COUNTRY VERSUS INDUSTRY DIVERSIFICATIONS IN ASEAN AND THEIR DETERMINANTS

by

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DIVERSIFIKASI NEGARA BERBANDING DIVERSIFIKASI INDUSTRI DALAM ASEAN DAN PENENTU-PENENTUNYA

ABSTRAK

Kajian ini mengkaji peranan kesan umum, kesan negara dan kesan industri dalam potensi diversifikasi antarabangsa dalam pasaran saham di ASEAN. Berdasarkan pendekatan penguraian dalam Heston & Rouwenhorst (1994), kajian ini mengekstrak kesan-kesan tersebut daripada pulangan saham. Memandangkan peningkatan integrasi antara pasaran kewangan dan penemuan sebelumnya yang tidak konklusif, perbahasan dalam diversifikasi negara berbanding diversifikasi industri masih tidak diselesaikan. Analisis peringkat pertama akan meneliti sama ada diversifikasi negara atau diversifikasi industri lebih bermanfaat dan evolusi kesan umum, kesan negara dan kesan industri sepanjang tempoh sampel. Malahan, analisis peringkat kedua dalam kajian ini pula memberi tumpuan kepada penentu-penentu kesan negara dan kesan industri, di mana ia boleh memberi kefahaman yang lebih baik tentang kuasa penggerak dalam magnitud kesan-kesan tersebut. Khususnya, regresi panel digunakan dalam analisis peringkat kedua. Sampel kajian ini terdiri daripada 4043 firma individu merentasi negara-negara ASEAN yang dikelaskan menggunakan penanda aras industri klasifikasi (ICB) atas tempoh 1990-2010.

Analisis penguraian dalam peringkat pertama menunjukkan kesan negara mendominasi kesan industri walaupun wujudnya peningkatan integrasi pasaran ekonomi dan kewangan. Walau bagaimanapun, trend pengurangan dominasi kesan negara, berserta dengan peningkatan asas-asas dalam negara-negara ASEAN dapat diperhatikan semasa krisis subprima baru-baru ini. Di samping itu, kesan umum yang tinggi yang diperhati mencadangkan integrasi yang kukuh antara pasaran saham di

ASEAN dan boleh bertindak sebagai penunjuk untuk krisis yang berpotensi berlaku. Seterusnya, analisis peringkat kedua menunjukkan konsentrasi perindustrian, risiko ekonomi dan risiko politik adalah antara kuasa-kuasa penggerak utama dalam dominasi kesan negara. Di samping itu, saiz terbukti sebagai salah satu penentu-penentu kesan industri di ASEAN. Secara keseluruhannya, hasil kajian mencadangkan diversifikasi negara yang lebih ketara, dan faktor-faktor seperti konsentrasi, saiz, risiko ekonomi dan risiko politik adalah antara pengerak-pengerak variasi kesan negara dan kesan industri di rantau ASEAN.

COUNTRY VERSUS INDUSTRY DIVERSIFICATIONS IN ASEAN AND THEIR DETERMINANTS

ABSTRACT

This study examines the role of common, country and industry effects in international diversification potential in ASEAN stock markets. This study follows Heston & Rouwenhorst (1994) decomposition approach in extracting these effects from stock returns. Given the increased integration of financial markets and previous mixed findings, ongoing debates of country versus industry diversifications are still remain unsolved. The first stage analysis will scrutinize whether country or industry diversification is more fruitful and the evolutions of common, country and industry effects throughout the sample period. The second stage analysis of this study focuses on the determinants of country and industry effects, where it could provide better understanding towards the driving forces behind the magnitude of country and industry effects. Specifically, panel regressions are employed in the second stage analysis. The sample of this study comprises 4043 individual firms across ASEAN countries classified using the industry classification benchmark (ICB) over the period 1990-2010.

The decomposition analysis indicates country effects dominate industry effects despite the increasing integration of economic and financial markets. However, a diminishing trend of country effects domination coupled with improving fundamentals in ASEAN is observed during the recent subprime crisis. In addition, high common effects are observed suggesting strong integration of stock market in ASEAN and could provide leading indicators for potential crisis impending. Next, the determinants analysis shows industrial concentration, economic risk and political

risk are among the main driving forces behind the dominance of country effects. On the other hand, size proved to be one of the determinants of industry effects in ASEAN. Overall, the results suggest country diversification is more prominent, and factors like concentration, size, economic risk and political risk are facilitating the variation of country and industry effects in ASEAN region.

CHAPTER 1

INTRODUCTION

This chapter will first discuss the overall background of this study, from the concept of diversification, modern portfolio theory and international diversification. Then, the reasons behind this study are disclosed which the increasing market integration and previous mixed results are among the motivation of this study. Mainly, this study focuses in ASEAN region thus the basic facts and stock markets of ASEAN are discussed in the section 1.3. Subsequently, problem statements are intensely discussed where there is a need of this study to shed light on the unsolved issues. Section 1.5 spells out the research objectives while section 1.6 highlights the objectives of this study. Moving on, section 1.7 will then discuss the significance of this study on how this study distinguishes from others and subsequently section 1.8 will discuss how this study can contribute to the body of knowledge and provide further insight to investors on diversification strategy. Last but not least, section 1.9 will provide an insight on the chapter scheme of the whole study.

1.1 Background of the Study

Diversification of investments is one of the most discussed topics in today's economic climates. The concept of diversification in modern portfolio theory (MPT) is developed by Markowitz (1952), who advocates that selection of securities in a portfolio is based on the basis measure of risk and return on the portfolio as a whole. In general, an investor tends to maximize the portfolio expected return given a constant unit of risk or minimize the portfolio risk for a given level of expected return through assets allocation. Asset allocation is a popular traditional top-down approach in diversification, which allocates the investments across broad asset

classes. The concept of diversification is to invest in multiple instruments whose returns are not perfectly positive correlated and possess lower risk than owing an individual asset. By diversifying across various assets is regarded as an attempt to eliminate nonsystematic risk or firm-specific risk; in which only the market risk or systematic risk is left in the portfolio.

Based on the grounded of MPT and given the increase market liberalization and advances in technologies, international diversification has become an interest to international investors. International diversification can be defined as an attempt to reduce a portfolio risk by investing in more than one nation. It is suggested that within an economy, all risky assets are exposed to same economic conditions and market sentiments thus, would have limit the benefits of diversification. Hence, international investors are seeking the benefits of diversification beyond national boundaries based on the ground where there exists a high degree of positive correlation between risky assets within an economy. It is believed that the differences between the economic conditions, currency denomination, interest rate as well as the increase capital movement are among the driving forces behind the prevailing international diversification benefits. Grubel (1968), Levy and Sarnat (1970) and Solnik (1974) are among the foremost advocates in this topic to have found evidences on the benefits of international diversification. In general, low correlations between index returns in various countries were found and international diversification benefits revealed.

International diversification has redefined the finance and investment industry where investors are looking beyond countries to diversify their investment

portfolio. In a traditional top-down portfolio management, first, investor tends to diversify their investment geographically then only look for securities within each market. Country diversification proves to be effective in risks reduction as over the last decades, many studies have presented empirical evidence of benefits. [see, for example, Solnik (1974), Elton and Gruber (1992), De Santis and Gerard (1997), Ang and Bekaert (2002), Carrieri et al(2003), Ferreira and Gama (2010)]. The existence of country diversification benefits can be attributed to various reasons which are deemed not to be mutually exclusive. Notably, the differences in industrial composition of market indices are believed to a major factor. Both Lessard (1974) and Roll (1992) reveal the importance of differences in industrial composition in explaining the variation in stock returns. Every market is considered unique to the extent that it is constructed from the constituents of different industries and companies. The second argument suggests it is the national fiscal and monetary policies and the exposure of exchange rate changes that drive most of the variation in international stock returns. Thirdly, the other school of thought believes that the degree of integration of capital markets is among the explanations. Serra (2000) argues that financial could be segmented even there is real economic integration between two markets as stock prices are believed to be influenced by non-economic factors as well.

1.2 Motivation of the Study

With the fast pace of technology development, financial liberalization and deregulation, international stock markets are believed to be more integrated. National economies have becoming more closely connected and interdependent which would have increased the cross-country correlation. One would argue the traditional top-

down portfolio management based on the grounds of country diversification is very much under scrutiny as country effects are diminishing. With the growing interdependency among international stock markets, the benefits of country diversification might have been overstated. There have been suggestions to investors to abandon the top-down strategy and focus on industry diversification. The advocacy of the importance of industry structure in explaining the variation of stock returns is not limited to Lessard (1974) and Roll (1992). Therefore, a significant issue arises, whether diversification across countries or diversification across industries is more important in reducing portfolio risk remains ambiguous to investors. Heston and Rowenhorst (1994) (henceforth HR) address the issue by using dummy variable model to decompose stock return into country and industry sources of variation. Ever since the hallmark works by HR, many researchers have tried to address this issue by extending HR's framework with various approaches, and they have come to different conclusions. The mixed findings in these studies are largely due to different data sets consisting of different countries, industry classifications, periods of data and methodologies. These factors suggest that the results could change over time for different combinations of countries and industries.

Besides, it is worthy of attention that the existing literature utilizes different analyses to investigate the benefits of portfolio diversification across country or industry, yet few studies have examined the sources or determinants that drive or influence these effects. Thus, it demonstrates a research gaps for further detailed examination. So far, very limited is known on the possible driving forces behind these country and industry effects, despite the fact that the factors that dictating the fluctuations of these effects could be very important to investors. By knowing the

determinants of these effects, investors might be able to foresee the changes in country and industry effects, which would affect and improve their diversification strategy. Therefore, the additional steps in examining the determinants of the time-series and cross-sectional variations of the pure country effects and the pure industry effects across the sample period are indeed needed.

In summary, the focus of the study is to examine the relative importance of country and industry effects as it is extremely important for an investor to comprehend whether diversification across industry or country is more fruitful. This paper scrutinizes the dominance of country or industry effects in explaining the variation in return of the stock markets and the evolution overtime. Further examination on the determinants of pure country effects and pure industry effects are done to shed some lights to investors on what are the factors that are influencing both effects.

1.3 Scope of Study

This study will generally focus on The Association of Southeast Asian Nations (ASEAN) countries. ASEAN was established on 8 August 1967 in Bangkok, Thailand, with the signing of the ASEAN Declaration (Bangkok Declaration) by the founding member states which consists of Indonesia, Malaysia, Philippines, Singapore and Thailand. Subsequently, the members are joined by Brunei Darussalam on 7 January 1984, Viet Nam on 28 July 1995, Lao PDR and Myanmar on 23 July 1997, while Cambodia made up the tenth members of ASEAN on 30 April 1999. The primary purpose of ASEAN is to accelerate the economic growth, social progress and cultural development in the region while promoting peace and

stability through active collaboration and mutual assistance. ASEAN is the fourth largest trading region in the world, with a total trade of US$ 1710 billion. ASEAN gross domestic product was US$1.5 trillion and it has a population of about 584 million people.

ASEAN became one of the most attractive regions for international investors in 1980s, driven by the high profit margin as well as financial liberalization and deregulation. Followed by the industrialization and economic openness, foreign direct investment (FDI) into the region has been constantly driven the booming of economic in the early 1990s and strengthened its position in world economy. According to IMF emerging market list, ASEAN markets are considered high growth emerging markets, which could potentially offer international investors benefits in investment and diversification. The decision to create ASEAN Free Trade Area (AFTA) in 1992 has certainly elevating ASEAN economic cooperation. With the comprehensive elimination of tariff and non-tariff barriers, it aims to attract more direct foreign investments into the region. Given the increased economic cooperation following the ASEAN Free Trade Agreement (AFTA), which was signed in 1992, one would expect the markets in ASEAN to become more interdependent due to the comprehensive elimination of tariff and non-tariff barriers.

However, the financial crisis in 97/98 has taken a hit on the development of the region, where all the countries were severely affected and the core countries of ASEAN went into recession. Since then, ASEAN has gone through series of successful financial reform in the wake of the Asian crisis in 1997. ASEAN has certainly grown much stronger and more integrated, with significantly improved key

micro and macro metrics as well as more transparent economic and financial development. Increased integration between ASEAN markets would have blurred the national borders, thus would eliminate the diversification benefits across countries in the region. As indicated in Lim (2009), there are some evidences of increased levels of integration and interdependence between the ASEAN markets after the financial crisis. However, previous studies in other region have shown that despite the increased integration of financial markets, country effects remain important. Thus, whether the increased level of integration could signify that country factors can be neglected in diversification strategies needed further investigation

ASEAN stock markets are worthy of attention for a few notable reasons. Due to the fact of dissimilarity in the fundamental risk exposure, cultural and institutional differences, ASEAN market has become a likely diversification destination for global investing institutions as well as retail investors. ASEAN has long deemed as a strategic geographical location in Asia-Pacific to attract global investors. This is especially true as the FDI into ASEAN remained at relatively high levels of US$60.59 billion in 2008[1] despite the recent global economic crisis.

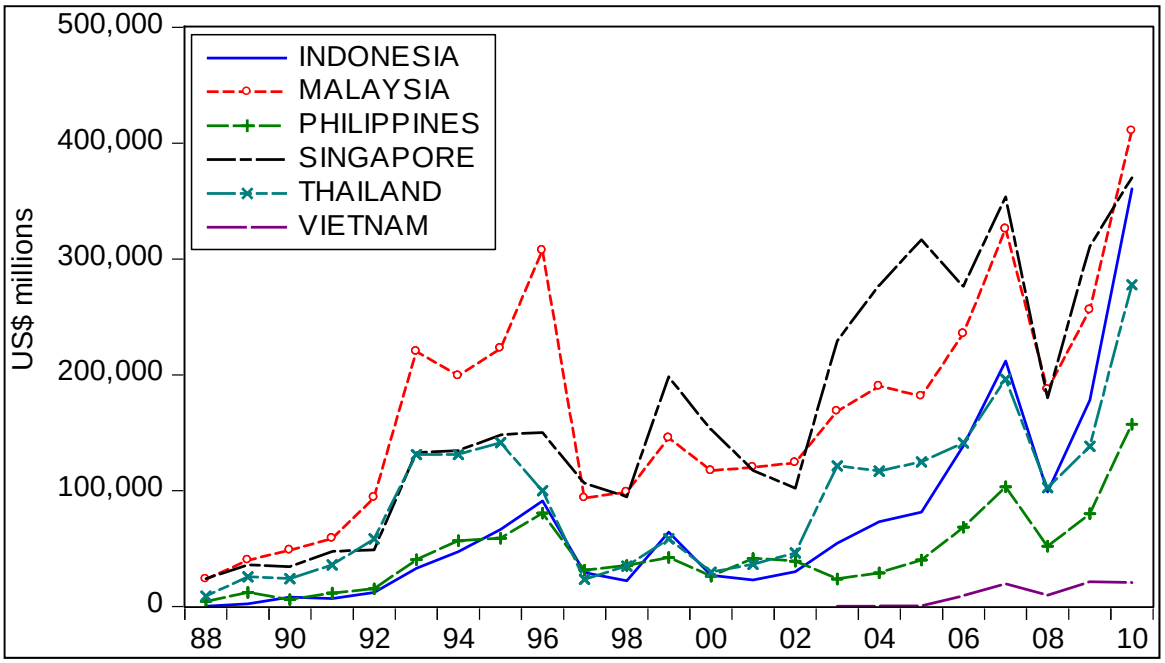
Stock markets in ASEAN have gone through remarkable growth since two decades ago. Referring to figure 1.1 below, it can be seen that the stock markets in ASEAN have prospered significantly over the last two decades and that international investors actively participate in these markets. The market capitalizations of ASEAN stock markets have experienced tremendous growth since 1990. Notably, the market capitalizations of Indonesia, Malaysia, Philippines, Singapore and Thailand in 2010 were more than 20 times, 4 times, 12 times, 8 times and 4 times higher than in 1990,

[1] Source: ASEAN Secretariat - ASEAN Statistical Yearbook, 2008 - ASEAN FDI Database as of 15 July 2009.

while Vietnam has been on a tremendous growth in recent years. The increase in market capitalization is attributed to both price appreciation of listed firms and increase in the number of listed firms. Referring to figure 1.2, there are healthy constant growths for all countries throughout the years despite gone through various crises, especially for Indonesia, Malaysia and Singapore. From figure 1.3, it is undeniably encouraging that the trading value of Indonesia, Malaysia, Philippines, Singapore and Thailand has grown 9 times, 1.5 times, 3.2 times, 3 times, and 9 times respectively since 2000; meanwhile, the total trading value of Vietnam has increased to US$ 29,397 million in 2010 from US$ 16 million seven years ago.

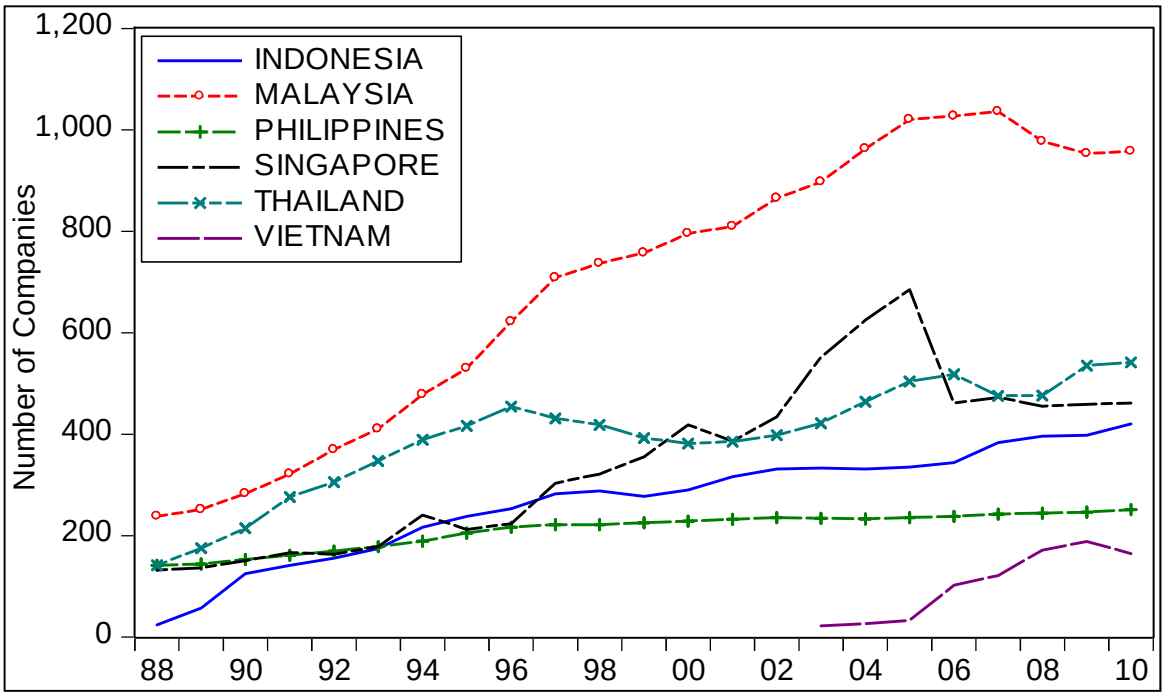
Another milestone has recently been reached in ASEAN with the newly signed ASEAN Comprehensive Investment Agreement (ACIA) on the February 26, 2009. The consolidation and revision of two ASEAN Investment Agreements: the 1987 ASEAN Agreement for the Promotion and Protection of Investments (also known as the ASEAN Investment Guarantee Agreement or ASEAN IGA) and the 1998 Framework Agreement on the ASEAN Investment Area (commonly known as the "AIA Agreement"), as well as the related protocols, will further enhance ASEAN's attractiveness as an investment destination, facilitate investment protection and improve investors' confidence in investing in the region.[2] Surely, the ambiguities regarding diversification across country or diversification across industry need to be addressed to provide better insight for investors.

[2] Association of Southeast Asian Nations fact sheets



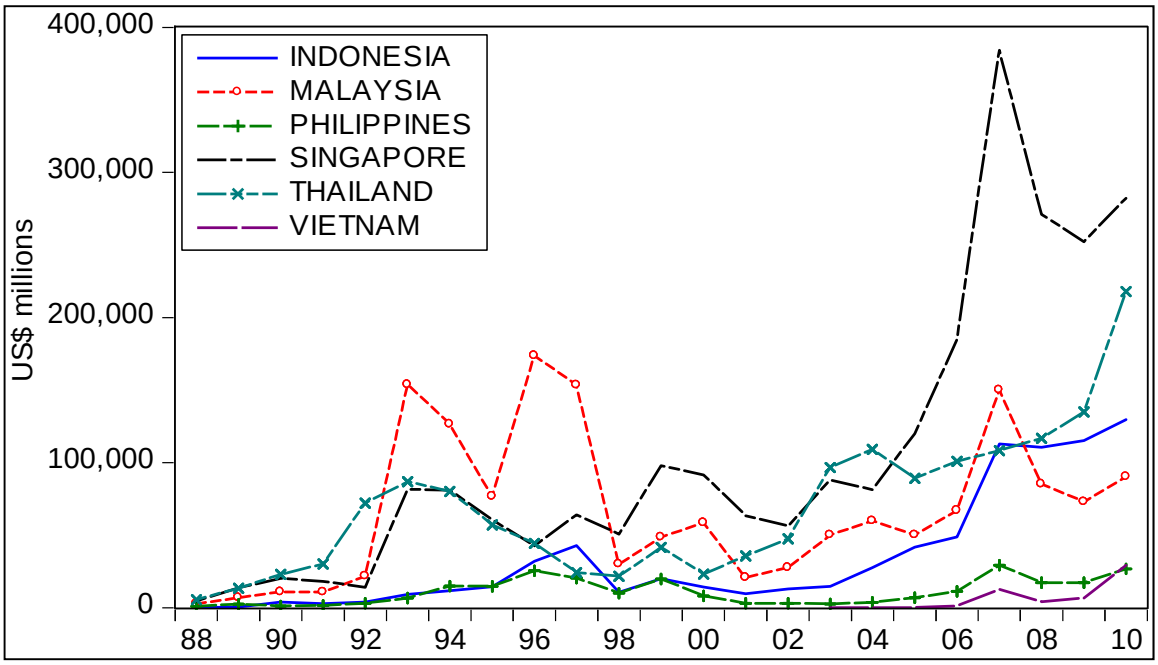
Source: World Development Indicators of the World Bank (last updated on 24th August, 2011)

Figure 1.1: Market Capitalization (US$ millions) of ASEAN Stock Markets



Source: World Development Indicators of the World Bank (last updated on 24th August, 2011)

Figure 1.2: Number of Listed companies of ASEAN Stock Markets



Source: World Development Indicators of the World Bank (last updated on 24th August, 2011)

Figure 1.3: Total Trading Value (US$ millions) of ASEAN Stock Markets

1.4 Problem Statement

There have been long advocates on the increasing financial integration across the globe fostered by the increased economic openness and financial deregulation. High level of integration would have diminished the benefits of using a traditional top-down strategy through country allocation ceteris paribus, as national borders become blurred. With the elimination of trade barriers and increased economic policy coordination through ASEAN Free Trade Area (AFTA), a trade bloc agreement by the Association of Southeast Asian Nations (ASEAN), and ASEAN Comprehensive Investment Agreement (ACIA), it is believed as if the stock markets among ASEAN have become more integrated. As a result, one would argue the traditional top-down portfolio management based on the grounded of country diversification is no longer effective as country effects are diminishing. However, existing literature does not uniformly support the claim. Do these implied that diversification across countries in ASEAN is no longer a rewarding strategy? Or there are still significant benefits for international investors to scrutinize?

There have been some arguments on the factors that contribute to the benefits of international diversification. First, there is a claim that the differences in industrial composition contribute to the international diversification. As each country index is made up from different industries, therefore it is believed that the volatility of the country index is explained by the industrial composition of the index. Secondly, there is advocate for the national fiscal and monetary policies and exposure to exchange rate changes that are facilitating the diversification benefits. If it is indeed proven that the former factor prevailed, industrial composition of an index matter most, thus, country diversification is no longer an effective strategy in ASEAN or vice versa. Such an important issue on which factor is the most prominent in explaining the benefits of international diversification still remain unsolved in the region. Throughout the world, many literatures propose that country diversification still remains effective while some have argued industry diversification provided greater risk reduction given the fact of increased integration of financial markets. Previous works that attempted to shed some light on this query are somewhat contradict, thus inconclusive. The conclusion tends to vary to the different country, different industry classifications chosen in the sample and not to mention the different periods of data as well as methodologies.

Emerging countries are worthy of attention as many investors were looking to east during the recent global financial meltdown thanks to their strong fundamentals and growing economies.[3] However there have been limited studies investigating the diversification strategy in Asian countries and let alone in ASEAN. Ultimately, the

[3] Emma Wall (August, 2011). Financial crisis: should investors go east to escape a failing west? The Telegraph, Retrieved from http://www.telegraph.co.uk

question on whether diversification across country or diversification across industry is more important remains ambiguous. Should investors employ a traditional top-down strategy through country allocation or through industry allocation in order to achieve better diversification benefits in ASEAN market? Whether country effects or industry effects are better in explaining the sources of variation in country and industry index returns are still remains puzzled as there is no precedent work in addressing the matters in the region. Furthermore, the possible determinants of both the country and industry effects are still remain untested. Regardless of which effect is more important, it is still a doubt to investors on what are the driving forces behind the fluctuation of both pure country and industry effects. Not knowing the possible determinants of these effects, investors are considered handicapped as they could not foresee any potential changes of diversification benefits that would deeply affect their diversification strategy.

1.5 Research Questions

Generally, this study is to investigate whether the increase economic integration signifying the diminishing country diversification benefits while favouring industry diversification instead. By answering the below questions, this study would able to shed some light on the ongoing debate of diversification strategies and the determinants behind both the country and industry effects. Below are the research questions that shall be addressed in this study.

1. Is country diversification or industry diversification provide more benefits in ASEAN region?
2. Are the industry effects among ASEAN's industries in increasing trend?
3. Are the country effects among ASEAN countries in diminishing trend?

4. What are the possible determinants of country effects?

5. What are the possible determinants of industry effects?

1.6 Objectives of the Study

The general objective of this study is to examine the ongoing debate of country versus industry diversification benefits in ASEAN. This study also takes further steps in examining the possible determinants of both country and industry effects to understand the driving forces behind these effects. The objectives are listed as below.

1. To investigate whether country or industry diversification is a better strategy in ASEAN region.
2. To examine the evolution of country and industry effects across time.
3. To investigate the possible determinants of country effects
4. To investigate the possible determinants of industry effects

1.7 Significance of the Study

In summary, the focus of the study is to scrutinize the dominance of country or industry effects in explaining the variation in return between the stock markets of ASEAN over the period 1990–2010 and the evolution overtime. The study would attempt to answer whether it is the industrial structure of a country's index or the national policy and shocks factors explaining the international diversification benefits in ASEAN. Until today, ASEAN alone as a region is remain untested, thus it would certainly contribute to the existing literature.

It is worth noting that Vietnam stock market will be taken into the sample despite its existence only in year 2003. The tremendous growth of Vietnam stock markets in recent years encourages Vietnam to be included in the sample. Most researchers that focus in ASEAN will mainly examine only the ASEAN-5 stock markets as their focal points. By including Vietnam in the study on ASEAN would definitely generate a better proxy for the true universe of stocks and it would further differentiate from others.

Monthly frequency data is employed on all available individual firms across ASEAN's stock markets covering as early from nineties, which include various major crises period. The data coverage of this research is considered very comprehensive as possible highest number of firms will be retained to create the closest proxy to the real picture of the stock markets in ASEAN. In addition, it would provide an insight of the industrial and country shocks in ASEAN markets to international investors that are looking forward for diversification in the region.

Due to the fact that results could be very much different taken into consideration of time and combination of countries and industries, this study will distinguish from others as the focus of this study is on ASEAN markets. Besides, industry classification benchmark (ICB) Level-4 industries listing, which categorize every firm into one of the 40 industries will be used. By doing so, it would enable this study to look into each industry more thoroughly and Level-4 industries' listing is considered a narrow classification to avoid any potential biases as according to Griffin and Karolyi (1998).

Moreover, the possible determinants of both country and industry effects will under further examination. Limited existing literature in scrutinizing the factors behind both country and industry effects opened up a gap to further examine. These would contribute to investors' strategies as it identifies the relation between the driving sources and these effects.

1.8 Contribution of the Study

This study contributes to the theoretical knowledge of whether it is differences in industrial composition contribute to the international diversification differential or the national fiscal and monetary policies that are facilitating the diversification benefits in ASEAN region. Previous literature findings are somewhat inconclusive, let alone studies scrutinized in the ASEAN region.

The increasing integration of international stock markets has blurred the national boundaries which would redefine the popular top-down country diversification strategy across decades. There have been debates on country versus industry diversification strategies which remain unsolved. This study contributes to investors on the more effective diversification strategies in ASEAN, be it country diversification or industry diversification that is most prevailed. The results of this study would attempt to answer the ambiguity among investors on whether to continue weight on top-down country diversification strategy or otherwise in reducing their portfolio risks.

Furthermore, investors would gain a better insight on how both the country and industry effects evolved across time and how do the crises over the years have

affected the effects. Do the importance of these effects change across time and crises? By examining the effects changes across time would enable the investors to better understand on the development of both effects. Besides, this study would be able to shed some light in the underlying reasons that drive the international diversification benefits. By knowing the factors that influencing these effects would enable investors to foresee and refer the leading indicators in determining their diversification strategy.

1.9 Chapter Scheme (organization of the chapter)

The remainder of this paper is organized as follows. Chapter 2 reviews the literatures, while Chapter 3 discusses the theoretical framework, methodology, data as well as establishes the hypotheses. Then, the empirical results and discussion for the first stage analysis will be presented in Chapter 4 while the empirical results for the second stage analysis on the determinants will be discussed Chapter 5. Last but not least, the conclusion, implications and the limitations of this study will be presented in Chapter 6.

CHAPTER 2

LITERATURE REVIEW

This chapter will discuss intensively on the overall previous works related to the area of this study. First and foremost, the literature of modern portfolio theory and diversification are going to be discussed. The following section provides the arguments in the factors that contribute to the benefits of international diversification. Section 2.3 will then discuss the empirical evidences of country and industry diversification benefits which are based on Heston & Rouwenhorst (1994) decomposition method. It is then further segregated into two subsections where one is in support of country effects domination; while the other is in favour of industry effects domination. Next, arguments, criticisms and counter-criticisms on the Heston & Rouwenhorst (1994) method are presented in section 2.4. Section 2.5 will discuss some of the alternate methods used by researchers in attempt to address the issue focused in this study. Subsequently, empirical evidences of increasing integration among ASEAN countries are then provided in section 2.6. Lastly, the final section in this chapter will discuss the existing works that examined the sources of variation of both country effects and industry effects.

2.1 The Modern Portfolio Theory (MPT) and Diversification

Diversification was first discussed in Markowitz (1952, 1959), where he proposed mean-variance analysis and found that diversification across securities that pose low covariance among themselves would lower the risk of the portfolio and achieve an efficient portfolio. MPT is a mathematical formulation of the concept of diversification in investing, with the tendency to lower the risk of investment by assembling securities into a portfolio. Generally, MPT proposes that portfolio

diversification shall contribute to lower the risk given a unit of expected return or higher expected return given a unit of risk and towards achieving an efficient frontier. Efficient frontier is a key concept in MPT that postulate the relation of the expected return of a portfolio and the risk of the portfolio in the absence of risk-free asset. As described by Markowitz, a portfolio lying on the efficient frontier is the best possible expected return attainable for given risk level among all. Putting in technical words, MPT defines the standard deviation of portfolio return as the risk while a portfolio is combination of various assets. It is believed if the assets are not perfectly positive correlated, there is a room for diversification in a way where the variance and standard deviation of portfolio can be reduced, provided the assumptions of MPT are satisfied. Despite the theories are being criticized and applauded in many ways, his findings still regarded as the basis of modern portfolio theory that have been extensively extended and empirically tested until today.

Building on the grounded of the theories, Grubel (1968) first founded the international diversification benefits by examining the monthly data for the stock market indices of ten industrialized countries and the US. International diversification can be defined as an attempt to reduce a portfolio risk by investing in more than one nation. Levy and Sarnat (1970) employed annual data of 28 countries indices in their sample consists of both developed and developing countries. Using Markowitz efficient frontier, they found that potential international diversification benefits from the mixed of both developed and developing countries in their portfolio. Then, using biweekly individual firms' data covering seven EU countries and the US, Solnik (1974) showed that substantial diversification benefits can be achieved in internationally diversified portfolio compared to domestic portfolio,

where portfolio risk is much lower in the former one. Besides, Solnik (1974) tested for inter-industry diversification and inter-country diversification by constructing different portfolio and showed that the risk of a portfolio diversified across countries is lower as compared to inter-industry diversification.

2.2 The Arguments in International Diversification Benefits

In view of the evidences of international diversification benefits, there have been arguments on the factors that contribute to the benefits of international diversification. Some claim that it is the differences in industrial composition contribute to the international diversification. As each country index is made up from different industries, at such, some industries are more volatile and are more concentrated in certain countries. Secondly, it is widely believed that the national factors such as national fiscal and monetary policies, interest rates and exposure to exchange rate changes that are facilitating the diversification benefits. Thirdly, there are few studies scrutinized the ideas of under-diversification and the ‘home bias' phenomenon. French and Poterba (1991) found very little cross-border diversification and concluded incomplete diversification of investors’ choices even in the absences of tax differences, transaction costs and explicit cross-border limits. Advocates of these theories believe that investors are better informed and more optimistic about the financial markets in their own country than to a foreign country, thus tend to concentrate more in holding assets in their own country. Our focus is main examining the first two claims, thus we will not discussing further on the third argument.

Lessard (1974) was among the first to examine the national and industrial elements in the international structure of equity returns by extending international CAPM model. Using monthly data of the 16 national stock price indices covering various sub periods from January 1959 to October 1973, he found significant influence of the industry factor on the proportion of an individual stock's return. Despite the fact, he concluded that "diversification across countries, even if within a single industry, results in greater risk reduction than diversification across industries within countries" implied that national risk factors are more important than industry factors in diversification strategy. Using daily country indices from April 1988 through March 1991, Roll (1992) employed Fama and MacBeth (1973) regressions to extrapolate the industry factors and found that significant portion of international structure of correlations among country returns can be attributed to the industrial composition of the country indices. However, Heston and Rouwernhorst (1994) argued that Roll (1992) has overstated the importance of industry factors as using an aggregate index data, where industry factor is unable to separate in his model. Instead, Heston and Rouwernhorst (1994) introduced a dummy regression decomposition method to decompose stock returns into a common effect, pure country effects and pure industry effects, which are then largely replicated by others.

2.3 Empirical Evidences in Country versus Industry Diversification Benefits

2.3.1 The Evidence of Country Effects Domination

A method that is precedent for many, Heston and Rouwernhorst (1994) analyzed 829 stocks that comprise the Morgan Stanley Capital International indices of 12 European countries and 7 broad industries from 1978-1992 and found that pure country effects explained the most in variation of returns. Evidence depicted that

industrial structure explains very little of equally weighted country index returns, and thus implied that country diversification remains more effective strategy than industrial diversification. Following Heston and Rouwenhorst (1994)(H&R) method in decomposing a stock's return into components of country effects and industry effects using dummy variables model, a stream of researches focus on investigating the relative importance of country versus industry effects in explaining the variation of stock's return. Heston and Rouwenhorst (1994)'s finding is corroborated by Griffin and Karolyi (1998), where they used index returns instead of individual stock's return as the regressand and covered 25 broad countries from world stock index and over 66 industry classifications from 1992-1995. They also concluded that industry effects are greater in traded goods industries compared to non-traded goods. Then, Rouwenhorst(1999) again focused on European countries, covering over the post-Maastricht Treaty time period up to August 1998, but proposed a mean absolute value (MAD) concept to measure both country and industry effects country. He found that country effects still remain dominant as ever despite the increase integration of economy among its members.

Subsequently, Serra (2000) replicated H&R method on emerging markets, where she composed a sample of 364 weekly series for between 629 stocks from 26 emerging markets span from year 1990 to year 1996 and her results showed that country pure effects are the most important factors driving the behavior of emerging markets' individual stock returns. Brooks and Del Negro (2004) were among the very few researchers that are in line with the findings of the above in the 2000s. Covering 9679 companies from 42 developed and emerging countries from 1985 to 2002, they proved that industry effects have increased since mid-1990s and have

surpassed country effects since 1999. He however, pointed out that this phenomenon is largely confined to the technology, media and telecommunications (TMT) sector and IT bubbles.

In addition, by extending HR method, Brooks and Del Negro (2005) discovered significant region effects embedded in country effects which were an important source of return variation, explaining half the return variation accounted by country effects. Soriano and Climent (2006) brought out the region versus industry context using extended HR method and found the overall dominance of region effects over industry effects. Similar to the findings of Brooks and Del Negro (2005), the rising of industry effects happened only in the period of TMT crisis thus they conceived this phenomenon as temporary. Besides, they also concluded that Asia region which consists of the most emerging markets appeared to be the most segmented from other markets. Using conditional variance instead of stock return, Bai and Green (2010) investigated the issue of country versus industry from the risk perspective on emerging equity markets using monthly frequency covering from August 1984 to July 2004. They showed the dominance of country effects has been diminishing with increasing importance in industry effects with data of 1537 firms from 13 emerging countries and 11 industry sectors. They concluded that investors can still gain by diversifying across countries as country effects remain the more dominant force driving the low co-movement of international equity returns.

2.3.2 The Evidence of Industry Effects Domination

More recent studies have instead found evidences supporting the increasing importance of industry effects or diminishing importance of country effects. First,

Baca et al. (2000) studied on monthly data for Datastream global equity indexes from year 1979 to year 1999. They focused on 10 sector indexes across 7 largest countries (France, Germany, Japan, Netherlands, Switzerland, the U.K. and the U.S.) by market capitalization of the observation at last period. By plotting rolling period of average effects variances, they noticed a significant shift in the relative importance of national and economic influences in the equity return. They showed that, the influence of country-based components on return variation has declined in the past 20 years while the impact of sector-based components has either remained relatively constant or increased. Similarly, Cavaglia et al. (2000) reported evidences showing that industries factors have been growing in relative importance especially in later years by plotting 52-week moving average of cap-weighted pure factor MADs. They used monthly data for 21 developed equity markets and FT/S&P 36 industries level national total return indexes covering the period from 1986 to 1999. Moreover, they examined the Sharpe ratios of three different positions; whereby the first position consists of industries only, the second taking position in countries only whereas the third position taking both industries and countries. The results indicated the Sharpe ratio of the first position outperformed the second position, while the third position was most optimal as expected. They claimed that diversification across industries provided greater risk reduction benefits than diversification across countries and expect the phenomena to persist and even strengthen given the ongoing geographical integration of markets. Brooks and Catao (2000) extended the study by using a large comprehensive sample, which included 5507 firms from 21 developed and 19 emerging stock markets accounts for 90 percent of stock market capitalization across sample countries covering from 1986 to 2000. Monthly frequency is employed and firms are grouped into one of the 10 FTSE industry sectors. They showed that

industry sectors are becoming more important in diversifying portfolio risk and the importance of industry factor associated with information technology were growing at high pace. They also noted on the loss of some explanatory power of country effects in developed countries over the period, whereas the explanatory power of country effects for some emerging markets have increased.

Wang et al. (2003) instead focused on 6 Asian countries and U.S. market, obtained monthly stock price from DataStream Global Equity Indexes for 22 industries and found that industry effects had become more important and started to dominate country effects from 1999. Their findings are supported by the fact that when the Asian financial turmoil of 1997 was spreading from one country to another, the co-movements between financial markets increased over time, thus diminishing the country effects. However, it is worth noted that both country and industry effects were volatile across the years. Besides, they also looked into details by comparing the relative impact of countries and industries. They concluded that that Japan has had a greater impact on Asian countries compared to U.S, and the industry effects of mainstream industries such as computer software, electronics, semiconductors dominated those of traditional industries such as textiles and leather and steel. Using data on the Euro zone markets from 1995 to 2002, Flavin (2004) suggested that in the purely post-Euro sample industry effects outweigh country effects. Using generalised least squares (GLS) estimation on monthly total returns from 1193 companies across 11 original members of 'Euro zone' excluded Greece, he showed that diversification across industries was more rewarding as there were more dispersion created from industry specific shock and the correlations remains low compared to diversification across countries. He pointed out this is part of a global