EFFECT OF GEOGRAPHICAL DIVERSIFICATION ON INFORMATIONAL EFFICIENCY IN EMERGING COUNTRIES

by

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LIST OF ABBREVIATIONS

IPO	Initial Public Offerings
VR	Variance Ratio
EMH	Efficient Market Hypothesis
LDC	Less Developed Countries
GEM	Global Emerging Market
OFDI	Outflows Foreign Direct Investment
MNEs	Multinational Enterprises
EMMs	Emerging Market Multinationals
IMF	International Monetary Fund
FTSE	FTSE International Ltd
MSCI	MSCI Inc
S&P	Standard and Poor's Financial Services
TEE	Test for Evolving Efficiency
OLS	Ordinary Least Square
VIF	Variance Inflation Factor
LM	Lagrange multiplier

KESAN KEPELBAGAIAN GEOGRAFI KE ATAS KECEKAPAN MAKLUMAT DI NEGARA-NEGARA MEMBANGUN

ABSTRAK

Objektif utama kajian ini adalah mengkaji kesan kepelbagaian geografi ke atas kecekapan maklumat. Kecekapan maklumat diukur dengan menggunakan ukuran kelewatan harga dan dibahagikan kepada kecekapan maklumat yang berkaitan dengan berita tempatan dan kecekapan maklumat yang berkaitan dengan berita global. Kepelbagaian geografi diproksikan dengan menggunakan 4 pembolehubah yang berbeza iaitu dummy jualan asing, bilangan negara-negara asing, nisbah jualan asing dan Indeks Herfindahl. Kajian ini melibatkan syarikat tersenarai awam dari 12 negara-negara membangun dari tahun 2005 sehingga tahun 2014. Keputusan regresi membuktikan bahawa semua 4 proksi kepelbagaian geografi menunjukkan kesan positif dan penting terhadap kelewatan harga terhadap berita tempatan. Kesemua model regresi dalam kajian ini tidak mengalami masalah heteroskedasticity dan multicollinearity. Semua proksi kepelbagaian geografi kekal penting ke atas kelewatan harga terhadap berita tempatan apabila pengiraan kelewatan alternatif digunakan dan krisis kewangan dikawal dengan menggunakan krisis dummy. Bagi implikasi dasar kerajaan, kajian ini mencadangkan bahawa semua syarikat awam tersenarai harus diberi mandat untuk mendedahkan struktur perniagaan mereka mengikut kawasan geografi dalam laporan tahunan mereka untuk memudahkan proses analisis pelabur. Pendedahan itu boleh memudahkan pelabur untuk melakukan penyelidikan ke atas syarikat dan mengurangkan kos dan halangan pelabur untuk mendapatkan maklumat mengenai syarikat tersebut.

EFFECT OF GEOGRAPHICAL DIVERSIFICATION ON INFORMATIONAL EFFICIENCY IN EMERGING COUNTRIES

ABSTRACT

The main objective of this study is to investigate the effect of geographical diversification on informational efficiency. Informational efficiency is measured using price delay measure and is further divided into informational efficiency related to local news and informational efficiency related to global news. Geographical diversification is proxied by using 4 different variables which are foreign sales dummy, number of foreign countries, foreign sales ratio and Herfindahl Index. The sample study involves public listed companies from 12 emerging countries ranging from year 2005 to year 2014. The regression results prove that all 4 geographical diversification proxies show positive and significant effect on local price delay. All the regression models in this study are robust to heteroskedasticity and multicolinearlity problems. All geographical diversification proxies remain significant towards local delay when alternative delay measures are used and financial crisis is controlled by using crisis dummy. For implication on the government policy, this study suggests that all geographical diversified public listed companies should be mandated to disclose their business structures according to geographical areas in their annual reports to simplify the analysis process of investors. The disclosure can facilitate investor to do research on the company and reduce the cost and barrier of investor to retrieve information about the company. This policy changes will definitely decrease the price delay caused by geographical diversification and ultimately improve the informational efficiency of stock market.

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

This study focuses on the research of informational efficiency which is firstly introduced by Professor Eugene Fama in his Efficient Market Hypothesis (EMH). Informational efficiency can be defined as the extent and speed of market prices of an asset incorporate available information. If the market price change instantly after the release of the news, the market can be considered as perfectly efficient. This study utilizes price delay model proposed by Hou and Moskowitz (2005) which can quantify informational efficiency of a market. This price delay model has several advantages compared to conventional tests. First, it permits researchers to identify various factors that affect the informational efficiency of stocks. Second, it enables researchers to measure the adjustment of stock price to both local and global market information.

This study follows many previous literatures to investigate the determinant of informational efficiency. There are many researches done on variables about stock specifications, for example, trading volume by Chordia and Swaminathan (2004), liberalization process by Bae *et al*. (2012), liquidity by Lesmond (2005), short selling by Saffi and Sigurdsson (2011), option pricing by Phillips (2011), and market frictions by Hou and Moskowitz (2005). However, there are only a few researchers study about relationship between firm fundamentals and informational efficiency such as, firm size by Hou and Moskowitz (2005), accounting quality by Callen *et al.* (2013) and analyst coverage by Bae *et al*. (2012). This study proposes geographical diversification as a determinant on informational efficiency and investigates the relationship of geographical

diversification on informational efficiency. Informational efficiency is proxied by price delay and further divided into price delay related to local news and price delay related to global news. Four types of geographical diversification proxies such as foreign sales dummy, number of foreign countries, foreign sales ratio and Herfindahl Index which are widely used in previous literature are employed in this study in order to capture different aspects of geographical diversification of a firm.

This study focuses on firm level analysis. Regression will be used as the primary tool to gauge the relationship between geographical diversification and informational efficiency. Several robustness tests such as Breusch-Pagan Lagrangian multiplier Test, Hausman Test, VIF indicators and White Standard Error are used to eradicate bias to the results. Alternative measurement of informational efficiency and crisis dummy will also be included in the robustness test.

For sample firms, this study will only focus on public listed companies from emerging markets. The time span of this sample study ranges from year 2005 to year 2014. During this time span, many public listed companies emerging countries start to diversify their business to other foreign countries which contributes to higher variation of geographical diversification data.

1.2 Motivation of the Study

The stock market is one of the sources for companies to raise fund. It permits firms to be publicly traded, or raise extra financial capital for expansion by offering equity of the

company in a public market. During initial public offerings (IPO), company will offer its stocks to the public in exchange for the capitals to further build up the company. In secondary markets, investors can freely trade the stocks among themselves. The invention of stock exchange increases the liquidity of stock trading. Investors can instantly and easily trades securities. Compared to other less liquid securities such as real estate and private equities, liquidity provides advantages for stock. Some companies even trade their own stocks to enhance liquidity.

Investors trade shares to acquire profits through capital gains and dividend payments. If stock market is totally efficient, stock prices will reflect all the information instantly no matter past, present or future information. However, in reality, stock market is not always efficient. There is a delay between the release of the news and the adjustment of the stock prices.

Informational efficiency is a measurement of how fast information can be incorporated into stock price. The investigation about factors that affect informational efficiency of firm can beneficial three particular parties, which are security market regulators, active investors, and firm itself.

For security market regulators, one of their objectives is to promote informational efficiency of the security market in order to maintain fair information, protect the investor's interest and realize effective resources allocation. Therefore, with more knowledge about the factors that affect informational efficiency of a firm, they can make good decision in creating regulation about securities market.

There is a group of investors called active investors who actively trades on shares to exploit extraordinary profits. From perspective of an active investor, it is important to know the factors that influence informational inefficiency of a firm because they can attain extraordinary profit from an informational inefficient firm. For example, if there is a delay between the release of news and stock prices adjustment, then an active investor can buy the share after the release of good news about company and still manage to harvest extraordinary gains caused by the news.

From the perspective of firm's management team, it is important for them to increase its firm informational efficiency. According to investor recognition hypothesis, informational efficiency of a firm is mainly caused by the potential investor base of that particular firm (Merton, 1987).In another words, the more investors pay attention to a company stock, the higher its informational efficiency. A firm with higher informational efficiency will have many advantages such as gaining higher reputations, raising more capitals from issuing right issues and attracting more potential customers for their products and services.

As a result, in finance literature, there are many researchers study about informational efficiency. The most prominent contributor about informational efficiency in history is Professor Eugene Fama which eventually being awarded Nobel Prize and also known as father of EMH. Besides that, there are many researchers investigate about the methods to measure market efficiency such as: Serial correlation tests and spectral analysis by Granger and Morgenstern (1963), variance ratio (VR) test by Lo and

MacKinlay (1988), joint testing procedures to control for the overall test size by Richardson and Smith (1991), spectral-based tests by Durlauf (1991), Kalman filter technique by Emerson *et al*. (1997) and others.

Apart from that, there are also many studies have been done to examine the efficiency of stock market in different countries. Shama and Kennedy (1977) witness the weak-form efficiency in New York Stock Exchange, London Stock Exchange and Bombay Stock Exchange. The studies of Hung (2009), Wang *et al*. (2004), Lima and Tabak (2004) prove that weak-form EMH exist in Chinese stock market (A-Shares only). Hafiz *et al*. (2007) find that the equity markets in Hong Kong, Indonesia, Malaysia, Philippines, Singapore and Thailand are inefficient.

After Hou and Moskowitz (2005) introduces a price delay measure which can gauge informational efficiency by using multiple regression, various researchers start to investigate the independent variables that can affect informational efficiency, for example Chen and Rhee (2010), Boehmer and Wu (2013), and Saffi and Sigursson (2011) examine the relationship between short sales constraints and price discovery process, Callen *et al*. (2013) examine the effect of accounting quality on informational efficiency, Bae *et al*. (2012) examines the effect of market liberalization on asymmetry informational market efficiency, Phllips (2011) investigates potential of options to mitigate the negative effect of short sales constraint on informational efficiency and others.

In conclusion, it shows that it is important to investigate the variables that affect informational efficiency. It becomes the motivation of this study to investigate the effects of geographical diversification on informational efficiency.

1.3 Problem Statement

Since Professor Eugene Fama introduces his EMH, "informational efficiency" has become a common term in financial study. Informational efficiency is used to indicate the extent of market prices of tradable assets incorporate available information. After the theory of EMH is introduced, researchers start to test the EMH theory in the stock markets around the world. In the early part of the research, the researchers only focus on testing whether a market is efficient or not. They use many different methods to test EMH such as serial correlation tests (Fama, 1965), spectral analysis used by Granger and Morgenstern (1963), and variance ratio test (Lo and MacKinlay, 1988).

In 1997, Campbell *et al.* (1997) offer the concept of "relative efficiency", which is informational efficiency of a market measured relative to other market. We can indicate whether a market is efficient and also the lead-lag relationship between any two markets can be determined. However, the degree of efficiency of a market still can not be quantified. Hou and Moskowitz (2005) propose a price delay model which can quantify informational efficiency of a market. This price delay model has several advantages compared to conventional tests. First, it permits researchers to identify various factors that affect the informational efficiency of stocks. Second, it enables researchers to measure the adjustment of stock price to both local and global market information.

Since this price delay measure has been proposed, a lot of studies have been done to investigate the determinants of the informational efficiency. Basically, the determinants of informational efficiency can be divided into two sections which are stock specification and firm fundamental. There are many researches done on variables about stock specifications, for example, trading volume by Chordia and Swaminathan (2004), liberalization process by Bae *et al*. (2012), liquidity by Lesmond (2005), short selling by Saffi and Sigurdsson (2011), option pricing by Phillips (2011), and market frictions by Hou and Moskowitz (2005). However, there are only a few researchers study about relationship between firm fundamentals and informational efficiency such as, firm size by Hou and Moskowitz (2005), accounting quality by Callen *et al* (2013) and analyst coverage by Bae *et al*. (2012). The price delay model is still incomplete. There are still many other undiscovered factors that will affect informational efficiency of firm. Figure 1.1 shows research gap of this study.

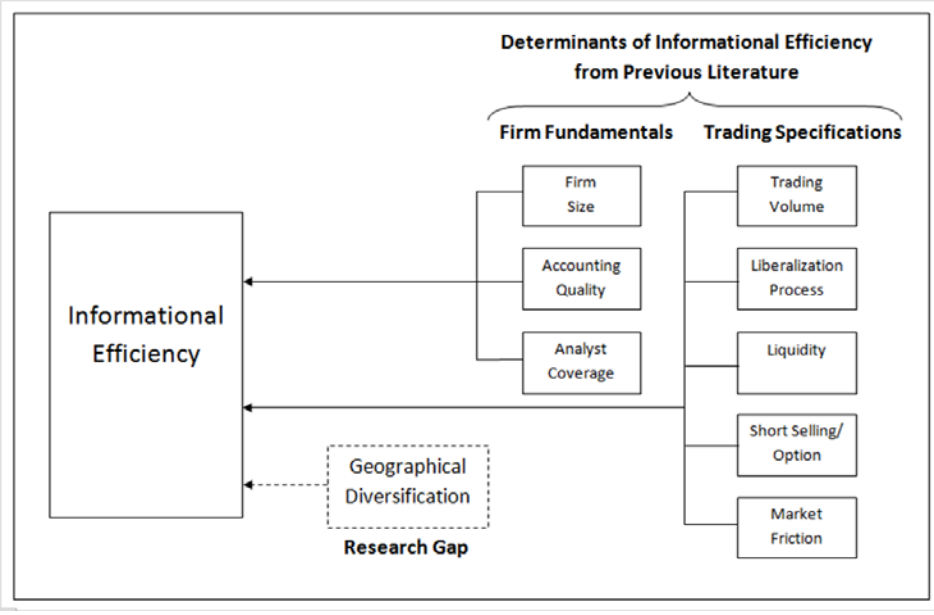

Figure 1.1 Research Gap

This study aims to introduce geographical diversification which is one of the firm fundamentals as a new determinant to informational efficiency. Geographical diversification is a very fundamental corporate governance issue which can be defined as the decision of management teams to expand the firm business segment geographically beyond the borders of its original home country. It also refers to the extent of firms invest in assets outside their home countries and execute business activities internationally (Teece, 1981).

Over the past 25 years, the increasingly integrated capital markets and globalization have lowered the cost of companies doing business in foreign markets. Foreign investment made by corporations in the industrialized nations has grown dramatically. Firms prevalently adopt diversification, similar business operations in different countries, as a main corporate strategy to gain competitive advantages (Barney and Hesterly, 2008) Regardless of the great challenges and difficulties of its implementation, geographic diversification attracts companies with huge opportunities for long term growth in the markets of other countries without changing their main operating activities. (Chang and Wang, 2007; Hitt *et al*., 1997).

For informational efficiency related to local news, we suggest that geographical diversification will possess negative effect on it. Chen (2005) suggests that individual investors and institutional investors favor information which is easy to understand and widely available. When a company undergoes geographical diversification, its business coverage area becomes larger and the company is exposed to other countries' risk where its business involved in. Its business structure becomes more complex than company that

only focuses its sales locally (Morck and Yeung, 1991). Such a complex business structure of geographically diversified firm will eventually decrease the potential investor base. Due to cost of information (Shapiro, 2002), when the information of a company or stock is hard to acquire or analyze, its informational efficiency related to local news will decrease since most of the institutional investors more concern about local news.

For informational efficiency related to global news, we make an assumption that when a company undergoes geographical diversification; its recognition to the foreign investors will be higher. Foreigners, who have been exposed to the products of the company in foreign countries, will ultimately recognize its company. As a result, the investor base of geographical diversify company is larger than the investor base of its contemporary company which only focused locally by the increment of the number of foreign investors. Based on investor recognition hypothesis suggested by Merton (1987), the company which undergoes higher geographical diversification will have higher informational efficiency related to global news since foreign investors more concern about global news. Lim and Hooy (2013) use foreign sales dummy as a moderator to investigate the relationship between foreign shareholdings and informational efficiency by using Malaysian public listed firm as sample study. They suggest that foreign sales dummy can act as the proxy for firm visibility which represents the attentions of foreign investors on the stock. In this study, we further investigate the effect of geographical diversification on informational efficiency by using 4 different proxies for geographical diversification instead of only foreign sales dummy. Besides that, we expand the sample size to include all public listed company in emerging countries instead of only Malaysia.

Overall, geographical diversification will pose two effects on investor base of firm which will significantly affect its informational efficiency. Firstly, geographical diversification will cause a company structure becoming more complex. This will cause less investors pay attention on it since most of the investors prefer simple company which is easy to analyze. This will subsequently decrease its informational efficiency related to local news. Secondly, the investor base of a company will increase by the inclusion of foreign investors which recognize the company through its products or business in foreign country. This will subsequently increase its informational efficiency related to global news.

1.4 Research Questions

1. What is the effect of geographical diversification on informational efficiency related to local (global) news of emerging countries stock market?

a) Does stock price of geographical diversified firm adjust slower to local (global) information compared to focused firm?
b) Does the width of geographical diversification (number of countries) affect local (global) market information adjustment?
c) Does the depth of geographical diversification (foreign sales ratio) affect local (global) market information adjustment?
d) Does the degree of geographical diversification (foreign sales dispersion) affect local (global) market information adjustment?

1.5 Objectives of the Study

1. This study aims to investigate the effect of geographical diversification on informational efficiency related to local (global) information of emerging countries stock market.

a) To compare the speed of adjustment to local (global) market information between geographical diversified firm and non-diversified firm.
b) To analyse whether the number of foreign countries that a firm diversified to has any impact on the adjustment to new local (global) market information.
c) To analyse whether foreign sales ratio has any impact on the adjustment to new local (global) market information.
d) To analyse whether the degree of foreign sales dispersion across foreign countries has any impact on the adjustment to new local (global) market information.

1.6 Scopes of the Study

This study focused on three major aspects which are: informational efficiency, geographical diversification and firm-level analysis. For sample study, we focus on the public listed firm from emerging markets.

Firstly, this study employs price delay measure popularized by Hou and Moskowitz (2005) to measure informational efficiency. However, we follow Bae *et al.*'s (2012) study to include both local and global price delay. Since we are dealing only with the historical price data, therefore the findings of this result only restricted to weak form

market efficiency. Semi-strong form and strong form efficiency are not covered by this study.

Secondly, this study focuses on geographical diversification of a firm. Several types of geographical diversification proxies such as foreign sales dummy, number of foreign countries, foreign sales ratio and Herfindahl Index which are widely used in previous literature are employed in this study in order to capture different aspects of geographical diversification of a firm.

Thirdly, the scope of our empirical study focuses on firm-level analysis. Descriptive statistics and correlation matrix are produced for every important variable followed by multiple regression model to investigate the relationship between different global diversification proxies and informational efficiency. Several robustness tests such as Breusch-Pagan Lagrangian multiplier Test, Hausman Test, VIF indicators and White Standard Error are used to eradicate bias to the results.

Lastly, for sample firms, this study will only focus on public listed companies from emerging markets. The “emerging markets” term is introduced since 1980s. Before that, "less developed countries" (LDCs) is used as opposed to emerging market to allude to the countries that were less developed than the developed countries such as the United States and Europe. LDCs give more noteworthy potential to investment profit, yet on the same time more risk due to many reasons. Nonetheless, a few researchers find that the term LDCs is politically mistaken since there is no ensure that a country will move from

"less developed" to "more developed". As a result, the “emerging market” term is introduced to substitute LDCs.

World Bank economist Antoine Van Agtmael has popularized the term “emerging markets” in the 1980s. Dr. Kvint mentions in year 1999 that in emerging market, middle class is expanding, standard of living is improving, social stability and tolerance is increasing. Besides that government will have more cooperation with multilateral institutions. It is a process where society transits from a dictatorship to a free-market-oriented-economy. As a result, economic freedom is increased, the country will gradually integrates itself with other foreign countries and other members of the GEM (Global Emerging Market)".

This study focuses on public listed companies from emerging markets to study the effect of geographical diversification on informational efficiency because there is a huge rise of outflows foreign direct investment (OFDI) from emerging markets in 2000s. OFDI streams from emerging market multinational enterprises (MNEs) which is indicated in the table by the companies from both developing countries and transition economies have demonstrated especially dynamic growth rates of roughly 300% from US$159 billion in 2005(US$140 billion from developing countries and US$19 billion from transition economies), to reach approximately US$482 billion in 2012 (US$426 billion from developing countries and US$55 billion from transition economies).

Table 1.1 FDI Outflows, by Region and Economy

Region/economy	USD' millions				
	2005	2006	2007	2008	2009
World	903,763	1,427,473	2,272,048	2,005,332	1,149,776
Developed economies	744,407	1 152196	1,890,419	1,600,707	828,005
Developing economies	139,934	244,703	330,033	344,033	273,401
Transition economies	19,422	30,573	51,596	60,591	48,368
Region/economy	2010	2011	2012	2013	2014
World	1,504,927	1 678 035	1 390 956	1,305,910	1,354,046
Developed economies	1,029,836	1 183088	909,383	833,630	822,826
Developing economies	413,219	422,066	426,081	380,784	468,184
Transition economies	61,871	72,879	55,491	91,496	63,072

Source: UNCTAD, World Investment Report 2015.
(http://unctad.org/en/PublicationsLibrary/wir2015_en.pdf)

In recent decades, OFDI of emerging countries has changed tremendously in term of regional distribution. Emerging market MNEs have increased their foreign investment in many other developing countries. They progressively increase the resources allocation in developed countries. Among all the sectors, firms that exporting natural resources and services firms take up the highest percentage of OFDI (World Investment Report 2008).

There are no certain blueprint to mentions that how emerging market multinationals (EMMs) diverse their business internationally. However, based on the method they use to tap into foreign market, we can conclude into five distinct models. The first model is indicated as full-fledged globalizers. Full-fledged globalizers usually are more established EMMs. They have achieved a large business scale which is comparable with the multi-national firms from developed countries. Second model is called regional players. They intend to break out of their local markets in search of

larger scale. They usually locate their sights primarily on neighboring regional markets due to geographic reason and cultural similarity.

The third model is called worldwide sourcers. They mainly focus their business on the local market. The purpose for them to tap into international market is collecting resources which can hardly available in their home country. The fourth model is called global sellers. The main purpose global sellers diverse their business geographically is to look for new customers abroad. They feel that the customer base in home country already saturates. The fifth model is called multi-regional niche players. They usually are smaller companies. They only focus on niche sectors but across multiple regions due to innovative technology or processes.

Until today, there are still no consensus about the criteria and the countries which included as emerging markets. Different organizations have their own interpretation about emerging markets. The table below shows the list of countries in emerging market from various well known financialinstitutions such as International Monetary Fund (IMF) , FTSE International Ltd (FTSE) which is a British provider of stock market indices, MSCI Inc (MSCI) which is a US-based provider of equity, fixed income, and hedge fund stock market indexes, Standard and Poor's Financial Services LLC (S&P) which is one of the top three rating agency, Dow Jones and Company (Dow Jones) which is an American publishing and financial information firm and Russell Investments (Russell) which is a Seattle-based subsidiary of the London Stock Exchange Group.

Table 1.2 Countries Included in Emerging Markets by Different Institutions

Country	IMF	FTSE	MSCI	SandP	Dow Jones	Russell
Argentina	✓				✓	
Brazil	✓	✓	✓	✓	✓	✓
Bulgaria	✓					
Chile	✓	✓	✓	✓	✓	✓
China	✓	✓	✓	✓	✓	✓
Colombia	✓	✓	✓	✓	✓	✓
Czech Republic		✓	✓	✓	✓	✓
Egypt		✓	✓	✓	✓	
Estonia	✓					
Greece		✓	✓	✓	✓	✓
Hungary	✓	✓	✓	✓	✓	✓
India	✓	✓	✓	✓	✓	✓
Indonesia	✓	✓	✓	✓	✓	✓
Israel						✓
Latvia	✓					
Lithuania	✓					
Malaysia	✓	✓	✓	✓	✓	✓
Mauritius						
Mexico	✓	✓	✓	✓	✓	✓
Morocco		✓		✓	✓	✓
Oman	✓					
Pakistan	✓	✓				
Peru	✓	✓	✓	✓	✓	✓
Philippines	✓	✓	✓	✓	✓	✓
Poland	✓	✓	✓	✓	✓	✓
Qatar			✓			
Romania	✓					
Russia	✓	✓	✓	✓	✓	✓
Slovenia						✓
South Africa	✓	✓	✓	✓	✓	✓
South Korea			✓		✓	✓
Taiwan		✓	✓	✓	✓	✓
Thailand	✓	✓	✓	✓	✓	✓
Turkey	✓	✓	✓	✓	✓	✓
Ukraine	✓					
United Arab			✓			✓
Venezuela	✓					

Sources: http://www.imf.org/external/pubs/ft/weo/2012/update/02/index.htm, http://www.ftse.com/products/downloads/FTSE-Country-Classification-Update_latest.pdf,https://www.msci.com/indexes

In this study, we will follow IMF's emerging markets countries lists as our sample study because unlike other research institutes, IMF is an international organization which is not bounded by any countries. Besides that, the establishment of IMF is to promote international economic cooperation, international trade, employment, exchange-rate stability and not for profitability. Thus, we strongly believe that IMF takes a fair stance when categorizing the countries.

1.7 Significances of the Study

Firstly, this study is the first study that totally focuses on investigating the effect of geographical diversification on informational efficiency. Geographical diversification serve as an research gap for informational efficiency in previous literature. With persuasive theoretical assumptions from investor recognition hypothesis introduced Merton (1987), this study intends to prove the significant of relationship between geographical diversification and informational efficiency from empirical means by using sample firms from emerging countries.

Secondly, this study focuses on investigating the informational efficiency of firm in emerging countries. Different characteristics of informational efficiency of firm from different countries can be observed and compared. Besides that, different variables such as firm size, analyst coverage, trading volume and liquidity which are proved to possess

significant effect on informational efficiency of developed countries firms are tested by using sample firms from emerging countries.

Thirdly, this study uses four different variables as global diversification proxies for firms in different emerging countries. Different global diversification proxies will capture different degrees of diversification effect of a firm. The result from this study can serve as a reference for other researchers when considering which proxies to choose to measure global diversification of a firm.

1.8 Contributions of the Study

Firstly, this study suggests a new variable which is geographical diversification into the price delay model introduced by Hou and Moskowitz (2005). From our knowledge, the relationship between geographical diversification and price delay so far remains as a research gag in previous literature. With the supported theory of well known investor recognition hypothesis (Merton 1987) and empirical result done in this study, we can prove that geographical diversification does possess significant effect on informational efficiency. The empirical analysis study encompasses large number of companies from emerging companies.

Secondly, this study provides evidences against weak EMH. According to weak EMH, a stock market is considered weak form efficient if all the historical information is reflected into current stock prices. As a result, historical information should not have any effect on current stock price. By using price delay model, the price of stock is regressed with historical market price (Hou and Moskowitz, 2005). A delay shows that historical

market price possess an effect on current stock price which is an indication that the stock market is not completely weak-form efficient. Therefore, this study provides empirical result with the sample study of companies from emerging market which serve as one of the empirical evident that against weak EMH.

Thirdly, this study employs four different proxies to measure geographical diversification of a firm. By using different geographical diversification proxies, the effect of different degrees of company geographical diversification either from the perspectives of number of foreign countries, ratio of foreign sales or both on informational efficiency can be determined. This study compares the results using different proxies and can serve as a reference for researchers who want to choose geographical diversification proxies in the futures.

Fourthly, this study focuses on firm analysis by using public companies in emerging countries as sample study. Foreign direct investments flows from emerging market multi-national enterprises have increased a lot recently. It shows that many big companies from emerging countries start to geographically diversify to foreign countries because diversification can bring them a lot of benefits. This study will contribute to the literature about the descriptive statistics in emerging markets.

1.9 Organization of the Study

The entire study is divided into five chapters. Chapter 1 is the introduction of the study and contains all the characters of this study like motivation, problem statement, research questions, research objectives, scope of study, significance of the study and contribution of the study. Chapter 2 discusses about the literature review. Previous research about informational efficiency and geographical diversification are included in this chapter. The theoretical background that supports the hypothesis is covered. Chapter 3 addresses the methodology used to accomplish the objectives of this study. A series of robustness tests are incorporated also in this chapter. Chapter 4 discusses the main findings of the results which include descriptive statistics, regression models and robustness tests. Chapter 5 concludes previous four chapters and discusses about further study.

CHAPTER 2

LITERATURE REVIEW

This chapter firstly introduces the origin of informational efficiency and the revolution of the methods to investigate it. Previous important literature of informational efficiency will be discussed. New determinant of informational efficiency which is geographical diversification will be introduced and previous literature of geographical diversification will be discussed further. The relationship between informational efficiency and geographical diversification will be discussed in the last section of this chapter.

2.1 Informational Efficiency

Jules Regnault is the first individual to model the patterns of stock prices (Regnault, 1863). Later in year 1900, Louis Bachelier, a French mathematician in his paper, "The Theory of Speculation" specifies about the stock price's movement (Bachelier, 1990). However, their works are disregarded until the 1950s.

The term “informational efficiency” is first introduced by Fama (1965) in his paper that discussing about Efficient Market Hypothesis (EMH). Informational efficiency is defined as the extent of market prices of tradable assets incorporate available information. Low market efficiency means the process of incorporating information into market prices is slow and incomplete.

2.1.1 Efficient Market Hypothesis (EMH)

An informational efficient market is a market in which all new information incorporates immediately, rationally and completely into the market prices of financial assets. Asset prices in an efficient market will reflect all past and new information. There are several criteria that have to be achieved for a market to become completely efficient. First, an efficient market requires a large number of profit maximizing participants analyze and value securities, each independent from one another. Second, new information regarding securities comes to the market in a random fashion, and the timing of one announcement is generally independent from one another. Third, all those profit maximizing investors make buy and sell decisions rapidly on the arrival of new information.

Fama has categorized market efficiency into three classes based on the degree of information incorporation into assets prices. The three classes are weak-form EMH, semi-strong form EMH and strong-form EMH. The weak-form EMH is a subset of semi-strong form EMH whereas strong-form EMH encompasses both weak-form EMH and semi-strong form EMH.

By using stock market as example of EMH, the stock market is considered as weak-form efficient if all the historical information is reflected into current stock prices. In this manner, the stock prices can't be anticipated by utilizing the historical information of stock such as stock prices and trading volumes. In other word, abnormal returns can not be achieved by using technical analysis which is solely based on historical information of stock.

In a semi-strong form efficient market, the present stock prices will mirror all publicly available information, whether it is past data or newly released information. Public available information incorporates basically two types of data, which are financial statement figures such as profits, revenues, change of equity, assets and so forth and financial market figures such as stock prices, trading volumes, etc. If the market is semi-strong form efficient, investors who just access to open access information will not earn extraordinary returns by gathering and examining the information related to the company. As a result, not only technical analyst, but also fundamental analyst will not earn above average returns in semi-strong form efficient market.

Lastly, strong-form EMH presumes that stock prices will mirror both public and private information. Private information can be characterized as the information that is yet declared to public and is known by small group of people. In strong-form efficient market, even insiders with first hand information can not earn above average profits. No investors will earn abnormal returns if the market is strong-form efficient.

Since the study will just focus on historical data which are company stock prices, international and local stock market indices, the discussion will particularly focus on weak-form EMH. As indicated by these forms of market efficiency, Fama (1965) notices that if the market is completely efficient, investors can't benefit from any past information and therefore stock prices are considered random and unpredictable. Table below shows the summary of information types reflected by stock prices for each form of market efficiency.

Table 2.1: Information Reflected by Different Forms of Market Efficiency

Forms of Market Efficiency	Types of Information Reflected by Stock Prices		
	Historical Data	Public Information	Private Information
Weak-form EMH	✓	×	×
Semistrong-form EMH	✓	✓	×
Strong-form EMH	✓	✓	✓

After two decades, Fama (1991) performs the second survey of the market efficiency literature. As opposed to concentrating on past returns, he increases the scope of weak form market efficiency to examine the return predictability using other variables, for example, earning-price ratio, dividend-price ratio, book-to-market ratio and different measures of the interest rates. The studies for semi-strong form efficiency and strong form efficiency are relabeled as event studies and test for private information, respectively. His survey shows increasing confirmation of return predictability from past returns, dividend yields and various term structure variables.

With improvement of market efficiency theory, there are more and more literature challenges EMH with the presence of different anomalies. For example post earnings announcement drift (Ball and Brown, 1968); IPO anomaly (Ritter, 1991); overreaction (De Bondt and Thaler, 1985) and momentum anomaly (Jegadeesh *et al*, 1993). Fama consequently turns out with the third survey of market efficiency literatures. He exhibits that vast majority behavioral anomalies would have a tendency to vanish, if these anomalies are exposed to different method to gauge the expected normal returns, different models of risk adjustment, and diverse statistical method to measure them.