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International Diversification and Multinational Firms' Risk: Do Locations of Investments Matter?

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ABSTRACT

Revisiting diversification theory, this article examined the impact of investment locations on the relationship between multinational firms' diversification exercise and risk using data on foreign investment activities from 107 listed companies on the Malaysia stock exchange. The study found that diversification exercise is negatively related to risk for firms investing in non-Asian regions. On the contrary, diversification exercise is positively related to risk for firms investing in the Asian region. The results indicated that firms investing in the Asian region do not obtain benefits from diversification because of the increased risk from positively correlated economies within the Asian region. Conversely, non-Asian regions are obtaining benefit from diversification through negatively correlated economies when investing in non-Asian regions.

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INTRODUCTION

Over a decade, the trend of moving business operations from domestic into international markets has been widely spread within multinational firms in emerging countries. Typically, before moving their businesses into international markets, these multinational firms had a long history of excellent performance in their home countries. However, seeing the advantages of larger market share and risk reduction by moving their business operations into international markets, multinational firms grabbed this opportunity by expanding their operations internationally. Relatively, the cost of running a business in selected foreign countries are lower than home countries and thus multinational firms would gain advantages in term of improving their turnover and revenue. In general, researchers and practitioners agree that the higher the degree of multinationality of a firm, the greater the performance due to access of greater market size (Grant, 1987).

One of the major benefits from diversifying firms' investments into various continents is cost reduction. Malaysian multinational firms specifically have diversified into various continents (Bany-Ariffin et al., 2014) to obtain this benefit while indirectly improving their annual turnover and profits. Malaysian firms have been aggressively investing in foreign markets over the past 10 years. The establishment of the Asia Free Trade Area (AFTA) and global economic order indirectly encouraged these investments. The Department of Statistics in Malaysia reported that between 2000 to 2009, Malaysian firms invested a total of RM 181.7 billion, which is equivalent to 3.5% GDP in foreign markets. Moreover, starting from 2007, the Malaysian economy experienced a transition from net capital importer to net capital exporter (Goh et al., 2013). Consequently, the expansion of operations into international markets has become crucial for Malaysian multinational firms[†].

However, despite the hypothesized positive effects of international diversification, mixed findings on the effects of diversification on firms' returns were reported in the earlier studies of multinationals from various countries (Capar et al., 2015; Grand, 1987). One of the underlying assumptions of diversification theory is the higher the risk, the higher the return and vice versa. However, recent findings revealed this to be contradicted from traditional diversification theory. This reversed finding revealed by Kolk (2010) showed stock returns of multinational firms to be systematically higher than non-multinational firms. This study is supported by an earlier study of Kim et al. (1989). Their study compared the risk and returns of portfolios from multinationals with local and international firms and found them to be against traditional diversification theory underlying assumptions. Furthermore, Rugman and

[†] The massive international expansion by Malaysia firms has resulted few of the firms to be on the top 100 non-financial transnational corporations (TNCs) from developing countries. Among them, Petronas is ranked the highest in terms of foreign assets in 2007. Malaysia also has five other companies in the top 100 non-financial TNCs from developing countries, ranked by foreign assets. These include YTL Corporation, Genting Berhad, Sime Darby and Telekom Malaysia Berhad (UNCTAD 2008). Yet, despite this impressive investment activities, research on the advantage of such activities to the participating firms is scarce.

Verbeke (2004) posited that benefits of diversification were restricted if multinational firms invested outside of their home regions due to the country's heterogeneity risk.

Why do some firms that invest internationally attain the diversification success while others do not? Perhaps one reason is the increased risk from investing in a region or countries whose business cycles perfectly correlated with the home region (Rugman and Oh, 2013). To date, most studies mainly concentrated on the direct effect of international diversification on firms' returns or risk and little attention was paid to the effect of locations where the internationalization activities were carried out. To address this issue, this study focused on the effect of international diversification activities locations of Malaysian multinationals.

Specifically, based on international diversification theory, this study examined Malaysian multinational foreign investments activities and whether there was a different effect on firm risk when investing in non-Asian regions and the Asian region. The study on both Asian and non-Asian choices is very crucial because Asian economies positively correlated with each other and therefore the multinational may not experience the diversification benefits from investing in the Asian region. Using panel generalized method of moments, this study revealed that a diversification measure, entropy, is positively related to risk for firms that invest only in the Asian region. On the contrary, non-Asian regions experience a negative relationship between diversification and risk, which supports diversification theory.

The remainder of this article is organized as follows. Section 2 briefly reviews relevant literature. Section 3 describes the data and methodology. Section 4 discusses empirical findings. Section 5 presents the study conclusions.

BRIEF LITERATURE REVIEW

As noted earlier, international diversification can provide many benefits to multinational firms. According to three-stage internationalization theory, the benefits of increasing returns can be experienced by multinational firms through cost reduction (Contractor et al., 2003). On the other hand, for the multinational firms to experience risk reduction, the traditional diversification theory suggested that a multinational firm can reduce the unsystematic risk through diversification if the assets are negatively correlated. If the assets are imperfectly correlated, there will still be risk reduction although less when compared to those negatively correlated (Markowitz, 1959).

Revisiting this theory, and based on international diversification theory, this study draws insight and posits that multinational firms that invest in countries where their business cycles are negatively correlated will reduce risk. However, investing in countries where their business cycles are positively correlated will increase the risk instead as economic downturn in one country will affect the other countries. This study assumed that international diversification gives benefits to multinational firms by diversifying into countries whose business cycles are not perfectly correlated.

A contradictory finding from traditional diversification theory was found in recent empirical evidence by Kolk (2010) who revealed that multinational firms' stock returns were systematically higher than non-multinational firms' stock returns. Following traditional diversification theory arguments, diversification of multinational firms should reduce the risk and maintain return. They posited that during the internationalization exercise, the huge fixed as well as sunk costs incurred will increase firms' risk. Ultimately, these additional risks should have explained why stock returns of non-multinational firms were relatively lower than multinational firms Kolk (2010). Besides that, another contradictory finding from traditional diversification theory was found by Capar et al. (2015). In their study, a comparison between firm resources on risk and international diversification was made and revealed that it is not diversification that plays dominant effect on risk but firm resources such as marketing assets.

In earlier study, Senchack and Beedles (1980) compared the risk, returns and betas of portfolios of multinational firms with portfolios of domestic and international equities, and reported that multinational firms did not deliver diversification benefits. Amit and Livant (1988), however, noted that risk-return trade-off existed without diversification posture. The results of this prior research work were inconsistent. Moreover, they overlooked the effect of regional versus global diversification on risks.

Empirical studies on regional investment emerged during the 1980s with the argument that multinational firms should strategize for regionalization and globalization but they gave less attention to the effect of diversification on risk. Early researchers focusing on regional investment emphasized the need for multinational firms to combine globalization and regionalization (e.g. Prahalad and Doz, 1987; Bartlett and Ghoshal, 1991) but made no attempt to investigate the effect of regional versus global diversification on risk. Regionalization is required due to the existence of incomplete cross-border integration (Kolk, 2010). Likewise, Elango (2004) noted that firms operating within regions reduced costs and lowered risk. Conversely, Rugman and Verbeke (2004) argued that firms investing their outside home regions are exposed to the country's heterogeneity risk, which limits risk reduction benefits that multinational firms obtain from diversification.

Although, multinational firms are known as key drivers of the globalization process, some studies have argued that multinational firms' globalization process is more a regional than global phenomenon (e.g. Rugman and Oh, 2013; Almodovar, 2011; Oh, 2010; Rugman et al., 2009). Multinational firms diversifying operations in their home region may lower risk, as noted by Elango (2004), but the risk reduction benefits are limited if countries in the home region respond to business cycle risk in similar ways.

In 1980s, a comparison between multinational firms with portfolios of domestic and international equities was made in term of risk, returns and betas of portfolios. The study revealed that multinational firms did not receive any diversification benefits (Kim et al., 1989). On the contrary, Bettis and Mahajan (1985), Amit and Livant (1988) posited that a firm with certain diversification postures reduced risk and return simultaneously.

These inconsistent findings among the earlier researchers created more room for research, especially on the effect of location of the investment on firm risk, which was overlooked in the past studies. This study extends the studies on the internalization-return relationship by concentrating on the effects location of the international diversification on firm risk, an area that has been given little attention in the literature. The multinational firms from one of the Asian countries was chosen as a sample as countries in this region may respond to business cycle in similar ways. Specifically, this study investigated whether investing in a non-Asian region or an Asian region reduced risk for the multinational firms. Moreover, the study drew insights from diversification theory to explain the relationship between the effects of regional versus global diversification on risk.

DATA AND METHODOLOGY

This study used comprehensive data on foreign investment activities from 107 listed companies on Bursa Malaysia from numerous types of industries, including properties, construction, manufacturing products, consumer products and trading to examine whether locations of the foreign investments matter. Based on this 48 firms are considered to have invested majority in non-Asian region while the remaining sample within Asian region. The data were extracted from the companies' annual reports and DataStream database for the period from 2011 to 2015. The outcome of expansion within the Asian and non-Asian regions was ascertained by dividing the sample firms into those that invested within the Asian region and those in non-Asia regions. Firms that invested out of the Asian region were classified as firm investing outside Asia and vice versa for firms that invested in only the Asia region are classified as firms investing in Asia.

Table 1: List of Asian and Non-Asian Countries recipient of Malaysian Multinational Firms Foreign Investment

Asian	Non-Asian
Cambodia	Canada
China	USA
India	Brazil
Indonesia	Chile
Japan	Italy
Singapore	Netherland
Philippines	Sweden
Thailand	United Kingdom
Vietnam	Egypt
Myamar	Nigeria
	South Africa

Variables

The main independent variable in this study was entropy, measuring the degree of multinationality, whereby the dependent variable beta was used to proxy for risk. The diversification strategy undertaken by firm as indicated by the multi-nationality level is attained via the entropy measure. This measure was used by (Bany-Ariffin et al., 2015; Qian et al., 2010; Raj et al., 2011 and Qian, 1996) who indicated that certain researchers have debated that a multidimensional indicator is needed for signifying multi-nationality. Thus, the entropy characterised multi-dimensional measure because it takes into consideration both the spread and amount of international expansion. Hitt, Hoskisson and Kim (1997) also mentioned that entropy measure considers both the number of global market regions in which a firm operates and the importance of each global market region relative to total assets. Using Qian's (1996) approach, the entropy measurement involves calculation of the number of subsidiaries in any one country relative to the total foreign holdings held by the firm. The Entropy formula as follows:

$$D = -\sum_{i=1}^{n} S_i \, log_e \, (1/S_i)$$

Where:

D = Index of multinational diversification computed at the end of the observed period.

Si = Number of subsidiaries in country *i* or region *i* to the total number of foreign subsidiaries.

Beta is known for its well-established risk measurement in modern portfolio theory (Fama and French, 1996). However, despite lots of criticisms against the predictive power of Beta on the risk-return relationship, researchers and practitioners continue using it due to its strength and the intuition behind it (Brown and Walter, 2013).

A market regression model was used to derive Beta and used the daily data for two years to reflect the current dynamics of the firm. As shown below, firm stock returns were regressed towards market return.

$$\mathrm{Re}turn_i = \alpha + \beta R_M + \mu$$

Where:

R = the return on stock i

α = the constant term

β = the slope of the regression which corresponds to the beta of the stock

R_M = the return on market

μ = the error term (assume to have zero mean and constant variance)

The study argued that multinational firms investing in non-Asian regions lower risk. The assumption was that through international diversification, a multinational firm diversifies business activities into countries whose business cycles are not perfectly correlated would gain from the international diversification exercise.

Table 2: Variables definition

	Variables	Proxies
Dependent Variables	Risk	Beta
Independent Variables	Degree of Multinationality	Entropy
Control Variables	Firm-specific factors	Debt/Equity Ratio (DE) *-Measured by total debt divided by total equity* Firm Age (LAGE) *- Measured by number of years since establishment* Firm Size (LSIZE) *- Measured by natural log of total assets*

Model specification

To examine whether investing in a non-Asian or Asian region decreased risk based on diversification theory, the study specifies two models below:

$$Beta_{it\ Asia} = \alpha Beta_{it-1\ Asia} + \beta_1 + \beta_2 ENT_{it\ Asia} + \beta_3 DE_{it\ Asia} + \beta_4 Age_{it\ Asia} + \beta_5 Size_{it\ Asia} + \eta_i + \lambda_t + \mu_{it}$$

$$Beta_{it\ Non-Asia} = \alpha Beta_{it-1\ Non-Asia} + \beta_1 + \beta_2 ENT_{it\ Non-Asia} + \beta_3 DE_{it\ Non-Asia} + \beta_4 Age_{it\ Non-Asia} + \beta_5 Size_{it\ Non-Asia} + \eta_i + \lambda_t + \mu_{it}$$

According to (Bany-Ariffin et al., 2016) the relationship between beta and entropy and other control variables are endogenous. Under these circumstances, normally the ordinary least square method would produce biased estimates of regression parameters in the presence of endogeneity. To capture the dynamic relationship between risk and entropy and other control variables, the dynamic models above include lagged dependent variables. Finance and economic variables are noted as dynamic (Baltagi, 2005). However, ordinary least square will no longer become an appropriate method when lagged dependent variables are added into the model specification. This is very crucial because ordinary least square requires the entire explanatory variables to be exogenous. On the other hand, applying generalized method of moment (GMM) is a more appropriate method when lagged dependent variables are included in a model. This is because it maximizes an objective function including moment restrictions that the correlation between the error-term and the lagged explanatory variables used as instruments are zero (Arellano and Bond, 1991; Matemilola et al., 2012). The control variables measurements are (DE) total debt over total assets, (Age) the number of years since inception and (Size) measured by market capitalization.‡

‡ In order to test the robustness of the model.

This study applied the Blundell and Bond (1998) system generalized method of moment's estimation (System GMM) technique. There is a possibility that the observed relationship might be because of the effect of beta on the explanatory variable and not vice versa and therefore the use of System GMM may help mitigate this opposite interconnection problem (Arellano and Bond, 1991). System GMM combines the first difference equation and the level equation to estimate the parameters in the model and higher order lagged of the dependent variable and independent variables as internal instruments to address endogeneity and the serial correlation problem. Furthermore, the application of two steps System GMM gives a better result because it uses the first-step errors to construct heteroscedasticity-consistent standard errors (Blundell and Bond, 1998). GMM results are more reliable because the different size effect causes heteroscedasticity, which is a serious problem in firm level data. However, over-fitting of the endogenous variable problem would arise using System GMM because it generates too many instruments (Roodman, 2009). To overcome the instrument proliferation problem, this study includes one lagged dependent variable in the model, restricting the number of instruments, and ensuring that the number of instruments does not exceed the number of firms in the sample.

Table 3 and 4 contain mean and standard deviations. Table 5 and 6 contain the correlation results. The correlation results reveal that the degree of association between most of the variables is weak because the correlation coefficients are generally lower among the independent variables. Thus, there is little risk of multi-collinearity among the variables.

Table 3: Descriptive Statistics for Firms investing in Asian Region

Variables	Mean	Std. Dev.	Min	Max
Beta	0.861	0.581	-0.770	3.288
Entropy	0.395	0.259	0.000	0.976
Debt	0.672	19.680	0.000	7.067
Age	13.828	11.076	0.000	52.000
Size	5.946	1.501	3.600	10.852

Notes: Beta is firm risk. Entropy is the ratio of firm's holdings (number of subsidiaries) in a foreign country to its global holdings (the total number of its foreign subsidiaries). Debt is ratio of debt to equity. Age is number of years since establishment. Size is natural log of total assets.

Table 4: Descriptive Statistics for Firms investing in Non-Asian Region

Variable	Mean	Std. Dev.	Min	Max
Beta	0.865	0.649	-0.313	2.958
Entropy	0.670	0.445	0.000	1.917
Debt	0.128	7.659	0.000	5.439
Age	18.093	13.166	0.000	51.000
Size	6.141	1.714	3.131	10.632

Table 5: Pearson correlation matrix of the variables for firms investing only in Asian region

Variables	Beta	Entropy	Debt	Age	Size
Beta	1.000				
Entropy	0.007	1.000			
Debt	-0.004	-0.051**	1.000		
Age	0.122**	-0.178**	0.032	1.000	
Size	0.181**	0.002	0.049**	0.452**	1.000

Note: [a] See Table 2A for definition of variables. [b] Coefficient is significant at: * *(5) percent

Table 6: Pearson correlation matrix of the variables for firms investing only in non-Asian region

	Beta	Entropy	Debt	Age	LSize
Beta	1				
Entropy	0.111	1			
Debt	0.021	-0.019	1		
Age	0.049**	-0.073**	0.085**	1	
Size	0.140**	0.075**	0.089**	0.442**	1

Note: [a] Beta is firm risk. Entropy is the ratio of firm's holdings (number of subsidiaries) in a foreign country to its global holdings (the total number of its foreign subsidiaries). Debt is ratio of debt to equity. Age is number of years since establishment. Size is natural log of total assets. [b] Coefficient is significant at **(5) percent.

EMPIRICAL RESULTS

The proxy for international diversification, entropy, is positively and statistically significant to risk for firms investing in the Asian region (See Table 7). Consistent with the international diversification theory, the results in Table 7 show that the firms investing solely in the Asian region are not diversifying enough to reduce risk. The results are inconsistent with Elango's (2004) argument that firms would experience risk reduction when operated within the home region. Due to the collaboration policy within the Asian region, the entropy within the Asian region is positively correlated with each other. For example, to increase the countries' competitiveness as a production base in the world market, ASEAN Free Trade Area (AFTA) eliminated tariffs and non-tariff barriers.

Table 7: System GMM result for firms investing in Non-Asian region and Asian region

	Non-Asian Region	Asian-Region
Independent Variable	Beta	Beta
$Beta_{it-1}$	0.728*** (44.59)	0.724*** (23.70)
Entropy	-0.003** (-2.10)	0.336*** (6.98)
Debt	0.000*** (24.6)	-0.001*** (-4.87)
Age	0.013*** (4.91)	0.005*** (2.81)
Size	-0.001 (-0.55)	0.012** (2.00)
Sargan (p value)	0.416	0.643
AR1	0.143	0.012
AR2	0.297	0.991

Notes: [a] Results of the system generalized method of moment. [b] Beta is firm risk and the dependent variable. Entropy is the ratio of firm's holdings (number of subsidiaries) in a foreign country to its global holdings (the total number of its foreign subsidiaries). Debt is ratio of debt to equity. Age is number of years since establishment. Size is natural log of total assets. [c] Coefficient is significant at ** (5) and * * * (1) percent, respectively. Numbers in parenthesis are test statistics. [d]T-statistics of system GMM models are based on Windmeijer-corrected standard errors. [e] 2nd order serial correlation that has N (0, 1) distribution, but null uncorrelated with errors. [f] Difference Sargan over identification test and null that instruments are valid but runs if error are GMM type. [g] $Beta_{it-2}$, $Entropy_{it-2}$, $Debt_{it-2}$, $LAge_{it-2}$, $LSize_{it-2}$ are used as Instruments. N = 107 (46 for Non-Asian region and 61 for Asian region). T = 5. Number of instruments is 44 for Asian, and 44 for Non-Asian region.

Likewise, Jayasuriya's (2011) findings revealed that emerging stock markets in the Southeast Asia market were correlated. In addition, the Asian region is dominated by developing countries and has similarity in term of economic conditions such as economic downturn in one country would affect other countries. Therefore, international diversification will not reduce risk if the firm is solely investing in the Asia region.

On the other hand, for firms that invest outside of the non-Asian region, the entropy is negatively and statistically significant related to risk. Thus, this was revealed that firms that investing in non-Asian regions reduce risk. Consistent with Siddharthan's (1982) and Oh (2010), firms that invest internationally reduce risk through geographical diversification because of asynchronous business cycles. Moreover, operating across different geographical regions reduced risk because the different economic cycles within various regions provide negative or less correlation[§].

CONCLUSIONS

The study aimed to examine the effect of investment locations on the relationship between international diversification activities and firm risk using diversification theory, an area that has received little attention in the literature. Specifically, the study investigated whether investing in non-Asian regions or the Asian region would help reduce risk more effectively through firm international diversification exercise. The findings revealed that firms that invest only in the Asian region experience more increase in risk. In other words, regional diversification within the Asian region does not reduce risk because of the positively correlated business cycles within Asian countries. Conversely, the benefit of diversification can only be experienced by firms investing in non-Asian regions. This is consistent with international diversification theory that firm risk can be reduced to a certain degree if a firm diversified its operations to countries whose business cycles are negatively correlated with the home region.

The practical implication of these findings is that Malaysian multinational firms should concentrate on diversifying their business operations into non-Asian regions, instead of just solely diversifying into the Asian region. More specifically, when expanding their business operations, Malaysian multinationals could save the valuable financial and non-financial sources of a firm by being more selective in the location of the investments. Considering when all lucrative markets have been taken up, understanding the location of internationalization activities could prevent firms from over-diversification and its negative impact.

In a broader context, this study made two contributions. First, it focused on the effects of investment locations on the effectiveness of the international diversification exercise.[**] As its second contribution, this study added to the understanding by drawing insights from diversification theory explaining the relationship between regional versus global diversification on risk.

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[§] The robust test that uses different measurement of the control variables also produced similar results. The measurements of the control variables used in the robust test are; long term debt(DE) and total fixed assets(SIZE).

[**] There are many other factors that may influence the relationship between internationalization and firm risk such as cost, herding, and convenient strategy. These factors can be introduce as moderating factors in future research.

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