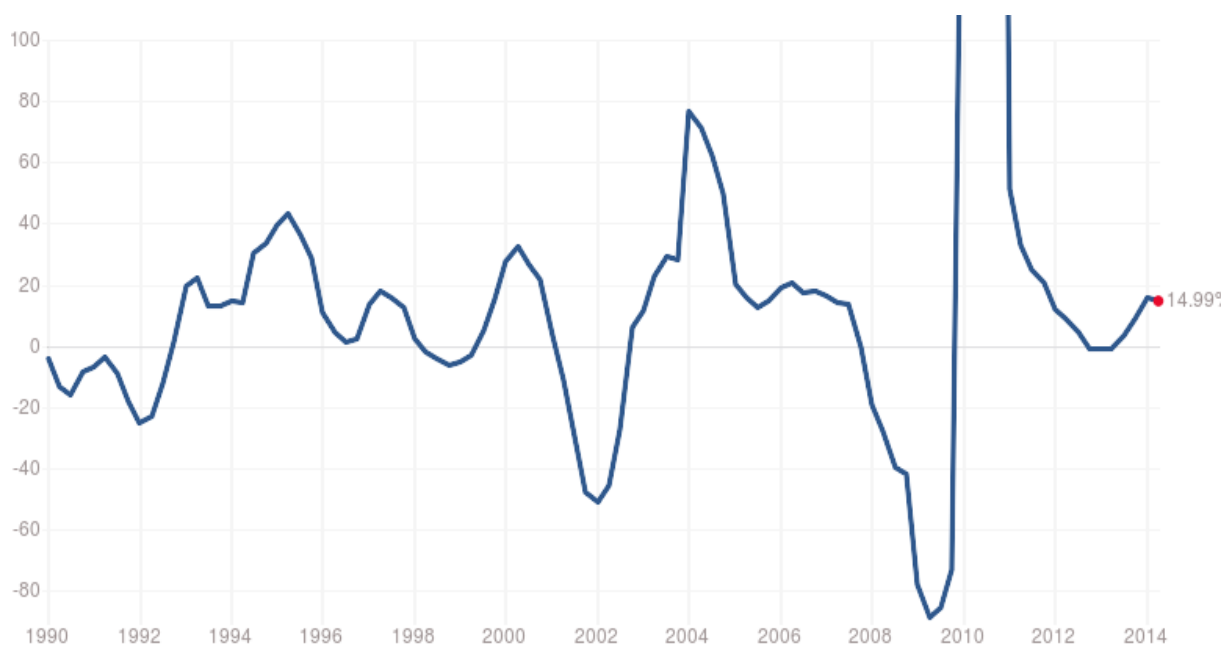
The above graph shows the S&P 500 price to book value. The value of a stock market is compared to its book value using the ratio price to book ratio. Its calculation is the division of the current closing stock price by the book value per share of the latest quarter (Investopedia, 2014).

The net assets available to the common shareholders a company is compared with the stock sale price using price to book ratio. The formula in particular is

$$P/B \text{ Ratio} = \frac{\text{Market Price per Share}}{\text{Book Value per Share}}$$

The price to book value is very useful, especially in this particular case because we spoke of the criticism that the S&P received over their actions during and prior to the 2008 financial crisis. The price to book value tells us, in layman's terms, how much the market is willing to pay for a given stock. The way that it works is, the scale is comprised of small numbers, starting from zero, where the number 1 represents the true value of the equity per share. Meaning that a price to book value above 1 shows that the market is willing to pay more than the equity per share value.

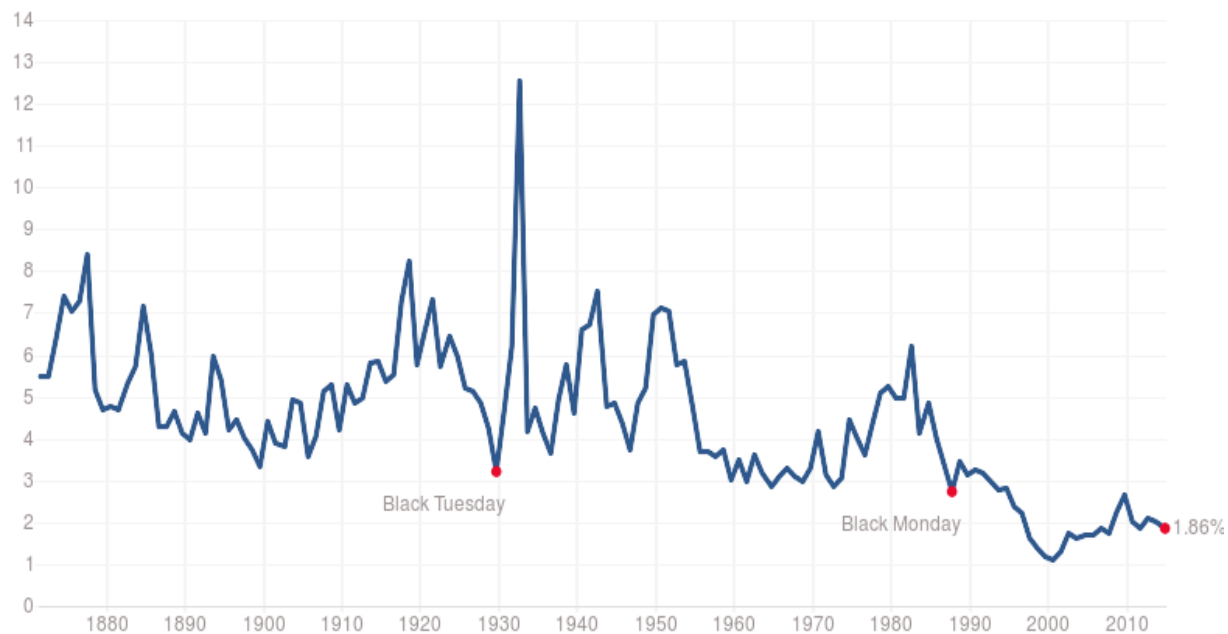
In this case, we can see that the S&P has been incredibly popular, where people have been willing to pay five times the equity per share value at certain points in recent history. While we can distinctly see that there was a dip in price to book value after the financial crisis, we can also see dips across the entire graph, as popularity tends to vary much more than the success of the index itself. Therefore, we cannot say for certain that the S&P had become less popular among investors after the financial crisis due in particular to the crisis, even though the data seems to suggest that it did happen. Either way, the S&P remains at 2.81 today, meaning that even though it's not as popular as it was back in 2000, it's still lauded for being a successful index.



The above graph shows the earnings growth rate of S&P 500, from the year 1990 until today. The growth in earnings is quite simple, which is defined as the growth rate of investment earnings in the said index. Generally, a higher earnings growth is better. Like price to book value, this value represents a ratio, and can thusly have negative values. The formula for present value of stock is given by

$$P = D \cdot \sum_{i=1}^{\infty} \left( \frac{1 + g_i}{1 + k} \right)^i$$

Where P represents the present value, k represents the discount rate, current dividend is denoted by D and the revenue growth rate for period i is denoted by g. To analyze the graph above, it is visible that S&P tends to fluctuate in both positive and negative values. There are several key events that have caused peaks in the above graph. The most notable are the 2001 contraction resulting in P/E peak, the Dot-com bubble burst of March 10, 2000 and of course Black Monday of October, 1987. All of these peaks are visible on the graph, including the one around the 2008 financial crisis. The earnings growth rate had fallen down to negative 90, however, in less than a year, it had flown off the charts, which might be part of the reason that S&P received so much flak over their survival of the financial crisis.



The above graph shows the dividend yield of S&P 500 over the past 130 years.

Dividend yield has a very simple formula of

$$\text{Current Dividend Yield} = \frac{\text{Most Recent Full-Year Dividend}}{\text{Current Share Price}}$$

This means that dividend yield is quite simply, how much money is being paid in comparison to how much a stock is worth. Therefore, stock worth and dividend yield are in direct reverse proportion. The above graph shows this relationship in action as after the infamous Black Tuesday stock market crash, S&P's dividend yield skyrocketed, logically, because stock prices plummeted. The same can be said for Black Monday, although this was a much smaller, more isolated incident, so the peak is much smaller. The current dividend yield of S&P is 1.86%, which is a rather small number, but as long as it is a positive one it should still encourage investors. The last large spike in dividend yield is very obviously the financial crisis of 2008, and after it there are no positive spikes, only a smooth variation around the current percentage.

The obvious conclusion to the analysis of the S&P indicators is that S&P is a very secure index that promises profits for the upcoming years. However, this is considered public knowledge already. The question at hand is, how the S&P fared during the financial crisis of 2008, why it fared that way and how would it react in a future crisis.

Many US officials contend that the S&P purposefully used faulty models, knowing that they would hurt investors in the process. In fact, they were in part blamed for causing the financial crisis, or at the very least adding fuel to the fire. Whatever the case, the S&P took a lot of flak for the models they used. The problem with financial models on indexes, however, is that they all come at a price of being unverifiable. In

fact, no financial model can predict with certainty. While a lot of models are considered accurate, none are certain, as is the nature of indexes and stocks in general.

## Chapter 5

### Model

I believe that in analyzing the S&P 500, for this particular purpose, it is wise to employ the Black-Scholes model, as the only non-observable market parameter through it is the underlying asset's future volatility in average. That being said, it is a very accurate model with very realistic depictions.

The main problem with the approximation of factor model for option returns purpose is general implausibility of betas which are constant. As a given option contract shows evolution and time changes, it transforms from a long-term option to a short-term option obviously. There can be dramatic effects for these changes. Let's assume a yearly volatility of 15% with a rate of interest of 5%. One 22 day call has the Black-Scholes delta of around 0.99 for an option that's 10% in the money, or 0.02 if an option is 10% out of the money. The following shows the two options' instantaneous betas, according to the definition by Black-Scholes model:

$$B - S \text{ delta} \times \frac{\text{underlying price}}{\text{option price}}$$

These betas are 9.6 and 64.4 respectively. There are chances about the development of one of these two options from a contract that had been at the money and had expiry date for 6 months, with 7.7 as beta, upon issue, the magnitude of time variation in betas obviously matters.

I believe that a diffusion setting might provide more concrete evidence. Let's suppose that asset price uncertainty in the case of S&P is driven by a K-dimensional, process with zero drift of diffusion marked as St. Consider the price observation of

significant options on the same underlined security which are totally varying depending on the expiry time.

$$\frac{dp_{it}}{p_{it}} = [rt + \mu(\tau_{it}, \kappa_{it}, vt, Ti)]dt + \beta(\tau_{it}, \kappa_{it}, vt, Ti) dSt,$$

Above,  $r_t$  represents short rate instantaneously,  $\beta$  is a  $K * 1$  vector,  $\tau$  is the option's expiration time at the time  $t$ ,  $\kappa_{it}$  is option's moneyness at time  $t$ ,  $vt$  represents a vector of aggregate-level conditioning variables seen at time  $t$ ,  $T_i$  represents a variable discerning the security type as put or call and  $\mu(\cdot)$  and  $\beta(\cdot)$  are continuous.

From a pricing relation, the above formula helps in zeroing in on the magnitude of deviations, instead of testing the zero mispricing point hypothesis. There is very obviously a possibility for profit for a trader that decides to purchase stocks that have different put and call options, in exploiting their apparent mispricing. This is exactly what happened back in 2008. The S&P board used inaccurate models that would promise a higher return than expected, thereby luring in investors with copious amounts of money towards investing in S&P stocks and further dragging down the national debt.

Since inclusion in S&P index is a matter of celebration for companies, there needs to be removal of a company for each company added. An index effect is seen by many analysts which is a rise in price initially soon after the addition of a stock is announced and there is the removal of stock decline due to reasons except buyout or merger (Bajkowski, 2009). A general observation is that during a full year performance review, the stock portfolios removed from S&P index due to reasons excluding a buyout is exceeding the stock portfolios which are added.

It would appear that the S&P very frequently removes stocks from its portfolio without a direct and obvious reason for doing so. In fact, sometimes it seems

counterproductive to do so, however, the S&P has strict rules that are followed almost religiously. For instance, many companies are cut out due to becoming too small, even though these so called outcasts might keep performing towards satisfactory results in the future.

The idea is that the S&P must put the investors first and for that purpose, there are rules that are always followed to the fine print, regardless of the possible negative outcomes.



## **Chapter 6**

### **Conclusion**

#### **6.1. Summary of the Study**

Given the high importance of the Standards and Poor Index in explaining the stock market behavior globally, the examination of the credibility of the index given the recent financial crisis becomes particularly significant. Thus, it is hypothesized in this study that the recent financial crisis has significantly affected the credibility of the index. The aim of this study is to examine the credibility of the index given the recent global financial crisis of 2008. This is especially relevant given the recent allegations on the index in failing to warn the investors about the housing price collapse and the associated crisis in 2008.

After explaining the relevance of the study, its aim and objectives, the next chapter discusses the main studies related to the research question and the objectives of this study. The discussion in this chapter shows that there is a lack of systematic and empirical studies examining the effects of financial crisis on the usefulness of the S&P index. The existing studies criticize the index for not warning investors about the housing price collapse and the associated problems. There are two arguments on the usefulness of the index, one supporting and the other one opposing its usefulness. This chapter clearly shows the significance of empirical studies in examining the credibility of the index compared to the other indices.

In the third chapter, the methodology for the study is discussed. The discussion shows positivism as the method with quantitative analysis as the research strategy. The

data is analyzed using both descriptive and inferential statistics. The data sources here are Bloomberg and Yahoo Finance.

In the fourth and fifth chapters, the analysis and the findings of the study are discussed. The S&P index does seem to favor investors, regardless of the 2008 financial crisis. It simply doesn't seem likely that the index will drop again. The incident in 2008 seems to have been an isolated one seeing as how every index dropped the ball, so to speak and there was a significant drop in profits and a sudden increase in dividend yield, followed by a very careful rise back into functionality. Thus, the hypothesis that the recent financial crisis has affected the index significantly is accepted in our study while the index has risen back to its functionality, as shown by the study. Historically, it can be seen that this crisis is not the first time when the values of equities, bonds and other asset classes were significantly affected by a crisis. During the Second World War, there was significant decline in the S&P Index by nearly 17% while it came back significantly after the Second World War reaching 62 percent (Wealth Management Systems Inc, 2014). The invasion of South Korea by North Korea also affected the index significantly resulting in a decline of 5.38 percent, while it again rebounded after the war by about 30 percent more than the initial decline. Again the Iraq Kuwait war resulted in a significant decline in the index by about 13.5 percent while after the war, it again increased significantly to 10.16 percent higher than the initial decline. Thus, the decline of the index by the recent crisis is not a new phenomenon. Historically, there are several instances where it declined significantly but again came back to normality after the incidents. Our study also supports these findings and show that in spite of the effects of the crisis, it is now back to normal functionality. Thus, the global financial crisis has

not affected the credibility and usefulness of the crisis in the long run, though there had been significant effects in the short run.

There was simply no way for S&P to provide a perfect testament as to what could have happened at the time. Even if they were to have analyzed the index against other indices or companies at the time, there would have been no clear way of knowing for sure that a crash would happen. In fact, the stock market could have gone the other way at that time, to no surprise. It is simply in its nature to be erratic in such a way.

Indexes are bound to fail at some point and it is rather strange that the S&P received so much criticism over the 2008 crash, since it didn't directly cause or influence the crash, as some people tend to claim. The above analyses and comparisons to the Dow Jones Industrial Standard show very clearly that the crisis hit S&P as much as it did any other index. Whatever profit the S&P board might have made in the process is made negligible by the overall losses.

Furthermore, on the matter of projecting for the future, the S&P is on a very clear increase in profits and values, at a very acceptable dividend yield. It is quite certainly a favorable index that holds quite a good rating on any website that offers live trend analysis. In fact, every single official source is claiming that now is the time to buy S&P. As for what the future will bring, it is impossible to tell, but the charts certainly seem to claim that green is in S&P's future.

## **6.2. Recommendations**

The credibility of the index needs to be examined only historically rather than just looking the short term trends. In this regard, buy and hold investing can be

recommended for the investors since the short term trends cannot be relied for decisions on the investment in the stock market. This has less risk compared to the alternative investment strategy, which is the market timing based on the current trends in the index. This is because market timing has the risk of getting stuck in a day of losing, without being able to reap the advantage of the best days in the stock market. Thus, the market decline can be considered a buying opportunity rather than a loss since the overall trends need to be considered in the investment rather than the short term trends.

### **6.3. Limitations and Scope for Future Research**

In this study, the analysis is confined only to the effects of the recent financial crisis on the S&P index and how has it affected the credibility of the index. The study can be extended by extending the effects of other crises periods historically and comparing all these effects on the index along with other indices to get a broad and detailed picture in this regard.

## References

- Altman, R. C. (2009). The Great Crash, 2008: A Geopolitical Setback for the West. *Foreign Affairs* , 1-7.
- Aleer,MM., JJ Martin and TP Amaral(2013) : " Has the Basel Accord Improved Risk ManagementDuring the Global Financial Crisis?" Retrived from <http://www.ucm.es/data/cont/docs/518-2013-11-05-1226.pdf>
- Bajkowski, J. (2009, February). *The Outcasts: Stocks Removed From the S&P 500*. Retrieved 2014, from American Association of Individual Investors: <http://www.aaii.com/journal/article/the-outcasts-stocks-removed-from-the-sp-500>
- Breslow, J. M. (2013, February 5). *4 Reasons Why the S&P Fraud Lawsuit May Be a Game-Changer*. Retrieved 2014, from PBS: <http://www.pbs.org/wgbh/pages/frontline/business-economy-financial-crisis/untouchables/4-reasons-why-the-sp-fraud-lawsuit-may-be-a-game-changer/>
- Campbell, L. (2013, February 11). *S&P Faces Federal Lawsuit over 2008 Financial Crisis*. Retrieved 2014, from Lawyers and Settlements: [http://www.lawyersandsettlements.com/articles/consumer-fraud/Standard-and-Poors-financial-crisis-lawsuit-18467.html#.U\\_J9gvm1ZPI](http://www.lawyersandsettlements.com/articles/consumer-fraud/Standard-and-Poors-financial-crisis-lawsuit-18467.html#.U_J9gvm1ZPI)
- Carrig, D. (2014, August 29). *S&P 500 closes at record high, up for 4th week*. Retrieved 2014, from USA Today: <http://www.usatoday.com/story/money/markets/2014/08/29/stocks-friday/14792269/>
- Chaudhary,Mo(2011) : " The Financial Crisis and the Behavior of Stock Prices"Retrieved from <http://people.mcgill.ca/files/mohammed.chaudhury/CrisisApr042011.pdf>
- Corbet,S(2014) : " The Contagion Effects of Sovereign Downgrades: Evidence from the European Financial Crisis". *International Journal of Economics and Financial Issues* Vol. 4, No. 1, pp.83-92
- Dehaan, E(2103) : " The Financial Crisis and Credibility of Corporate Credit Ratings"Retrieved from [https://www.stern.nyu.edu/sites/default/files/assets/documents/con\\_040523.pdf](https://www.stern.nyu.edu/sites/default/files/assets/documents/con_040523.pdf)
- Dreibelbis, S., & Breazeale, J. (n.d.). Rating the Analysis in the Current Recession: A Review of Moody's and Standard and Poor's. *Academy of Banking Studies Journal* , Vol. 11, No. 1 , 2012.

- Eavis, P. (2013, February 5). *U.S. Contends S.& P. Purposely Used Faulty Models*. Retrieved 2014, from New York Times: [http://dealbook.nytimes.com/2013/02/05/financial-models-at-the-heart-of-lawsuit-against-s-p/?\\_php=true&\\_type=blogs&\\_r=0](http://dealbook.nytimes.com/2013/02/05/financial-models-at-the-heart-of-lawsuit-against-s-p/?_php=true&_type=blogs&_r=0)
- Einhorn, E. (2011, August 9). *Washington pols are at fault for debt downgrade, not S&P, Bloomberg says*. Retrieved 2014, from NY Daily News: <http://www.nydailynews.com/news/politics/washington-pols-fault-debt-downgrade-s-p-bloomberg-article-1.947654>
- Gandel, S. (2013, February 6). *How S&P 'Burned down the house*. Retrieved 2014, from Fortune: <http://fortune.com/2013/02/06/how-sp-burned-down-the-house/>
- Grey, B. (2013, February 6). *Standard and Poor's Credit Rating Agency Charged With Fraud in Sub-Prime Mortgage Ratings*. Retrieved 2014, from Global Research: Canada: <http://www.globalresearch.ca/sp-charged-with-fraud-in-mortgage-ratings/5322037>
- Hodgson, G. M. (2014). The financial characteristics of large and small firms before and after the 2008 stock market crash. *The International Journal of Business and Finance Research* , 1-16.
- Hodgson, G. M. (2009). The Great Crash of 2008 and the Reform of Economics. *Cambridge Journal of Economics* .
- Holthausen, R., and R. Verrecchia. 1988. The effect of sequential information releases on the variance of price changes in an intertemporal multi-asset market. *Journal of Accounting Research* 26 (1):82-106.
- Investopedia. (2014). *Price-To-Book Ratio - P/B Ratio*. Retrieved 2014, from Investopedia: <http://www.investopedia.com/terms/p/price-to-bookratio.asp>
- Jaballah, J(2012) : "Impact of the Subprime Crisis on the Reputation of the Credit Rating Agencies", Retrieved from [http://www.efmaefm.org/OEFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2012-Barcelona/papers/EFMA2012\\_0326\\_fullpaper.pdf](http://www.efmaefm.org/OEFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2012-Barcelona/papers/EFMA2012_0326_fullpaper.pdf)
- Krisiloff, S. (2014, September 18). *S&P 500: Years Like This*. Retrieved 2014, from Investing: <http://www.investing.com/analysis/s-p-500:-years-like-this-226364>
- Lesmond, D. M. (2001). The Illusory Nature of Momentum Profits. *Unpublished Manuscript: Tulane University* .

Malkiel, B. G. (2003). *The Efficient Market Hypothesis and Its Critics*. CEPS Working Paper No. 91 .

Menon,S and V Ullattil(2012) : "Impact of Macroeconomic Variables on S&P Global Equity Indices" Retrieved from [https://www.academia.edu/6207322/Impact\\_of\\_Macroeconomic\\_Variables\\_on\\_S\\_and\\_P\\_Global\\_Equity\\_Indices](https://www.academia.edu/6207322/Impact_of_Macroeconomic_Variables_on_S_and_P_Global_Equity_Indices).

Murphy, C. (2013, February 5). *US Sues S&P Over Mortgage-Bond Ratings*. Retrieved 2014, from ETF: <http://www.etf.com/sections/features/15927-us-sues-sap-over-mortgage-bond-ratings-.html>

Odean, T. (1999). Do Investors Trade Too Much? *American Economic Review* , 1279-1298.

Shiller, R. J. (1981). Do Stock Prices Move So Much to Be Justified by Subsequent Changes in Dividends? *American Economic Review* , 421-436.

Twin, A. (2008, November 20). *S&P 500 sinks to '97 low*. Retrieved 2014, from Money @ CNN: [http://money.cnn.com/2008/11/20/markets/markets\\_newyork/](http://money.cnn.com/2008/11/20/markets/markets_newyork/)

Velthuis,S(2013) : " Risks and Ratings: the credit rating agencies and the global financial crisis" Retrived from [https://www.academia.edu/1939498/Risks\\_and\\_Ratings\\_the\\_credit\\_rating\\_agencies\\_and\\_the\\_global\\_financial\\_crisis](https://www.academia.edu/1939498/Risks_and_Ratings_the_credit_rating_agencies_and_the_global_financial_crisis).

Wohlstetter, R. (1962). *Pearl Harbor, Warning and Decision*. Stanford: Stanford University Press.