

Research Article

The Effect of Trade and Financial Liberalization on Idiosyncratic Risk in Malaysia and China

Shahrin Saaïd Shahrudin¹, Ali Fayyaz Munir², Mohd Edil Abd. Sukor³, Mohamed Sheikh Abu-Baker Al-Baity⁴, Izlin Ismail⁵

Abstract

This study attempts to analyze the impact of trade and financial liberalization on idiosyncratic risk of firms based on industry sectors. The results of the study revealed a number of salient features and characteristics of emerging economies such as China and Malaysia, which are the subjects of this study. The empirical findings indicate that Malaysian firms are more susceptible to liberalization activities as compared to firms in China. Furthermore, both trade and financial liberalization are more beneficial to Malaysian firms as compared to firms in China. The results also indicate that financial liberalization does not provide as many benefits to most industry sectors in China. The empirical evidence also stipulates that even though Malaysian economic sectors are more heavily influenced by financial and trade liberalization, China's economy could be positively impacted as a result of an increase in trade liberalization efforts.

Keywords: *Trade and financial liberalization; idiosyncratic risk; industry sectors.*

JEL Classification Code: F14, G1, G1.

Introduction

Financial market and trade liberalization have been argued to be beneficial to economies because the opening of markets for purposes of capital movements and trade have resulted in

¹ Faculty of Business and Accountancy, University of Malaya, Malaysia, shahrin@um.edu.my

² Faculty of Business and Accountancy, University of Malaya, Malaysia, muniralifayyaz@gmail.com

³ Faculty of Business and Accountancy, University of Malaya, Malaysia, mohdedil@um.edu.my

⁴ College of Business Administration, University of Sharjah, Malaysia, malbaity@sharjah.ac.ae

⁵ Faculty of Business and Accountancy, University of Malaya, Malaysia, izlin@um.edu.my

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financial market development and improvements in industries. Prior studies have also managed to identify a beneficial link between a country's liberalization policy and an economy. Furthermore, latent evidence seems to indicate that financial market liberalization has had an impact on firm idiosyncratic risk by reducing the total idiosyncratic risk of a firm.

This is, in fact, beneficial to investors and government regulators in designing policies to stimulate equity market and financial market participation by performing reforms which influence the financial markets. Nonetheless, a study on the impact of trade liberalization on the systematic risk of a firm has yet to be carried out, especially when it comes to decomposing the effects on industry sectors. By studying the impact of both financial market liberalization and trade liberalization on idiosyncratic risk, it is possible to identify the significance of the impact on countries as a result of carrying out trade or financial market-related reforms.

The two countries selected in this study, Malaysia and China, have been chosen as they have both undergone a gradual process of liberalizing their economies to become a member of the global economy and the global financial system. Even though both countries have undertaken different measures at different points in time in order to adjust and to integrate into the international system, the extent of the effects of this gradual approach has yet to be studied from the point of view of the impact on firms volatility. Furthermore, the effects of trade and financial liberalization will be evaluated on ten industry sectors which have been identified in both countries.

This study, therefore, attempts to provide some insights about the impact of trade and financial liberalization on volatility or firm risk in both of these dynamic economies. The forthcoming section of the paper will identify possible theoretical and empirical evidence which shall be used as a framework to conduct this study. This will be followed by an explanation regarding the empirical framework which has been proposed by Campbell, Lettau, Malkiel, and Xu (2001) in order to derive firm volatility as well the theoretical model which will be used to test the impact of trade liberalization and financial liberalization on the systematic risk of a firm. Finally, the implications of the study will be discussed from the point of view of its impact on investors and regulators.

Literature Review

Trade and Financial Liberalization Defined

Trade liberalization can be defined as government policies which have been introduced to remove barriers to trade between different countries. As an example, reducing or eliminating

quotas, reducing tariffs and reducing non-tariff barriers are regarded and liberalizing trade policies.

Financial liberalization policies, on the other hand, are implemented to reduce the influence of the state (or government influence) on finance activities. Examples of financial liberalization policies include interest rate reduction and easing restrictions on activities of financial institutions.

Previous studies have been conducted to understand the implications of performing trade and financial liberalization activities on countries. The studies have been conducted mainly for assessing possible policy implications of either further easing trade or financial liberalization activities or restricting them. However, the work that has been done in the past has not explored the impact of both trade and financial liberalization on the unsystematic risk of firms, particularly in the emerging markets context. Moreover, an empirical study on the effects of trade and financial liberalization on industry sectors and its relationship with firm risk has also yet to be performed.

Trade Liberalization in Malaysia and China

Malaysia has had a long history of trading with other countries in an attempt to diversify the economy Al-Amin, Siwar, and Jaafar (2007). Except for financial crisis periods in the 1980s and the Asian Financial Crisis in the late 1990s, the Malaysian government has always taken a liberal approach towards trade in order to extend their industrial development policies.

Before the 1970s, the Malaysian economy was highly influenced by trade activities as a result of the degree of international trade performed by Malaysian companies that were mainly operating in primary industries. As a result, in the 1970s the Malaysian government undertook policies to stymie the influence of trade on the economy by introducing tariff and non-tariff policies to protect the domestic economy (Al-Amin et al., 2007). This policy was better known as the Import Substitution policy and this considered approach to trade liberalization policies was earmarked for its success in providing a balance between reducing the country's export-oriented reliance on the primary industry and instead successfully steered the country into an industrialized economy.

The Malaysian government has also placed an increased level of importance on international trade by influencing tariff rates and creating multilateral and bilateral trade arrangements with other countries. By focussing on improving production capacity and improvements in skills,

technology and managerial capacity, the government has taken the view that the country's long-standing history of being a trading nation will continue in the future.

In the case of China, trade liberalization policies began in earnest as a result of Chinese economic reforms in the late 1970s (Lardy, 2005). Having said that there had been a dramatic increase in the contribution to the Chinese economy as a result of an increase in global trade since then. Before the 1970s, the degree of export and import activity from China was influenced by the central government. The export of goods by China was at this point in time performed for goods which China did not enjoy a comparative advantage in production, and Chinese producers had no incentive to expand international sales.

In lieu of China's accession to the World Trade Organization in 2001, the import regime was significantly influenced as licensing requirements were reduced to almost four percent for most commodities. Furthermore, large numbers of companies were then allowed to engage in foreign trade transactions, which in turn reduced the influence of the central government on the import market. Together with capital market reforms and other exchange rate policies, the Chinese economy is now amongst one of the most open economies for international trade.

The Effect of Trade and Financial Liberalization on Firm Risk

There are mixed results when it comes to the effects of trade liberalization in improving economic growth. Silajdzic and Mehic (2018) argued that trade openness does not necessarily result in benefits in the form of reduction of costs to an economy. Rodriguez and Rodrik (2000) on the other hand postulate that trade policy and trade are dichotomous issues that have different effects on an economy where there are benefits to increasing employment but not to the country's economic growth.

The effects of increasing trade intensity have been studied based on a group of countries in Eastern Europe. However, the impact of trade openness on the idiosyncratic risk of firms has yet to be explored. Furthermore, when viewed in terms of the effects of trade openness and its impact on firms within a subsector of an economy, the evidence seems to indicate that this has not been done in previous studies.

Theoretical and empirical evidence have also proven to be inconsistent, and country dynamics have to be taken into consideration. This would also imply that the government plays a vital role in ensuring that trade policies positively impact the economy such as argued by Matthias

and Königer (2012), where increased trade integration and in particular, internationalization thorough exports may not necessarily be related to government's exercise of trade-related 'neutrality principle'. Matthias and Königer (2012) further argued that trade openness and growth predominantly depend on trade specification.

Further studies on the impact of trade liberalization on industry sectors were found by Lall (1995) and Wade (2016). They argued that underdeveloped transition economies or infant industries could benefit even more from trade openness. Furthermore, Ahsan and Mitra (2014) argued that the net effect of trade reforms will depend on the labour intensity of production based on a set of Indian firms. Lim and Chen (2012), on the other hand, found that investment in telecommunications depends on the risk rating of a country. In countries with relatively high-risk rating, liberalization reduces investment in the telecommunications sector.

Braun and Raddatz (2007) found that international economic integration influences domestic financial institutions by evaluating sectoral data. The results of the study indicate that decline in the importance of financial development can be explained by its irrelevance for tradable sectors. These results are more significant in countries that are fully integrated into the world economy. Various studies have tried to explain the effects of financial liberalization on firm risk. For instance, Kose, Prasad, Rogoff, and Wei (2009) examined the implications of increased financial integration for the patterns of international risk sharing among different groups of countries. The results are less supportive of financial liberalization in emerging economies as there is very little evidence to suggest that financial integration has helped to improve risk sharing in emerging economies.

Townsend and Ueda (2010) take the view that financial liberalization is a government policy that alters the path of financial deepening, whereas financial deepening is endogenously chosen by agents given a policy occurs in the transition toward a distant steady state. Taskin and Muradoglu (2003) contend that capital liberalization opens up the domestic economy to the world. In addition to strengthening the already existing information flow from the world to the stock market, new direct links are established to the world markets through exchange rates and real economic growth.

Volatility model and the effect of financial and trade liberalization

This study attempts to examine the impact of liberalization on economic subsectors by using the volatility model proposed by Campbell et al. (2001). Campbell studies the effect of firm-level and market-level volatility and finds that the explanatory power of the market model has

diminished. However, the study proposed the volatility decomposition model which can explain the firm-level risk.

Various other studies have been performed to test for the effects of financial or trade liberalization. However, there is little evidence to suggest that financial and trade liberalization has been tested on industry sectors. In the case of Huang, Wald, and Martell (2013), it was found that the impact of idiosyncratic risk on stock returns for emerging markets, idiosyncratic risk is positively associated with returns prior to financial market liberalization, but liberalization diminishes this effect. Bekaert and Harvey (1995) show that financial market liberalization is typically associated with a reduction in market volatility.

Financial liberalization has been argued to be beneficial to economic development in emerging economies. For instance, Ahmed (2013) conducted a study on Sub-Saharan Africa and found that increased financial openness leads to lower volatility in output and consumption growth. Also, Ben Rejeb and Boughrara (2014) argue that in order to push the convergence to the efficiency or to reach a high level of efficiency, regulators of emerging countries should consider the initial conditions of the domestic market before setting up the financial liberalization process; they should also keep monitoring these conditions after liberalization.

In a related study, Batuo, Mlambo, and Asongu (2018) argue that financial development and financial liberalization have positive effects on financial instability. The findings also reveal that economic growth reduces financial instability, and the magnitude of reduction is higher in the pre-liberalization period than the post-liberalization period.

Data and Methodology

Trade and Financial Liberalization model

In this study, the effect of financial liberalization and trade liberalization on total volatility of firms is examined in a panel regression setting in the following manner:

$$\hat{\sigma}_{alt}^2 = \alpha + \beta_1 Finlib_{lt} + \beta_2 TO_{lt} + \beta_3 Size_{lt} + \beta_4 Openness_{lt} + \beta_5 Trate_{lt} + \beta_6 X_{lt} + \beta_7 M_{lt} + \varepsilon_{lt} \quad (1)$$

The dynamic fixed effects of the degree of financial and trade liberalization are tested by controlling for the level of market development through the *size*, which accounts for total market capitalization to GDP. Furthermore, the effect of liquidity is controlled by the turnover ratio, *TO*, takes into consideration the amount of volume traded for stocks.

Restriction based and capital flow-based measures are used to proxy for financial liberalization, $Finlib_{it}$. These financial liberalization factors include the LMF (Lane & Milesi-Ferretti, 2007), FEL (Foreign equity liabilities) and EW (Edison & Warnock, 2003) measures that are tested each with separately in this study. Lane and Milesi-Ferretti (LMF) is the sum of a country's foreign equity (assets and liabilities) and foreign direct investment (assets and liabilities) as a share of GDP. This measure is used as a proxy for capital flows and the ability of an economy to restrict cross border transactions.

Foreign equity liabilities (FEL) is another proxy for financial liberalization and considers the value of foreign equity portfolio relative to the market capitalization of local stock exchanges. The Edison and Warnock (2003) measure (EW) is used to proxy for equity market liberalization. The measure is developed by determining the ratio of SP/IFC Investable index to the SP/IFC Global Index. This index was developed based on the the index construction methodology proposed by S&P. The ratio, which ranges from 0 to 1, measures the accessible portion of the equity market to foreign investors, where a ratio of 0 would indicate that the equity market is less accessible while a ratio of 1 would mean that the market is fully accessible to foreign investors.

The trade liberalization factors are proxied by $Openness_{it}$, which is commonly used to represent the degree of trade openness in a country. This annual set of data is measured in terms of total exports and total imports by GDP for each country. Another trade liberalization factor which is used in this study is the tariff rate ($Trate_{it}$), and the ratio of total exports to GDP ($Export_{it}$) and total imports to GDP ($Import_{it}$) are also included to determine the impact of exports and imports on total firm volatility independently.

Volatility Model

The total aggregated volatility of stocks in each country is derived based on the modified market model proposed by Campbell et al. (2001). This model also accounts for the time-varying effects of trade liberalization on the volatility of stock returns by decomposing total volatility, which follows a series of steps to derive the volatility of stocks in a local market portfolio, where:

$$\tilde{R}_{ilt} = \beta_{lw}\tilde{R}_{wt} + \tilde{\varepsilon}_{lt} + \varepsilon_{ilt} \quad (2)$$

In equation (2) above, \tilde{R}_{ilt} , which is the return on stock i in country l is measured by the sum of returns on the global market portfolio by β_{lw} , a country-specific shock (ε_{lt}) and a firm-specific residual (ε_{ilt}). The variance of individual stocks is derived by:

$$var(\tilde{R}_{ilt}) = (2\beta_{lw}\beta_{iw} - \beta_{lw}^2)var(\tilde{R}_{wt}) + (2\beta_{il} - 1)var(\tilde{\varepsilon}_{lt}) + var(\varepsilon_{ilt}) \quad (3)$$

Aggregated total volatility is subsequently decomposed for stocks in each country by taking weighted averages of variances through:

$$\begin{aligned} \sum_{i \in l} w_{it} var(\tilde{R}_{ilt}) &= (2\beta_{lw} \sum_{i \in l} w_{it} \beta_{iw} \beta_{lw}^2) var(\tilde{R}_{wt}) + var(\tilde{\varepsilon}_{lt})(2 \sum_{i \in l} w_{it} \beta_{il} - 1) + \\ \sum_{i \in l} w_{it} var(\varepsilon_{ilt}) &= \beta_{lw}^2 var(\tilde{R}_{wt}) + var(\varepsilon_{ilt}) + \sum_{i \in l} w_{it} var(\varepsilon_{ilt}) \sigma_{a_{lt}}^2 = \sigma_{w_{lt}}^2 + \\ &\sigma_{\varepsilon_{lt}}^2 + \sigma_{\varepsilon_{ilt}}^2 \end{aligned} \quad (4)$$

where $\sigma_{a_{lt}}^2 = \sum_{i \in l} w_{it} var(\tilde{R}_{ilt})$, $\sigma_{w_{lt}}^2 = \beta_{lw}^2 var(\tilde{R}_{wt})$, $\sigma_{\varepsilon_{lt}}^2 = var(\tilde{\varepsilon}_{lt})$ and $\sigma_{\varepsilon_{ilt}}^2 = \sum_{i \in l} w_{it} var(\varepsilon_{ilt})$.

Subsequently, the volatility of stocks is then grouped according to industry groups based on ten categories of industry sectors. These ten sectors include Basic Materials, Consumer Goods, Consumer Services, Financials, Health Care, Industrials, Oil and Gas, Technology, Telecommunications and Utilities.

Panel Data and Dynamic Fixed Effects Model

The dynamic fixed effects model is used to overcome problems relating to small dimensions (T) and a large number of observations (N). Nickell (1981) observed that a bias could be formed as a result of this situation. In a dynamic fixed effect (DFE), a lagged dependent variable is added to the equation. In doing so, the biased estimates of the coefficients are eliminated. Furthermore, the correlated effects of the independent variables and the errors are also minimized. The robustness tests are also performed, and the test results indicate that their issues relating to serial correlation do not occur in Malaysia and China. However, there are multicollinearity issues in Malaysia, while heteroscedasticity is an issue in both countries.

Data

The study relies on weekly data from the period beginning 1997 to 2017. In deriving volatility estimates, stock prices are extracted from the Kuala Lumpur Stock Exchange in Malaysia and the Shanghai and Shenzhen Stock Exchanges in China. All trade liberalization variables are extracted from Thomson Reuters Datastream. The data relating to both LMF and FEL is obtained from the External Wealth of Nations Mark II database from the International Monetary Fund (IMF). GDP data is obtained from the World Bank Database. Data is also taken from the Department of Statistics in Malaysia and the Department of Statistics in China.

Analysis

Descriptive Statistics

The summary descriptive statistics are presented in Table 1. Results of the analysis indicates that the average volatility of firms is higher in China as compared to Malaysia. Amongst the financial liberalization factors, LMF, which proxies for capital market liberalization, is higher in Malaysia as compared to China. Foreign investor access to equity markets is higher in Malaysia as compared to China. In essence, Malaysia seems to be more open to financial and trade activities relative to China.

Table 1.

Descriptive Statistics

Malaysia					
	Obs	Mean	SD	Min	Max
Total Volatiltiy	10660	0.000	0.001	0.000	0.032
LMF	9090	0.950	0.251	0.551	1.318
FEL	9090	0.165	0.031	0.109	0.214
EW	10660	0.870	0.102	0.555	0.949
TO	10660	0.002	0.001	0.001	0.005
SIZE	9090	1.534	0.329	0.907	1.970
China					
	Obs	Mean	SD	Min	Max
Total Volatiltiy	10399	0.001	0.001	0.000	0.024
LMF	9090	0.310	0.071	0.206	0.405
FEL	9090	0.120	0.065	0.035	0.266
EW	10660	0.760	0.176	0.333	0.985
TO	10660	0.001	0.001	0.000	0.002
SIZE	9090	0.451	0.248	0.174	1.266

Source: Authors' calculations

Industry Sector Analysis

Results of the aggregated volatility of returns based on the industry sector as a result of trade and financial liberalization are presented in *Appendix A1 and A2*. In the case of Malaysia, Healthcare and Consumer Services industries are highly affected as a result of financial and trade liberalization. Basic Materials, Consumer Goods and Technology industries are least affected as a result of liberalization activities. Malaysia has managed to diversify the local industries in order to meet the demand of domestic consumers, and this has led towards local industries and consumers being able to source supplies locally. However, the Healthcare industry, which is heavily reliant on products and imported from foreign companies are still at risk of changes in government rules and quotas.

In the case of China, Basic Materials, Consumer Services and Industrials are most heavily impacted as a result of liberalization activities. Telecommunications is least affected by liberalization activities. These results imply that the resources sector is highly dependent on the supplies from overseas markets are susceptible to actions by government regulators in influencing the industry. Furthermore, the telecommunications sector which is dominated by state-owned enterprises is less influenced by the liberalization activities.

Panel Data Results

The panel data results regarding the effects of financial liberalization on aggregated volatility of returns are presented in Table 2 and Table 3 for Malaysia and China, respectively. From a Malaysian perspective, trade openness significantly increases firm risk. Furthermore, exports have a lower impact on systematic risk as compared to imports. Tariff increases volatility even though it is not significant. From the perspective of the control variables used in the study, size seems to increase volatility while TO reduces volatility. Also, trade liberalization increases risk in firms specialized in consumer services, financials, industrials, telecommunications and utilities. However, the liberalization of trade reduces the risk in consumer goods segment, oil and gas industry as well as the technology sector.

The effect of financial liberalization factors on aggregated volatility also indicates that increase in liberalization increases firm risk in the case of FEL and LMF and reduces risk in the case of EW. Financial liberalization seems to be beneficial to the Consumer Goods, Oil and Gas, Technology and Basic Materials industries. The integration of the international markets might explain the reason as to why an increase in trade liberalization will be a good diversification alternative for investors as idiosyncratic risk is reduced. Also, for mature industries, it seems

to be influenced by trade liberalization. It could be inferred that both financial and trade liberalization are influential on industries and benefits are most significant when it comes to the Consumer Goods, Oil and Gas and Technology industries.

Table 2.

Aggregated total volatility and the effect on trade and financial liberalization for Malaysia

LMF	0.000798*** (6.30)		
FEL		0.00404*** (8.26)	
EW			-0.0000671 (-0.40)
Openness	0.00500*** (3.49)	0.00181 (1.25)	0.00400** (2.80)
Tariffs	-0.00000547 (-0.10)	0.0000597 (1.11)	0.0000202 (0.38)
Exports	0.00927* (2.00)	0.00831 (1.80)	0.00581 (1.26)
Imports	-0.0318** (-2.70)	-0.0245* (-2.07)	-0.0358** (-3.04)
TO	0.140*** (9.91)	0.166*** (11.43)	0.132*** (7.40)
Size	-0.000523*** (-7.66)	-0.000376*** (-7.65)	-0.000195*** (-4.41)
<i>Industry:</i>			
Basic Materials	-0.0000576 (-1.27)	-0.0000576 (-1.28)	-0.0000576 (-1.27)
Consumer Goods	-0.000395*** (-8.71)	-0.000395*** (-8.71)	-0.000395*** (-8.71)
Consumer Services	0.000395*** (8.73)	0.000395*** (8.73)	0.000395*** (8.73)
Financials	0.000285*** (6.30)	0.000285*** (6.31)	0.000285*** (6.28)
Health Care	0.000628*** (13.89)	0.000628*** (13.91)	0.000628*** (13.86)
Industrials	0.000242*** (5.35)	0.000242*** (5.35)	0.000242*** (5.33)
Oil and Gas	-0.0000853 (-1.89)	-0.0000853 (-1.89)	-0.0000853 (-1.88)
Technology	-0.0000996* (-2.20)	-0.0000996* (-2.21)	-0.0000996* (-2.20)
Telecommunications	0.000339*** (7.49)	0.000339*** (7.51)	0.000339*** (7.48)
Utilities	0.000327*** (7.22)	0.000327*** (7.23)	0.000327*** (7.21)
_cons	0.0198** (2.82)	0.0146* (2.07)	0.0279*** (4.03)
N	9090	9090	9090
Dynamic fixed effects	Yes	Yes	Yes

Notes: The results correspond to regression Eq. (1) in the study. The dependent variable is the aggregated total volatility, whereas aggregated total volatility is the weighted average of weekly return volatilities of stocks in the S&P/IFC global index of the relevant emerging countries. The degree of trade liberalization is denoted by Openness, Tariffs, Exports and

Imports and degree of financial liberalization is measured by LMF, FEL and EW. Also, control variables include TO and Size. The effect of volatility on ten industry sectors Is also presented above.

* Represents 10% significance level

** Represents 5% significance level

*** Represents 1% significance level

Source: Authors' calculations

Table 3.

Aggregated total volatility and the effect on trade and financial liberalization for China

LMF	0.00000802 (0.09)		
FEL		-0.000849** (-2.74)	
EW			0.00000847 (0.09)
Openness	0.0000623*** (7.73)	0.0000624*** (7.74)	0.0000631*** (7.81)
Tariffs	0.000530* (2.47)	0.000224 (1.02)	0.000532* (2.48)
Exports	0.00340*** (10.23)	0.00419*** (9.54)	0.00340*** (10.24)
Imports	-0.00440*** (-14.78)	-0.00476*** (-14.84)	-0.00440*** (-14.79)
TO	-0.329*** (-8.78)	-0.283*** (-6.97)	-0.329*** (-8.78)
Size	0.000748*** (20.57)	0.000640*** (12.18)	0.000748*** (20.57)
<i>Industry:</i>			
Consumer Goods	-0.000323*** (-8.33)	-0.000323*** (-8.33)	-0.000323*** (-8.33)
Consumer Services		0.0000952** (2.72)	0.0000952** (2.72)
Financials		0.000198*** (5.65)	0.000198*** (5.65)
Health Care		-0.000267*** (-7.61)	-0.000267*** (-7.61)
Industrials		0.000133*** (3.78)	0.000133*** (3.78)
Oil and Gas		-0.000125*** (-3.56)	-0.000125*** (-3.56)
Technology		-0.000407*** (-11.60)	-0.000407*** (-11.59)
Telecommunications		-0.000611*** (-17.42)	-0.000611*** (-17.42)
Utilities		-0.0000803* (-2.29)	-0.0000803* (-2.29)
Basic Materials		0.000322*** (8.30)	0.000323*** (8.30)
CONS	-0.000867***	-0.000198	-0.000798***

	(-3.84)	(-0.74)	(-3.78)
<i>N</i>	8050	8050	8050
Dynamic fixed effects	Yes	Yes	Yes

Notes: The results correspond to regression Eq. (1) in the study. The dependent variable is the aggregated total volatility, whereas aggregated total volatility is the weighted average of weekly return volatilities of stocks in the S&P/IFC global index of the relevant emerging countries. The degree of trade liberalization is denoted by Openness, Tariffs, Exports and Imports and degree of financial liberalization is measured by LMF, FEL and EW. Also, control variables include TO and Size. The effect of volatility on ten industry sectors Is also presented above.

* Represents 10% significance level

** Represents 5% significance level

*** Represents 1% significance level

Source: Authors' calculations

The results from the analysis of China seem to indicate that trade openness increases firm risk, and the results are significant. Furthermore, exports and imports also have an essential role to play in influencing systematic risk. However, the results are mixed when it comes to the effects of trade liberalization as tariffs seem to increase firm risk related to firm risk even though the results are not significant. Also, Size and TO (control variables employed in the study) are essential factors influencing the volatility of returns. Trade liberalization also increases risk in firms specializing in consumer services, financials, industrials and basic materials. However, trade liberalization reduces the risk in consumer goods segment, oil and gas, healthcare, technology, telecommunications industry and the technology sectors.

The results also indicate that an increase in liberalization increases systematic risk. In evaluating the results, financial liberalization benefits only the Utilities sector, which suggests that financial liberalization is not an effective method to be used to reduce systematic risk. These results could be partly explained in a way that the integration of the international markets might explain the reasons why an increase in trade liberalization is a good diversification alternative for investors as idiosyncratic risk is reduced. Also, for mature industries, it seems to be influenced by trade liberalization. Nonetheless, given China's heavy reliance on the import of materials to spur its growth, it seems sensible that materials segment is highly susceptible to foreign influences. These results further imply that trade liberalization is more influential on industries as compared to financial liberalization in emerging market economies.

Conclusion

In summary, the results of this study provide evidence that is useful for the purposes of formulating government policies as well as giving some guidance to investors and fund managers in designing investment portfolios. When it comes to government policy making, the evidence from Malaysia seems to indicate that trade and financial liberalization over the study period, from 1997 to 2017, by and large, has resulted in an increase in aggregated stock volatility. The results of the study also indicate that the effects of trade liberalization in particular, significantly increase firm risk. The Malaysian government regulators could use such evidence to review their current policies vis-à-vis liberalization activities as the effects on the economic support measures to open up the markets to the global economy.

The results from China, however, seem to indicate that the government has been useful in devising trade policies to benefit from China's increasing influence on the global economy. Nonetheless, the results seem to portend that financial liberalization activities have not been as beneficial to the Chinese economy and perhaps more could be done in order to reform the financial and capital markets in China. The Chinese government, however, has taken incremental steps in the last few decades to revise its policies relating to financial and capital markets.

Fund managers and investors could use the evidence provided in order to develop investment strategies. From a Malaysian perspective, evidence from industry sector analysis suggests that diversification strategies could be devised with respect to consumer goods, oil and gas, technology and basic materials industries. Nonetheless, the results also indicate that investors should be wary of government policies in affecting trade as trade openness seem to lead towards an increase in firm volatility.

From the point of view of China, investors and fund managers should take into consideration the effects of trade policies on industries such as consumer goods, oil and gas, healthcare, technology and telecommunications in designing a diversification strategy. The reliance of China on trade as a driver for economic growth would suggest that investors should pay close attention to the government's policies in either liberalizing or limiting trade-based activities. In the case of China, the heavy reliance on imports of basic materials to spur economic growth

has resulted in the basic materials industry being highly susceptible to the effects of trade policies. This has also been reflected in the results in relation to the effects of trade liberalization on the basic materials industry in China.

The study of the effects of trade and financial liberalization factors on both of these emerging economies has been useful to shed some light on the possible effectiveness of policies that have been set in place for purposes of encouraging growth and economic activity. Although both economies have devised policies and participated in the global economy at different stages of their development, the empirical results of this study have provided some useful results which can later be used to discern strategies both for government regulators as well as investors.

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Appendix

Appendix A1.

Malaysian Industries (Summary Statistics of Volatility and Financial Liberalization measures)

Basic Material						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.000	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.002	1.318	0.214	0.949	0.005	1.970
Consumer goods						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.001	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.024	1.318	0.214	0.949	0.005	1.970
Consumer Services						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.001	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.012	1.318	0.214	0.949	0.005	1.970
Financials						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.001	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.012	1.318	0.214	0.949	0.005	1.970
Healthcare						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.001	0.950	0.165	0.870	0.002	1.534
SD	0.002	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.029	1.318	0.214	0.949	0.005	1.970

Industrials						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.001	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.010	1.318	0.214	0.949	0.005	1.970
Oil & Gas						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.000	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.001	1.318	0.214	0.949	0.005	1.970
Technology						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.000	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.001	1.318	0.214	0.949	0.005	1.970
Telecommunications						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.001	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.032	1.318	0.214	0.949	0.005	1.970
Utilities						
	Total Volatility	LMF	FEL	EW	TO	Size
Obs	1066.000	909.000	909.000	1066.000	1066.000	909.000
Mean	0.000	0.950	0.165	0.870	0.002	1.534
SD	0.001	0.251	0.031	0.102	0.001	0.329
Min	0.000	0.551	0.109	0.555	0.001	0.907
Max	0.023	1.318	0.214	0.949	0.005	1.970

Appendix A2.

Chinese Industries (Summary Statistics of Volatility and Financial Liberalization measures)

Basic Material							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.012	0.405	0.266	-1.195	0.985	0.002	1.266
Consumer goods							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000

Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.013	0.405	0.266	-1.195	0.985	0.002	1.266
Consumer services							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.015	0.405	0.266	-1.195	0.985	0.002	1.266
Financials							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.013	0.405	0.266	-1.195	0.985	0.002	1.266
Healthcare							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.002	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.020	0.405	0.266	-1.195	0.985	0.002	1.266
Industrials							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.013	0.405	0.266	-1.195	0.985	0.002	1.266
Oil & Gas							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.011	0.405	0.266	-1.195	0.985	0.002	1.266
Technology							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.018	0.405	0.266	-1.195	0.985	0.002	1.266
Telecommunications							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	805.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.000	0.310	0.120	-1.195	0.760	0.001	0.451

SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.006	0.405	0.266	-1.195	0.985	0.002	1.266
Utilities							
	Total Volatility	LMF	FEL	IC	EW	TO	Size
Obs	1066.000	909.000	909.000	961.000	1066.000	1066.000	909.000
Mean	0.001	0.310	0.120	-1.195	0.760	0.001	0.451
SD	0.001	0.071	0.065	0.000	0.176	0.001	0.248
Min	0.000	0.206	0.035	-1.195	0.333	0.000	0.174
Max	0.024	0.405	0.266	-1.195	0.985	0.002	1.266