

**The Impact of Cross Listing on Shareholder's Return:  
An Empirical Study of Canadian Mining Companies Cross Listed on  
the Frankfurt Stock Exchange**

By

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## **Abstract**

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This paper tests the impact of cross-listing on Canadian mining firm's shareholder's return. An event study is used to test abnormal return following the announcements of cross-listing event on the Frankfurt stock exchange. Cumulative Abnormal return around the cross-listing date is used as a proxy to test this impact. 31 Canadian firms that are cross-listed on the Frankfurt stock exchange are collected through the period of 1989-2003 for this study.

Canadian stocks react negatively to cross-listing on Frankfurt stock exchanges around the cross-listing date, at the 5% significance level. However over a relative long period Cross-listing in the Frankfurt stock exchange showed a less negative market reaction. Both reactions are however not significant. The test results support findings of previous studies that cross-listing provides some sort of benefit especially over time.

Therefore, Canadian firms considering cross-listing on the Frankfurt stock exchange as a way to add value for its shareholders' should consider it despite the Canadian market reaction to this decision. This is because cross-listing provides many other benefits as highlighted in our literature review that on the long run will affect its share-price and thus shareholders return.

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## **Chapter 1: Introduction**

### **1.1 Purpose of study:**

Fundamentally, a business operates to maximize Shareholder's return. Therefore maximizing shareholder's return is a major objective of every senior management team. This objective not only boosts the confidence of existing shareholders to increase their stake in a business but also serves to attract new investors to develop a positive perception of the companies' sustainability and profitability. The drive to satisfy shareholder's wants has made senior management consider different strategies. One popularly considered is known as cross-listing. This can be defined as a situation whereby firms choose to list their shares on one or more foreign stock exchanges in addition to its domestic stock exchange. This does not only meet shareholders wants as it were but gives the company a new status as an international firm which most management of firms want to attain. This strategy is widely considered among most start up and middle sized companies management.

The question which now arises is does cross listing actually affect existing shareholder's return?

This paper examines the impact of cross listing on shareholder's return using a sample of Canadian mining companies cross listed on the Frankfurt stock exchange. We investigate if this impact occurs over a relatively short period or a relatively long period. In addition, the paper discusses various theories and management motives behind management's decision to cross list.

## **1.2 Background:**

The Commodity market is a market that would continue to thrive in the near future considering the demand for various commodities especially hard commodities such as gold and diamond. These commodities are viewed as alternative investments for portfolio diversification. This puts companies involved in the exploration and production of these commodities on the spot light for market, financial analysts and investors' scrutiny and valuation. Risk adverse investors despite the volatility of commodity prices still would want to buy the shares of companies trading the commodities

From the stat Canada website, it can be seen that one of the major drivers of the Canadian economy is the mining sector and oil and gas industry. These are the third largest contributor to the nations GDP. Thus, the need to look closely at the likely benefits for purchasing Canadian mining Companies stocks by shareholders. In a bid for management to identify different options to ensure that they maximize shareholders wealth, this makes them look at cross listing.

Different Scholars such as Roosenboom and van Dijk (2009) propose that there are four main benefits derived from cross-listing. They include; market segmentation, market liquidity, information disclosure, and investor protection while Sarkissian and Schill (2009) stated that firms that cross-list experience valuation gains with the reduction of market barriers as well as Karolyi (1998) who report that the share price reacts favorably to cross border listing, supporting Sarkissain and Schill(2009) claims.

Scholars gave recommendations of different stock exchanges to cross list that would have the greatest positive impact on Shareholder's return. Doidge, Karolyi and Stulz (2009) proposed New York as the most competitive exchange for firms to cross-list. However the number of companies that choose to cross-list on London exchange has increased significantly since 2001. Based on this premise we claim that the size of the exchange is a factor that management considers when deciding to cross list.

Recent statistics from the world federation of exchanges show the Frankfurt stock exchange is among the top 10 stock exchanges in the world and reports from the Frankfurt stock exchange show them as an exchange of choice for companies in emerging economies. This is because of the ease companies get to list on the exchange as well as the liquidity it provides their stocks. This explains why companies from different part of the world see the Frankfurt stock exchange as a good choice.

Above all, a very important question still remains to be answered and that is, does cross listing on this exchange affect shareholders return? This is the focal point of this research.

### **1.3 Outline:**

This paper is divided into five chapters. Chapter 1; gives an overview of cross listing as it relates to this paper and the purpose of carrying out this research. Chapter 2; presents a review of literatures pertaining to cross listing and its various implications. In addition, to other researchers empirical test result and evidences. Chapter 3; describes our data and explains our research methodology. Chapter 4; illustrates and provides an analysis of our empirical result and Chapter 5; gives a conclusion and recommendation of our paper.

## **Chapter 2-Literature Review:**

### **2.1 Introduction and outline:**

McKenzie 2008 quarterly report (as cited in Dodd 2011) brings to our attention the globalization and integration of the world financial markets, and in particular, significant capital market developments such as the introduction of the Euro in the European Union in 1999, the Sarbanes-Oxley Act of 2002 (SOX) and the introduction of the Alternative Investments Market (AIM) of the London Stock Exchange in 1996 characterized by low disclosure requirement in addition to easy access to capital.

All this has been identified to cause debate among academicians and practitioners concerning the motivations for, and the benefits of, cross-listings. This adds to the considerable attention the decision of cross listing had drawn in the last three decades. Therefore we arrange the literature review of this MRP to follow the outlined subheading:

### **2.2 Why do firms cross list?**

Dodd (2011) reports that managerial surveys and the literature on the determinants of cross-listing decisions indicate that an international cross-listing is often an integrated part of the company's global business strategy .This is according to King and Mittoo study. Often times firms that recently went public, and more export-oriented companies choose to list their shares on a foreign exchange to signal to markets various stakeholders

that the company has become a global player. Furthermore, (Bancel and Mittoo 2001) suggests that cross-listing is considered to be a means of internationalizing the investor base in line with the international profile of the firm's operations and thereby accessing the foreign equity capital needed to finance investment opportunities.

Consider the findings of Mittoo (1992) as well as Bancel and Mittoo (2001). Together these papers survey the managers of European and Canadian firms listing in the United States. Both sets of managers cite very similar reasons for cross-listing, but the reasons for listing differ in their relative importance for both sets of managers. European managers, who were surveyed much later, cite "increased liquidity, prestige and image" as the most important benefit from listing in the United States, in addition to expansion of shareholder base and interest by foreign investors, "increased access to foreign capital markets/financing ability," "facilitated implementation of the global strategy," and "enhanced stock performance/stock liquidity." Despite these benefits about 12 percent of managers still believe that a cross-listing adds no value to the firm.

The desire for "increased liquidity, prestige and image" is consistent with Fuerst (1998) and Moel study (as cited in Dodd 2011) who propose that firms are motivated to cross-list as a means for them to communicate their private information, and thus signal their quality to the market. Although (Bancel and Mittoo, 2001) states that managers may be motivated by such considerations as the improved prestige, image and visibility of their company to customers and investors. Chouinard and D'Souza study (as cited in Dodd 2011) states the primary financial objective of a foreign listing is a "reduction in the company's costs of capital and, accordingly, improved corporate valuation".

Despite the likely benefits of cross-listing, not every company wants to cross-list. This is because of the costs involved in cross-listing. Some clearly identified by Cheol S. et al as cited in the text *International Financial Management*, Canadian perspectives include:

- a. It can be costly to meet the disclosure and listing requirements imposed by the foreign exchange and regulatory authorities;
- b. Once a company's shares are traded in overseas markets, there can be volatility spillover from those markets;
- c. Once a company's shares are made available to foreigners, they might acquire a controlling interest and challenge the domestic control of the company.

### **2.3 Developments in cross-listing**

At the end of the first decade of the 21st century, firms wanting to pursue a cross-listing abroad had many options. Sarkissian and Schill (2009a) document how, over time, exchanges from 34 countries have hosted international (pure exchange-traded) firms. This number has risen dramatically over time. In the first decade of the 1900s, firms cross-listed on five exchanges (Belgium, France, Switzerland, the Netherlands, and the United Kingdom). By the 1950s, the number of host exchanges had risen to nine (including Austria, Canada, Luxembourg, and the United States), and to 14 in the 1970s (now including Australia, Germany, Japan, Malaysia, and Singapore). Substantial growth has occurred since the 1970s from 16 host exchanges in the 1980s, to 24 in the 1990s, and finally to 30 in 2000s. The last two decades have also witnessed the entry of new host markets. In the 1990s, firms cross-listed in Brazil, Denmark, Hong Kong, Italy, Norway, Peru, South Africa, and Spain for the first time. Since then, Argentina, Finland, Israel,

Mexico, Poland, Portugal, Taiwan, and the United Arab Emirates have joined the host market ranks. In total, these 34 exchanges have accommodated 3,683 cross-listing firms over time. The largest exchanges have been the United States (1415), followed by the United Kingdom (494), Luxembourg (285), France (208), Germany (193), and Switzerland (176) (Sarkissian and Schill, 2009a).

Despite the growth in the number of host exchanges, a relatively small number of exchanges have consistently dominated the host cross-listing market. For example, in the last decade of the 20th century, 30 international exchanges hosted just fewer than 800 firms. These listings have been concentrated in the top six markets: the United States (367), United Kingdom (71), Luxembourg (118), Canada (58), Italy (19), and France (18). Collectively, these countries account for almost 82 percent of all listings in that decade. In short, while the number of host exchanges has risen over time, listing activity is concentrated in a small number of exchanges. Second, since the 1950s, the top six host markets have attracted between 78 percent and 94 percent of the entire number of listings. Furthermore, only 12 distinct host markets have occupied the top six host market positions since the 1950s: the United States and the United Kingdom (every decade); France (five decades); Switzerland (four decades); Belgium, Luxembourg, and the Netherlands, (three decades); Germany (two decades); and Canada, Italy, Japan, and New Zealand (one decade each).

Among the 12 dominant host markets, considerable variation in rankings exists over time. This is consistent with the notion that cross-listing activity occurs in waves in different markets. That is, the relative attractiveness of each exchange changes over time, and in specific periods, some exchanges are more popular than others. Although the United

States has been the top host cross-listing market for the last three decades, this has not always been the case. In the 1950s, the United States ranked a lowly sixth, behind Belgium in first place. France occupied the top market position in the 1960s and the United Kingdom held this distinction in the 1970s. Cross-listing wave activity is also evident with the popularity of Japan in the 1980s and more recently New Zealand in the 1990s.

Sarkissian and Schill (2009a) suggest that cross-listing waves partly result from superior relative financial/economic performance in the host market. In this regard, France in the 1960s, Japan in the 1980s, Luxembourg in the 1950-1970s, and the United States in more recent years all owe their popularity to their economic/financial health. Also, albeit inadvertently, the United States and the United Kingdom have benefited from governance reform measures in home markets in terms of attracting cross-listed firms. Since firms are more (less) likely to cross-list in countries with high (low) levels of investor protection (disclosure requirements), governance reforms at home render cross-listings in smaller, less regulated markets futile for these firms. Thus, firms are more likely to cross-list on U.S. and U.K. markets because they offer the highest level of investor protection, all else being equal. The top host markets are not universally popular, but owe their popularity to the patronage of one/two home markets. Belgium owes its popularity in the 1950s to U.S. and Canadian firms, and the United Kingdom to South African mining firms. Without such support, the share of foreign listings in Belgium and the United Kingdom would have dropped from 21.1 percent to 3.6 percent and 19.3 percent to 9.7 percent, respectively. The Netherlands and Switzerland also owe their popularity in the same period to U.S. firms. In the 1960s, U.S. and Belgium firms predominantly favored France

while the United Kingdom owed its popularity to U.S. and South African firms. In the 1970s, together with U.S. firms, Irish firms helped popularize cross-listings in the United Kingdom. In the 1980s, Canadian, Israeli, and U.K. firms helped to maintain the position of the United States as the top host market. In the same years, U.S. and U.K. listings largely determined Japan's popularity. Finally, in the 1990s, the wave of emerging market listings helped to maintain the position of the United States and the United Kingdom as the top host markets. Canadian firms still listed predominantly in the United States, while Australia owed much of its popularity to listings by firms from New Zealand (Sarkissian and Schill, 2009a).

Home market cross-listing activity has also varied over time. The largest patrons of host markets have been Canada (651), followed by the United States (551) (despite a fall off in patronage in recent times), the United Kingdom (285), Japan (234), and Australia (172). In fact, the drop in U.S. patronage partly explains why some countries such as Belgium no longer occupy the top six host market positions as they previously had done. The same countries have tended to dominate both host and home markets.

Much of the growth in the cross-listing market has occurred since the 1970s. Since then, the cross-listing market has grown considerably, rising from 255 listings in the 1970s to 741 in the 1980s and then to 1,550 in the 1990s. During the first decade of the 21st century, the number has fallen to 797. Cross-listings by Canadian firms rose from 16 in the 1970s to 177 in the 1980. For U.S. firms over the same period, cross-listings rose from 80 to 181. Between the 1980s and 1990s, listing rose as follows: Australia from 33 to 102 firms; Ireland from 10 to 45 firms; Israel from 20 to 90 firms; the Netherlands from 19 to 69 firms, and the United Kingdom from 65 to 130 firms. Only the United

States and Japan contributed less to overseas listings in the same period, decreasing from 181 to 101 firms and from 83 to 71 firms, respectively.

These listings also reveal sizable “proximity preferences,” as evidenced by Sarkissian and Schill (2004). This partly explains why Irish firms list in the United Kingdom, Canadian firms list in the United States, and New Zealand firms list in Australia. U.S. firms dominate listings in Canada. Firms from Hong Kong are the largest single group of firms listing in Japan. Geographically-close Austria, Belgium, Switzerland, and the Netherlands dominate cross-listings in Germany. In short, these examples show that the home bias plays an important role in cross-listing.

Having said this, an argument proposed recently as cited in Dodd 2011 suggests that while European markets have improved their quality and attractiveness to foreign companies, the US is potentially losing its competitive edge, particularly after the adoption of the Sarbanes-Oxley Act of 2002 (SOX), which has significantly increased the costs of a US listing (see, for example, Zingales, 2007; Yallapragada et al, 2008). Marosi and Massoud (2008) explicitly argue that foreign companies fled the US market due to reduction in net benefits of a US cross-listing after the adoption of SOX. Overall, there is recent evidence that a significant number of companies still choose to have their shares listed on foreign exchanges and also at the same time, a number of companies choose to delist their shares from foreign exchanges

**\*culled from** *O’conner, T. & Phylaktis, K.(n.d), Chapter 12: Cross listing behaviour and Dodd, O. (2011) Price, Liquidity, Volatility, and Volume of Cross-listed Stocks, Durham theses.*

## **2.4 Theoretical concepts influencing cross listing decisions**

From the introduction of this MRP and earlier discussed section of this literature review we can see clearly that cross-listing is a managerial decision supported by existing shareholders. However, it is important to identify the underlining theories that affect this “managerial decision”. According to Dodd (2011), the following theories were identified which aims to explain the effect of cross listing on shareholder’s return. These theories are related to Roosenboom and van Dijk (2009), Bris, Cantale, Hrnjic and Nishiotis (2011), and Lee (1991) various view on motivating factors for firms to cross-list:

### 2.4.1 Capital market segmentation theory

Dodd (2011) suggested that “cross-listing makes a company’s stocks accessible to investors who would otherwise find it less advantageous to hold the stocks because of investment barriers”. “In turn, improved stock investability after the cross-listing increases the shareholder base and the risk sharing and, thus, leads to a lower cost of capital”. Prior to Dodd report, Subrahmanyam in his study(as cited in Dodd 2011) offers analysis of the imperfections in international capital markets, and shows that cross-listing is one of the corporate financial policies that overcome the effects of capital market segmentation and, accordingly, results in a higher price of cross-listed stock. In other words, cross-listing makes stock more marketable to investors thus potentially increasing the demand for the shares since foreign investors from other countries can easily buy shares of companies not originally from their country and the company cross-listing its shares believe that other exchanges will give additional return to shareholders as a result of its cross-listing activity. This theoretically affects the price of the stock positively.

A number of empirical studies (Alexander et al, 1988; Foerster and Karolyi, 1993; Miller, 1999; Errunza and Miller, 2000) provide empirical evidence consistent with the market segmentation theory on the effects of cross-listings on shareholders' wealth.

#### 2.4.2 Legal bonding theory

As discussed in Dodd (2011), Cross listing on an exchange with stricter legal and disclosure requirement compared with the home market of the stock cross-listed is a way to “bond” the company to better corporate governance practises thus providing better protection to minority shareholders.

According to studies by Reese and Weisbach and Doidge (as cited in Dodd 2011), it was proposed that cross listing in the United States provided protection to Shareholders and reduced the extent to which Controlling shareholders might want to take advantage of private contact to management for their own selfish benefit. As a result this increases the company's growth prospects through access to external investment.

Furthermore, King and Segal (2004) studied the bonding hypothesis specifically for Canadian firms that were cross-listed in the U.S. The results showed that only Canadian firms that were actively traded in the U.S. got higher firm valuation gains compared with Canadian firms that were only listed on Canadian stock exchanges.

#### 2.4.3 Signaling theory

This can be compared to the improved investor recognition and market visibility concept that was identified as one of the motivating factors for firms to cross list. According to Dodd (2011), “the Legal bonding theory is closely related to signalling theory in terms of

the effects of foreign listings on shareholders' wealth". Fuerst study (as cited in Dodd 2011), "in an attempt to explain the increase in the number of listings by foreign companies on American stock exchanges with strict disclosure requirements in the 1990s, developed a theoretical model that rationalises the choice to cross-list on exchanges with high disclosure levels". Fuerst argues that voluntarily bonding to higher levels of disclosure via a cross-listing is a way for managers to convey information to the market about the firm's future prospects and quality. Since a cross-listing on an exchange with strict disclosure requirements signals superior operating performance in the future, the market reaction to the cross-listing decision is predicted to be strongly positive.

#### 2.4.4 Investor Recognition theory

The classic assumption of asset pricing is that markets are efficient, i.e. all information is costless and immediately available to all investors. However, in reality the process of the acquisition and dissemination of information in financial markets is complicated and costly. By listing shares on a foreign exchange, companies increase investor awareness abroad and make information about the company more easily accessible by foreign investors, which significantly reduce investors' monitoring costs. Chemmanur and Fulghieri's (as cited in Dodd 2011) theoretical model predicts a positive effect on shareholders' wealth from a cross-listing decision, given that following the cross-listing, investors can produce information about the company at a lower cost. To understand this clearly empirical evidence on the information environment of cross-listed companies shows that non-US companies cross-listed in the US enjoy an increase in media attention, analyst coverage and forecast accuracy following the cross-listing and the increase in

visibility is associated with a decrease in the cost of capital after the cross-listing. This is according to Baker et al and Lang et al study (as cited in Dodd 2011)

#### 2.4.5 Proximity preference theory

Sarkissian and Schill study (as cited in Dodd 2011) argue that “corporate financing decisions, like portfolio investments decisions, are biased towards domestic assets, i.e. they exhibit a ‘home bias’”. More precisely, their study shows that geographical, economic, cultural, and industrial proximity measures are important determinants of the corporate decision to cross-list. Furthermore, Sarkissian and Schill (2009a) provide evidence that wealth benefits are higher for cross-listings on markets that are already familiar with the company’s home market’s products (measured by cross-border export) and that are relatively close geographically (measured by the distance between the capitals). Thus Dodd claims that;

*The expectations of the impact of a cross-listing on shareholders’ wealth based on proximity preference theory are the opposite of the expectations that arise from investor recognition theory. While investor recognition theory implies the greatest wealth gains for shareholders’ occur when the host market is least familiar, due to the need to overcome higher information barriers, proximity preference theory implies the greatest benefits occur when the host market is most familiar.*

#### 2.4.6 Market timing theory

Henderson study (as cited in Dodd 2011) appraises how market-level conditions impact corporate capital raising decisions and find proof that companies issue equity in ‘hot’

markets in order to take advantage of soaring market valuations. Sarkissian and Schill (2009b) show that companies tend to cross-list in ‘hot’ host markets, i.e. when the host market outperforms other markets economically (in terms of GDP growth) and financially (in terms of growth in market capitalization-to-GDP ratio). This is also what Fernandes and Giannetti (2008) find. Thereafter, Sarkissian and Schill as well as Fernandes and Giannetti relate cross-listing attractiveness to market timing. Firms are more likely to list in countries where the magnitude of the (temporary) valuation gains is highest. Since market timing, by definition, only delivers short-term value gains, long-term gains from cross-listing are likely to manifest through a combination of bonding, enhanced liquidity, improvements in a firm’s information environment, and a larger shareholder base.

Therefore the studies of market timing theory supports Dodd’s proposition that ;Corporate managers’ time the company’s listing on a foreign exchange to take advantage of high market valuation at the stock-level, i.e. listing following a strong stock performance on the home market. Also managers time a foreign listing at the market-level, in other words, listing during a ‘hot’ market period

#### 2.4.7 Business strategy theory

According to Dodd (2011) Business strategy theory predicts “the impact of cross-listing on shareholders’ wealth to be a function of company-specific factors, because companies make the decision to cross-list for reasons related to their global corporate strategy”.

Pagano study (as cited in Dodd 2011) shows that companies tend to cross-list on markets where their industry peers are listed, which can be attributed to cross-listing companies

attempting to strengthen their competitive position in their industry. Fanto and Karmel (1997) and Bancel and Mittoo (2001) conduct Surveys of corporate finance managers on the benefits of cross-listings. Results reveal industry-specific reasons and a company's global business strategy are among the main reasons to cross-list. Bancel et al (2007) provide empirical evidence that emphasises the importance of the business strategy theory in explaining the stock performance of cross-listed companies.

In conclusion, Dodd (2011) suggests;

*Predictions of legal bonding, liquidity and investor recognition theories are similar as they all suggest that a cross-listing in a better quality market than the home market is beneficial for investors. In each theory, however, market quality is assessed from a different angle: legal bonding theory addresses the level of investor protection, liquidity theory the level of market liquidity, and investor recognition theory the quality of the information environment. Empirically, more developed financial markets offer high levels of investor protection, liquidity and information availability, and, ultimately lower transaction costs. This fact makes an empirical test of joint significance of the theories related to the effects of cross-listings on shareholders' wealth a challenging task.*

*Nevertheless, it is interesting to note that market segmentation and proximity preference theories make opposite predictions. Market segmentation theory suggests that the benefits of cross-listing would be higher because of the need to overcome more significant levels of segmentation between the home and the host markets. In contrast, proximity preference theory expects that the benefits would be higher from cross-listings in host markets that have a high level of similarities and connections with the home*

*market. Lastly, market timing and business strategy theories predict a significant variation in the effects of cross-listings on shareholders' wealth based on both market conditions and company-specific factors.*

## **2.5 Empirical evidences on the effect of cross listing on shareholders' return**

### 2.5.1 Cross-listings in the US

Listing in the US by a foreign company usually takes place in the form of an American Depository Receipt (ADR). American exchanges offer listing companies a number of benefits including high liquidity, a large investor base, analyst and media coverage, greater access to capital and a high level of investor protection. Not surprisingly, the empirical evidence shows that in the 1980s and 1990s non-US companies listing in the US, on average, experienced a significant positive abnormal return.

Miller (1999) examines the stock price reaction around the cross-listing announcement dates for 181 companies from 35 countries that instituted their first Depository Receipt programme over the period 1985-1995. Miller (1999) finds a positive abnormal return of 1.15% for a 3-day (-1, +1) event window around the announcement of an ADR-issuance. Importantly, the stock price reaction is determined by the listing venue (exchange vs. OTC), home market (emerging vs. developed), and avenues for raising capital (public or private). Abnormal return is found to be higher for companies from emerging markets (1.54%) and significantly higher for exchange listings (2.63%) compared to OTC listings and private placements. Miller (1999) interprets his findings as being consistent with the argument that higher liquidity and a larger shareholder base increase shareholder wealth. Later, Coffee (2002) interprets the findings of Miller (1999) as evidence for the legal

bonding theory. Coffee (2002) argues that this difference in price reaction on the announcement day of different type of listings is important evidence because exchange listings, Rule 144a private placements and OTC listings have critical differences in legal and reporting requirements.

Lee (2003) reports significant abnormal returns of 1.7% for a 3-day (-1, +1) event window and 3.3% for a 7-day (-5, +1) event window for a sample of 69 companies from 11 Asian and Latin emerging markets that cross-listed in the US via ADR programs from 1991 to 2001. Lee (2003) shows that the excess returns are unrelated to the degree of integration between a company's home stock market and the US stock market. He argues that the value effects are mostly due to an improvement in the company's ability to take advantage of growth opportunities.

Foerster and Karolyi (1999) examine stock price behaviour around the first-time US listings of 153 companies from Canada, Europe and the Asia-Pacific Basin region from 1976 to 1992. Foerster and Karolyi (1999) find a prelisting run-up in prices, defined as the average daily abnormal returns for the (-49, -10) days event period, are 0.095 % ( $t=2.28$ ). Around the day of listing the average daily abnormal returns are as high as 0.35 %. Overall, cross-listing companies earn CARs of 19% during the year before listing, and an additional 1.20% during the listing week, however, they incur a loss of 14 percent during the year following the listing. In general, the findings of Foerster and Karolyi (1999) are consistent with the liquidity and investor recognition theories on the effects of cross-listings on shareholders' wealth. A more recent study by Bris et al (2007) uses a relatively small sample of 20 non-US companies with dual-class shares cross-listed in the US and reports positive and significant annualized average daily abnormal return of

1.32% for the domestic share class and 0.62% for the US-listed share class during the 50 day period prior to the cross-listing event. The findings of Bris et al (2007) mainly support market segmentation theory.

### 2.5.2 Cross-listings outside of the US

In Serra study (as cited in Dodd 2011), a study was done to compare the impact on stock price as a result of cross-listings by non-US companies in the US and in the UK. The study examined the stock returns of 70 companies from 10 emerging markets and a control sample of 65 European companies from mature markets, around cross-listings in the US (NYSE & NASDAQ) and London (SEAQ-I) over the period 1991-1995. The study provides evidence that there are significant positive abnormal returns before listing and a significant decline in returns over the first five weeks following the listing. In conclusion Dodd reports that the evidence provided could be supportive of market segmentation theory. This study reports that, for companies from emerging markets, listing in the UK has the same effects on shareholders' wealth as listing in the US. However, for companies from mature markets, the positive impact on shareholders' wealth is limited to NYSE listings.

Bris et al (2009) investigate abnormal returns around cross-listings on the London stock exchange. Using a sample of 273 stocks including both stocks listed on the LSE and stocks admitted to trade on SEAQ, this study finds positive significant abnormal returns for the period (-20, 20) days around the listing/trading date for the stock exchange listings but not for the admissions to trade. Bris et al (2009) argue that the main source of value

creation around cross-listings is greater information disclosure.

Sarkissian and Schill (2009a) examine monthly stock returns during (-120 months; +120 months) around foreign listings for more than 1500 listings placed in 25 host countries based on the listing status as of December 1998. Firstly, they control for the order of the firm's foreign listing and report that the first listing is associated with unique effects on shareholders' wealth (at least transitory) while multiple listings yield diminishing gains. Secondly, they report substantial stock price run-up prior to cross-listing and a profound post-listing decline in returns in the long run, which is consistent with market timing theory. Nevertheless, they find a permanent change in a firm's cost of capital of about 2 percent that can be predominantly explained by cross-product market trade and investor familiarity. In other words, the long-term gains from a foreign listing are greater for firms listing on foreign markets that are geographically, economically, and culturally closer to their home market. The authors suggest that listing on American exchanges does not offer unique benefits to foreign firms in terms of shareholders' wealth.

Roosenboom and vanDijk (2009) carried out a study on market reaction to cross-listing using firms from 44 different countries cross-listed on eight major stock exchanges from 1982 to 2002. Their report showed that firms cross-listed on U.S. exchanges had the highest abnormal return at 1.3% on average. The next exchange that recorded abnormal return was London stock at 1.1% on average. This was followed by exchanges in Continental Europe that recorded 0.6% return. However, there was no significant abnormal return for firms that cross-listed in Tokyo.

This result finds evidence consistent with improved disclosure and bonding creating value for cross-listings on US exchanges, while overcoming segmentation and bonding are associated with higher announcement returns on the London Stock Exchange. The evidence is mixed for continental European exchanges and for Tokyo. Our results highlight the role of the destination market in value creation around cross-listings.

From the reviewed literatures, an inference can be made that based on the level of development in the US economy and the size and role of its capital markets in the global financial system, the effect of cross-listing on stock prices could be significantly different from cross-listing on other stock exchanges in the world. Regardless of the fact that only few studies have looked at cross-listing on exchanges outside of the United States. This supports Dodd suggestion that:

“Overall, there is empirical evidence that, on average, international cross-listings create wealth for shareholders. However, the evidence on the sources of the net benefits of cross-listings, particularly on markets outside of the US, is inconclusive”.

### 2.5.3 Cross-listings effects and Canadian stock price reactions

Many Canadian firms choose to cross-list in the U.S. As a result, a number of studies examine listings in the US by Canadian companies. However, it is important to remember that there are several different stock exchanges to choose from in the U.S. This raises the question, if the U.S exchange of choice has any significant effect on the Canadian firms' stock price? According to Kryzanowski and Lazrak study (as cited in Shi 2012), they claim that there is no significant effect in terms of liquidity.

Canadian companies list on the US exchanges directly as opposed to issuing ADRs. Moreover, the Canadian and the US markets have been geographically, economically and culturally integrated for some time. Despite this observable market integration, the studies of Doukas and Switzer (2000) and Mittoo (2003) report that Canadian companies experience significant positive price effects from a cross-listing in the US. Doukas and Switzer (2000) conduct a joint test of changes in the degree of capital market integration through time and of changes in risk premium for the sample of 79 Canadian stocks over the period 1985-1996. They find significant positive announcement effects during the (-120; +60) day period around a US listing announcement. Significant abnormal performance is observed mainly in the listing announcement period and, particularly, during the 60 trading days prior to the listing (31.06% on an annualized basis), whereas no significant effects on shareholders' wealth are found around the listing dates. Doukas and Switzer (2000) argue that their findings are consistent with the view that an international listing increases the investor base of the firm with beneficial effects on its cost of capital. The results also showed increased liquidity and investor recognition for the cross-listed firms. In addition, the authors stated that there still existed market segmentation between Canada and the U.S. Mittoo (2003) investigates short- and long-run effects on shareholders' wealth of direct listings in the US of 56 Canadian companies over the period of 1976-1990 and of 108 companies over the period of 1991-1999. The short-run performance analysis for the 7-day (-3,3) day event window around the listing date provides evidence of positive price effects, with the price effects being smaller in the post-1990 period compared to the pre-1990 period. The long-run performance analysis shows that cross-listed companies significantly under-perform Canadian market indices,

yielding negative cumulative abnormal returns of -10.53% during the three years subsequent to a US listing. Mittoo (2003) provides evidence that the determinants of the effects of a US listing including liquidity and industry factors, vary cross-sectionally and over time.

King and Segal (2004) used three groups of companies to test the bonding hypothesis of cross-listing. The authors tested Canadian firms' long-term valuation gains using 12-year data. There were several reasons why bonding hypothesis could be reflected in Canadian firms' cross-listing activities on U.S. stock exchanges: stricter supervision in the U.S.; a higher level of information asymmetry in Canadian firms; and more Canadian firms held by controlling shareholders, unlike most U.S. firms which were widely held. The results of this paper showed that only Canadian firms with high share turnover in the U.S. market got valuation gains in the long-run. Cross-listed Canadian firms which were not actively traded in the U.S. market were valued similarly as Canadian firms only listed in Canadian stock exchanges. Bonding hypothesis stated that firms' cross-listing got positive market reaction because the firms can offer better investor protection while operating in a market with higher standards. The test results of this paper showed that the valuation gains of these Canadian firms were due to higher investor protection.

Under the bonding hypothesis, Canadian firms' cross-listing in stock exchanges that are not considered stricter than Canadian stock exchanges may not get positive market reaction.

Shi (2012), reports that Canadian firms constituted one of the largest groups among international companies on London's AIM. "Canada takes aim" (2007) stated some

trends that had been found about Canadian firms' listing on AIM. Some Canadian firms chose to be listed only on AIM instead of being dual-listed on both Canadian stock exchange and AIM. Some Canadian technology and natural resource firms chose to list on AIM before they went public on stock exchanges in North America. If a Canadian firm was only listed on AIM, it was not required to follow disclosure requirements in Canada. Listing on AIM had been viewed as training for Canadian firms' being a North American public company ("Canada takes aim," 2007).

There is some discussion about Canadian stock exchange markets and AIM of London Stock Exchange. Rousseau (2007) compared the Canadian stock exchanges' competitiveness with that of AIM. According to the paper, Canadian stock exchange was stricter on information disclosure and corporate governance requirements. On the admission perspective, Canadian exchange was rule-based while AIM was principle-based. The author suggested that while AIM had attracted many firms, including some Canadian firms, Canadian stock exchanges may not be able to develop the same system as AIM.

## **2.6 Conclusion**

Despite financial research extensively covering the impact of cross-listings on shareholders' wealth, there remains other areas yet to be explored. One of such areas is cross-listing trends from the year 2000s considering the adoption of SOX in the US and the adoption of the single currency in Europe. Also as seen from the reviewed literatures the majority of empirical studies provide evidence on the impact of cross-listing in the US, which is significantly different from other major capital markets in terms of

disclosure requirements and costs of listing. This makes more research on the impact of cross-listing on shareholders return on other exchanges worth considering.

Bris, Cantale, Hrnjic and Nishiotis (2011) found that cross-listed firms from countries with higher accounting standards got lower abnormal return from cross-listing.

Lins, Strickland and Zenner (2000) stated that firms from developed countries cross-listed for other reasons such as higher level of market visibility and takeover opportunities. Such contradictory cross-listing trends call for further research to explore the costs and benefits of international cross-listings in the current conditions for different types of companies.

## **Chapter 3: Data description and Methodology:**

### **3.1 Introduction of Research Methodology**

An event study has been designed to empirically test whether cross-listing events are value enhancing or value destroying activities. If on average market reacts positively to cross-listing, then we can reasonably conclude that cross-listing are value enhancing activities; vice versa.

The most important assumption for this study is that Canadian stock market is strong-form efficient based on EMH, i.e., share prices speedily and accurately reflect all public and private information thus no one can consistently beat the market. In addition, we choose the cross-listing date as our event date rather than the announcement date.

### **3.2 Data description:**

As at June 2013, 855 Canadian mining companies were listed on the Frankfurt stock exchange. However, for the purpose of this study, 31 mining companies that cross-listed on the Frankfurt stock exchange from 1989-2003 was considered. Their cross listing dates were obtained from the Thomson Reuters DataStream data base – a comprehensive database for global financial research to a wide network of end users. These dates were used to define the event date and estimation window for our study.

In addition, daily stock prices in Canadian dollars around the event date of these Canadian firms were collected as well as daily market index prices as recorded in the TSX.

These data were used to measure the return and test if abnormal return existed as a result of the cross listing.

### **3.3 Model Design:**

This paper seeks to measure the effect on stock price/returns as a result of firms cross listing on the Frankfurt stock exchange. Canadian mining companies are the only category of firms considered in this paper. This is because we want to verify what caused a large influx of them to the Frankfurt Stock market in recent times. From January 2010-June 2013 records show about 283 Canadian mining firms cross listed on the Frankfurt stock exchange. However, since most of these company shares are penny stocks thus increasing greatly its systematic risk exposure as a result of high volatility we will be considering the firms that cross listed in the Frankfurt stock exchange and have been active for at least 10 years. This is the basis of our sample size. This is to ensure a level of stability of the firms. An event study methodology will be employed in this paper to measure the impact of cross listing. Cumulative abnormal return will be the proxy to test if there were significant effect on shareholder's return.

Stata statistical software will be used to analyse the data to identify the impact of cross-listing on share price and identify if there was a significant effect.

#### **3.3.1 Estimation Window:**

An estimation window is set before the event date. The estimation window is considered as a period that is prior the event when the stock prices are expected to behave normally without the influence of any external constraints. This period is used to evaluate the

normal performances of the prices of the securities of the mining companies. This paper chooses a 110-day estimation period which is 110 days before the cross listing date to 30 days before the event date. Expected return of the stock prices of the mining firms are estimated using the coefficients obtained from the equation below.

The Market Model is used to estimate how these companies performed relative to the performance of the market index (which is the value of  $\alpha_i$  and  $\beta_i$ )

$$RI = \alpha_i + \beta_i R_m + \epsilon_i$$

$\alpha_i$  is a measure of the performance of the securities i.e the intercept of the model

$\beta_i$  is a measure of the performance of the index i.e the slope of the model

RI is the expected return of the firms

$R_m$  is the expected return of the market

$\epsilon_i$  is the error term.

The return on S&P/TSX Composite Index was used as the proxy for the market return in the market model as the index provides investors with a broad representative benchmark for investors expected return. A linear regression was performed to estimate the value of  $\alpha_i$  and  $\beta_i$ .

### 3.3.2 Event Window

Two event windows were carefully chosen to span across a 11-day period and 21 days period .For the 11-day trading period it takes into consideration five days before the cross listing date and another five days after the cross listing date. And for the 21 days trading

period it takes into consideration 10 days before the cross listing date and another 10 after the cross listing date. This is intended to effectively capture the existence of any abnormal return on the securities for a relative short and relative long period which could be attributed to the event of cross listing. Abnormal return exist if there is an observable difference between the actual return of the firm and the estimated return of the firm as showed in the equation below:

$$AR_i = R_i - RI$$

$AR_i$  is the abnormal return of the firm

$R_i$  is the actual return in the event window

$RI$  is the expected return using the Market model.

Cumulative abnormal is the sum of the abnormal returns in the event period

$$CAR_i = \sum_{j=5}^5 AR_i$$

$$CAR_i = \sum_{j=10}^{10} AR_i$$

$CAR_i$  is the cumulative abnormal return of the firm.

### **3.4 Empirical Test**

Cumulative abnormal returns are viewed as the market reaction to the securities of the mining firms trading in Canada's stock market. A positive cumulative abnormal return across the firms in the event window confirms that the market believes the cross listing decision will create value and thus increase shareholders return, while a negative

cumulative abnormal return in the event window suggest a negative perception of the decision by the market.

## **Chapter 4: Empirical result:**

### **4.1 Market reaction:**

An event study of the Canadian stock market reaction to the cross-listing event on the Frankfurt Stock exchange was conducted using a regression model that has the cumulative abnormal return as the dependent variable with no independent variable. The test was carried out considering two different event windows to determine market reaction over a short period and relative long period. We calculate the cumulative abnormal return for the sample mining firms for these two periods and present the results as follows:

#### 4.1.1 Market reaction over an 11 day event window

The test for cumulative abnormal return showed a negative value of  $-0.0462377$  at a 5% level of significance. This means the cross-listing event on the Frankfurt stock exchange has a negative impact on the Canadian firms' stock prices. This give us reasons to support empirical studies and evidences that offer other motives behind firms cross-listing their shares on other stock exchanges apart from their home markets. These other reasons can be revised in our literature review in chapter 2. However the P-value is greater than 0.05 which suggests the impact is not significant.

Table 1 shows the test results of cumulative abnormal return in the 11 day event window period of cross-listing event.

```

Linear regression
Number of obs =      31
F( 0,      30) =      0.00
Prob > F      =      .
R-squared     =      0.0000
Root MSE     =      .24998

```

cumulative~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.0462377	.0448983	-1.03	0.311	-.1379322	.0454569

Table 1: Test Result of Cumulative Abnormal Return at 5% level of significance

#### 4.1.2 Market reaction over a 21 day event window

The test for cumulative abnormal return showed a negative value of -0.1081634 at a 5% level of significance. This means over a relatively longer period cross-listing on the Frankfurt stock exchange also had a negative impact on the Canadian firms' stock price. However, this value is lower indicating that the impact of the cross-listing event is better on average over a longer period of time. In addition the P value is also greater than 0.05 but less than the P-value for our first test. This suggests that the impact is not that significant. Therefore, we can infer that a cross-listing event may affect the share price positively over time considering some other factors like the market timing theory as discussed in our literature review.

Table 2 shows the test results of cumulative abnormal return in the 21 day event window period of cross-listing event.

```

Linear regression
Number of obs =      31
F( 0,      30) =      0.00
Prob > F       =      .
R-squared      =      0.0000
Root MSE      =      .34705

```

cumulative~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.1081634	.0623325	-1.74	0.093	-.2354634	.0191366

Table 2: Test Result of Cumulative Abnormal Return at 5% level of significance

## **Chapter 5: Conclusion and recommendation:**

From our study and result, cross listing decisions are seen to negatively affect shareholders return on an average using cumulative abnormal return as a proxy to test its impact on share price. However, it is important to note that this result is specifically for cross-listing on the Frankfurt stock exchange. This supports various scholars' studies notably Rousseau (2007) and King and Segal (2004) and contradicts different studies empirical result especially concerning cross-listing on the US stock exchange.

Therefore the need for further research to be done in this area using more recent data and increasing the sample firms, while considering different developments in various stock exchanges. In the case of the Frankfurt stock exchange, this will include the introduction of the Euro currency. These developments are highlighted in detail in our literature review.

Having said this we want to reiterate that although cross-listing events may not directly affect stock price positively. However over the long run other benefits such as increased liquidity that the firm will have access to tends to increase the firms' profitability. This will indirectly affect Shareholders' return positively. Since the firm will have more funds at its disposal for its business operations that can earn it more profit and thus increase the firm's value and share price simultaneously. This is the argument opined by the Director General of the Frankfurt stock exchange and this could be seen as a laudable explanation for the large influx of Canadian mining firms that are presently cross-listed on the Frankfurt stock exchange.

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### Appendix A.

cc	Name	crdate
1000	BARRICK GOLD (FRA)	1989-01-24
1001	ELDORADO GOLD (FRA)	1996-05-22
1002	MONETA PORC.MINES (FRA)	1996-07-11
1003	KINCORA COPPER (FRA)	1996-12-23
1004	CANARC RESOURCE (FRA)	1997-02-06
1005	VALENCIA VENTURES (FRA)	1998-01-07
1006	KINROSS GOLD (FRA)	1998-06-12
1007	TASEKO MINES (FRA)	1999-11-16
1008	AGNICO-EAGLE MNS. (FRA)	1999-12-28
1009	DOMINION DIAMOND (FRA)	1999-12-28
1010	NXA (FRA)	2000-01-04
1011	SILVER STANDARD (FRA) RES.	2000-03-14
1012	KOBEX MINERALS (FRA)	2001-02-22
1013	PAN AMER.SILVER (FRA)	2001-02-22
1014	NTH.AMER.PALLADIUM (FRA)	2001-03-05
1015	CLAUDE RESOURCES (FRA)	2001-07-13
1016	RED TIGER MINING (FRA)	2001-08-31
1017	IAMGOLD (FRA)	2001-10-25
1018	DORATO RESOURCES (FRA)	2001-11-02
1019	THUNDERMIN RES. (FRA)	2002-04-02
1020	GOLDCORP (FRA)	2002-06-04
1021	VISTA GOLD (FRA)	2002-06-20
1022	GLDN.STAR RES. (FRA)	2002-07-01
1023	CALEDONIA MNG. (FRA)	2002-07-24
1024	SAMEX MINING (FRA)	2002-07-30
1025	RADIUS GOLD (FRA)	2002-10-04
1026	MOUNTAIN PROV.DIAS.(FRA)	2002-11-04
1027	COLOMBIA CREST GD. (FRA)	2003-03-28
1028	RICHMONT MINES (FRA)	2003-04-11
1029	AFRICA HYDROCARBONS(FRA)	2003-06-06
1030	INTL.MINERALS (FRA)	2003-06-06

## Appendix B.

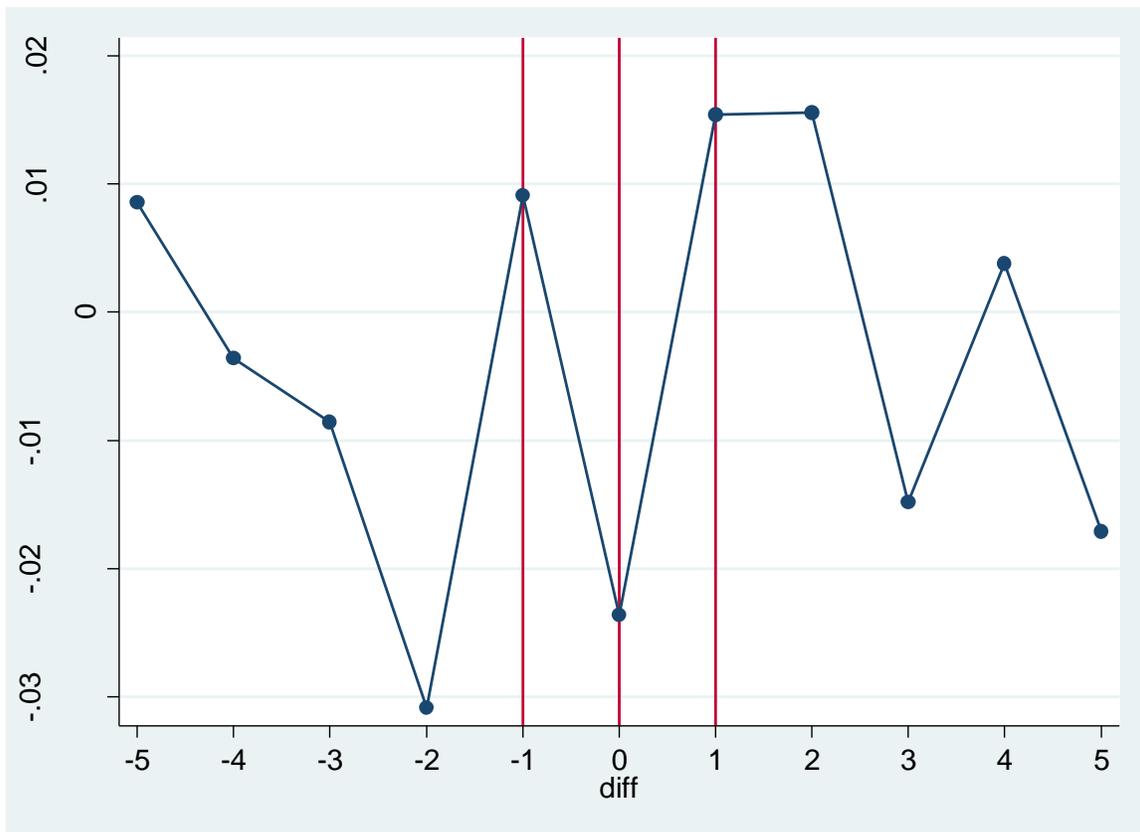
### 1. Test for cumulative abnormal return over an 11 day event window.

```
. reg cumulative_abnormal_return if dif==0, robust
```

Linear regression

Number of obs = 31  
F( 0, 30) = 0.00  
Prob > F = .  
R-squared = 0.0000  
Root MSE = .24998

cumulative~n	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
_cons	-.0462377	.0448983	-1.03	0.311	-.1379322	.0454569



## 2. Test for cumulative abnormal return over a 21 day event window

Linear regression

Number of obs = 31  
 F( 0, 30) = 0.00  
 Prob > F = .  
 R-squared = 0.0000  
 Root MSE = .34705

cumulative~n	Robust					[95% Conf. Interval]	
	Coef.	Std. Err.	t	P> t			
_cons	-.1081634	.0623325	-1.74	0.093	-.2354634	.0191366	

