POLICY AND POLITICAL CHANGES IN ADVANCED COUNTRIES AND ITS IMPACT TO THE INTERNATIONAL FINANCIAL MARKET FOCUSING ON EMERGING ECONOMIES

By

Woo Jin Chung

Dissertation

Submitted to
KDI School of Public Policy and Management in
partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY
IN PUBLIC POLICY

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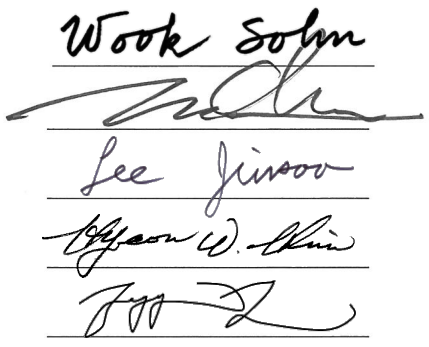

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CHAPTER ONE

THE US LONG TERM INTERST RATE AND ITS IMPACT TO EMERGING ECONOMIES

ABSTRACT

By

Woo Jin Chung

The synchronization of the global financial market has intensified in the era of globalization, which is characterized by technological and financial market developments. Since the 2008 global financial crisis, the implementation of the US monetary policy changes and clear policy guidance promoted market stability and reduced market friction. However, this has also elevated the influence of the US monetary decision on the global markets, especially those of emerging economies. Through an empirical research design, this study investigates the impacts of US monetary policy and its long-term rate changes on emerging markets by dividing the regression group before and after the global financial crisis. Using the vector auto-regressive approach, this work investigates the impacts of the US long-term interest rate on the emerging real economies and financial markets. Results revealed that the impacts of the US long-term rate changes heightened on emerging equity and bond markets after global financial crisis. The US monetary policy and its expectations also displayed significant interactions with emerging markets' industrial production and export growth, both of which are important economic indicators for developing economies.

CHAPTER1.

THE US LONG TERM INTERST RATE AND ITS IMPACT TO EMERGING ECONOMIES

1.1. Introduction

We live in the era of globalization, during which the industrial and financial sectors have undergone tremendous changes in the past few decades. From these trends, we have experienced the efficient allocation of resources, including human, natural, product, and capital resources, and unrestricted movement from one country to another. Globalization has enhanced the level of cooperation among countries and promoted economic alliance and free trade. It has also delivered business efficiencies and economic welfare to a certain degree while heightening the interdependency and complex financial interconnectedness among international financial markets.

Researchers agree that the expansion of globalization started from financial globalization and innovation. In other words, the diversification of investment assets in developed markets and the development of various financial product and derivatives facilitated the free movement of capital and promoted the efficient allocation of resources in both domestic and international markets. As a result, the expansion of globalization has become a key theme in international economics and politics, it has also encouraged the transfer of resources from emerging to advanced economies and promotes labor market flexibilities. Consequently, globalization has also deepened the integration of policy decisions and transmission of their effect among global economies. This kind of market interdependency has also been strengthened with technological development, along with an increase in the utilization of information, such as the phase of the efficiency market hypothesis in the global perspectives (Fama, (1998)).

Furthermore, the development of investment products has contributed to global financial industry expansion beyond traditional local investment products, such as deposits, bonds, and stocks. Since their introduction in the late 1990s, ETFs (ETN/ETPs) had grown to 4 trillion USD in 2017 with advantages in terms of transparency and flexibility across markets and products, making them key investment instruments of globalization. (Antoniewicz and Heinrichs, 2014). However, in a broader perspective, the dominance of this kind of passive investment style (index tracking) has also created a side effect wherein the size and speed of downward movement could easily snowball in cases where the market is positioned homogeneously. According to a past study, the development of financial instruments due to globalization led to the global financial crisis and recession in 2008, which began in the US (Vieira, 2011).

After the global financial crisis in 2008, the policy decisions of the US—the largest economy in the world, whose currency and financial institutions were at the core of the global financial system—become a key signal not only for global investors but also local investors, especially small and open economies (e.g., Korea) that have largely depended on the US. Moreover, aside from investment products based on sovereignty, such as sovereign bonds or short-term savings, financial products in the private sector, such as corporate bonds and equities, have also been influenced by the US policy decisions.

Indeed, the major central banks in advanced countries have imposed unconventional monetary policies with respect to zero prime rate as part of the containment phase, thereby introducing unlimited quantitative easing programs during the financial crisis in 2008. By providing unlimited and active policy measures, these efforts have led to financial market stability with a clear direction. As part of the effort to overcome the financial crisis, the policy change and subsequent impacts on the financial markets in developed countries have continuously affected fund flows and market volatiles in the emerging markets. In fact, the main objectives of these

financial measures are to provide liquidity to specific markets and to secure the stability of their respective financial markets. However, these measures inevitably affected other economies and financial markets, providing better yield attractiveness and substitutable investment products. As the US initiated this unconventional monetary policy and held the status of possessing the major hard currency, investors in other countries had to pay attention to the US monetary policy and its scale, which in turn, influenced the macroeconomics and financial markets in emerging countries as counterparty effects.

Since the US financial crisis in 2008, the US Federal Reserve introduced the concept of "forward guidance" to minimize market volatility and information discrepancy stemming from changes in the macroeconomic conditions and policy decisions by providing more transparent interpretations of certain economic conditions. Henceforth, the forward guidance and Fed policy direction became the key information that global market participants should consistently rely on. Doehr and Enrique (2015) concluded such monetary policy expectations (forward guidance) contributed to market communication improvement under the zero-bound interest rate period. Not just for domestic investors but also for international investors' perspectives did, the global financial crisis of 2008 ultimately strengthen market interdependence by requiring market participants to understand international financial policies, especially those of the US. Moreover, in terms of policy decisions, the Fed and other international policymakers minimized information asymmetry and distortions in order to reduce market volatility and inefficiency.

I aim to conduct research on the financial integration of global perspectives, especially focusing on the impacts of US monetary policy on emerging economies during the pre- and post-financial crisis periods. This study investigates the empirical relationship between the US interest rate movement and emerging market performance, observing both of macro-economic impact and financial market impact. The remaining parts of the paper are organized as

follows: Chapter 2 presents the related literature review, Chapter 3 presents the identification methodology, Chapter 4 provides the empirical analysis, and Chapter 5 presents the conclusion and implications of this research.

1.2. Literature Review

Previous studies have investigated the effects of globalization on the global economy as well as presented various analyses of policy change decisions and their subsequent market impacts. Contagion effect analyses have also been carried out regarding policy changes in advanced markets and their macroeconomic impacts on other countries. Additionally, a number of studies have examined how policy changes in advanced markets affect the financial market of emerging countries. In this chapter, I aim to introduce previous studies related to policy changes in advanced markets and their impacts on macro fundamentals and financial market in emerging countries.

Academics and economists have engaged in ongoing debates on whether financial globalization would eventually lead to disastrous results in the early 2000s. Stiglitz (2010) pointed out that financial integration can overlook the actual risk magnitude, as actual financial risks are not diversified by integration. This can be attributed to the fact that many financial technologies and related risks are non-convex and can also lead to unexpected adverse effects due to the cascading of default problems. Actually, this has already been proven in the case of the financial crisis in 2008, which started from US mortgage defaults but eventually affected global financial markets, thereby resulting in widespread economic recession in many countries. According to Kamin (2010), many economies and financial authorities have underscored the impact of financial integration and the fact that it can help overcome the challenges and threats originating beyond the borders of individual countries. The author further stated that, due to financial globalization, it became more difficult for central banks to make domestic policy

decisions as they are now required to consider the external impacts of policies on international financial markets. It is true that the financial authorities and regulators struggled to catch up with the market development and the impact of complexities because of rapid financial globalization and constant product innovations, and this situation has gradually led to a lack of appropriate risk controls.

Some have argued that the economic impacts of the policy need to be approached in the view of economic risk contagion. Many previous studies regarding contagion issues among countries have been published, and such studies have observed that the economic shock of one country can easily spread to other countries. The stock market shock leads to the currency shock, and in turn, the currency shock affects the overall trade condition in a real economy. The impacts on the financial market can also vary depending on the relative economic conditions (e.g., trade competitiveness, financial markets, interest rates, etc.) of the counterpartying countries. The contagion impact is even greater when speculative forces enter the picture. Contagion risk may stem from several factors, such as strong trade relations, common macroeconomic weaknesses or similarities, and financial market correlations. Boutabba (2019) studied the mutual contagion effects of seven countries on exchange rates, stocks, and liquidity markets. The study applied the vector auto-regressive (VAR) model to examine the correlations and interrelationship of each market using the unitary root ADF and PP methods and revealed that contagion effect explains many parts of market's irrationality.

The impacts of the contagion effect appear proactively and simultaneously in the financial market. Kim and Lee(2017) found the financial market can be affected by US policy changes both in the short and long run, as it preemptively reflects US policy changes through market sentiment and is also affected by corporate earnings changes in the long run. Thus, it can be said that macro-indicators, such as the balance of payments and industrial production, affect financial markets simultaneously.

Meanwhile, Mac´kowiak (2007), analyzed the US monetary policy and found that it did not have a significant influence from 1986 to 2000. The actual Fed rate shock came in the form of short-term interest rate volatilities and exchange rate fluctuations in emerging markets, although the impacts were not as huge as those observed in the real economies. In other words, US monetary policy changes have similar impacts on emerging financial markets within a six-month perspective, although the effects are somewhat mixed in the long run. This is because, even if the interest rate rises, the impacts on the real economy are reduced due to the relative currency depreciation against the USD. Indeed, according to a study by Calvo and Mishkin (2003), the effect of the exchange rate regime on the real economy is not the priority factor. Given that the exchange rate regime is more dependent on the economic structure and political background, in a real economy, the fiscal soundness and/or current account are the more important factors influencing actual economic performance in the long run.

Nevertheless, US policy changes have had negative effects on the real economy in small open economy countries such as Singapore and Korea. Especially in the case of Korea—a small, open, and export-driven economy that is dependent on large economies like the US and China-has been significantly affected by the policy changes in major economies. Rajan and Zingales (2003) found that trade openness as well as political and institutional interest can influence a country's financial development. In turn, this can have meaningful implications for robust and sustainable financial market development in emerging countries. The authors concluded that market openness facilitates the expansion of the financial market and that related policies promote the industrial efficiency of economic growth. Furthermore, they pointed out that public awareness of the industry or market scheme can be a potential cost of policy implementation

Gehringer (2015) conducted research on financial liberalization and productivity growth within European Union(EU) countries by performing an empirical analysis of panel data. The author

found that the financial integration of the market has a more positive impact on manufacturing industries rather than on service industries, although both industries showed an overall positive relationship. The author pointed out that the skilled worker bias is weakened by technological changes and international finance effects on productivity growth. He further emphasized that, although financial integration has a relatively small impact on service sector growth compared to that of the manufacturing sector, policy-makers need to search for more long-lasting growth channels for the service sector (Gehringer, 2015).

Meanwhile, Hausman and Wongsman (2011) analyzed the effect of the FOMC's decision regarding global asset prices based on the OLS model. They reported that the target rate changes have a more significant effect on the global stock market, although bonds and currency markets are more greatly affected by long-term policy path changes. On average, a 25bp rate change in the FOMC caused a 1% change in global stock market prices and a 5bp change in the bond market. The foreign exchange rate is also affected by 5bps with expected target rate changes, similar to the bond market movement. These changes differed depending on the country's total financial market capitalization.

Bjørnland and Leitemo (2009) investigated the interdependence between US monetary policy and the stock market (S&P500) using the structural VAR model. They concluded that monetary policy shock, which is about 100bps, has an immediate impact on the stock market (7%– 8% fall and stock price shock increase shock by 1%), which then leads to 4bps increase in the interest rate. As this research mainly focused on the period of 1983 to 2002 and studied data from before the global financial crisis of 2008, it can be considered an analysis of the domestic macroeconomic dynamics of US monetary policy rather than its international impacts. The study employed the VAR approach and successfully identified the simultaneous relationships between the financial market and monetary policy.

Guidolin, Alexei, and Pedio (2017) examined the effects of a conventional monetary expansion, quantitative easing (QE), and the maturity extension program (MEP) on corporate bond yields using impulse response functions obtained from flexible models with regimes. They found that the responses of corporate bonds to unconventional monetary policies are statistically significant, large, and of the sign intended by policymakers in a crisis state. Interestingly, both QE and MEP can affect general bond yield strengthening, but the latter has a more significant effect on the cost of funding for private borrowers. In their preceding study in 2014, the same authors examined the effects of quantitative easing and operation "twist" as well as a conventional monetary expansion on corporate bond yields and spreads. However, they found that only the operation twist lowered corporate yield without generating inflationary expectations.

Coenen, Montes–Galdon, and Smets (2015) examined how the impacts of forward guidance and the large asset purchase program are quantitatively affected by the falling effective interest rate. In addition, they analyzed how expansionary fiscal policy can serve as an additional stabilization tool during nominal interest rate declining trends. They further analyzed the impacts of these three policies on the macroeconomics using a stochastic model.

Kose and Ohnsorge (2020) reported that the potential growth of emerging countries has slowed down after the financial crisis due to the implementation of an expansionary monetary policy. As the role of policy easing is expected to be highlighted once again in the current global economic slowdown, policies that focus on resilience to boost long-term growth and efficiency should be prioritized. However, the EMDE's policy capacity was higher before the global financial crisis in 2008, and emerging countries' economic conditions are also considered much weaker than they were at that time. Finally, despite the general robust developments in the emerging market, emerging economies' policy responses may vary under certain economic conditions. According to the paper, the synchronization of global economic slowdown

increased to 41% in 1975 and 61% in 2009. In current conditions, the impact is likely to be greater due to the increased international trade and financial linkages among countries.

Based on these findings, this study aims to find out how U.S. monetary policy relates to the real economy of emerging countries. Especially, this study attempts to analyze the impact of US monetary policy on the emerging financial market by dividing the observation before and after the financial crisis as well as its impact on representative economic indicators. Through qualitative research on individual countries and statistical analysis of long-term effects, I believe that the causal relationship between US monetary policy and the economic impact of emerging countries will be more clearly established.

1.3. Data and Identification Methodology

By examining the background environments and preceding studies of financial globalization before and after the financial crisis of 2008 as well as its impact on emerging markets, I aim to investigate the impacts of US monetary policy changes on individual countries from the perspectives of macroeconomic and financial markets, based on each country's economic fundamentals and circumstances.

The US is the world’s leading economy accounting for nearly over 20% of global output and a third of global stock market capitalization. From a financial market perspective, the trend of the US dollar and its monetary policy had dominantly influenced other financial market movements, as it directly affects currency movement and domestic rates. In turn, this has also affected global investors’ risk appetite with regards to certain countries in the portfolio. However, the US Fed policy rate has a strong influence on emerging economies, but the intensity of this impact can vary depending on the economic conditions of the individual country and its degree of capital market openness.

Accordingly, in this model, I aim to analyze the impacts of US monetary policy based on emerging countries' economic conditions. In order to analyze several types of emerging economies, including those of Brazil, Russia, and China, which are the representative major economies in the emerging markets, as well as the small open economies with high capital market openness (Korea) and relatively lower market openness (Mexico and Indonesia), I intend to investigate the impacts of monetary policies of developed countries on emerging economies.

1.3.1. Economic Overview of Target Countries

Before introducing a full-fledged statistical analysis, I would like to briefly explore the economic structure and characteristics of the countries being observed. The following data is based mostly on published IMF statistics and the economic statistics come from Bloomberg financial terminal.

In general, in regard to the economic status of the countries, China has the largest economic scale and high GDP per capital level, but its capital market openness is low, as it is based on the quasi (PBOC controlled) floating foreign exchange system and the size of the financial accessibility of foreign investors was limited until 2019. On the other hand, in Russia and Brazil, the openness of their capital markets is high, but the market volatilities are also high due to their natural resource and commodity export-oriented industrial structure, which can be easily affected by foreign exchange market movement. In terms of per capita GDP and financial market openness, Korea and Russia are in a leading position in the emerging group. However, they have quite different industrial structures, with one being a manufacturing exporter and the other a raw material exporter. Indonesia and Mexico have relatively lower GDP per capita positions in the observation group, but Indonesia's growth rate is quite high, unlike Mexico which underwent both economic and political uncertainty after the financial crisis. From these

different economic structures and financial market development, these emerging countries can be found to have different reactions to the US monetary policy changes.

Table 1.1. General Economic Profile of Target market

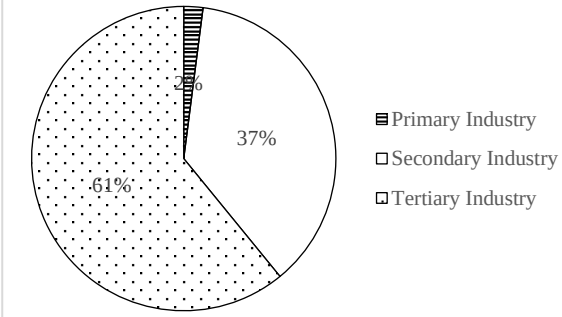
Classification		Korea	Indonesia	Mexico	China	Brazil	Russia
GDP Production (in mn USD 2016)		1,903,411	3,030,577	1,077,906	21,310,048	3,156,494	3,531,999
GDP Growth Rate (avg 2014~2018)		2.95%	5.03%	2.32%	6.85%	-0.80%	0.52%
Per capital GDP (in USD 2016)		37,143	11,714	8,736.7	15,412	15,386	24,081
Investment by Sector	Household	20.70%	-	-	23.50%	32%	20%
	Corporate	64.60%	-	-	64.00%	51.30%	60%
	Government	14.70%	-	-	12.50%	12.70%	20%
Foreign Exchange system		Floating	Floating	Floating	Quasi Floating	Floating	Floating
Financial Market openness*		0.93	0.5	0.39	0.09	0.41	0.7
Government Debt % of GDP		37.90%	27.30%	58%	42.92%	73.70%	16.42%
Direct Investmen t(in mn USD 2014)		9,899	26,349	30,397	289,097	96,895	22,891
Export Diversification and Quality		2.38	2.25	2.44	1.9663	2.45	3.54

To investigate the industrial structures of target countries, I analyzed the 5yr industrial contribution data for GDP production from 2014 to 2019. Table 2 shows the average industry shares based on quarterly GDP data during 2014-2019 published by central banks of each country. In the case of China, Korea, and Mexico, the proportions of the primary, secondary and tertiary industries are similar. On the other hand, in Indonesia and Russia, the proportion of primary industries is still relatively high compared to the other countries. Moreover, in Indonesia, the natural gas and mining industries, and in Russia, petrochemical related resources yield high economic contributions respectively. Especially, in the case of Russia, the proportion of primary and tertiary industries is relatively high, which is a similar composition to that of Brazil. In other words, even within emerging countries, it is at the advanced level, reflecting domestic demand driven service industries as well as financial market development.

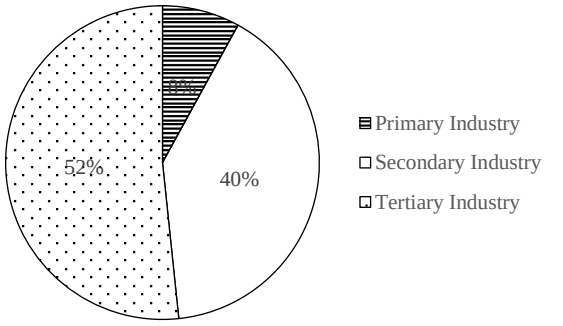
On the other hand, in the case of China, the proportion of primary and secondary industries is nearly half of its total GDP production, relatively higher compared to the other countries. This also shows China's manufacturing and export-driven economic structure, even though it is the largest economy in the world. Considering its limited financial market openness and undeveloped service industry, it can be inferred that the economy can be more easily affected by global economy cycles.

Table 1.2. Percentage of GDP Composition for Each Industrial Stage

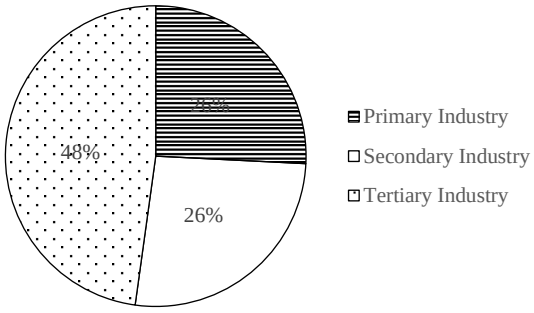
Korea



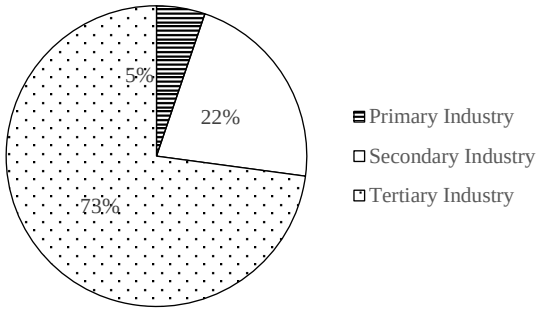
China



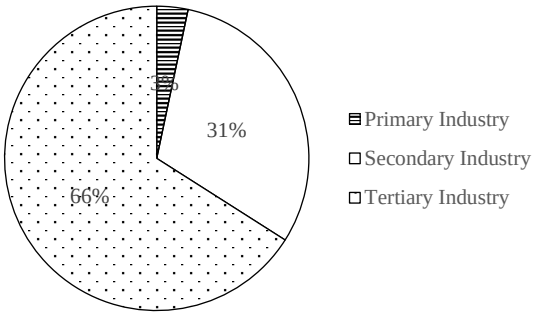
Indonesia



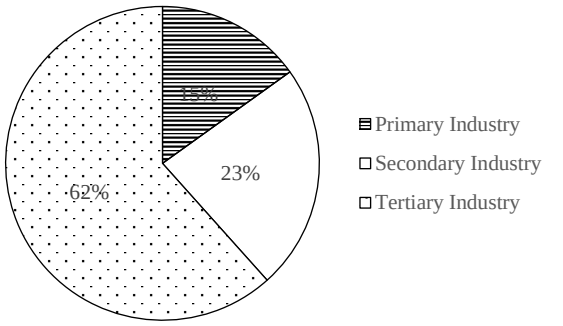
Brazil



Mexico



Russia

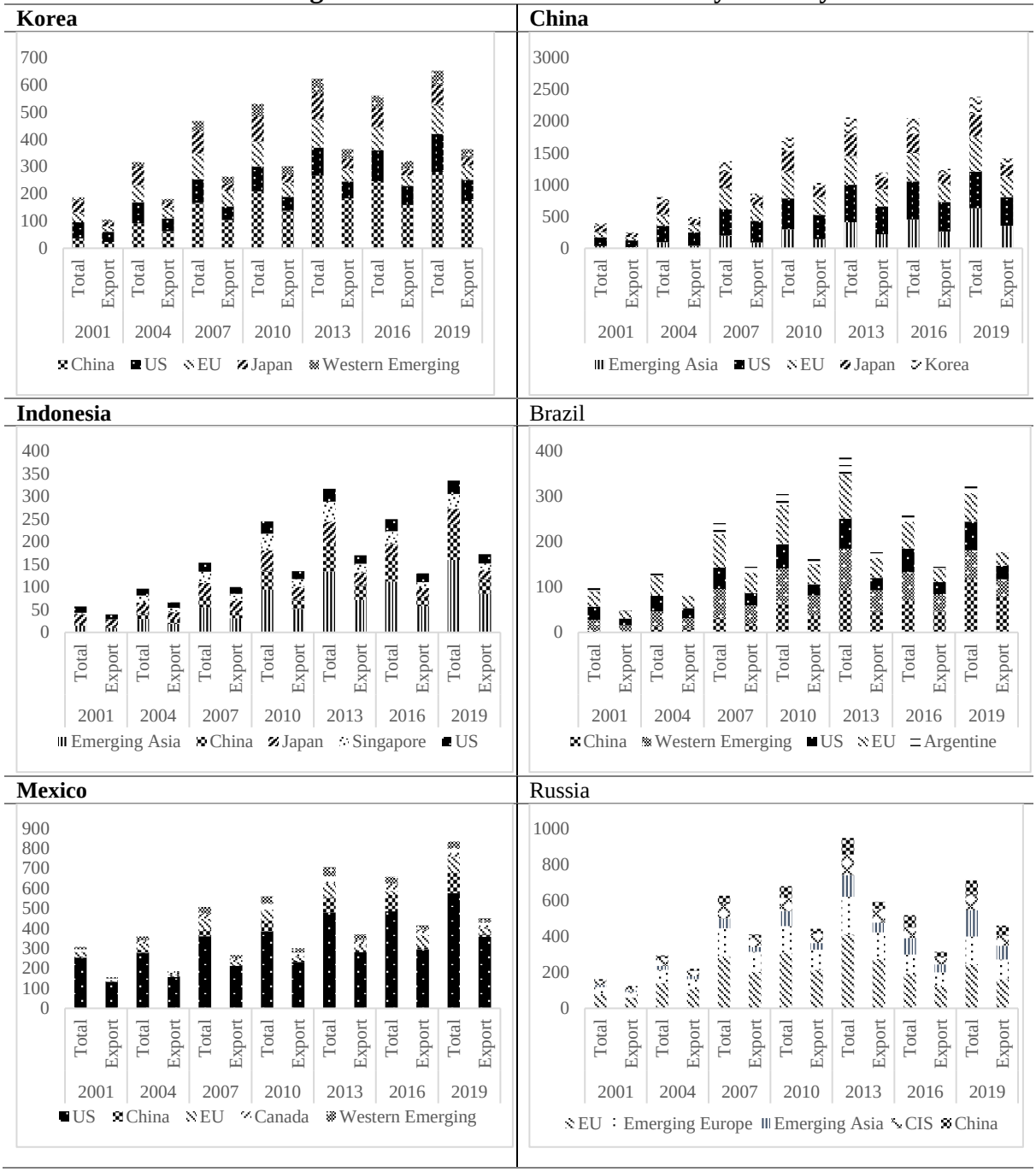


To examine the general trade condition of each country, I observed the flow of its trade volume and export partners of countries since 2001 with gap of 3yrs. The most striking features include

the remarkable trade volume growth of China and its growing influence on other countries. The trade volume with China grew to the 1st or 2nd largest position of all 4 countries (except for Russia) as of 2019. The total volume of trade of US is amount to USD 4,104bn in 2019, which is relatively lower than that of China, amount to USD 4,630bn. Nevertheless, the US has always maintained the 1st or 2nd place with China and other major trading partners, and, as the largest current account deficit country, its policy changes or economic performance have also affected its trading partners. In addition, in terms of the fact that China's No. 1 trading partner has always been the United States for 20 years, its influence is considered very crucial. In particular, Mexico has the highest trade dependence on the United States, while Brazil is more dependent on China than on the United States. Since 2000, China has formed strategic economic partnerships with major commodity exporters and emerging countries such as Latin America (Brazil) and Russia, promoting economic stability, and expanding its economic influence on them. (Zhongping, Feng and Huang Jing 2014). Interestingly, in the case of Indonesia, it is difficult to say that it has a large dependence on the US or China, but it does have well diversified trading partners, such as Japan and ASEAN countries. It is a case similar to Korea with its small open economy, and it is greatly influenced by leading key currencies and global economic cycles.

Overall, the US still dominates in terms of trade volume in most countries, but this has been steadily declining in terms of absolute amount due to China's overwhelming growth. This is not irrelevant to the changes in the industrial structure of the US itself. In the US, the proportion of service industries exceeded 80% of the total GDP production in 2019, as the US economy tends to gear toward the development of the high tech and software industry, rather than traditional manufacturing products trade. As a result, in economic terms, the influence of the country’s tangible trade volume itself was inevitably going to decrease.

Table 1.3. Trends of Changes in Trade and Trade Partners by Country



The financial market movement and macroeconomic results interact with each other. The financial market plays a role of capital financing the real economy, while the prices of financial products fluctuate depending on the real economy performance and earnings. Arestis and Demetriades (1997) investigate the relationship between financial market development and economic growth of country. The study states that the development of capital markets and the utilization of accumulated capital based on financial liberalization positively affect the

economic growth of the country. On the one hand, in the case of Korea, the financial repression works properly on their cartelized banking system, meaning that the effect of its financial policy can vary depending on the economic and financial industry conditions of emerging countries. In other words, not only the degree of financial market development but also the domestic financial policy and the capital utilization all together simultaneously affect the overall economic activity. For this reason, it is important to observe the general financial market condition of target group of countries as follows.

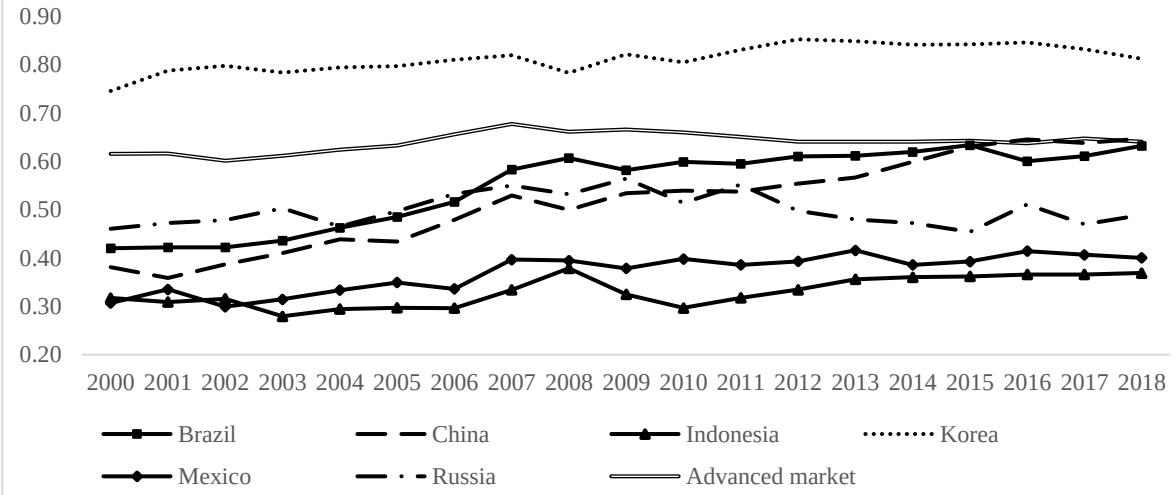
Considering the financial market conditions of the target countries group, they are quite different from previously described macro-economic related conditions. Meanwhile, the real economy of each country is largely influenced by general economic cycle of the world. However, despite of the globalization of the financial industry, the size of the financial market and the level of development by country are still largely dominated by their respective government's domestic financial/regulatory policies.

In the following financial market development index from IMF(2018), Korea's financial market development is the highest in the observed group, exceeding the average level among advanced countries. Brazil also maintains a fairly high level, and China is rapidly improving with its capital market openings, however it is still lower level compared to its economic status in world economy. On the other hand, Russia shows a steady declining since the global financial crisis in 2008, while Indonesia and Mexico have not shown significant progress it the past decade.

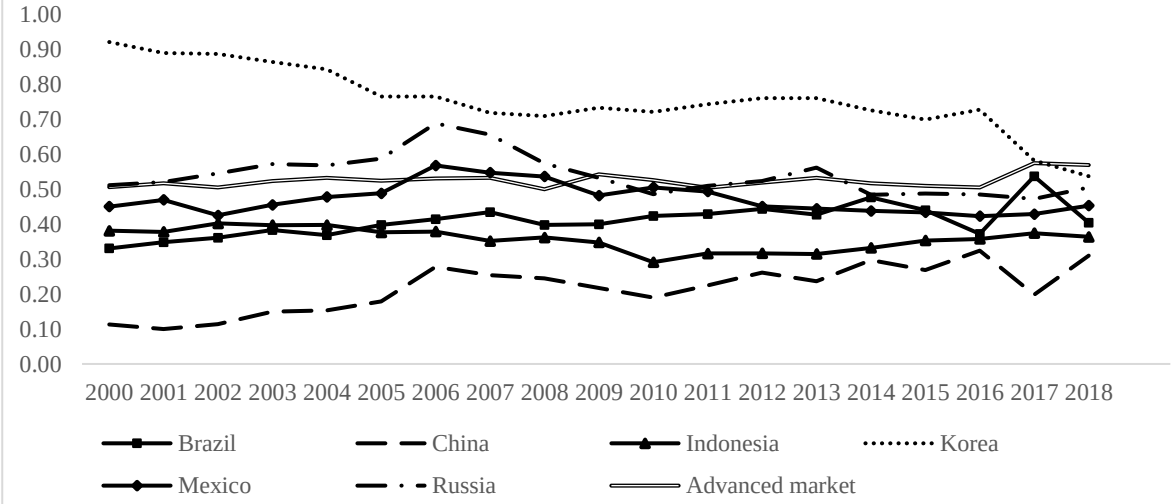
In the aspect of the financial market accessibility, Korea maintains the highest position, but it can be noted that the Korea has continued to fall since 2016. This seems to reflect recent strengthened loan regulations by financial authorities and risk-avoidance attitude by major market players in a cartelized industry structure. In the case of China, it is lower in terms of accessibility, followed by Indonesia, while Mexico, Brazil, and Russia show higher levels of market accessibility.

Table 1.4. Development, Accessibility, and Efficiency Trend of Financial Industry by Country

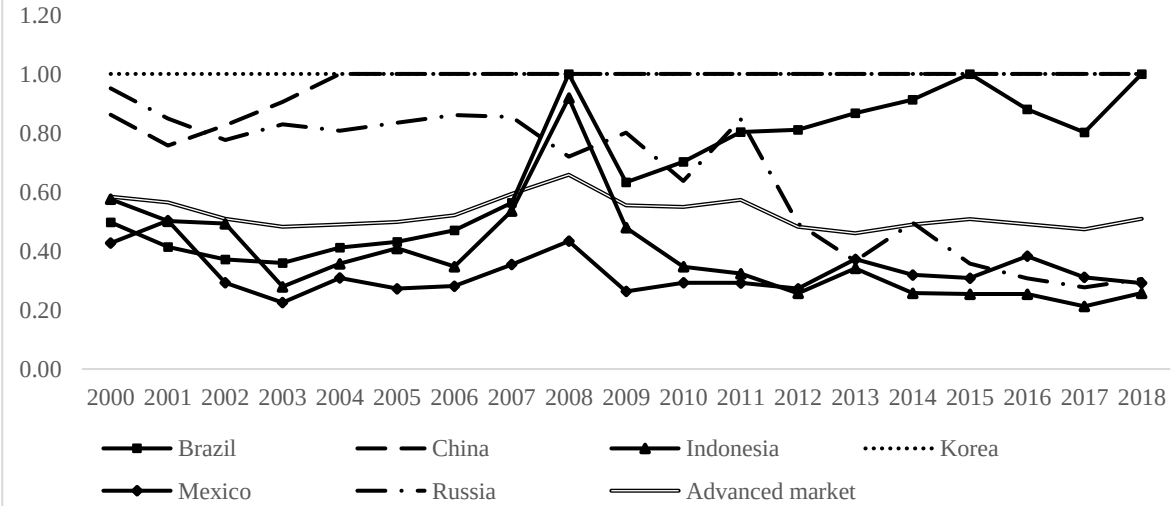
Financial Market Development Index



Financial Markets Access Index



Financial Markets Efficiency Index



In terms of financial market efficiency, Korea and China rank the highest, while Brazil has continued to move into the leading group. However, Russia has continued to see a decreasing trend, which probably stemming from economic sanctions from western countries due to its Ukraine invasion in 2014. Mexico also exhibits a low level of financial efficiency, as it suffered from an economic slowdown as the domestic financial market experienced high volatilities because of the unstable economic situation and currency depreciation resulting from weak oil prices since 2014. In addition, in the case of Brazil, Russia, and Indonesia, a relatively high portion of primary industries in their industrial structure show slowing global growth. Moreover, decreasing raw material and commodity demand have adversely affected the development of the financial market in these countries.

China is evidently inferior in the aspect of the capital market accessibility, but, with its distinctive improvements in the financial market efficiency and development, it is expected to develop into one of the dominant financial markets with the market opening completion. In Indonesia, the development and efficiency of the financial industry had showed signs of growth before the financial crisis in 2008. Since then, however, the development of the financial industry itself seems to be in a stagnant state compared to the real economy growth.

Due to these different macro-economic conditions and the degree of financial market development of individual countries, the US financial policy, especially its monetary policy, had different impacts on each country. In this sense, I set up a VAR model to investigate the mutual impact on external policy changes, financial market performance, and the real economies.

1.3.2. Vector Auto-Regression Model

By examining the US Fed monetary policy impact on the emerging market, I assume in the model that simultaneous effects would exist among the macroeconomic data (e.g., industrial

production and export data(Kim and Lee, 2017)) and the external monetary policy decision (US monetary policy) as well as the impact on the emerging financial market. In preceding studies, the US policy rate was shown to affect emerging markets, particularly in Southeast Asian countries, the real economy, asset prices, and inflation, which also vary based on the economic structure or characteristics of the affected countries (Evgenidis, Phillippas, Siriopoulos (2018)). In another study, US monetary policy changes were shown to have a significant impact on financial markets in emerging countries as well as their real economies in macro-fundamental perspectives. (Brana & Prat(2016))

For this reason, this study sets up two models. The first is macro-economic impact analysis of the US monetary policy impact on emerging economies and the second one is its impact to emerging stock, fixed income, and foreign exchange market. Both models employed Vector auto-regression models, which were introduced by Christopher Sims (1980) to model the joint dynamics and causal relations among a set of macroeconomic variables. One of the distinctive features of the VAR(Vector Autoregression) model is that it can identify the dynamic behavior of a variable or a set of variables on others via impulse response analysis. This is one distinction from traditional regression models, as the regression model assumes that the effects of explanatory variables are constant over time. (Moon (1997)) In fact, existing models, such as OLS and IV-2SLS were also considered unsuitable in the case of real economic situations where the interaction of variables changes over the long-term perspectives. In the same vein, since the ARIMA model assumes that there exists the regularity of variables in the future and ignores the interactions between variables and their impact. Compared to these limitations, the VAR model is more suitable in terms of analyzing the dynamic interactions of multivariate time series perspectives. Thus, this study employs the VAR model to observe and analyze the economic interactions among policy, real economies, and financial markets over long-term

perspectives. Besides, it can be considered useful as it can reflect time lags in policy reflection in real economies while analyzing the mutual impacts among the variables. (Pesaran (2015))

1.3.3. Macro Economic Impact Analysis

In the case of macro-economic analysis, although the Fed easing policy would have the greatest impact on the US economy itself, it can also affect the policies of neighboring countries, especially emerging countries, because of the latter's high dependency on the US economy. This not only affects the exchange rate of the relevant country from the viewpoint of the real interest rate equilibrium theory(Mundell(1963)), but it can also potentially limit the direction and scale of the monetary policy operations of emerging countries. In order to conduct a dynamic analysis of US Fed rate changes and their impacts, I employ the VAR (vector autoregressive) model, to evaluate the interactions among the US 10yr treasury yield rate, domestic industrial production in emerging markets, and export growth rate.

I choose 10yr treasury yield rate as proxy of US fed rate because the US fed rate itself does not reflect the market participants' expectations or interpretation of US monetary policy as it is a final result of policy decision. But the mark-to market interest rate of US bond yield can reflect policy expectations more sensitively and change rapidly according to the prospects for additional changes even after the actual policy decision. (BM Friedman, 1982) Balduzzi, Pierluigi, Elton, and Green (2001) found that U.S. bond interest rates were highly influenced by macro-economic data such as US Trade Balance, US exports, and Factory Orders. In particular, the study found that for the US 10 yr treasury bond, the trading volume and price are significantly affected by these macro-economic performances. In other words, the US 10yr treasury interest rate movement means is not only a reflection of monetary policy changes but also a signal for macro-economic flows. On the other hand, in the case of short-term interest rates, mainly based on the lending market, their response to macro-economic indicators and

market sentiments have been somewhat conservative. In this regard, it is worth noting the study by Cochrane and Piazesi(2002), they found that the fed rate changes and short- and long-term interest rate have the mutual impact on each other and the long-term interest rate tends to show a more significant relationship to Fed policy rate forecasts. Obstfeld (2020) also mentioned in his study that long-term nominal interest rates not only affect global current accounts and central bank reserves but also act as a direct indicator of assessing investor sentiment, government financing, and central banks' asset purchase program. As a result, I assume that long-term interest rates are a more appropriate indicator than short-term US interest rate because this study aims to analyze the simultaneous impact of US monetary policy on emerging macroeconomics and financial markets. Indeed, since U.S. policy rates mainly affect emerging countries with indirect economic impacts and expected policy forecast rather than direct impacts of interest rate changes, it was judged that long-term interest rates are appropriate rather than short-term ones to reflect the advanced monetary policy changes and macroeconomic flows. In the case of US 10yr rate, it has significant relationship to US fed rate, the coefficient is around 0.46 and it does have Granger- causality with US Fed rate. For these reasons, US 10yr is chosen as an indicator to reflect changes in US interest rates instead of the US Fed rate announced on quarterly basis. By observing macro-economic impact, it is meaningful to figure out how the changes in US rate have affected to emerging countries' actual real economies. In addition, from this analysis, the market reactions of each emerging market against US monetary policy can be deduced more logically. For empirical analysis of the macro-economic impact, the model chooses domestic industrial production growth(yoy basis), the US 10yr treasury yield and the domestic export growth(yoy basis). Monthly data is used to maintain data consistency for the model.

Table 1.5. Variables Summary

Data	Description	Denote
Date	Time (from 2003.03.31~2018.03.31)	T
US_Rate	US 10yr rate(as proxy of US fed target rate)	US_10yr
IP	domestic Industrial Production YoY% (South Korea, Indonesia, Brazil, China, Russia)	Country_IP
Export	domestic export YoY% (South Korea, Indonesia, Brazil, China, Russia)	Country_Ex

In the case of the export growth rate, it can be more sensitively affected by abroad economic policy decision. As the impact of external monetary shock can cause FX fluctuations and can change relative bargaining conditions of trade counterparties, the monthly export growth data is expected to react sensitively to US interest rate changes. Iacoviello and Navarro (2018) found that US monetary policy tightening affect emerging countries GDP production negatively through increasing economic vulnerability deteriorating current account, foreign reserve, inflation and external debt. They analyzed the transmission impact of U.S. interest rate hikes through three economic channels, exchange rate, trade, and financial channels. Especially in the case of trade channel, which is linked to US consumer activity slowdown due to by U.S. interest rate hikes, and consequence slowdown in exports activity in emerging economies. Guajardo(2019) also found that foreign interest rate shocks led countercyclical impact to net export in the small developed economy. Depending on the economic contribution of exports to emerging countries and the economic dependence on the US, export growth is a good indicator that can be most sensitive to changes in U.S. interest rates.

For the industrial production growth, it comprehensively reflects overall economic activity level of one' country by integrating domestic economic production activities. Caporale, Helmi, Catik, Ali and Akdeniz (2018) conducted an empirical study of the emerging countries' monetary policy and its macro impact based on the Augmented Taylor rule model. In their study, they analyzed the linkage among inflation, monetary policy and GDP output cap, and choosing monthly industrial production data as an indicator of production activity. Colombo

(2013) analyzed the impact of changes in U.S. economic policy on the European economy through the SVAR model and used industrial production as a component of the Eurozone Output. Industrial production is a representative indicator in terms of domestic private production activities, and it is also published by government authority with shortest cycle, so it is adequate economic indicator to analyze the relationship of US interest rates and its impact to emerging macro-economic activity. Indeed, Mitchell, Smith, Weale, Wright and Salazar (2005) used the industrial production as a representative component of production activities in their monthly GDP index component. As a result, this study also believes that Industrial production will be a good indicator of domestic production activities, reflecting the impact of external interest rate changes. By investigating, economic variables, one is depending on domestic production capacity and other is more focused on external sales activity, the study can describe how the impact on the US policy change could vary depending on the economic activity and economic structure.

This study aims to analyze the direct and indirect impact of expectation changes in monetary policies in the US on the emerging economies, focusing on the response of emerging macroeconomics during policy changes in the US Therefore, as described above, the US 10-year government bond rate was considered suitable for statistical analysis, to observe its simultaneous or time-difference impact on the actual monthly macroeconomic indicators. In fact, the real economic impact of changing policy rates in advanced countries is transmitted through changes in exchange rates or money market rates, so it tends to move ahead or respond sensitively against the actual point of policy change.(Ehrmann, Fratzscher(2005)) In order to analyze this kind of dynamic relationship, the monthly data is considered appropriate to analyze the interactions of change sensitively, which it can provide more sufficient data set due to its higher frequency than quarterly or annual basis.(Ferrara, Guérin (2018)) From the Schwarz Bayesian Information Criterion test(SBIC, Table 9), it is determined that the vector

autoregressive model of order 2 is estimated to be appropriate for given variables and model. The vector autoregressive model of order 2, denoted as VAR(2), is as follows:

Var Model Approach I : Macro-Economic impact analysis,

$$IP_t = \alpha_0 + \sum_i^t \alpha_{1p} US\_Rate_{t-p} + \sum_{\mathrm{i}}^t \alpha_{2p} TEX_{t-p} + e_{\mathrm{i}t} \quad (1)$$

$$US\_Rate_t = \beta_0 + \sum_{\mathrm{i}}^t \beta_{1p} IP_{t-p} + \sum_{\mathrm{i}}^t \beta_{2p} TEX_{t-p} + e_{2t} \quad (2)$$

$$TEX_t = \gamma_0 + \sum_{\mathrm{i}}^t \gamma_{1p} IP_{t-p} + \sum_{\mathrm{i}}^t \gamma_{2p} US\_Rate_{t-p} + e_{3t} \quad (3)$$

1.3.4. Financial Market Impact Analysis

The second model focuses on the US monetary policy impact to emerging financial market, domestic fixed income, stock market and foreign exchange market. Although there are a variety of financial assets, observing the stock indexes representing each country, the long-term bond rates, and the impact of the exchange rate market are sufficient to determine the overall market impact. This model analyzes the interactive impacts of US long-term interest rate changes on the emerging stock/bond/foreign exchange market performance. So, as an indicator of the US fed monetary policy stance, the model chooses the US 10yr government interest rate to reflect the daily impact of US rates and expected US monetary policy changes.

Table 1.6. observation period under VAR approach

From/to	Span & observation	Macro Fundamental
2003.03~2008.9	5.5yrs	Late Cycle before financial crisis, Fed rate peaked up and rate cut started due to economic slow down
2008.10~2018.12	10.25yrs	Mid and After Financial crisis, fed cut rate near zero % and maintained low-rate status for 5 years, and tapering starts as the US economy recovery

In addition, the model divides data into 2 observation groups, market movement before and after the financial crisis to analyze how the emerging market reaction to US policy rate impact changed. Due to the limitation of data availability, the time span of before financial crisis period

is ranged from March 2003 to September 2008, while the after the financial crisis period is from October 2008 to December 2018.

Table 1.7. Variables Summary

Variables	Description	Denote
Date	Time(daily)	T
US 10yr Bond Yield	Proxy indicator for US Fed rate	*US_10yr*
Stock market Index (Log value derived from given index)	KOSPI (South Korea) IBOVESPA(Brazil) Shanghai Composite(China) IMOEX Composite (Russia) MEXBOL Composite(Mexico) JCI (Indonesia)	*Country_eq*
Bond Market Index	10 yr Government Bond Yield of South Korea, Brazil, China, Russia, Mexico, Indonesia	*Country_fi*
FX	FX daily data of South Korea, Brazil, China, Russia, Mexico, Indonesia	*Country*_FX

- ✓ Var Model Approach II : Financial market impact analysis

$$Country\_eq_t = \alpha_0 + \sum_i^t \alpha_{1p} US\_10yr_{t-p} + \sum_i^t \alpha_{2p} Country\_fi_{t-p} + \sum_i^t \alpha_{3p} Country\_FX_{t-p} + e_{1t} \quad (4)$$

$$US\_10yr_t = \beta_0 + \sum_i^t \beta_{1p} Country\_eq_{t-p} + \sum_i^t \beta_{2p} Country\_fi_{t-p} + \sum_i^t \beta_{3p} Country\_FX_{t-p} + e_{2t} \quad (5)$$

$$Country\_fi_t = \gamma_0 + \sum_i^t \gamma_{1p} US\_10yr_{t-p} + \sum_i^t \gamma_{2p} Country\_eq_{t-p} + \sum_i^t \gamma_{3p} Country\_FX_{t-p} + e_{3t} \quad (6)$$

$$Country\_FX_t = \delta + \sum_i^t \delta_{1p} Country\_eq_{t-p} + \sum_i^t \delta_{2p} US\_10yr_{t-p} + \sum_i^t \delta_{3p} Country\_fi_{t-p} + e_{4t} \quad (7)$$

1.4. Empirical Result

1.4.1. Macro-Fundamental Impact of US Monetary Policy

In this step, the study focuses on the statistical analysis in terms of whether the US monetary policy change expectations affect the macroeconomic activities of emerging countries. Prior to the analysis, a unit root test is conducted for all variables except the US 10yr rate. In executing the test, a unit root test is used for the Dickey Fuller test and the Phillips–Perron test (named after Peter C. B. Phillips and Pierre Perron). For these variables, except for the US10yr bond

yield, all other variables are stable. In case of US 10yr bond yield, it has cointegration relationship with other variables which is confirmed by the regression result of the other variables (Industrial production and export data), and the unit root test for its error term.

Table 1.8. Unit Root test of Variables

	ADF		Phillips-Perron	
	Z(t)	p-value	Z(t)	p-value
US10yr	-1.767	0.3976	-1.738	0.4117
KR_IP	-6.549	0	-6.639	0
MX_IP	-5.821	0	-5.809	0
RS_IP	-3.288	0.0154	-3.26	0.0168
IDN_IP	-4.812	0.0001	-4.423	0.0003
BZ_IP	-4.463	0.0001	-4.288	0.0005
CH_IP	-3.088	0.0274	-2.471	0.1228
KR_EX	-4.7	0.0001	-4.458	0.0002
MX_ EX	-3.969	0.0016	-3.841	0.0025
RS_EX	-3.126	0.0247	-3.307	0.0146
IDN_EX	-3.94	0.0018	-3.884	0.0022
BZ_EX	-3.921	0.0019	-3.666	0.0046
CH_EX	-5.393	0	-5.078	0

This research employs VAR method to analyze and forecast the dynamics of the interactions among the domestic macro indicators' annual changes, such as the industrial production, monthly trade export, and US rates. The estimated time period is about 16 years, including the periods before and after the 2008 financial crisis. In addition, I also analyze how the impact of US Fed rate change at time t affects other variables in the model through the impulse response function (IRF) approach. Based on the SBIC criteria results (Table 6), the lag of the Var methodology is determined, which is primarily a lag of 2 months while Indonesia and Russia adopt to time lag of 1 in the model.

Table 1.9. SBIC Criteria Result

	Korea	Mexico	Indonesia	Brazil	China	Russia
0	16.9926	15.4524	16.8051	16.3514	15.7149	17.7475
1	13.0352	11.3211	12.7951*	13.2485	12.6993	12.458*
2	12.9467*	11.1655*	12.8055	13.2*	12.5926*	12.5641
3	13.0475	11.3147	12.9379	13.4691	12.8771	12.739
4	13.1896	11.2368	13.1394	13.7165	13.1684	12.8324
5	13.3944	11.449	13.3535	14.0577	13.4984	13.017
6	13.609	11.5976	13.5558	14.3398	13.9008	13.2289
7	13.8291	11.7895	13.7106	14.5933	14.2572	13.4323
8	13.9941	11.981	13.9261	14.8846	14.7859	13.6661

As a result of the Var analysis and estimation of the macro variables, the industrial production and exports are shown to be significantly influenced by US interest rates. (Table 10) Each estimation is conducted with a lag option based on previous SBIC results in Table 9. In the case of industrial production, the US interest rate impact is remarkably high, showing significant results in Korea and Brazil. In terms of the absolute coefficient, it has the highest influence, such as 1.38 in Korea, 1.43 in Indonesia, and 1.32 in Brazil. As the industrial production is one of representative indicator in economic activity, it shows higher sensitivity in Korea and Indonesia, where the countries with large economic dependency on global exports compared to domestic consumption. In terms of trade indicators, statistical significance is higher, and the influence of US interest rates is high in Korea, Russia, and Mexico. In the case of Korea and Mexico, the impact of US monetary policy seems to have been critical factors such as the exchange rate due to high export dependency on the US economy. In fact, considering the top 5 trading partners of individual countries, the United States is the largest trading partner in Mexico, and the United States is the second largest trading partner in Korea. In the case of Indonesia and Brazil, they show rather insignificant impact from US monetary policy in terms of export growth, like China, probably their increasing high economic dependency on China.

In Indonesia, the share of trade with ASEAN countries is followed by China and Japan. In the case of Brazil, the proportion of exports to China and Western Emerging Europe has also continued increased. Since Brazil economy has been highly dependent on the raw material export, the US monetary policy impact to trade is rather insignificant compared to other countries.

Table 1.10. VAR results: US10yr, Domestic Industrial Production, Export Growth

		US 10yr			Industrial Production			Export Growth		
Response of		Coeff	Std.Err	P>|z|	Coeff	Std.Err	P>|z|	Coefficient	Std.Err	P>|z|
Korea	US 10yr	0.9373	0.0299	0.0000	0.0011	0.0056	0.8410	-0.0012	0.0029	0.6890
	IP	1.3891	0.4838	0.0040	0.6176	0.0900	0.0000	-0.0530	0.0470	0.2600
	Export	1.7636	0.7716	0.0220	0.2430	0.1435	0.0910	0.6242	0.0750	0.0000
Indonesia	US 10yr	0.9625	0.0246	0.0000	0.0043	0.0055	0.4300	-0.0012	0.0012	0.3270
	IP	1.4318	0.2886	0.0040	0.5334	0.0639	0.0000	0.0229	0.0138	0.2600
	Export	1.1015	0.9700	0.2560	0.2604	0.2148	0.2260	0.7812	0.0465	0.0000
Russia	US 10yr	0.9682	0.0207	0.0000	0.0004	0.0047	0.9290	-0.0001	0.0010	0.9280
	IP	0.2157	0.1915	0.2600	0.8730	0.0436	0.0000	0.0017	0.0091	0.8550
	Export	1.7712	0.9255	0.0560	0.5223	0.2108	0.0130	0.8019	0.0438	0.0000
China	US 10yr	0.8657	0.0480	0.0000	0.0250	0.0120	0.0370	-0.0034	0.0025	0.1700
	IP	0.2157	0.1915	0.2600	0.8730	0.0436	0.0000	0.0017	0.0091	0.8550
	Export	1.4215	1.1080	0.2000	0.9170	0.2763	0.0010	0.5930	0.0566	0.0000
Brazil	US 10yr	0.8476	0.0520	0.0000	0.0043	0.0054	0.4290	-0.0023	0.0020	0.2300
	IP	1.3246	0.6859	0.0530	0.7902	0.0715	0.0000	-0.0474	0.0258	0.0660
	Export	1.9869	1.8891	0.2930	0.6100	0.1971	0.0020	0.6001	0.0710	0.0000
Mexico	US 10yr	0.9366	0.0272	0.0000	-0.0131	0.0114	0.2510	0.0004	0.0030	0.8870
	IP	0.1772	0.1739	0.3080	0.5487	0.0728	0.0000	0.0541	0.0191	0.0050
	Export	1.0931	0.5820	0.0600	-0.0332	0.2437	0.8920	0.7894	0.0640	0.0000

The Granger causality test is conducted to determine the causal relationship of US interest rates with the macro variables of individual countries. (Table 11) Based on the analysis, the causality of US interest rate on emerging industrial production and export growth rates are observed, especially for trade growth data. In case of export growth rate, except for Brazil, the US interest rate is found to have a significant effect on the monthly trade growth rate. On the other hand, for industrial production aspect, which refers to overall domestic economic activities, the impacts of US interest rates are significantly observed in Korea, Indonesia and Brazil. However,

in the case of Russia, China, and Mexico, the statistical significances are relatively weak in terms of monthly export growth data. In particular, the case of Mexico is impressive that despite the high degree of economic dependence on the US economy, the impact of US interest rates on the domestic economic activities is weak. On the other hand, in the case of Brazil, the influence of US interest rates is high on the domestic industrial production, but in terms of exports, the influence of the US interest rate is weak. The causality of U.S. interest rates on exports is seen as a result consistent with the previously predicted Var model.

Table 1.11. Granger Causality of Macro variables to US 10yr yield

	Industrial Production		Export Growth	
	F-statistics	Prob.	F-statistics	Prob.
Korea	2.9700	0.0536	3.0400	0.0504
Indonesia	25.1300	0.0000	5.0800	0.0253
Russia	1.6000	0.2070	3.8700	0.0507
China	1.6300	0.2002	3.9200	0.0216
Brazil	3.1900	0.0437	1.3700	0.2581
Mexico	0.9800	0.3785	2.7800	0.0648

1.4.2. Financial Market Impact of US Monetary Policy

This study investigates how changes in the US interest rate affected the equity, FX, and bond markets of the six emerging economies. Their financial markets are analyzed for a period of 16 years, from 2003 to 2018. A unit root test of each variable showed stable time series movements for the bond markets, and the movements of the equity markets were stable, except for China. However, the FX markets showed rather different developments, with Mexico and Brazil appearing unstable, which may be partly explained by the growing political and economic turmoil in Latin America over the last two decades alongside increasing political interventions. Data analysis is possible for the US interest rate despite low data stability because cointegration is observed for the individual countries' financial market variables.

Table 1.12. Unit root test Result

	ADF		Phillips-Perron	
	Z(t)	p-vaue	Z(t)	p-value
US10yr	-1.601	0.483	-1.489	0.5387
KR_equity	-3.343	0.013	-3.348	0.0129
MX_equity	-3.755	0.0034	-3.854	0.0024
RS_equity	-2.499	0.1157	-2.49	0.118
IDN_equity	-3.195	0.0203	-3.217	0.019
BZ_equity	-2.715	0.0715	-2.755	0.0651
CH_equity	-1.634	0.4655	-1.661	0.4512
KR_bond	-10.248	0	-6.7	0
MX_ bond	-10.801	0	-7.563	0
RS_bond	-13.517	0	-11.037	0
IDN_bond	-9.652	0	-6.649	0
BZ_bond	-22.499	0	-23.693	0
CH_bond	-24.801	0	-27.193	0
KR_fx	-2.957	0.0391	-2.948	0.0401
MX_fx	-0.736	0.8372	-0.72	0.8416
RS_fx	-2.852	0.0513	-1.164	0.6887
IDN_fx	-7.466	0	-4.055	0.0011
BZ_fx	-1.677	0.443	-0.864	0.7998
CH_fx	-16.151	0	-14.294	0

I used the VAR method to examine the impact of US interest rates on the financial markets. The analysis is performed for periods both before and after the global financial crisis (GFC), which brought about significant changes to the US monetary policy. Specifically, in the aftermath of the GFC, tepid growth, low interest rates, and low inflation became a new normal in advanced economies. Furthermore, as the US has maintained an expansionary monetary policy for an extended period of time, other major economies have mostly followed suit, while also making various efforts to keep their exchange rates competitive. In doing so, the financial markets of individual countries have responded in different ways depending on the particular circumstances of each country. Based on these factors, I designed a VAR approach using SBIC tests for the periods before and after the GFC. Interestingly, the optimal VAR lag in most of the surveyed countries is, before the crisis, within one or two days. Since stock exchanges in

Asian countries, including Korea, China, and Indonesia, open after the US stock exchange closes for the previous day, there is a time lag in the data of roughly one day. The data shows that, with the exception of Indonesia, the impact on each financial market is optimally reflected within two days.

Table 1.13. SBIC test Result before global financial crisis

	Korea	Mexico	Indonesia	Brazil	China	Russia
0	12.8216	5.3660	20.8152	7.1478	6.7087	7.4923
1	-1.9495	-9.3532	6.13129*	-7.1205	-3.8414	-7.3555
2	-2.01638*	-9.42085*	6.2117	-7.12977*	-3.88434*	-7.4482*
3	-1.9944	-9.3980	6.2154	-7.0399	-3.8702	-7.4058
4	-1.9343	-9.3449	6.3154	-6.9483	-3.8129	-7.3344
5	-1.8533	-9.2762	6.3956	-6.8553	-3.7398	-7.2567
6	-1.7641	-9.1882	6.4862	-6.7682	-3.6648	-7.1874
7	-1.6657	-9.1050	6.5844	-6.6749	-3.6089	-7.0877
8	-1.5681	-9.0264	6.6800	-6.5879	-3.5077	-6.9998
9	-1.4779	-8.9256	6.7807	-6.4790	-3.4091	-6.9254
10	-1.3767	-8.8322	6.8861	-6.3794	-3.3048	-6.8301

However, a change took place in the post-crisis period: the optimal VAR lag grew to between three and five days. Specifically, reflection is optimized in five days for China, Indonesia, Korea, and Russia and in three days for Mexico and Brazil. Presumably, the extended time lag indicates more complicated reflection process of impact of the US interest rate on the financial markets of the surveyed countries.

Table 1.14. SBIC test Result after global financial crisis

	Korea	Mexico	Indonesia	Brazil	China	Russia
0	13.6390	7.2230	22.1279	8.5300	3.01872	13.2837
1	-0.2634	-9.0597	8.44223	-7.6134	-7.52171	-0.7169
2	-0.5130	-9.1605	7.88283	-7.7923	-7.76926	-0.8682
3	-0.5372	-9.17989*	7.8187	-8.06744*	-7.84371	-0.9334
4	-0.5231	-9.1657	7.78548	-8.0345	-7.87135	-.980208*
5	-.576563*	-9.1294	7.4877*	-7.9891	-8.05153*	-0.9539
6	-0.5679	-9.0990	7.53452	-8.0174	-8.02011	-0.9173
7	-0.5624	-9.0605	7.56119	-8.0075	-8.03919	-0.8844
8	-0.5281	-9.0127	7.5853	-7.9611	-7.99492	-0.8508
9	-0.4936	-8.9631	7.61314	-7.9248	-7.94623	-0.8112
10	-0.4713	-8.9090	7.63954	-7.9359	-7.89545	-0.7635

The hypothesis for this study is that, while equity markets have performed rather strongly, driven by ample liquidity in the market, bond markets are likely to maintain low yields for a long time as economic growth continues to stagnate and discount rates fall. Particularly, it is assumed that bond markets would become more sensitive to the US interest rate in the post-crisis period as the US shifts from a zero-rate policy to monetary tightening as the economic conditions normalize. Moreover, sensitivity to US interest rates is likely to be higher for countries whose economies heavily depend on the US.

The study also included FX markets in the analysis because they are more directly influenced by the US interest rate. Stock prices, in contrast, are primarily affected by issues related to individual stocks, rather than by macroeconomic factors, and are thus less prone to being immediately impacted by changes in the US interest rate. For domestic 10-year bonds, I assumed that the impact of the US interest rate would be similar to the impact of daily changes in global risk appetite, considering that the bond market would be primarily affected by issues related to domestic financial policy and macroeconomic conditions. FX rates, however, are directly affected by the US interest rate, in accordance with interest rate parity theory (Feenstra, Taylor 2008), and are thus more sensitive to interest rate changes, although other influential factors should be noted, such as central banks' market interventions, the openness of the FX market, and speculative investment.

Table 15 illustrates the impact on financial markets between 2003 and September 2008. As expected, individual countries had little influence on the 10-year US Treasury yield, but, interestingly, the yield of 10-year US Treasuries had a significant influence on the bond markets of all the surveyed countries except for Mexico. For the equity market, the statistical significance is lower, but a significant level of correlation is observed for all the surveyed countries except Brazil and Russia. For Korea's equity market, the impact of the 10-year US Treasury yield had a higher statistical significance and correlation coefficient than for the bond

market, and the impact of the US interest rate is more statistically significant for Asian countries overall, including Korea, Indonesia, and China. The influence of the US interest rate on the FX markets is statistically significant in all surveyed countries except for Russia. Another notable observation is that the influence of the FX markets on domestic stock prices and interest rates is limited. From these findings, it may be surmised that foreign investors had limited influence on the financial markets of emerging economies before the GFC.

Table 1.15. Before financial Crisis

	US 10yr			Domestic Equity			Domestic FX			Domestic Bond		
	Coeff	Std.Err	P>|z|	Coeff	Std.Err	P>|z|	Coefficient	Std.Err	P>|z|	Coefficient	Std.Err	P>|z|
Korea												
US 10yr	0.9713	0.0080	0.0000	-0.0311	0.0251	0.2160	-0.0001	0.0001	0.1630	0.0019	0.0083	0.8230
KR_Equity	-0.0031	0.0019	0.1030	0.9807	0.0061	0.0000	-0.0001	0.0000	0.0090	0.0012	0.0020	0.5340
KR_FX	-1.5656	0.6833	0.0220	2.8169	2.1519	0.1910	0.9997	0.0069	0.0000	0.3962	0.7069	0.5750
KR_10yr	0.0656	0.0211	0.0020	0.6540	0.0663	0.0000	0.0017	0.0002	0.0000	0.7104	0.0218	0.0000
Indonesia												
US 10yr	0.9860	0.0054	0.0000	-0.0042	0.0051	0.4140	0.0000	0.0000	0.7240	0.0002	0.0014	0.8860
ID_Equity	0.0021	0.0014	0.1400	0.9973	0.0013	0.0000	0.0000	0.0000	0.8390	-0.0002	0.0004	0.5670
ID_FX	-0.0917	4.4219	0.9830	1.7557	4.1436	0.6720	0.9906	0.0047	0.0000	0.0768	1.1150	0.9450
ID_10yr	-0.2619	0.0973	0.0070	-0.4914	0.0912	0.0000	0.0004	0.0001	0.0000	0.6488	0.0245	0.0000
Russia												
US 10yr	0.9655	0.0084	0.0000	0.0381	0.0169	0.0240	0.0093	0.0035	0.0080	0.0014	0.0035	0.6760
RS_Equity	-0.0039	0.0032	0.2220	0.9960	0.0063	0.0000	0.0033	0.0013	0.0130	-0.0037	0.0013	0.0050
RS_FX	0.0234	0.0105	0.0260	-0.0916	0.0211	0.0000	0.9769	0.0044	0.0000	-0.0024	0.0043	0.5800
RS_10yr	-0.1703	0.0596	0.0040	-0.9785	0.1195	0.0000	0.0045	0.0250	0.8570	0.6177	0.0246	0.0000
China												
US 10yr	0.9749	0.0067	0.0000	-0.0076	0.0069	0.2680	0.0016	0.0050	0.7550	-0.0053	0.0034	0.1220
CH_Equity	0.0103	0.0021	0.0000	0.9946	0.0022	0.0000	-0.0054	0.0016	0.0010	-0.0024	0.0011	0.0270
CH_FX	0.1112	0.0402	0.0060	-0.5747	0.0415	0.0000	0.2340	0.0304	0.0000	0.0054	0.0207	0.7930
CH_10yr	-0.1364	0.0511	0.0080	0.1780	0.0528	0.0010	0.0056	0.0386	0.8840	0.5492	0.0264	0.0000
Brazil												
US 10yr	0.9763	0.0070	0.0000	-0.0099	0.0188	0.6000	-0.0064	0.0187	0.7310	-0.0013	0.0007	0.0730
BR_Equity	0.0015	0.0021	0.4710	0.9902	0.0058	0.0000	-0.0042	0.0057	0.4680	0.0002	0.0002	0.3220
BR_FX	0.0020	0.0026	0.4460	-0.0092	0.0069	0.1840	0.9855	0.0069	0.0000	-0.0003	0.0003	0.2310
BR_10yr	-1.0147	0.2682	0.0000	1.2283	0.7213	0.0890	0.5468	0.7178	0.4460	0.4484	0.0278	0.0000
Mexico												

US 10yr	0.9721	0.0078	0.0000	-0.0035	0.0069	0.6080	0.0165	0.0104	0.1130	-0.0062	0.0034	0.0630
MX_Equity	-0.0028	0.0017	0.1000	0.9953	0.0015	0.0000	0.0055	0.0023	0.0150	-0.0021	0.0007	0.0040
MX_FX	0.0169	0.0066	0.0110	-0.0128	0.0058	0.0280	0.9601	0.0089	0.0000	-0.0010	0.0029	0.7200
MX_10yr	-0.0524	0.0543	0.3350	-0.2584	0.0478	0.0000	0.3217	0.0727	0.0000	0.6593	0.0234	0.0000

Next, I investigated the impact of US interest rates on emerging financial markets in the post-crisis period. For Korea, the 10-year US Treasury yield had a significant influence on the equity, bond, and FX markets, and the statistical significance of their correlations is greater than before the crisis, although the magnitude of the correlation coefficient for the equity market is smaller. This seems to reflect the change in the impact of US interest rates on emerging bond and equity markets. That is, emerging bond markets are more directly affected by US monetary policy, and the level of the interest rate is also an influential factor; in contrast, equity markets are more affected by issues relating to individual companies and are less swayed by interest rates. The impact of US interest rates on the emerging bond markets shows that the correlation shifted from negative to positive territory, indicating their growing synchronization with US monetary policy. The magnitude of the correlation coefficients increased for Korea, Indonesia, and Mexico after the crisis, but, for Brazil and Russia, the impact of US interest rates on the bond market is not statistically significant, presumably because both countries have experienced heightened political uncertainties and economic hardships since the GFC. However, statistical significance is observed in their equity markets, suggesting that only competitive businesses have survived the recurring crises and still attracted foreign investment.

Table 1.16. After Financial Crisis

	US 10yr			Domestic Equity			Domestic FX			Domestic Bond		
	Coeff	Std.Err	P>|z|	Coeff	Std.Err	P>|z|	Coeff	Std.Err	P>|z|	Coeff	Std.Err	P>|z|
Korea												
US 10yr	0.9607	0.0064	0.0000	0.0348	0.0355	0.3270	0.0000	0.0001	0.8090	0.0118	0.0040	0.0030
KR_Equity	-0.0071	0.0014	0.0000	1.0094	0.0080	0.0000	0.0001	0.0000	0.0000	0.0028	0.0009	0.0010
KR_FX	5.2383	1.1254	0.0000	-44.6832	6.2938	0.0000	0.8846	0.0111	0.0000	-4.0783	0.7027	0.0000
KR_10yr	0.3151	0.0259	0.0000	-1.5725	0.1449	0.0000	-0.0017	0.0003	0.0000	0.6820	0.0162	0.0000

Indonesia											
US 10yr	0.9846	0.0065	0.0000	-0.0899	0.0209	0.0000	0.0000	0.0000	0.0050	-0.0183	0.0041	0.0000
ID_Equity	-0.0020	0.0015	0.1920	0.9746	0.0050	0.0000	0.0000	0.0000	0.0010	-0.0024	0.0010	0.0140
ID_FX	-129.05	26.0500	0.0000	937.1586	84.2486	0.0000	0.8614	0.0108	0.0000	168.2662	16.5120	0.0000
ID_10yr	0.3047	0.0280	0.0000	-1.1147	0.0905	0.0000	0.0001	0.0000	0.0000	0.7047	0.0177	0.0000
Russia												
US 10yr	0.9750	0.0046	0.0000	0.0132	0.0161	0.4120	-0.0004	0.0003	0.1270	0.0025	0.0018	0.1730
RS_Equity	-0.0029	0.0016	0.0740	0.9705	0.0056	0.0000	0.0005	0.0001	0.0000	-0.0002	0.0006	0.7920
RS_FX	-0.0469	0.0905	0.6040	-0.0130	0.3163	0.9670	0.9897	0.0058	0.0000	-0.0670	0.0362	0.0640
RS_10yr	0.0590	0.0430	0.1700	-2.2322	0.1503	0.0000	0.0342	0.0027	0.0000	0.6254	0.0172	0.0000
China												
US 10yr	0.9683	0.0052	0.0000	0.0333	0.0155	0.0320	0.0123	0.0087	0.1590	0.0149	0.0076	0.0500
CH_Equity	-0.0032	0.0015	0.0300	0.9764	0.0044	0.0000	0.0038	0.0025	0.1220	-0.0027	0.0022	0.2090
CH_FX	0.0697	0.0101	0.0000	0.0895	0.0304	0.0030	0.6245	0.0171	0.0000	-0.1444	0.0148	0.0000
CH_10yr	0.0768	0.0099	0.0000	-0.0859	0.0297	0.0040	-0.1394	0.0167	0.0000	0.7175	0.0145	0.0000
Brazil												
US 10yr	0.9802	0.0040	0.0000	0.0033	0.0125	0.7930	-0.0033	0.0033	0.3150	-0.0012	0.0009	0.1950
BR_Equity	-0.0022	0.0012	0.0780	0.9883	0.0038	0.0000	0.0030	0.0010	0.0030	-0.0005	0.0003	0.0690
BR_FX	-0.0008	0.0034	0.8030	0.0139	0.0105	0.1850	0.9962	0.0028	0.0000	0.0003	0.0008	0.6910
BR_10yr	-0.0002	0.0539	0.9970	-1.4775	0.1673	0.0000	0.1769	0.0441	0.0000	0.8208	0.0123	0.0000
Mexico												
US 10yr	0.9861	0.0067	0.0000	-0.0146	0.0172	0.3940	0.0010	0.0015	0.5140	-0.0044	0.0049	0.3740
MX_Equity	-0.0018	0.0015	0.2220	0.9763	0.0038	0.0000	0.0012	0.0003	0.0000	-0.0024	0.0011	0.0270
MX_FX	-0.0019	0.0160	0.9060	0.0726	0.0411	0.0770	0.9918	0.0037	0.0000	0.0056	0.0117	0.6340
MX_10yr	0.4471	0.0244	0.0000	-0.8087	0.0626	0.0000	0.1020	0.0056	0.0000	0.5867	0.0178	0.0000

Table 1.17. Granger Causality Test -Before/After Financial Crisis

		Equity		FX		Bond	
		F-statistics	Prob.	F-statistics	Prob.	F-statistics	Prob.
Korea	Before GFC	5.68	0.0035	2.92	0.0544	2.98	0.0513
	After GFC	25.15	0	3.12	0.0082	9.8	0
Mexico	Before GFC	0.48	0.6182	1.28	0.2774	0.07	0.9336
	After GFC	2.32	0.0736	0.13	0.9428	7.24	0.0001
Indonesia	Before GFC	2.06	0.1511	0.7	0.4046	5.17	0.0232
	After GFC	4.09	0.0011	0.22	0.9548	6.62	0
Russia	Before GFC	0.18	0.8393	0.2	0.8152	3.37	0.0347
	After GFC	1.98	0.0945	0.67	0.6123	1.87	0.1126
Brazil	Before GFC	1.05	0.3487	0.16	0.8562	3.68	0.0256
	After GFC	0.94	0.4203	0.28	0.8408	2.03	0.1076
China	Before GFC	12.28	0.0005	2.26	0.1334	6.28	0.0124
	After GFC	1.74	0.1227	0.52	0.7603	1.52	0.179

Following the VAR modeling of the US interest rate impact before/after the global financial crisis on each country, the causal relationship between the US interest rate and individual variables was analyzed by the Granger causality test. Similar to the previous statistical analysis, the influence of the domestic variable on the US interest rate is insignificant, but the influence of the US interest rate on the domestic economic variables of emerging countries is significant both the equity and bond markets. Especially in the case of Korea, Mexico, and Indonesia, where the manufacturing industry dominates, the US interest rate influence on the equity and bond market increased while the large economies, such as Russia, Brazil, and China show lower coefficient numbers compared to that of pre-crisis. Although the absolute value of the coefficient itself has decreased, but the overall statistical significances have also improved. (Except the case of Brazil) In other words, this result can be interpreted as the global financial market participants, in the aspects of reflecting market information, are more actively accept the policy or market sentiment changes in the leading market, such as the US, but in the large emerging economies the actual impact level of the US policy itself tend to decrease.

However, in the case of exchange rates, the Granger Causality is also found to be insignificant after the global financial crisis, except for South Korea. Probably, because of the difference in positions on each economy faced after the financial crisis, the monetary policy efforts of each country also have been diverged, which so- called currency war, have been developed fiercely. So, this trend can be applied in the same way as for raw material exporters, Brazil and Russia are sensitive to exchange rates and have a weak national debt structure.

1.5. Conclusion

As discussed in previous sections, globalization has led to the development of financial markets and technologies, which in turn, has played a key role in the synchronization of the global financial market. These trends emerged from the increasing transparency of information and the timeliness of policies implemented since the 2008 global financial crisis. Since then, major central banks have exerted efforts and emphasized the provision of clear policy directions and effective execution to minimize market friction. In this regard, market participants also needed to digest a wide range of global market information and reflect them immediately to ensure the fair value of their respective financial products, which later became an indicator of market efficiency.

Revealed via the empirical analysis of this study, the statistical significance of the US monetary policy became more robust after the financial crisis in 2008 rather than that of during the economic booming period, but its absolute impact degrees have been diverged depending on economy scales and domestic financial market condition. The differences in economic issues faced and consequent policies in the individual countries generated different market impacts of US monetary policy. For example, in the case of small open economies like Korea and Indonesia, which is sensitive to global economic trends, those show significant relations with the global monetary policy or the global financial market movements compared to large emerging economies such as China, Brazil and Russia from this study. For export-driven countries (e.g., Korea), which greatly depend on the US market with relatively strong GDP per capita and stable macro fundamental data, these markets have shown more significant relationship to US interest rate and both in domestic production and export growth movement. In addition, this kind of high dependency on international economy, the financial market of those countries also keenly reacts to US interest rate movement.

In the same vein, the prolonged new normal economic environments led the increasing economic inter-dependence and influence among countries. This means that, as Kalemli-Özcan(2019) pointed out, under the low-interest rate era, monetary policy and economic cycles in advanced economies especially the United States can simultaneously affect the economies of the rest of the world. The interesting point is, as simultaneous synchronization around the world has increased, while the slope of its impact has become modest with the well-diversified economic portfolios of individual countries due to globalization. This also result from the weakened economic dominance of advanced countries in the global economy. Obstfeld (2020) noted that the wage inflation in the United States has become less relevant to domestic inflation in the United States, and he pointed out that globalization could be a reason. This is because of a lower GDP contribution of domestic labors due to the globalization in production components, as with the recent trend of Phillip's curve flattening. In this respect, concerns about global inflation under COVID19 will certainly get attention in the road of the global economic recovery, but the risks from the system itself, such as the past case of the oil crisis and the Asian financial crisis, are thought to be lower than the risks expected by the market considering current well-diversified global supply chain. But still, its impact to overall global economy and market reaction will also definitely be significant.

The study statistically analyzes the impact of advanced countries' monetary policies on emerging economies, and it is meaningful that different results have found depending on the country's industrial structure or financial market development. However, the data on the actual money flow in the emerging financial market are available, it would be meaningful to quantify investor-specific changes in emerging markets responding to interest rates changes in the United States. This can give more clear interpretation of actual money movement. In addition, the study could be extended with the simultaneous analysis of domestic issues that affected domestic economy in the aspects of political uncertainties and domestic economic

policies held by observing group. In that regard, there could be other possibilities that the impact of U.S. monetary policy could be possibly diluted or intensified for each country. This kind of additional qualitative research and its reflection in the model would be meaningful to find out the causal relationship with domestic and external policy's mutual impacts as well as an overall interpretation of the phenomenon.

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CHAPTER TWO

EMERGING STOCK MARKET REACTION TO POLITICAL CHANGES AND ECONOMIC UNCERTAINTY IN THE ADVANCED MARKET

ABSTRACT

By

Woo Jin Chung

After the global financial crisis of 2008, the market faced low interest rates, low inflation, and low growth, a new normal with tremendous liquidity support by policy makers. With the development of financial products under market globalization, market volatility increased against not only economic shock but also political shock in advanced countries. This study investigates recent major political and economic events in the advanced market and their impact on the emerging stock market by first classifying groups according to the emerging market's economic structure, and then analyzing sub-sectors' relative reactions to the shock. In this study, the natural resource-driven emerging market and cyclical sectors are shown to have been subject to the largest short-term impact from political shocks, especially in terms of the G2 trade conflict, while countries with an advanced industrial structure and higher capital market openness were less impacted by market volatilities.

CHAPTER 2. EMERGING STOCK MARKET REACTION TO POLITICAL CHANGES AND ECONOMIC UNCERTAINTY IN THE ADVANCED MARKET

2.1. Introduction

Since the financial crisis of 2008, the interconnection and integration among global financial markets have been continuously developing. Monetary policy decisions in the US are no longer confined to its particular region but instead affect the global market as a whole. Similarly, the United Kingdom's (UK) "Brexit" from the European Union was not merely a political decision made within the UK and Europe, as it also influenced the overall risk appetite of global investors. We are all living in one world, and the transmission of information that can affect other regions is rapid and intense.

Since the global financial crisis in 2008, low-interest rate circumstances have persisted under policy easing by major central banks. In this process, abundant liquidity, which has been continuously supplied as a market stimulus, has also increased speculative capital inflow. In particular, low-interest rates and low-economic growth have diminished the expected returns of investments, while at the same time making the capital market's policy influence greater than in was in the past when the influence of corporate earnings and the profitability of equity itself were dominant factors. In other words, the market is more sensitive to the advent of political uncertainty and policy changes than to their actual impacts on the real economy. For example, during the US-China trade conflict in 2018, the market faced huge volatilities, and the issue dominated the market. The G2 trade dispute has been estimated to have led to a fall of 0.4–1.4% in global GDP growth (IMF, JP Morgan), and the stock market exhibited significant volatility, falling by 13.5% during the fourth quarter of 2018. During the first stage of the G2 trade conflict, the market faced substantial headwinds during two consecutive

quarters. Afterward, the market showed a rapid recovery, soaring by more than 10% in the first quarter of 2019.

Changes in the way of investment also contributed to this increase in volatility. With the recent development of ETFs and index futures, investment decisions triggered by macro-country or sector-level allocation rather than the buying and selling of individual stocks are based on fundamental analyses of individual corporations. In other words, as investors gain more access to index-based investment products, their decisions tend to reflect macroeconomic indicators and policy flows rather than individual companies' earnings or valuations. Such a trend also has a big impact on the performance of individual stocks. In fact, in the case of those included in the large ETF stock index, it tends to move close to the index, and studies have suggested that due to the ease of operations provided by ETFs, which enables investors to trade in short-term baskets, the volatility tends to increase. (Pagano(2019))

This financial globalization has led to policy factors having a greater impact on emerging economies. Indeed, since the US began tapering in 2014, emerging markets have not been able to outperform in terms of financial market performance, in contrast to the absolute growth of macro-economics. Apart from the intrinsic capabilities and growth fundamentals of individual emerging countries, this kind of advanced countries' policy decisions, or political shocks, although they have not quantified the actual impacts on the economy yet, act as major external factors that significantly affect and increase the volatility of emerging financial markets. This could be amplified as a short-term abnormality when it comes to the irrational and speculative nature of the market.

Accordingly, this study will examine the abnormal volatility of emerging markets, which is caused by political shocks in global markets. By examining individual emerging countries' economic relationships and the degree of capital market openness, I aim to analyze how individual market reactions were differentiated for each shock.

In Chapter 2, I will introduce the general background and related literature. In Chapter 3, I will conduct an analysis of four political events in the advanced market, in addition, I will also examine the target observation group of emerging markets. Chapter 4 is comprised of the empirical model for this study, which focuses on the emerging market impacts of major political and economic shocks in advanced countries, followed by a presentation of the abnormality measurement and results in Chapter 5.

2.2. Research Background and Literature Review

Minsky (1992) has asserted that investors' investment decisions are based on the expected return of uncertain futures, so their core nature can be characterized by speculation to some extent. This uncertainty is hard to quantify with an objective probability distribution, as investors use an individual's subjective probability distribution along with their own limited information and knowledge. In the modern financial market, investors finance their investment decisions not only through their idle money, but also through the capital market by borrowing debt from financial institutions. Depending on the expected returns and financial market conditions, the amount of debt financing could vary. This tendency makes it possible to borrow larger debts when the financial market policy continues to ease, which increases the overall leverage of the economy and weakens the general structure of the financial market itself. In this regard, Minsky insisted that intrinsic instability would be intensified at the level of the overall economy. In the same way, current abundant liquidity and the development of financial instruments have led to an increase in short-term speculative investment rather than long-term investment, and as Minsky predicted, global financial fragility has also increased. In addition. the growth of private capital and its increased dominance have also supported the growth of speculative money movement and the funding of a lower credit investment strategy. With a lower quality of investment credits under abundant market liquidity, market volatility has

increased at a rapid pace, even with such a small shock and impact. Taking an example from the real world, the extreme movement of financial markets, in other words, the market volatility, has been increasing in recent years ever since the global financial crisis in 2008. For example, there were 86 trading days during which the S&P 500 Index fluctuated more than +/- 2% between 2002 and 2006, but this number increased to 122 days between 2009 and 2013 after the global financial crisis in 2008. Market volatility has also been increasing with the fat-tailed distribution of returns. For instance, while the VIX index, which indicates market volatility, only exceeded the average value + 2σ, 38 times from 2000 to 2007, it exceeded this 103 times from 2009 to 2016 after the financial crisis.

This increase in market volatility ultimately results from a drastic change in investor sentiment, and there have been efforts to analyze the investors' decision-making processes or behaviors through micro-economic perspectives. In accordance with the micro-economic perspective on consumer behavior, mainstream economists assume that human beings make rational judgments based on the utility expectations of outcomes when the consequences of behavior are uncertain. However, behavioral economics (Thaler, Richard, and Ganser, 2015) assumes that the value function that quantifies the value of the amount, direction, and breadth of change from reference points is valued over the expected value itself. In other words, people respond to the consequences of change, not absolute values, based on prospect theory rather than the expected utility. When a market event occurs, the investors' interpretation of psychological and behavioral factors about the event affects the investment decision procedure rather than the actual fundamental factors. At the same way, the emphasis is on relative gains and losses rather than the absolute magnitude of wealth, and consequently, such distorted decision or biases by market participants will amplify market volatiles and anomalies. Olsen (1998) also agrees that newer theories and adaptive decision making in the aspects of investment and behavioral finance can help explain the puzzle of stock price volatility. In this respect, while the above-

mentioned increases in market volatilities since 2008 and recent investment decision trends with a top-down approach can be explained by behavioral finance in some ways, both are rather weighed on relative values and prospect theory. Stracca's (2004) investigation of asset price anomalies with the behavioral approach led to the classification of five sub-categories, with the added objective of trying to explain each group from the perspective of expected utility maximization, which is the mainstream academic approach.

There have been many preceding studies based on the event study analysis aiming to calculate the impact of an event which creates abnormal returns in the stock market. Since the event study was introduced in the paper published by Fama, Fisher, Jensen, and Roll (1969), this methodology has continued to serve as an important tool for impact analysis and market abnormality measurements. FFJR's methodology is used in various areas, including finance, economics, and accounting, because it easily and flexibly identifies market responses to various events, such as changes in accounting methodology, entity disclosures, and shocks to financial markets. This methodology also has some limitations. According to Collins and Dent (1984), and Bernard (1987), they state that individual companies have a different variance when calculating abnormal returns for individual companies and they have different variances according to the observed time horizons. Beaver (1968) mentioned that event-induced heteroskedasticity could occur. In this regard, Collins and Dent (1984) suggested that if the volatility grows during the event, it can be improved by applying the generalized least squares technique. Cowan, Karafiath, Spencer (1991), and Salinger (1992) said that if the abnormal returns are correlated, the bias of the cumulative abnormal returns becomes larger, but if the number of samples increases sufficiently, the bias can decrease. In the market model, one of the event study methodology, adding extra variables can help improving the statistical significance of the model. In the same context, Chen, Roll, and Ross (1986) used the market beta estimators and macroeconomic factors such as industrial production in their event study

model. Keim (1983) who analyzed the January effect, conducted his study with the multivariate regression model (MVRM) framework.

There are also many preceding studies analyzing the impact of politics on the financial market. Chavali, Alam, and Rosario (2020) conducted an event study about the impact of India's election results on the financial market, stating that elections had a positive impact on corporate stock prices when the ruling party was re-elected in 2014–2019. DeRouen (1995) conducted a simultaneous equation model of economic and political force, explaining that the two-force had to be indirectly linked. In other words, in the process of external political decision-making, the president and cabinet are directly and indirectly connected as political support rises when economic stability is achieved.

Booth and Booth (2003), Wang, Lee and Ling (2008), and others found that the election results can cause economic policy changes, including tax policies and other economic related policy changes which can directly affect business performance. The interesting point is that when a political party, which focuses on social equality, is expected to win, the market volatility tends to increase, while when a conservative party is expected to win, market demand tends to rise. Furthermore, in terms of an individual stock, the higher the share of government ownership, the more affected the outcome of these elections (Gomez and Jomo (1999)). Obradović and Tomić (2017) studied the impact of the US presidential election on the US stock market, where they conducted event studies on financial sector stocks, as financial firms donate substantially to presidential campaigns, and are more affected by election results. They found that immediately after the election, T+1 day, showed statistically significant returns on the stock price. They said that when an event occurs, there should be no more significant event leading to the stock market than the target event on stock prices. Hanke, Stöckl, Weissensteiner (2020) conducted a study about the impact of the US presidential election in 2016 and the Brexit Referendum on the financial market, they divided the stocks into outperforming and

underperforming groups based on political sensitivity to measure the performance of the stocks during this event. They conducted the study on the assumption that the expectation of political events could be reflected in individual stock markets and consequently, the impact of event result could also be reflected in stock prices. While continuing to reflect the outlook for the results, the study constructed a long-short portfolio that classifying companies into tax-sensitive, policy-sensitive, and unresponsive sub-groups. Wagner (2018) and Ramelli (2019) empirically investigate stock market reactions to the US presidential election in 2016. They explain the differences in the reaction based on different levels of exposure to major policy changes expected by the markets, especially trade policy and corporate tax regime changes.

Brooks, Faff, and Sokulsky (2005) examined the impact of German reunification on the stock market through the multivariate GARCH conditional beta model. The result suggests that the impact was stronger in European countries where the political and economic relations were high. In this analysis, they used the event schedule associated with German unification as a dummy variable and performed statistical analysis of market shocks comparing the return of individual stock and the world index. He, Sun, Zhang, and Li (2021) conducted an event study on the COVID19 shock on the Chinese stock market. According to the study, the Shanghai index, more traditional industries focused and a large portion of government-owned was it hard by COVID19 while the Shenzhen index, technology industry-focused and private capital-driven, perform rather positively after the COVID19. Manufacturing and IT sectors continued to show a positive return, and education and healthcare industries recovered gradually after initial negative returns, resulting in the most positive returns in the end. Also, the correction of the state-owned enterprise was notable, reflecting changing main economic industries and capital market development. In other words, in the case of COVID19, it was not an event affecting the real value of the company, nor was it a political event, but it was interpreted as a

paradigm-changing event that transforming the direction of policy support and being a growth engine in the future.

In fact, the most distinctive feature of financial markets is that every product price changes each day depending on market circumstances. Recent global political events do affect not only domestic markets but also other international markets as we observed with the BREXIT or US election cases. In addition to the intrinsic value of product itself, the political and economic environment condition changes are immediately reflected to the market prices and sometimes it creates large volatilities. Sometimes, they give market participants an opportunity, but they also produce a significant investment risk from a management perspective, by hindering accurate value assessment.

As discussed above, in previous studies, there have been many analyses of the political event's impact on the domestic market or industries. Also, the abundant liquidity environment under current low-interest rates, highly developed financial instruments, and various investment sources can be factors of heightened market volatility. In this study, I would like to approach the impact of global political events on the emerging market from global perspectives based on the analysis of the current economic condition of the country and the event study model which is widely used by previous studies.

2.3. Current Emerging Market Status and Major Political Shocks in Global Market

2.3.1. Current Emerging Market Status

Goldman Sachs's Jim O'Neil noted that the amount of real GDP growth in the four emerging economies of China, Brazil, Russia, and India exceeded that of the G7 in 2001, and he defined these four countries as BRICs(O'Neil(2001)). In 2001, the economies of these four countries, which accounted for 18.6% of the global GDP, grew to about 32.1% of the global GDP in 2018. This amount of growth may look a bit weaker than expected compared to the near 20-year time

horizon but considering that the G7's global GDP contribution was about 43% in 2001 (now having fallen to about 29.6%), it can be said that the emerging countries' economic growth has been outstanding. Actually, the US, which occupied the position of the world's foremost economic power until the early 2000s, accounted for around 20.4% of the GDP in 2001 (which has now fallen to 15%). In the case of China, the proportion was only 7.8% in 2001, but it surpassed the US production scale in 2013, and its share has since grown to 19.24% in 2018. In India as well, production volume was 4.27% in 2001, but this rate increased to about 8.0%. Indeed, not only have BRICS shown solid growth, but other emerging countries have as well. In 2008, the PPP -based purchasing power of emerging economies had grown to about 51.2%, exceeding the 48.8% of developed economies, and the gap has since widened to 40% for developed economies and 60% for emerging economies in 2016.

The growth engines of emerging countries vary depending on the industrial structure and capital market conditions of individual countries. In this study, I aim to divide the emerging countries based on the economic structure and the openness of financial markets and study the reactions of individual countries to external shocks. I have selected seven emerging countries to assess the political impact of advanced countries and how it can vary based on the scale and structure of the economy. As shown in Table 1, the target countries can be classified into three different economic groups: large economies with low market openness (China and India), commodity export-driven open economies (Brazil, Russia, and Indonesia), and industrial export-driven small economies (Korea, Mexico, Turkey).

First, in the case of China and India, I assumed that economies with lower market openness and that are domestically driven would be less impacted by political shock in advanced markets, as their capital markets would have lower exposure to foreign investors' shares. For the second group, the commodity export-driven open economies, my assumption was that they would exhibit the most distinctive shock impact, because these countries' capital markets are highly

open, and commodity prices are sensitive to the foreign exchange market. Political shock in the global market would have significant impact on their currency performance, which would in turn directly affect commodity prices. In this respect, I assumed these countries, Brazil, Russia and Indonesia would experience a significant impact from short-term political shocks in the advanced markets. For the third group, the industrial export-driven small open economies of Korea and Turkey, I assumed that there would be moderate anomalies, as these countries have well-diversified industrial manufacturing portfolios; therefore, short-term political shocks could not change individual company earnings, although there could be different impacts based on economic dependency on other markets. In this respect, these markets were expected to show relatively fewer abnormalities compared to the global market index.

Table 2.1. Country Classification with economy characteristics

Group	Country
Large economy with low market openness	China, India
commodity export driven open economy	Brazil, Russia, Indonesia,
Industrial export driven small economy	Korea, Turkey

2.3.1.1. Large economy with low market openness: China and India

Both China and India have the largest population in the world, the large domestic economy, and the manufacturing industry-oriented economy. In addition, since both countries have relatively low financial market development in the industry, the opening of the capital market is also relatively low in common.

China is the world's leading economy in terms of global economic output with strong growth rate and high GDP per capita(a personal per capita GDP of $15,412 in 2016). The rapid restructuring of the industrial sector into high value-added industries has allowed China, with the share of tertiary industries to hover above 50% in terms of GDP value-added production. In addition, China is the top trading partner for most countries, having a significant impact on the global trade trend, as demonstrated by the G2 trade conflict that erupted in 2019. However, with respect to low level of capital market openness and exchange rate policy, China remains

somewhat detached from the global market. While China uses a quasi-floating rate exchange system, it is controlled by PBOC, not the global foreign exchange market. In the case of the companies included in the MSCI All Country Index or the MSCI Emerging Market Index, most of them are Hong Kong-listed public enterprises and financial related companies. Due to these characteristics, the Chinese market seems to have a relatively low correlation with global stock market movement.

India is the third largest economy and has strong IT industrial competitiveness, following China and the US in this respect. However, in terms of GDP per capita and capital market openness, its economic status is still far behind that of the other BRICS countries. In fact, India has achieved only one-half to one-third of the average GDP per capita of BRICS, which amounted to $6,701 in 2016. In this sense, it likely has high potential growth rates compared to countries with a larger economic scale. India also has a relatively different major trading partner list compared to other Asian countries, as its dependency on China is moderate, and the gap to the second largest country, the US, is also not significant. Another distinction is that it has a large portion to the Middle East, unlike other emerging countries.

2.3.1.2. Commodity export driven open economy: Brazil, Russia and Indonesia

Brazil is the world's largest exporter of commodities and is highly dependent on natural resources in its industrial structure. As Brazil has strong competency in agricultural products, minerals, and energy, it has been distinguished from Russia, which is mainly focused on energy products while Indonesia also exports energy commodities, crude palm oil and rubber products. Brazil's GDP per capita is similar to that of China, but it has shown negative growth over the past five years amid political uncertainty. Due to the presidential impeachment in 2016 and conflict due to pension reform, Brazil underwent serious devaluation and foreign exchange volatility. In terms of the diversification of export trading partners, Brazil has a well-diversified

allocation, although the largest dependency is China, followed by the US Brazil has relatively low value-added industrial structure, while its market accessibility is mid-advanced. However, its financial market system is advanced under free-competitive market structure. Due to this characteristic, investors likely show more sensitive reactions in cases of market uncertainty.

Russia is a major exporter of energy resources and has a leading position within the emerging stock market in terms of its high level of capital market openness. The country also has a high diversification level with respect to corporate investment and trade structure. However, it is also a country with a relatively low level of potential growth, given stagnant economic circumstance and declining population growth. Due to the international sanctions imposed on Russia since 2014 because of the Ukrainian crisis, the Russian ruble and stock market plunged, which has continued to give economic pressure on Russia. These sanctions were expected to continue until mid-2020. In terms of trade volume, Russia is highly dependent on China and other countries in eastern and other parts of Europe. Even though economic sanctions are still in place, Russia has a high level of market openness, and its export diversification level is also high. Its largest trading partner is China, and it has large exposure in European countries, such as Germany, the Netherlands, and Italy.

In the case of Indonesia, currently it has one of the strongest growth rates among emerging economies in terms of population and GDP total production. It also has a relatively stable economic structure within emerging markets in terms of capital market openness. Indonesia has the largest trade volume with China, followed by Japan, the US, and ASEAN countries, such as Singapore and India. Indonesia is differentiated from other commodity exporters in that it is a major exporter of raw materials while it also has a high level of development in terms of industrial products.

2.3.1.3. Industrial export driven small economy: Korea and Turkey

In emerging countries, the growth of small export-driven countries, such as South Korea and Turkey, has also been notable and continuous. Under the globalization era of the last two decades, these countries have achieved distinctive economic growth. The economic structure of these countries is not focused on domestic consumption, but rather on exports to large economies having trade competencies, and the openness of capital and financial markets are also high and consequently highly affected by the political and economic event from other countries.

Turkey has a leading position in emerging countries in terms of GDP per capita as well as the economic growth rate. However, it has a relatively low level of financial market openness and less diversified export diversification compared to Korea considering its GDP production level. Similar case to Poland, Turkey also serves as a function of European factory, with high economic dependence on European economies. Its largest trading partner is Germany, followed by Russia and other EU member countries. Turkey also underwent severe political uncertainty since the declaration of a state of emergency during the coup d'état against Erdogan's government in 2016. Due to the resulting political instability and geopolitical tension near Middle Eastern countries, Turkey also shows sensitive market reactions when uncertain political risk arises.

Korea is a small-open market economy with the highest income level per capita among the target sample countries, which amounted to $37,143 in 2016. In terms of capital market openness, Korea has high exposure to foreign investors in terms of foreign direct investment and financial portfolio investment with active foreigner shares in both fixed income and stock markets. Despite being representative of export-led growth for decades, it is now highly dependent on China for its share of foreign trade, as it is threefold higher than that of the second-ranked the US Compared to its high level of market openness and development,

Korea’s export diversification and quality are relatively low. Under this economic profile and structure, Korea has shown dynamic reactions to external shocks depending on the economic situation and the expected impact.

In terms of industry, the KOSPI 200 composite consists of 10 sub-sectors. Morningstar has classified the sub-sectors into three groups: cyclical, defensive, and sensitive. Cyclical sectors are those that are sensitive to business cycle peaks and troughs, including basic materials, consumer discretionary spending, financials, and real estates. On the contrary, the defensive sector includes anticyclical stocks and is composed of consumer staples, healthcare, and utilities. The sensitive sector is indicative of moderate correlations with the business cycle. It includes communication services, energy, industrials, and technology stocks. This approach is applied to the KOSPI 200 sub-sectors (Table 2).

Table 2.2. KOSPI200 Sub-sector classification

Sector name	Sector classification
KOSPI200 IT Sector	Sensitive
KOSPI 200 Industrial	Sensitive
KOSPI200 Engineering &Chemical	Sensitive
KOSPI200 Construction	Sensitive
KOSPI2 Heavy Industry	Sensitive
KOSPI200 Finance	Cyclical
KOSPI200 STL&MATERIAL	Cyclical
KOSPI200 Consumer Disc.	Cyclical
KOSPI 200 Health Care	Defensive
KOSPI200 Consumer Staple	Defensive

Table 2.3. Country Political & Economic Profile

Classification	China	India	Brazil	Russia	Indonesia	South Korea	Turkey
Market System	Socialist market Economy	Free market economy	Mixed economy	Mixed economy	Free market economy	Free market economy	Free market economy
Political Freedom	9	67	74	20	59	83	32
GDP Production (in mn USD 2016)	21,310,048	8,705,013	3,156,494	3,531,999	3,030,577	1,903,411	2,087,370
GDP Growth Rate (avg 2014~2018)	6.85%	7.54%	-0.80%	0.52%	5.03%	2.95%	4.88%
Per capital GDP (in USD 2016)	15,412	6,701	15,386	24,081	11,714	37,143	26,330
Foreign Exchange system	Floating	Floating	Floating	Floating	Floating	Floating	Floating
Financial Market openness*	0.09	0.02	0.41	0.7	0.5	0.93	0.39
Export Diversification and Quality	1.9663	1.92	2.45	3.54	2.25	2.38	1.76
Commodity Dependency	-	-	agricultural products	fuel exports	Rubber, Palm Oil, Coals & metals	-	-

* Bloomberg, IMF, UNCTAD statistics, Freedom House Org.

Table 2.4. Top 10 trade partners of 7 Countries

#	China		India		Brazil		Russia		South Korea		Indonesia		Turkey	
1	US	695,762	China	92,606	China	113,684	China	110,747	China	309,444	China	79,643	Germany	36,918
2	Japan	354,091	US	87,410	US	62,268	Germany	64.293	US	133,272	Japan	39,555	Russia	26,193
3	South Korea	309,444	UAE	49,850	Argentina	27,407	Belarus	34,503	Japan	86,670	Singapore	36,718	China	24,485
4	HK	289,540	Saudi Arabia	33,763	Germany	17,036	US	33,486	Vietnam	67,122	US	31,089	US	22,714
5	Germany	195,273	HK	27,749	Mexico	12,106	Netherlands	32,454	HK	37,576	India	21,046	Italy	20,851
6	Australia	163,987	Iraq	25,032	Japan	11,503	Italy	26,906	Germany	31,679	South Korea	20,216	UK	18,427
7	Vietnam	129,591	Germany	22,365	Chile	10,338	Turkey	26,193	Australia	31,169	Thailand	18,947	France	15,672
8	Brazil	113,684	South Korea	22,253	South Korea	9,603	South Korea	24,424	Saudi Arabia	30,558	Malaysia	18,575	Spain	13,643
9	Netherlands	112,677	Singapore	21,593	Netherlands	8,877	Japan	24,403	Russia	24,424	Australia	9,686	Iraq	10,267
10	Russia	110,747	Indonesia	21,046	Italy	8,766	Poland	24,451	India	22,253	Vietnam	8,712	India	9,566

* Bloomberg, UNCTAD statistics

2.3.2. Description of Three key events

Stigler (1958) asserted that economic policies are made with a long-term perspective to pursue maximizing output, economic growth and reducing inequality between the countries. The priorities of these three goals have changed depending on the political environment or the political support by the voters. When a political change takes place, the change of prioritized economic policy or the economic goals follow. Accordingly, this also causes changes in the investment behavior of financial market investors as it affects the business performance and the future market environment. The three events selected by the study, are in common reflecting of rising of protectionism and consequence change of economic policies. And it is worth noting that these economic policy changes were made by voters' political and economic choices even though it is not the best choice in term of economic efficiency. Nevertheless, all three events have different characteristics. In fact, Brexit is a domestic political decision resulting in UK leaving the EU regime. The UK's weakening political and economic cooperation with the EU has a relatively limited economic impact on global economies as both parties' contribution to global economic production is relatively weaker compared to the cases of the US and China. On the other hand, in the case of the US presidential election, the positive expectations for deregulation and economic support were estimated more favorably than the potential risk of protectionism. Especially, the heightened recovery expectation supported the cyclical sector and raw material countries, which are significantly connected to the global economic cycle. Lastly, the US and China trade conflict, although it began as a dispute between the US and China, these two countries account for more than 40 percent of the world's GDP. Due to these countries having a profound impact on global trade, the conflict between the two countries led to great uncertainty over the global economy.

2.3.2.1. UK Brexit: Change in economy regime

After the global financial crisis, the debt burden from fiscal crises in PIIGS countries and the influx of refugees from the Arab Spring increased EU member states' dissatisfaction with the EU. Reflecting this domestic dissatisfaction, Britain's Prime Minister David Cameron held a referendum on whether the UK would leave the EU under the title of the "United Kingdom's European Union Membership Referendum". A total of 51.8% of UK voters agreed to leave the EU on June 23. As a result, Britain's FTSE 250 stock markets fell about 13% in two days, while global stock markets faced losses of around $2 trillion, sending shockwaves through the market. Regarding economic aspects, the effects of Brexit on real businesses are more obvious. According to the study, investment decreased by about 11%, and productivity also decreased by 2-5% since the Brexit Referendum in 2016 (Bloom, Bunn, Chen, Mizen, Smietanka, and Thwaites(2019)). Multinational companies have also tended to cut back their investments in the UK. Since Brexit, Britain's composite PMI dropped significantly in 2017 and recorded a steady downward trend thereafter due to manufacturing and investment contraction. This reflects the importance of political regime changes and its impact on the actual economic growth of the nation, as the fundamentals or the inherent capacity of the economy itself can change significantly due to radical economic policy or system changes, as those factors affect investors' decisions reflecting economic uncertainties of the nation.

Table 2.5. Brexit Timeline

Date	Content
2015-05-07	With winning the general election by Conservative party in UK, the Prime Minister David Cameron promised to hold a referendum on continued EU Membership
2016-06-23	The United Kingdom European Union Membership Referendum, 2016 - Remain a member of EU : 48.11% / Leave the EU: 51.89%
2017-03-29	formally triggered Article 50 and began the two-year countdown to the UK formally leaving the EU
2019-03-14	House of Commons vote on the permission from the EU to extend Article 50 and agree a later Brexit date
2019-04-10	the UK and EU27 agreed to extend Article 50 until 31 October 2019
2019-09-09	Benn Act: Parliament passed a measure in September obligating the prime minister to send a letter to Brussels asking to delay Brexit until the end of January in 2020 if no deal has been reached by Oct. 19

2.3.2.2. Winning Election of Trump in 2016

Trump's success in the 2016 U.S. presidential election had a large impact on market volatility. Prior to the result, Moody's Analytics predicted that, based on Trump policy promises, including, tax cuts that might lead to government spending, immigration restrictions, and the strengthening of trade protectionism would have a negative impact in the mid- to long-term on the US national economy. In particular, the expansion of fiscal policy and the weak dollar were expected to increase the burden of inflation in the US, and it was also predicted that the strengthening of trade protectionism would invoke market uncertainty that could hurt the long-term growth of the global economy. Although the market seemed to be skeptical about the possibility of Trump's victory in the early days of the presidential campaign, with his campaign reflecting political trends of 'putting one's country's interests first after Brexit in the UK.' Trump's promise to "make America great again" also attracted electorates' interest.

The economic effects of Trump's election increased stock market volatility in the short term, but it is questionable whether the market accurately reflected the actual value of his policy. Indeed, years after Trump's election, strong U.S. employment figures resulting from the service-oriented industrial structure and stable inflation rates meant that the economic uncertainty the market feared had not come about. Due to the changes in the US industrial structure, the manufacturing sector's contributions to the economy were not as significant as Trump promised. In the case of oil prices, there were predictions that U.S. oil supplies would expand amid eased environmental regulations on energy companies, and indeed, the US has become the second largest oil producer in the world after the Middle East. OPEC countries produced voluntary cutbacks on production to support higher oil prices as Iranian sanctions were suspended, and its production increased until the sanctions were imposed again in September 2018. In line with rising U.S. oil production levels, this helped the US expand its market share in the global oil market as well as stabilize global crude prices.

Table 2.6. US Presidential Election Timeline in 2016

Date	
2016-05-26	Donald Trump earned 1,237 pledged delegates, nominated as the Republican presidential candidate. Hillary Clinton earned 2,383 pledged delegates, nominated the Democratic presidential candidate
2016-09-26	First presidential general election debate. Hillary Clinton ends up taking the majority support after the debate
2016-10-09	Second Presidential Debate. Hillary Clinton ends up narrowly winning over Donald Trump
2016-10-19	Third Presidential Debate. Hillary Clinton ends up winning with a very close margin over Donald Trump.
2016-10-28	There was report that FBI will be investigating newly discovered emails from Hillary Clinton's private server. The lead polls heavily dropped.
2016-11-08	U.S. Election day. Donald Trump is the projected winner of the election, becoming president-elect, winning electoral vote 304 against Clinton's 227

2.3.2.3. US-China Trade Conflict

After the US's investigations into the US and China's trade structures in 2017, both parties tried to coordinate negotiations regarding trade imbalances and intellectual property protection issues. At that time, the US trade deficit against China accounted for 47%, which amounted to $357.2 billion of the total U.S. trade deficit of $796.2 billion in 2017. When the US failed to achieve its target of trade deficit against China in 2018, it announced the implementation of "global safety measures" that would place a 30% tariff on all solar panels and a 20% tariff on washing machines. China responded back by imposing tariffs on 128 items. On 15th June 2016, the US implemented a 25% tariff on a list of 818 products that was to take effect on July 6, 2018. China revised its initial tariff list to include a 25% tariff on 545 products for July 6, 2018. China also proposed a second round of 25% tariffs on a additional 114 products. As the gap between the parties did not close, trade disputes between the US and China escalated, and the negotiations continued until September.

After the November midterm elections in 2018, there was a consensus that trade imbalances with China should be resolved and the US introduced regulations for not only China but also emerging countries in order to tighten technology export-related sanctions increasing market uncertainty significantly. In December, China and the US decided to temporarily cease their

trade dispute and resumed trade talks in December stabilizing the stock market movement. However, Investors' perceptions of the trade dispute were that it was no longer an issue that could be resolved in a short period of time; instead, it was construed as a long-term project reflecting its importance for potential economic competency. Considering the paradigm shift from globalization to protectionism, the market showed big headwinds compared to the actual economic impact estimated thus far.

Table 2.7. US- China Trade Conflict Timeline

Date	Details
2018-02-07	The US implements 'global safeguard tariffs' – placing a 30 percent tariff on all solar panel imports, and a 20 percent tariff on washing machine imports (worth USD1.8 billion)
2018-04-02	China imposes tariffs (ranging 15-25 percent) on 128 products (worth USD3 billion) including food, steel pipes, and recycled aluminum
2018-05-03 ~2018-05-07	US-China engage in trade talks in Beijing, where the US demands that China reduce the trade gap by USD200 billion within two years.
2018-06-04 ~2018-06-05	2 days trade talk between U.S. & China in Beijing
2018-06-15	US Initial list of products finalized. List 1 now implements a 25 percent tariff on a reduced 818 products (from1,334) and is set to take effect on July 6, 2018. China also set its initial tariff list to include a 25 percent tariff on 545 products to take effect July 6, 2018
2018-08-02	US tariffs revisions to 25% with direction from Trump, approximately USD200 billion worth of goods and includes categories such as: consumer products, chemical and construction materials, textiles, tools, food and agricultural products, commercial electronic equipment, and vehicle/automotive parts
2018-08-23	U.S. and China implement 2nd round of tariffs, China files 2nd WTO complaint. U.S. implements a 25 percent tariff on 279 goods originating from China (worth $16bn).
2018-09-24	US and China implement third round of tariffs U.S.. The US implements tariffs on USD200 billion worth of Chinese goods (List 3), bringing the total amount to USD250 billion. The tariffs carry an initial rate of 10 percent, and will be increased to 25 percent by January 1, 2019. China responds to U.S. tariffs by implementing tariffs on USD60 billion worth of U.S. goods

* China Briefing, The US-China Trade War: A Timeline

2.4. Identification Strategy & Methodology

To assess the political impact on emerging markets, I observed short-term abnormalities by comparing actual individual country index performances and their expected normal performance, which were derived from a regression analysis with the MSCI All Country Index. Since it is difficult to quantify the actual economic impact on macro fundamentals in the case of political events, I assumed that the capital market reaction and its abnormality against the overall global composite index could capture a differentiated market reaction depending on a country's economic situation.

For this study, I employed event study methodology to analyze the emerging market impacts of political shock in advanced countries based on event study methodology (Fama, Fisher, Jensen, and Roll (1969)). In fact, as preceding studies have shown, there have been many ways to measure abnormality on the events study approach. McKenzie, Thomson, and Bruce (2003) compared the statistical performance of the Constant Mean model, OLS, and GARCH models for estimating abnormal returns of agricultural futures prices in the event of market shocks. They pointed out that statistical significance strengthened when sufficient samples were available for normal estimation. These models differ from the regression model I intend to employ in this study, in that they are based on the time series and variance data estimation of the individual index itself while the regression model utilizes the global benchmark index in the prediction. As stated in the previous chapters, this study tried to observe the market synchronizations in global financial markets, the study determined that a regression model based on MSCI ACWI was more appropriate to see how the market reflects in the short-term depending on the different economic structure of the country. Besides, the model also focused on measuring the degree of deviations from individual markets within a relatively short-term period, this study employs the simple benchmark-based regression approach rather than the ARMA, GARCH or OLS models that require long-term data from individual countries.

To perform event study analysis, first, I conduct before and after 3~5 days of observation of the responses of major emerging economies to major global political shocks. I observed seven emerging countries' abnormalities resulting from three major global political events: the UK's Brexit in 2016, the US presidential election 2016, and US-China Trade Dispute as already described in preceding chapters. Based on the countries' economic interdependence and the economic effect of each event, the market reaction varied. In addition to analyzing how individual countries respond to the shocks, it is possible to discuss what each event might mean at the industry level by studying how the stock market's individual sub-industry index responds to shocks.

From this point of view, I also performed the second approach to analyze the KOSPI 200 and its 10 sub-industry indices with the same range of 3 to 5 days before/after the shock. The KOSPI 200 index is composed of large stocks with high accessibility to both domestic and foreign investors, and it has 10 subsectors as follows: IT, health care, industry, finance, engineering and chemicals, construction, steel and materials, consumer discretionary spending, Consumer Staples, and Heavy Industry. This sub-index analysis also indicated how the abnormality was created from the sub-indices and how the industrial characteristics digested the shocks.

2.4.1. Target countries, sectors, and estimation period

This part of the study was designed to analyze the individual sector abnormalities and interpret how the reaction was diversified for each event. The event dates were known to the market in advance, so investors probably were able to prepare about the event and could reflect the impact of event before and after the actual event.(Table 10)

To perform the estimation of the three major external shocks to individual countries, the normal returns (estimated through regression with the MSCI ACWI Index) in seven countries were estimated over a period of 250 trading days before each target estimation period (Table 9).

Regarding the data collection period, referring from Aktas, Bodt, and Cousin(2007) review of event study methodology, the estimation window going from day -250 from -30 relative to event date is generally chosen. As the sample data is based on a representative index in each country, it was necessary to collect as much sample data as possible to simulate normal return. Obradović and Tomić(2017) also mentioned that that abundant estimation period will be a condition for validity of the equation for measurement of different abnormal returns. For this reason, the regression analysis and an impact test of each event period were implemented based on preceding 250 days for each event. Then, I calculate abnormal return and cumulative abnormal return for event window period.(Table 10).

The selected events are political events that influence over the direction of economic policy in the long run. However, the aim of this research is focused on how early markets react when decisions are made to this radical change, so, I would like to set the event window for short-term length to observe how the market digests uncertainty. Oler, Harrison, and Allen(2007) also mentioned that the most common choice of event window length is 5days, comprising 76.3% of reviewed event studies. The event window period set to be pre/post 3 to 5days of impact based on the event date. As a result, the study can estimate the degree of impact of the three events in the seven countries and analyzes how political and policy changes in developed countries affect emerging markets. As a similar approach to the above emerging market empirical test case, I calculated the normal and abnormal returns in ten KOSPI200 subsector indices.

Table 2.8. Model variables and definition

	Data description
Date	Daily date
Event date	Event study schedule classification
MSCI All Country index(MSCI ACWI)	Proxy data to predict normal return
Equity Market index	Actual daily market movement
South Korea	Log data of KOSPI200

Indonesia	Log data of DJ Indonesia
China	Log data of Shanghai Composite
India	Log data of FTSE India
Brazil	Log data of ibovespa
Russia	Log data of FTSE russia
Turkey	Log data of FTSE Turkey
KOSPI 200 Index	Log data of KOSPI 200 Index
KOSPI200 IT Sector	Log data of KOSPI200 IT Sector
KOSPI 200 Health Care	Log data of KOSPI 200 Health Care
KOSPI 200 Industrial	Log data of KOSPI 200 Industrial
KOSPI200 Finance	Log data of KOSPI200 Finance
KOSPI200 Engineering &Chemical	Log data of KOSPI200 Eng&Chem
KOSPI200 Construction	Log data of KOSPI200 Construction
KOSPI200 STL&MATERIAL	Log data of KOSPI200 STL&MATERIAL
KOSPI200 Consumer Disc.	Log data of KOSPI200 Consumer Disc.
KOSPI200 Consumer Staple	Log data of KOSPI200 Consumer Staple
KOSPI2 Heavy Industry	Log data of KOSPI2 Heavy Industry

Table 2.9. Estimation Period For events

Estimation Period	Impact Classification
2015-06-01~2016-06-02	250 trading days Before Brexit
2015-10-26~2016-10-31	250 trading days Before US presidential Election
2017-05-29~2018-06-05	250 trading days Before G2 Trade Disputes

Table 2.10. Event study window

Event Date	Impact Classification
2016-06-03	Brexit-5days
2016-06-08	Brexit-3days
2016-06-13	Brexit Day
2016-06-16	Brexit+3days
2016-06-20	Brexit+5days
2016-11-01	US President Election-5days
2016-11-03	US President Election-3days
2016-11-08	US presidential Election Day
2016-11-11	US President Election+3days
2016-11-15	US President Election+5days
2018-06-07	G2 Trade Conflict-5days
2018-06-11	G2 Trade Conflict-3days

2018-06-15	G2 Trade Conflict 1st Sanction Announcement
2018-06-20	G2 Trade Conflict+3days
2019-06-22	G2 Trade Conflict+5days

2.4.2. Methodology -Event Study: Market Model

As mentioned above, this study employs the event study-market based model methodology initially suggested by Fama, Fisher, Jensen, and Roll (1969). To measure the impact of each event, it needs to predict the normal return of the market. Given that the market shocks would be absorbed through the diversification of the general market index, which in this case was the MSCI All Country Index, I assumed that the normal return of the individual index of a country would behave similarly to the movement of the MSCI ACWI Index over time. Cowan, Karafiath and Spencer (1991) and Salinger (1992) said that if the abnormal returns are correlated, the bias of the cumulative abnormal returns can become larger, but if the samples are large enough, then the bias become less. From that perspective, using index calculated on the basis of listed companies in the individual stock market are considered to produce a smaller relative bias.

To elaborate the model, the expected normal return (1) was calculated by the estimated coefficient and the constant, which were the result of the regression with the MSCI ACWI and the individual index. Abnormal returns (2) were calculated by the actual individual index returns subtracted from the expected normal return (1). The cumulative abnormal return(3) is 1 week summation of daily abnormal return of (2). From this cumulative abnormal return, I derive before and after 3days and 5days of abnormal return of observing group. This methodological approach was applied same to the KOSPI 200 sub-indices empirical test, and calculated the expected normal return (4), abnormal return (5), and cumulative abnormal return(6) were calculated as follows.

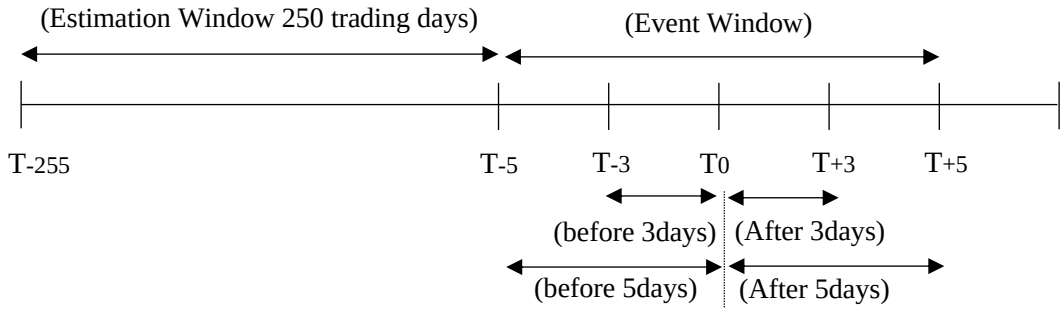
- Emerging market abnormalities test

- ✓ *Normal Return of index:* $r_{i,t} = a_i + b_i(log(MSCI\ ACWI))_{,t} + e_i$ *(1)*
- ✓ *Abnormal Return of index :* $e_{i,t} = log(individual\ index\ return) - r_{i,t}$ *(2)*
- ✓ *Cumulative Abnormal Return :* $CAR_{i(tn,tn+5)} = \sum_{n}^{n+5} e_{i,t}$ *(3)*

- KOSPI200 Sub-indices abnormalities test

- ✓ *Normal Return of index:* $r_{i,t} = a_i + b_i(log(MSCI\ ACWI))_{,t} + e_i$ *(4)*
- ✓ *Abnormal Return of index :* $e_{i,t} = log(individual\ sub\text{-}index\ return) - r_{i,t}$ *(5)*
- ✓ *Cumulative Abnormal Return :* $CAR_{i(tn,tn+1)} = \sum_{n}^{n+5} e_{i,t}$ *(6)*

- Event Window



2.5. Empirical Result

2.5.1. Emerging market abnormalities

Table 2.11. Coefficient of 7 emerging Countries & Sub-Indices with MSCI ACWI

	Event Group	Coef.	Std. Err	t	R-Squared
China	Brexit	1.9943	0.1235	16.15	0.5127
	US Presidential Election	0.5656	0.0891	6.34	0.1396
	G2 Trade Conflict	0.0825	0.0490	1.69	0.0113
India	Brexit	0.9473	0.0373	25.39	0.137
	US Presidential Election	1.1319	0.0604	18.73	0.5857
	G2 Trade Conflict	0.7918	0.0362	21.88	0.8339
Brazil	Brexit	1.6812	0.0786	21.4	0.6487
	US Presidential Election	2.6219	0.0756	34.69	0.8291
	G2 Trade Conflict	1.7917	0.0712	25.18	0.7188
Russia	Brexit	-0.1431	0.0911	-1.57	0.0098
	US Presidential Election	1.1364	0.0463	24.53	0.7082
	G2 Trade Conflict	1.5272	0.0390	39.12	0.8606
Indonesia	Brexit	0.3767	0.0600	6.27	0.137
	US Presidential Election	1.1319	0.0604	18.73	0.5857
	G2 Trade Conflict	0.7918	0.0362	21.88	0.6587
Korea	Brexit	0.4610	0.0300	15.36	0.4876
	US Presidential Election	0.7090	0.0171	41.36	0.8734
	G2 Trade Conflict	0.3797	0.0304	12.49	0.3863
Turkey	Brexit	0.9155	0.0625	14.65	0.4638
	US Presidential Election	0.6711	0.0564	11.91	0.3638
	G2 Trade Conflict	0.7048	0.0561	12.55	0.3885

The stock market abnormality of an individual country was calculated according to the political and economic shock of events caused by Brexit, the US presidential election, and G2(U.S.-China) trade disputes.

First, to estimate the normal return, the study performed regressions each index with MSCI ACWI before each event for Brexit, the US presidential election, and G2 trade conflict. In general, China shows low significances with the MSCI ACWI index, reflecting its lower level of capital market openness, which weighs significantly on the local investors, and its higher portion of financial corporates weight in the index. On the contrary, India showed a higher

coefficient with strong significance. This difference could be attributed to the basic economic structure, even though India's capital market openness was similarly low, but its fundamental economic system is based on capitalism, while the capital market of China is based on the communism system. In the case of the second group, commodity export-driven open economies, Brazil, Russia, and Indonesia showed higher coefficients with strong significance, while Russia showed low significance with the negative coefficient before the Brexit event. Due to the nature of the raw material export countries, the group also showed a procyclical movement with a global stock market trend. The third group of industrial export-driven small economies showed a generally positive relationship with MSCI ACWI and a stable statistical significance level for all estimation periods. In conclusion, the second and third groups are estimated to move in line with global financial market movements based on the high level of capital market openness and well-established trade competitiveness.

In terms of estimated abnormalities (Table 12), India and China in the first group, showed different reactions to shocks from the advanced countries. In China, it exhibited a negative abnormality during the event of Brexit and the G2 trade dispute, and the absolute amplitude was also relatively large. India, on the other hand, was less affected by external shocks than other countries, especially displayed a positive abnormality in the impact of Brexit and the G2 Trade dispute. The average abnormality increased after both Brexit and G2 trade dispute. It is because both events were interpreted as a sign of further escalation of uncertainty over rising protectionism. On the other hand, the US presidential election had a relatively small influence in both countries. (Table 12).

In the second group, Brazil, Russia, and Indonesia, the highest abnormalities were shown in response to the political shock, especially in Brazil, which was expected. The impact of Brexit and the US presidential election created positive abnormalities in those markets, but the G2 trade conflict created negative abnormalities. Those countries are large commodity exporters,

their economic relationships with the US and China are strong, and it negatively affects countries. In the case of Brexit, Britain's breakup with the EU was interpreted positively in the Russian stock market, a positive assessment of Russia's supply role of European energy demand. Trump's election victory had a positive effect on emerging countries in terms of expected economic support, favorable energy policy(Abandonment of Carbon Neutralization), and monetary policy easing in the US, especially in the commodity export-driven countries of Brazil, Russia, and Indonesia. As the expectations of policy changes positively affected investment sentiment, those markets seemed to react more sensitively to the event. In considering average daily abnormalities (Table 13), all three countries also have shown higher abnormalities when political shock took place. Especially in the case of the G2 conflict, Brazil underwent the highest negative abnormality, before and after the event date. As Brazil's high trade dependencies on China and the US economy were the highest among target countries, the negative reaction to the impact was also the biggest. Indonesia also showed significant abnormalities on the G2 trade dispute event, and it intensified 5 days after the event. In fact, when the US sanction on China was announced, the Indonesian stock market was closed for about six days during the outbreak, so the impact seemed to be more pronounced after the market openings. In the case of Russia, it showed relatively small abnormalities compared to other countries, reflecting well-diversified trade structure and low dependencies on the US economies.

The third group of industrial export-driven small economies showed relatively less abnormalities compared to the first and second groups. However, under each shock, the impact degree diverged according to each country. In the case of Korea, in the event of the Brexit and US presidential election, the abnormalities were the lowest while its abnormalities were positive. Korea also showed the greatest volatility in the G2 trade conflict among the three events, but it was relatively lower level compared to the other countries under observation and

its abnormalities also increase after the US sanctions were announced. It is impressive that Korea is with the highest financial market openness and GDP per capita among the observation group while it is in line with the overall global stock market movement against global political shock. Turkey exhibited the lowest abnormalities during the Brexit shock among the target observation group, while negative abnormalities were apparent in response to the G2 trade conflict. Turkey is highly correlated with the EU economy, and the EU's largest exporting counterparty is China, which can be interpreted negatively in the market.

At the same time, considering the results of the UK's Brexit and U.S. elections, the absolute value of abnormalities against the market shock was not very severe, while the US presidential elections had a positive impact on the overall emerging market except Turkey. In the preceding studies, the conservative party's victory in the election affected positively the stock market in the anticipation of market-friendly policies (Sattler(2013)), which seems to have worked the similarly in U.S. election case in 2016. In the case of Turkey, internal political issues (e.g., the Erdogan regime's coup risk) more dominantly affected stock market performance and showed different movements against other emerging countries. In general, Brexit is interpreted as a more domestic political issue and less impact on the global economy, so export-driven emerging economies also seem to react less sensitive to the event. However, in the case of US-related political issues, US presidential election, and G2 dispute, they have an immediate impact on global manufacturing with significant dominance of U.S., the emerging countries show higher abnormalities compared to other shocks.

Table 2.12. Aggregated abnormal return of shocks

Total	China	India	Brazil	Russia	Indonesia	Korea	Turkey
Brexit-5days	-0.8383	0.0444	0.0587	0.5418	0.2605	0.1148	-0.0083
Brexit-3days	-0.4998	0.0263	0.0459	0.3239	0.1492	0.0876	-0.0112
Brexit+3days	-0.3667	0.0920	0.1057	0.2406	0.1493	0.0474	-0.0103
Brexit+5days	-0.6433	0.1472	0.1739	0.4145	0.2534	0.0733	-0.0149

US President Election-5days	0.1188	0.0934	0.6805	0.1942	0.3177	0.0705	-0.0956
US President Election-3days	0.0810	0.0498	0.4071	0.1089	0.1858	0.0415	-0.0809
US President Election+3days	0.0938	-0.0168	0.2459	0.1706	0.1460	0.0021	-0.0904
US President Election+5days	0.1878	-0.0665	0.3783	0.2832	0.1492	-0.0128	-0.1757
G2 Trade Conflict-5days	-0.3339	0.1444	-0.7248	-0.0395	-[1)]	-0.1093	-0.7018
G2 Trade Conflict-3days	-0.2009	0.0938	-0.4446	-0.0268	-[1)]	-0.0702	-0.4444
G2 Trade Conflict+3days	-0.3025	0.1135	-0.4120	-0.0008	-0.1024	-0.1648	-0.4246
G2 Trade Conflict+5days	-0.5458	0.2027	-0.6924	0.0253	-0.2085	-0.2795	-0.6711

[1)] In case of Indonesia, the market closed from 11th June 2018 to 18th June 2018, the estimation excluded.

Table 2.13. Average abnormal return of shocks

Mean	China	India	Brazil	Russia	Indonesia	Korea	Turkey
Brexit-5days	-0.1677	0.0089	0.0117	0.1084	0.0521	0.0230	-0.0017
Brexit-3days	-0.1666	0.0088	0.0153	0.1080	0.0497	0.0292	-0.0037
Brexit day	-0.1519	0.0162	0.0342	0.0929	0.0444	0.0171	0.0015
Brexit+3days	-0.1222	0.0307	0.0352	0.0802	0.0498	0.0158	-0.0034
Brexit+5days	-0.1287	0.0294	0.0348	0.0829	0.0507	0.0147	-0.0030
US President Election-5days	0.0238	0.0187	0.1361	0.0388	0.0635	0.0141	-0.0191
US President Election-3days	0.0270	0.0166	0.1357	0.0363	0.0619	0.0138	-0.0270
US presidential Election Day	0.0254	0.0081	0.1276	0.0255	0.0675	0.0119	-0.0246
US President Election+3days	0.0313	-0.0056	0.0820	0.0569	0.0487	0.0007	-0.0301
US President Election+5days	0.0376	-0.0133	0.0757	0.0566	0.0298	-0.0026	-0.0351
G2 Trade Conflict-5days	-0.0668	0.0289	-0.1450	-0.0079	-[2)]	-0.0219	-0.1404
G2 Trade Conflict-3days	-0.0670	0.0313	-0.1482	-0.0089	-[2)]	-0.0234	-0.1481
G2 Sanction Announcement	-0.0770	0.0351	-0.1574	-0.0131	-0.0349	-0.0413	-0.1434
G2 Trade Conflict+3days	-0.1008	0.0378	-0.1373	-0.0003	-0.0341	-0.0549	-0.1415
G2 Trade Conflict+5days	-0.1092	0.0405	-0.1385	0.0051	-0.0417	-0.0559	-0.1342

[2)] In case of Indonesia, the market closed from 11th June 2018 to 18th June 2018, the estimation excluded.

Table 2.14. Stock market movement of 7 emerging countries with 3 major events(1/2)

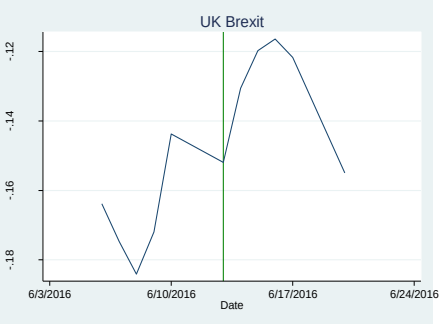
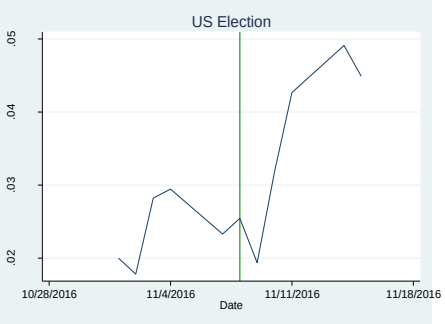
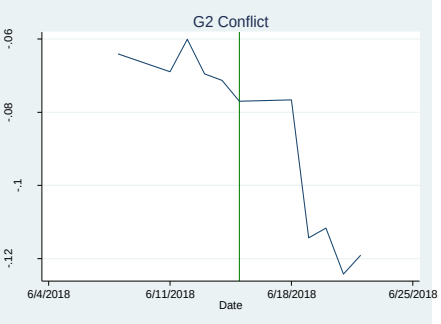
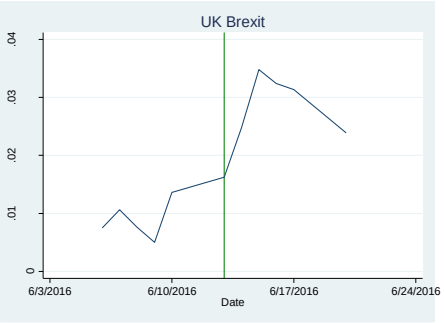
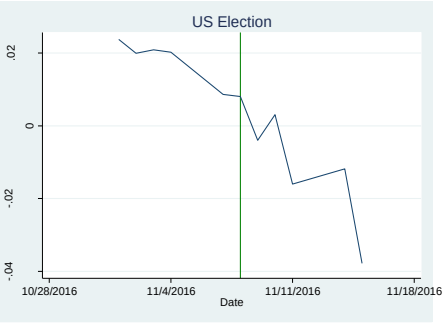
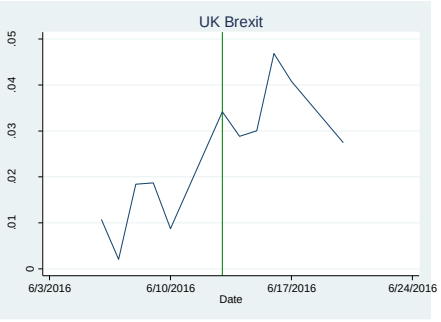
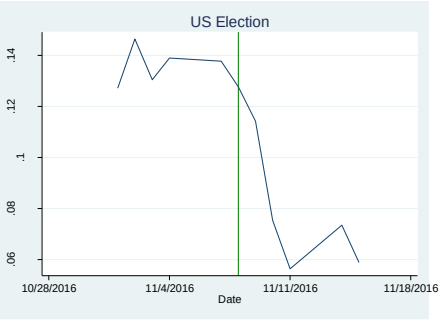
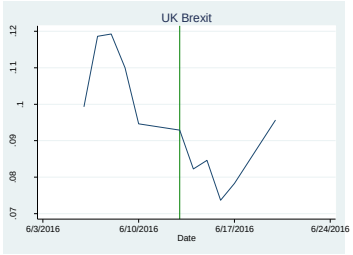
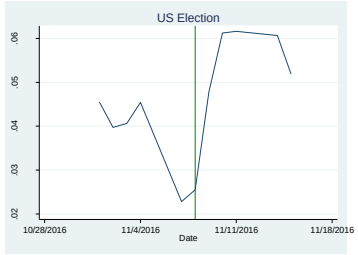
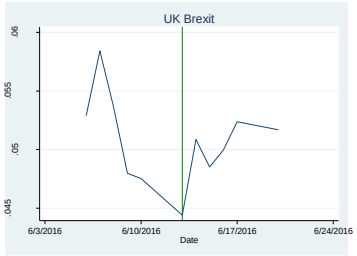
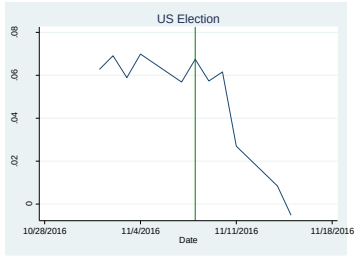
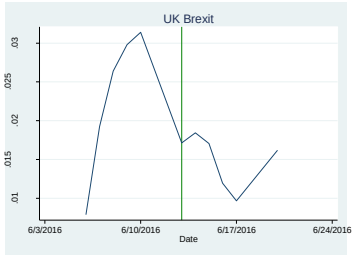
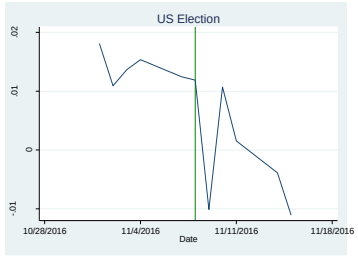
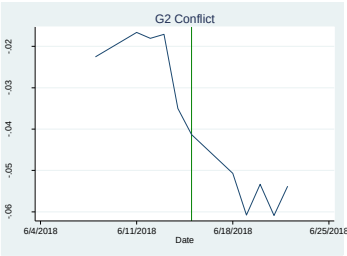
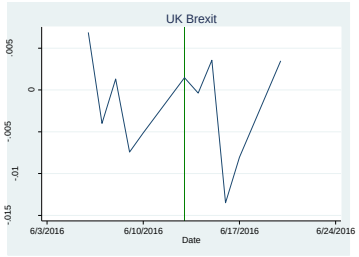
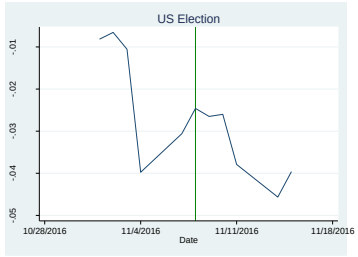
	UK Brexit	US Election	G2 Trade Conflict
China			
India			
Brazil			

Table 2.14. Stock market movement of 7 emerging countries with 3 major events(2/2)

	UK Brexit	US Election	G2 Trade Conflict
Russia			
Indonesia			
Korea			
Turkey			

2.5.2. KOSPI200 Sub-Indices

Table 2.15. Coefficient of KOSPI200 & Sub-Indices with MSCI ACWI

	event	Coef.	Std. Err	t	R-Squared
KOSPI200 IT Sector	1st	0.4578	0.0491	14.4700	0.4578
	2nd	1.1731	0.0507	23.1200	0.6830
	3rd	0.7710	0.0497	15.5300	0.4929
KOSPI 200 Health Care	1st	-0.4558	0.1692	-2.6900	0.0284
	2nd	-0.6505	0.1119	-5.8100	0.1200
	3rd	2.0640	0.0646	31.9400	0.8045
KOSPI 200 Industrial	1st	1.3190	0.0901	14.6400	0.4637
	2nd	0.3226	0.0539	5.9800	0.1262
	3rd	-0.5394	0.0439	-12.2800	0.3781
KOSPI200 Finance	1st	0.8085	0.0325	24.8700	0.7137
	2nd	0.5880	0.0452	13.0100	0.4057
	3rd	0.3365	0.0492	6.8400	0.1588
KOSPI200 Eng&Chem	1st	-0.1823	0.1257	-1.4500	0.0084
	2nd	-0.0071	0.0693	-0.1000	0.0000
	3rd	1.1725	0.0383	30.5900	0.7905
KOSPI200 Construction	1st	1.4929	0.1080	13.8200	0.4350
	2nd	0.3707	0.0629	5.8900	0.1227
	3rd	0.3232	0.1138	2.8400	0.0315
KOSPI200 STL&MATERIAL	1st	1.2772	0.0786	16.2400	0.5155
	2nd	1.0118	0.0695	14.5600	0.4609
	3rd	0.0165	0.0667	0.2500	0.0002
KOSPI200 Consumer Disc.	1st	-0.4558	0.1692	-2.6900	0.0174
	2nd	-0.1187	0.0407	-2.9200	0.0332
	3rd	-0.0502	0.0457	-1.1000	0.0048
KOSPI200 Consumer Staple	1st	0.0697	0.0404	1.7200	0.0118
	2nd	0.0226	0.0429	0.5300	0.0011
	3rd	-0.0621	0.0463	-1.3400	0.0072
KOSPI2 Heavy Ind	1st	2.3893	0.1051	22.7400	0.6759
	2nd	2.4584	0.0719	34.1800	0.8249
	3rd	-0.8456	0.0732	-11.5500	0.3498

The KOSPI 200 showed a positive coefficient with strong significance against the MSCI ACWI, while its sub-indices showed different results according to the sector characteristics. Specifically, IT, finance, construction, and steel and materials showed positive correlations with a relatively higher significance level, while healthcare, industrial, consumer staples, consumer discretionary, and heavy industry showed mixed direction of coefficients against the MSCI ACWI. Especially in the case of Consumer discretionary responded negatively for all 3 estimation periods. The IT, construction, and steel and material indices are pro-business-cycle, and they show positive coefficients to global market with high statistical significance. In the case of heavy industry, although it also belongs to the cyclical sector group, the sector

is mainly composed of ship builders and their own industrial cycles are dominant, and faced serious market downturns and restructurings in 2018, and this would be the reason for the negative coefficient in 3rd estimation period.

In the aspect of abnormalities for each event, the industry's business characteristics seem to affect the abnormalities. The domestic demand-driven sectors, the consumer staples, construction, and healthcare sector show relatively large abnormalities widening gaps from global index movement, while the procyclical sectors, IT, financial, and consumer discretionary sectors show relatively small abnormalities from expected normal returns. In the event of Brexit, the healthcare sector had the largest abnormalities, while the cyclical sector's negative abnormalities were prominent. However, after the event, abnormalities decreased over time. Interestingly, in the case of the US presidential election, the positive abnormalities expanded in the economy-compatible sectors, similarly to the case of emerging countries preceding studies. In particular, the strength of IT, heavy industry, steel & material sectors, which have major export items in Korea, stood outstanding. Under the G2 trade conflict, abnormality increased more after the actual event day in overall sector perspectives. This could be attributed to the fact that the G2 trade dispute negotiation was not just a short-term event but was instead a more structural issue; the market seems to reflect that the impact can be prolonged.

The financials and steel and materials showed positive abnormalities during the US presidential election, but it shifted into negative territory when Brexit and G2 trade conflict occurred. Trump's winning election supported the infrastructure investment and economic recovery expectations and acted positively to financials and steel and materials sector, but the impact from Brexit and G2 Trade conflict, rising of protectionism, interpreted negatively to those sectors. In the case of IT and engineering & chemical sector, they show positive abnormalities during Brexit and the US presidential election while displayed negative

abnormalities in the G2 trade conflict event similar to the KOSPI200 index movement. The IT sector exhibited a similar trend with respect to the KOSPI 200 indices, as it comprised about 42% of the KOSPI 200 index. However, the absolute level of the abnormalities was larger than the KOSPI 200 for each shock.

Among the sub-sectors of KOSPI200, it was estimated that the healthcare sector created the largest abnormalities in terms of daily average returns and cumulative returns. Due to the defensive characteristics of the healthcare industry and its market cap, which accounted for less than 5% of the KOSPI 200 index, the healthcare sector showed larger discrepancies from the global market movement and external international events. The consumer staple sector, which also belonged to the defensive group, showed positive abnormal returns due to its domestic-oriented business nature in the case of Brexit and G2 trade conflicts. However, healthcare and consumer staples both exhibited negative abnormalities underperforming compared to other cyclical or sensitive sectors. For the impact of overall shocks, the outperform of consumer staples stood out just before the actual shock occurs. This may have been the result of preparing for the defensive position accumulated against the shock. The industrial goods sector showed a rather opposite movement with respect to abnormal returns compared to the other sector movement. During the shocks of Brexit and the US presidential election, the negative abnormal returns widened. However, they showed relatively small abnormalities in the case of the G2 trade conflict. The construction sector exhibited a positive performance during the G2 trade conflict, as the overseas orders in the construction industry were mostly based on Europe and Southeast Asia, and domestic business contributions were also high. In the case of heavy industries, the average abnormalities relatively small in Brexit, but in the case of the US presidential election and the G2 trade conflict, it exhibited positive abnormalities, differentiating itself from other sectors.

Table 2.16. Aggregated abnormal return of shocks in KOSPI200 & Sub index

	IT	Healthcare	Industrial	Financial	Engineering & Chemical	Construction	Consumer Discretionary	Consumer Staples	Heavy Industry	Steel & Material
Brexit-5days	-0.0389	1.0702	-0.4683	-0.2204	0.3093	-0.5669	-0.0825	0.2763	-0.1469	-0.0968
Brexit-3days	-0.0072	0.6845	-0.2664	-0.1088	0.2053	-0.3201	-0.0424	0.1721	-0.0605	-0.0242
Brexit+3days	0.0327	0.5124	-0.2441	-0.1762	0.0601	-0.2966	-0.1259	0.0827	0.0074	-0.0294
Brexit+5days	0.0440	0.8125	-0.4396	-0.3085	0.0998	-0.5402	-0.2021	0.1279	-0.0499	-0.0868
US President Election-5days	0.3126	-1.6030	-0.5537	0.2982	-0.0083	-0.1047	-0.1348	-0.4144	0.0929	0.0108
US President Election-3days	0.1816	-0.9409	-0.3178	0.1796	0.0087	-0.0637	-0.0968	-0.2459	0.0609	0.0287
US President Election+3days	0.0882	-0.7748	-0.2924	0.2016	0.0000	-0.0455	-0.1716	-0.2567	0.0384	0.0669
US President Election+5days	0.0970	-1.2554	-0.4885	0.3816	0.0325	-0.0530	-0.3281	-0.4593	0.2008	0.1982
G2 Trade Conflict-5days	-0.1106	-0.5505	0.0038	-0.2154	-0.2629	0.8209	-0.1937	0.1321	0.3793	-0.1561
G2 Trade Conflict-3days	-0.0710	-0.3306	0.0065	-0.1299	-0.1534	0.4826	-0.1216	0.0945	0.2041	-0.1098
G2 Trade Conflict+3days	-0.1589	-0.3235	-0.1737	-0.1893	-0.2285	0.2042	-0.2295	0.0407	-0.0861	-0.3196
G2 Trade Conflict+5days	-0.2270	-0.5201	-0.3735	-0.3746	-0.4045	0.3465	-0.4241	0.0704	-0.1662	-0.5991

Table 2.17. Average abnormal return of shocks in KOSPI200 & Sub Index

	IT	Healthcare	Industrial	Financial	Engineering & Chemical	Construction	Consumer Discretionary	Consumer Staples	Heavy Industry	Steel & Material
Brexit-5days	-0.0078	0.2140	-0.0937	-0.0441	0.0619	-0.1134	-0.0165	0.0553	-0.0294	-0.0194
Brexit-3days	-0.0024	0.2282	-0.0888	-0.0363	0.0684	-0.1067	-0.0141	0.0574	-0.0202	-0.0081
Brexit day	-0.0027	0.1969	-0.0673	-0.0398	0.0435	-0.0870	-0.0346	0.0321	0.0063	0.0041
Brexit+3days	0.0109	0.1708	-0.0814	-0.0587	0.0200	-0.0989	-0.0420	0.0276	0.0025	-0.0098
Brexit+5days	0.0088	0.1625	-0.0879	-0.0617	0.0200	-0.1080	-0.0404	0.0256	-0.0100	-0.0174
US President Election-5days	0.0625	-0.3206	-0.1107	0.0596	-0.0017	-0.0209	-0.0270	-0.0829	0.0186	0.0022
US President Election-3days	0.0605	-0.3136	-0.1059	0.0599	0.0029	-0.0212	-0.0323	-0.0820	0.0203	0.0096
US presidential Election Day	0.0543	-0.2818	-0.1013	0.0459	0.0186	-0.0061	-0.0190	-0.0844	0.0003	0.0097
US President Election+3days	0.0294	-0.2583	-0.0975	0.0672	0.0000	-0.0152	-0.0572	-0.0856	0.0128	0.0223
US President Election+5days	0.0194	-0.2511	-0.0977	0.0763	0.0065	-0.0106	-0.0656	-0.0919	0.0402	0.0396
G2 Trade Conflict-5days	-0.0221	-0.1101	0.0008	-0.0431	-0.0526	0.1642	-0.0387	0.0264	0.0759	-0.0312
G2 Trade Conflict-3days	-0.0237	-0.1102	0.0022	-0.0433	-0.0511	0.1609	-0.0405	0.0315	0.0680	-0.0366
US China Sanction Announcement	-0.0407	-0.0883	-0.0178	-0.0723	-0.0574	0.1135	-0.0595	0.0150	0.0179	-0.0627
G2 Trade Conflict+3days	-0.0530	-0.1078	-0.0579	-0.0631	-0.0762	0.0681	-0.0765	0.0136	-0.0287	-0.1065
G2 Trade Conflict+5days	-0.0454	-0.1040	-0.0747	-0.0749	-0.0809	0.0693	-0.0848	0.0141	-0.0332	-0.1198

Table 2.18. KOSPI200 & Sub Indices Movement with 4 major events(1/3)

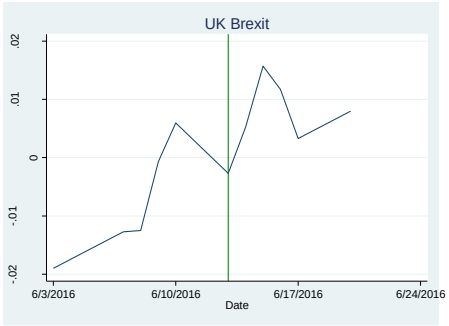
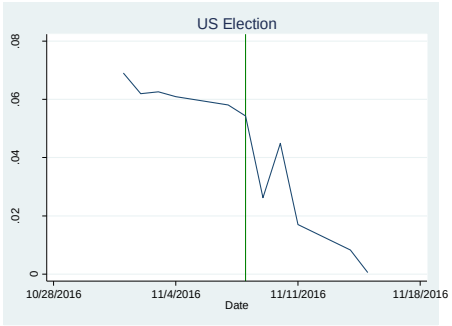
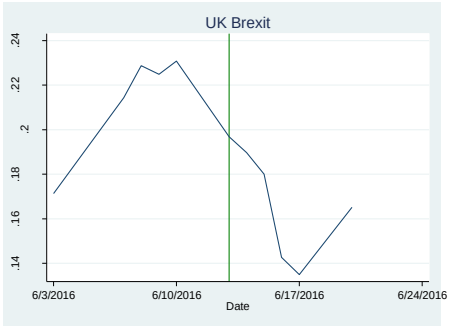
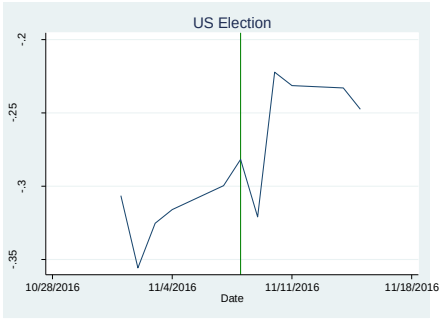
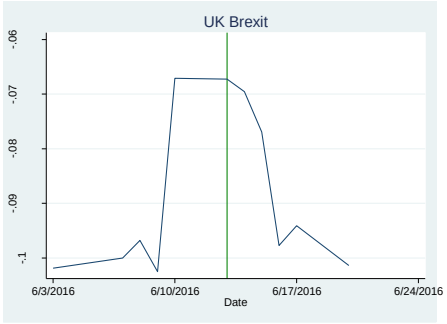
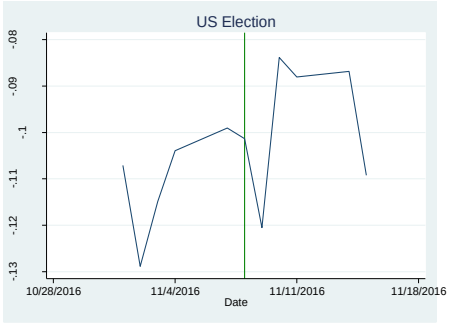
	UK Brexit	US Election	G2 Trade Conflict
IT			
Healthcare			
Industrial			

Table 2.18. KOSPI200 & Sub Indices Movement with 4 major events(2/3)

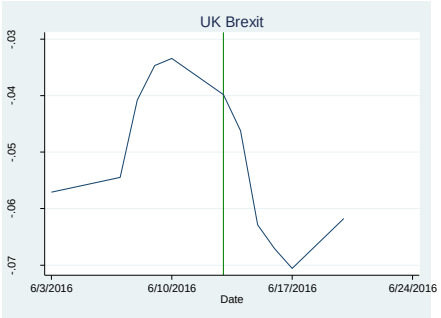
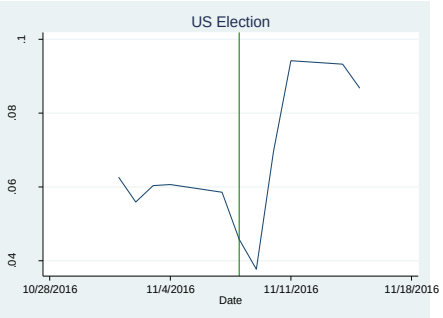
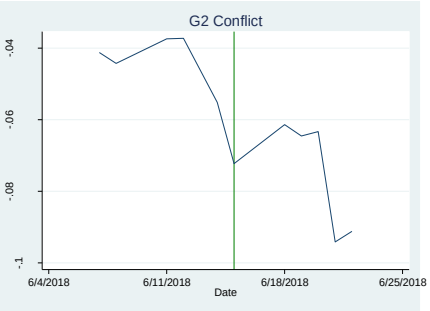
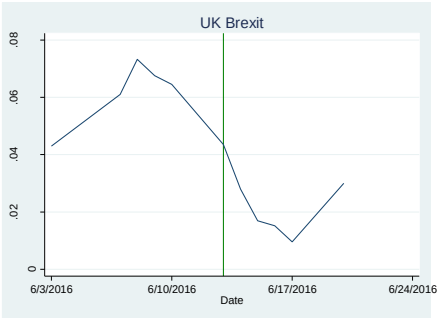
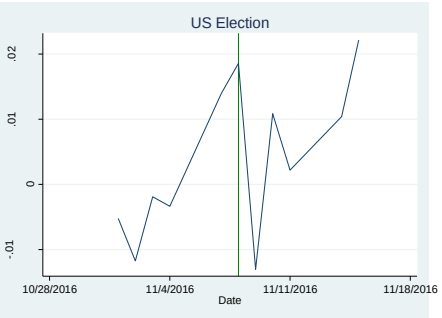
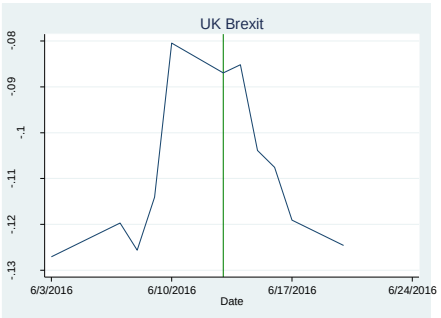
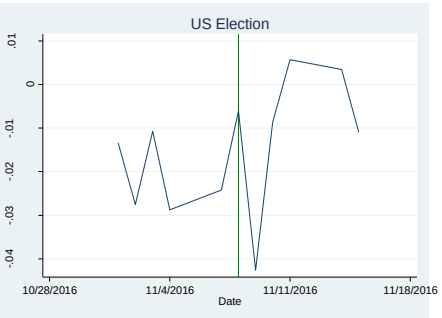
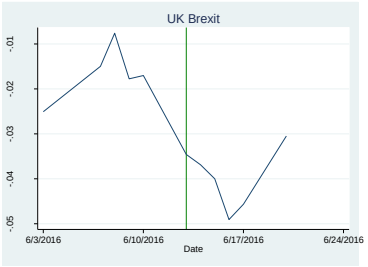
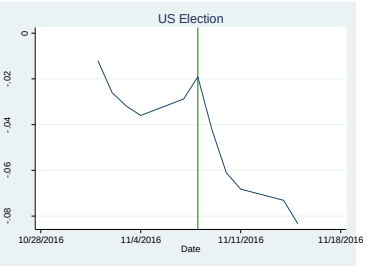
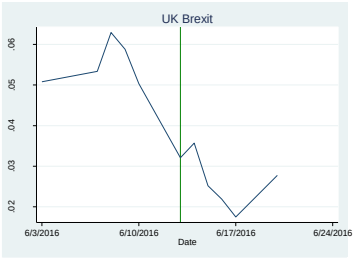
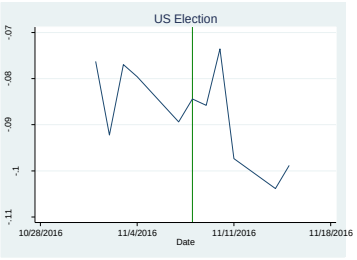
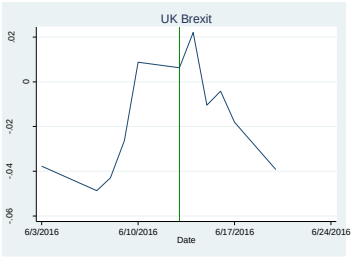
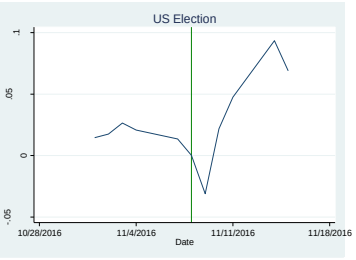
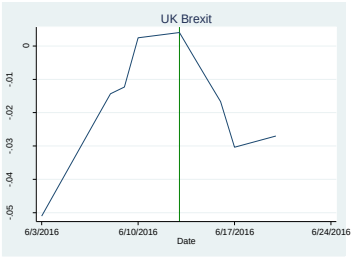
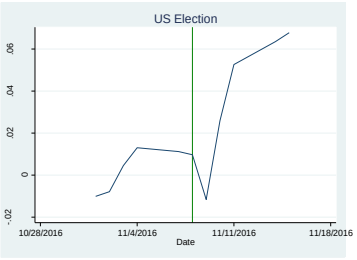
	UK Brexit	US Election	G2 Trade Conflict
Financial			
Engineering & Chemical			
Construction			

Table 2.18. KOSPI200 & Sub Indices Movement with 4 major events(3/3)

	UK Brexit	US Election	G2 Trade Conflict
Consumer Discretionary			
Consumer Staples			
Heavy Industry			
Steel & Material			

2.6. Conclusion

This study has investigated the impact of political events in global markets on emerging stock markets. The absolute value of the abnormal returns of the index were generally amplified just before and after at the actual event day. In addition, the average abnormal return during the observed event period tended to be amplified and varied depending on the degree to which individual countries and sectors were associated with the event.

Regarding the aggregate abnormal return of shocks, the industrial export-driven small economies showed relatively lower abnormalities compared to the BRICS countries, although the degree of impact differed based on political events. In the case of Korea and Turkey during the expansion of G2 trade conflicts, the abnormalities were the highest, while they were relatively smaller during Brexit and the US election. It is interesting that Korea showed a high beta tendency in the global market, but when there was a market shock, the absolute abnormal return was lower than other countries. Despite the high opening of the capital market, stable forex market and sound economic structure allowed the country to follow the global market flow, and that volatility has not been amplified compared to other emerging market.

The natural resource-driven economies of Brazil, Russia and Indonesia exhibited the highest abnormalities with respect to political shock. They reacted positively to Trump's victory in the US presidential election, while the G2 trade conflict created high-negative abnormalities. As large commodity exporters, their economic relationships with China and global economy are strong, and it negatively affects both countries.

Both India and China exhibited different movements although they are in the same group. Both have relatively low levels of financial market development and large portions of domestic economy demand, but they are based on different economic structures, Capitalism and Communism. In general, India showed lower abnormalities among the observation group as

expected, while China showed higher abnormalities to each shock. I guess the higher market openness, free competitive market system and industrial diversification in India made this distinction against China. India exhibited positive abnormalities in the case of Brexit and the US presidential election. In the case of the G2 trade conflict, China displayed negative abnormalities while India displayed positive abnormalities. In the tug-of-war between the US and China, the impacts were differentiated depending on which nation the individual country was closer to. This is because the relative negotiation power of the US against China was stronger at the beginning of the G2 conflicts. The interesting point is that in the case of China, there were some distinctions and differences from the trend that was seen across other emerging market samples. Specifically, it seemed that the gap between the Chinese market itself and the global market amplified volatilities by the short-term external shocks due to its under-developed financial market status.

The second major result is the movements of the subsectors in the KOSPI 200 indices. The results reflect the unique characteristics of the industries against external shocks. The export-driven sectors that were more cyclical and sensitive to global economic trends, such as the materials and industrial sectors, showed big headwinds and fluctuations during global political and economic shocks. Even in the same pro-cyclical sectors, those with a high domestic demand weight, such as financials and consumer discretionary were less affected by the global stock market, and they were also less affected by the political shock in advanced countries. In the case of U.S. presidential election, the negative abnormalities of the defensive sector expanded, while the positive abnormalities of the cyclical industry stood out amid expectations of an economic recovery. Market performance diverged according to each industry's structural or competitive relationship with the country in which the event occurred.

It can be confirmed from this study that the political events in global market had a significant impact on the increases in volatility of emerging markets. It has been observed that as

uncertainty escalated near the event date, volatility also increased, although the levels were different for each case. It is also meaningful that the level of abnormalities in the market could vary according to the individual country's situation, including such factors as its dependence on trade between countries, the degree of financial market opening, and the causes of the events. However, because the study did not analyze the stocks that the index constitutes, it could not fully conduct detailed cause-effect analysis on what political shocks mean in terms of individual companies. This might have revealed a more specific causal relationship and consequence of political shock for individual markets. In addition, for each event, it would have been better if this study could have provided more detailed information on how the foreign investors' actual investment flows changed during the event. It would also be helpful to further study how individual countries' financial market development contributes to coping with exogenous shocks. In this study, in Korea, where the financial market has developed, the abnormalities of exogenous shocks were low, and it would be meaningful to analyze the reasons based on more in-depth variables.

The political changes in developed countries lead to macroeconomic changes, which then lead to changes in terms of individual investment choices. In particular, the abundant liquidity of the global economy saved us from the global economic crisis, but this makes investors act sensitively to market uncertainty. This implies that the quick liquidation of assets or betting on those with lower expected returns made the market more volatile. In this process, a political uncertainty, although not a fundamental issue, provides investors with an excuse to change their investment positions rather than considering the overall economic cycle. This phenomenon is more prominent in emerging markets, where the market fundamentals are weaker.

Obviously, a country's independent political changes and shocks are no longer limited by national boundaries, and they have an impact on the global financial market. In other words,

under the global financial market, investors should continuously monitor and collect political and policy-related information as well as recognize its consequential impacts on their investment objects. Under the current low growth and low interest-rate market circumstance, policy elements are important investment decision-making factors, continuous research on political uncertainties, their macro-economic connections, and market responses to them are needed.

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- Bloomberg & IMF statistics : Countries economic profile
- KRX, KOSPI 200 Index & sub sectors data

CHAPTER THREE

REGIONAL FINANCIAL ARRANGEMENT: A SURVEY OF THE LITERATURE AND RECENT DEVELOPMENTS

ABSTRACT

Regional Financial Arrangements: A Survey of the Literature and Recent Developments

By

Wook Sohn & Woo Jin Chung

This article summarizes recent studies on regional financial arrangements (RFAs) and examines the role played by global multilaterals and RFAs in emerging crises. We also review the major RFAs with regard to their basic organizational structure, activities, legal framework, and lending facilities. Finally, we discuss the attributes needed for the sustainable development of RFAs and we look at how they can expand their role for economic cooperation in the associated regions.

CHAPTER 3. REGIONAL FINANCIAL ARRANGEMENTS: A SURVEY OF THE LITERATURE AND RECENT DEVELOPMENTS

3.1. Introduction

With significant globalization of the financial markets taking place during the past few decades, the level of regional cooperation between countries has grown, enabling countries to work together when handling fluctuations in the international financial markets. During the 2008 global financial crisis, in particular, the interconnectedness and interdependencies of global financial markets impacted both advanced and emerging economies. This affected both the monetary policies of individual countries and regional economic and monetary cooperation.

There are cases where regional cooperation has succeeded in overcoming a global financial crisis based on timely and flexible ways of supporting member countries' sudden liquidity problems. In particular, due to the increasing interdependence of financial markets and the complexity of financial products, the demand for more advanced ways of financial assistance has increased, both at the level of domestic policy and in terms of regional cooperation. Corresponding to the needs of changing global economies, major regional financial assistance networks have developed, via the strengthening of global and regional agreements, to prevent the risk of contagion from global financial crises as well as to guarantee global stability and sustainable economic development by promoting the coordination of policy actions.

This article investigates the role of global multilaterals in emerging crises and their limitations. It looks at the origin and motivating factors behind the formation of regional financial arrangements (RFAs), the way in which they differ from global multilaterals, and the relationship between them.

The following section discusses the background to the establishment of RFAs. The section reviews the function of global multilaterals in emerging crises and their limitations, focusing on the case of the International Monetary Fund (IMF). This section also introduces recent research into the development of global multilaterals and RFAs. In the overview section, we review the major RFAs with regard to their mission, basic organizational structure, framework, governance, and lending and support processes. In the case study section, we describe recent examples of RFAs, namely the roles of the European Stability Mechanism (ESM) and the Chiang Mai Initiative Multilateralization (CMIM) in the ASEAN + 3 countries (China, Japan, and Korea). Finally, in conclusion, we discuss the attributes required for the sustainable development of RFAs, and we look at ways to expand their role in furthering economic cooperation from a regional perspective.

3.2. Establishment of Regional Financial Arrangements (RFAs)

3.2.1. The Role of Global Multilaterals in Emerging Crises and Their Limitations

From a global perspective, the IMF has played a key role by taking responsibility for surveillance programs and lending activity in the global financial markets and international monetary system. The organization's role has been professionalized and systemized over time, based on experiences from different global financial crises and pressures from multilateral bodies. Lamberte and Morgan (2012) review the IMF's special objective in its crisis-fighting role for global member countries as the lender of last resort in efforts to combat national and regional systemic financial crises.

Marino and Volz (2012) discuss the limitations of the IMF's role due to the stigma effect of bailout plans and the political pressures on member countries to meet IMF qualification conditions for rescue loans. In the Asian financial crisis of the late 1990s, the IMF's limitations in providing adequate liquidity for countries requesting rescue loans were shown by its severe

conditionality and the political and economic intervention resulting from its strict surveillance program.

John and Knedlik (2011) and Marino and Volz (2012) examine recent reforms to the IMF's lending program, which include the new Flexible Credit Line (FCL) and the Precautionary Credit Line (PCL). These studies point out that due to political misgivings about approaching the fund and the anticipated requirements for huge foreign exchange reserves, many emerging-market countries tend to look for alternative funding instruments. From the political perspective, the risk of strengthening the influence of bilateral creditors can lead to political conflicts between the IMF and debtor and creditor countries. As the IMF fund has increased, creditor countries have tended to require deeper political consensus for voting shares and tougher political and economic reforms in debtor countries. Although these strict IMF requirements have enhanced the transparency of the lending process, the effectiveness and timeliness of capital injections can be another issue for debtors. The IMF inevitably maintains a strong rule-based lending process for these potential risks, but it needs to reconsider the effectiveness of currently existing programs for timeliness and conditionality in order to maximize the benefits of rescue funding and acceptance by debtor countries. A recent study by Fernandez-Arias and Levy-Yeyati (2012) shows that many emerging countries, faced with the IMF's inflexible attitude toward member countries, are developing self-insurance strategies by accumulating foreign reserves; this is another indicator of constraints that risk provoking further global imbalances.

In addition to the conditionality and requirements pressure associated with IMF lending, the IMF itself has limitations as the sole global crisis fighter both in its capital size and human resources. The IMF tripled its lending capacity to 750 billion US dollars, based on the G20 agreement made in April 2009, together with Special Drawing Rights, which amount to 250

billion dollars. To help prevent crises, the IMF has also implemented two additional lending facilities—the FCL and PCL—which provide access to emergency financing for member countries. However, the capital capacity available to the IMF is comparatively small considering the current level of global capital flows in emerging markets.

With regard to the organization's human resources, the IMF provides surveillance activity services to members to support and monitor its lending program. This requires the IMF to maintain a massive organizational structure: it is estimated that the IMF currently employs 2,400 people, half of whom are economists. The organization has nine functional departments, five region-specific departments (which cover 189 countries), and three supporting departments as well as other small offices all over the world. As the sole supervisory organization of the global financial market, its financing capacity and required resources are increasing. However, limitations remain in terms of covering, diagnosing, and delivering appropriate actions to member countries.

The Bank for International Settlements (BIS) is another important multilateral in terms of international monetary cooperation and surveillance. It supports central banks and other financial regulatory authorities by promoting monetary and economic stability, operating as a prime counterparty for central banks. In addition, it holds regular meetings to facilitate global financial decision-making among global central banks, with members across the spectrum of the international financial and supervisory community.1 Although the BIS does not offer surveillance programs or financing assistance, as with the IMF, it provides analysis for global monetary and financial issues as well as supplementing the roles of international organizations and central banks.

3.2.2. Global Multilaterals and RFAs

Volz (2012) discusses the importance of combined efforts between regional RFAs and other multilaterals, such as the IMF and BIS. In November 2010, G20 leaders requested G20 finance ministers and central bank governors to examine possible ways to strengthen the relationship between RFAs and the IMF and develop synergy for global financial markets. With participation from the European Union (EU) and ASEAN + 3 member countries, broad and nonbinding principles for cooperation were established. The G20 pointed out that the joint work with the IMF should not only consider the conditions and purposes of RFAs but also region-specific circumstances and characteristics.2 Based on this global consensus on the need for IMF cooperation, advanced and ongoing studies have been undertaken regarding the successful cooperation of these organizations. Lamberte and Morgan (2012) argue that the establishment of successful global financial safety nets (GFSNs) should include not only the IMF and RFAs but also members' central banks in the interests of technical stability and to handle country-specific issues during crises. They also emphasize coordination between the between IMF and RFAs in terms of sharing expertise, surveillance systems, and financing activities within regional countries. Destais (2014) provides an overview of the cooperation trends among global central banks following the 2008 financial crisis. He argues that currency swap agreements between countries in the same region have helped central banks to create a liquidity cushion that has matched the volatility of international capital flows. This has been very effective for emerging countries in helping to prevent short-term liquidity shortages and a credit crunch. These RFAs and GFSNs have been very important for emerging countries considering their relatively volatile market conditions. Eichengreen(2010) points out that, due to the IMF's limited funding scales, countries that are experiencing short-term liquidity deterioration could expect only a limited capital injection from the IMF. Kwack (2005) and Aizenman and Sun (2012) argue that by establishing global safety nets on a regional basis,

dependence on the IMF can be alleviated. Individual countries can also reduce the burden of the accumulation of foreign reserves by establishing a regional agreement, such as currency swaps or regional currency baskets for emerging liquidity crises, particularly among emerging countries. Essers and Cassimon(2015) have constructed a theoretical model of the optimal international reserve level for developing countries and the availability of contingent loans from a GFSN. In this study, an individual country's self-insurance strategy had meaningful substitution effects on shockcontingent loan availability from the GSFN, implying that an optimal foreign reserve level is demonstrably lower when low-income countries have substitutable regional or multilateral loans for contingent shocks. To ensure the practical effectiveness of contingent plans for global financial crises, it is essential that the IMF overcomes the aforementioned limitations and cooperates with self insurance strategies in individual countries. The IMF should also increase complementary funding sources for regional RFAs to ensure their sustainable growth as crisis-fighting multilaterals. McKay, Volz, and Wölfinger (2010) point out six specific preconditions for building a successful GSFN. The funding pool has to be big enough to meet prospective member countries' needs. The surveillance capacity is also important because creditor countries will contribute money only if they have reasonable grounds for a return and for the sustainability of regional cooperation. The speed of decision-making is essential: shocks to financial markets occur dramatically and immediately. Adequate liquidity support is crucial to prevent knock-on defaults in this complex financial era. The arrangement has to be perceived as legitimate, based on a clear consensus from member countries, because an RFA's actions must be accountable. In addition, information accessibility and high-quality expertise are important preconditions for the sustainability of RFAs. Finally, the ability to cooperate with multilaterals, such as the IMF, BIS, the World Bank, and others is important as it may be desirable to outsource the negotiation of conditionality. Eichengreen (2012) describes EU and IMF cooperation in the recent Greek

crisis. In this case, the IMF and the EU have tried to develop joint work to provide urgent assistance for troubled member countries. Although there are pros and cons, cooperation to date has been successful, based on good communications and a clear common understanding of the issues. Essentially, the degree of cooperation between multilaterals and RFAs can be controlled according to the purpose and circumstances under which the financial assistance is to be applied. Historically, the IMF has focused on crisis fighting roles by providing liquidities with strict policy conditionality attached (Broome 2010). This harshness toward member countries is one of the elements underlying the need for RFAs and their further development. When we look at the purpose of RFAs and the history and geopolitics of related member countries, it is difficult to demand radical adjustments of member countries as a precondition for emergency assistance. This leads RFAs to delegate surveillance and negotiation functions to multilaterals like the IMF. However, many regional countries still try to resolve problems within their own region. This can provoke conflict between how they place the onus for negotiating conditionality on their members and how they satisfy particular needs. There is also a need for transparent supervisory functions to underpin the organization and to allocate resources that are supplemented by a regional arrangement.

3.3. Overview of RFAs

The majority of RFAs aim to assist countries experiencing financial difficulties by establishing a financial support mechanism within a specific region, based on a reciprocal agreement or treaty. In use since the 1970s, the objectives, size, organizational structure, and framework of RFAs vary according to regional needs and interdependency levels (McKay, Volz, and Wölfinger(2010)). From the Asian financial crisis of the 1990s to the South American economic crisis in the early 2000s, the need for a greater level of regional integration and cooperation has increased, especially in emerging markets.

Studies have been conducted into the formation and purpose of RFAs and their progress in regional cooperation. Lamberte and Morgan (2012) examine the origins of existing RFAs and how they developed from emerging-market financial crises in the late 1990s and early 2000s. There are currently nine RFAs in six regional areas (four in Europe); they comprise the Arab Monetary Fund (AMF), the Latin American Reserve Fund (FLAR), the North America Framework Agreement (NAFA), the Balance of Payments Assistance Facility (BOP), the European Financial Stabilization Mechanism (EFSM), the European Financial Stability Facility (EFSF), the ESM, the Eurasian Economic Community Anti-Crisis Fund (ACF), and the CMIM. Table 1 summarizes the member countries, legal basis, institutional frameworks, objectives, financing methods, funding structures, and the resources of these nine RFAs.

The funding size and financing methods differ based on the regional location and organizational objectives. The legal base is also an important factor in determining the effectiveness and authority of RFAs. Most take the form of reciprocal agreements between member countries; however, the BOP, ESM, and ACF are based on the legal form of a treaty. All the existing RFAs have common ground with regard to short-term liquidity supply for balance of payment difficulties, and they promote the stability of foreign exchange reserves. The level of regional integration depends on the history of the RFA and its political status within a region. RFAs provide economic and political intervention and consultation programs for member countries.

Miyoshi et al. (2013) point out that the type of financial arrangement and funding process can be differentiated based on their organizational framework and governance structure. Table 2 depicts the lending instruments, IMF engagement, governance structure, and recent activities of RFAs.

The AMF, ACF, and RFAs in the EU provide lending programs based on capital injections and accumulated reserves from member countries, with particular conditions. These RFAs have a

broader purpose, not only providing financial support but also promoting policy coordination and economic reforms for better development and cooperation among member countries. As seen in the recent case of Greece, the IMF, European Central Bank (ECB), and European Commission (EC) not only injected financial assistance but also imposed a wide range of conditions for restructuring the economy in order to ensure fundamental economic recovery and completion of the bailout plan. On the other hand, the CMIM, FLAR, and NAFA have the more solid purpose of stabilizing member countries' financial distress by providing foreign exchange swaps and short-term liquidity according to a proactive agreement between member countries.

In terms of lending capacity and foreign reserve accumulation, RFAs in the EU are the largest, followed by the CMIM, AMF, and FLAR. Only the ESM has a surveillance function, which can affect a country's actual policy. The AMF, ACF, and FLAR provide coordination activities for political cooperation between member countries. Regarding the IMF's involvement during the lending procedure, most RFAs (with the exception of the ESM), do not have a significant relationship or cooperation structure with the IMF. This is especially the case in emerging countries, where great weight is placed on foreign exchange reserve stability. There is greater economic and political interdependence between member countries in the ESM (Dullien, Fritz, and Mühlich 2013), which also has a keen relationship with the IMF in terms of decision-making procedures, surveillance issues, and post-monitoring activities for member countries. This relationship and coordination between the IMF and ESM has contributed to the establishment of a transparent lending process, surveillance activities for structural reforms and recapitalization and post-program monitoring for loan payment completion.

As RFAs develop their organizational structure, their legal base and governance structure tends to be systemized with a stronger legal binding. With the exception of the NAFA, most RFAs are recognized under international law as independent multilaterals. In particular, the BOP and

EFS operate under EU Council Regulations, which have a legally binding effect among EU countries under both domestic and international laws.

RFAs tend to include an independent decision-making committee, such as a board of governors at the top; most are representatives of member countries' financial authorities. Most decisions are made via a voting process. Based on the objective of RFAs and their assisting processes, voting power in the FLAR is based on one vote for each country, no matter the amount contributed for the reserve. However, the AMF and ESM provide multiple voting rights according to the amount of capital a country injects and its expected reserve contribution.

Table 3.1. Major RFAs and Basic Structure

Arrangement	Member Countries					
	Establishment	Legal basis	Institutional framework	Objectives	Type	Resource size and funding structure
Arab Monetary Fund (AMF)	22 member countries: Jordan, United Arab Emirates, Bahrain, Tunisia, Algeria, Djibouti, Saudi Arabia, Sudan, Syria, Somalia, Iraq, Oman, Palestine, Qatar, Kuwait, Lebanon, Libya, Egypt, Morocco, Mauritania, Yemen, Comoros					
	Founded in 1976	Agreement	- Legal entity of public international law. - Decision process: absolute majority of voting power.	- Support BoP disequilibria and promote FX stability, eliminate payment and trade restrictions. - Promote development of capital markets and develop policy coordination.	Loans drawn from pooled member resources; supplemented by market borrowing.	Authorized capital of US $5.5 billion. US $2.1 billion loans outstanding at end of 2013.
Latin American Reserve Fund (FLAR)	Uruguay, Bolivia, Colombia, Costa Rica, Peru, Venezuela					
	Created in 1991 - succeeding the Andean Reserve Fund (FAR)	Agreement	- Legal entity of public international law. - Decision made by 3/4 qualified majorities. Board approval not required for short and contingent credits.	- Support BoP disequilibria and promote FX stability. - Promote development of capital markets and develop harmonized policy coordination.	Loans drawn from pooled member resources); supplemented by market borrowing.	Subscribed capital of US $3.2 billion and paid in US $2.3billion; US $0.45 billion loans outstanding at end of 2013.
North America Framework Agreement (NAFA)	Canada, Mexico, US					
	Established in 1994	Agreement	No legal entity or independent secretariat.	Provide short-term liquidity support for FX reserve stability.	Bilateral currency swap arrangements.	US $9 billion

Note: Initial contents are taken from the table of Miyoshi et al. (2013); we have added and updated some information from RFA website sources.

Table 3.1. Major RFAs and Basic Structure (Continued)

Arrangement	Member Countries					
	Establishment	Legal basis	Institutional frameworks	Objectives	Type	Resource size and funding structure
RFAs in the European Union						
1) Balance of Payments Assistance Facility	Restricted EU member countries that do not use the Euro: Bulgaria, Czech Republic, Denmark, Latvia, Lithuania, Hungary, Poland, Romania, Sweden, the United Kingdom					
	Established in 2002 for EU Member States outside the Euro area.	Treaty	- Council Regulation No.332/2002. - Decision process: made by qualified majority of the Council.	- Support BoP disequilibria, promote FX reserve stability. - Promote adoption of economic policy measures to prevent the occurrence of an acute BoP crisis.	Lending facility financed by market borrowing by the EU.	Max. lending capacity of €50 billion. Financed through capital markets using the credit of the EU and lent under the same conditions under which it was borrowed (back-to-back loans).
2) European Financial Stabilization Mechanism (EFSM)	All EU members: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, the United Kingdom					
	Established in 2010	Agreement	- Council Regulation No.407/2010. - Decision process: made by qualified majority of the Council.	- Support BoP disequilibria, promote FX reserve stability. - Promote adoption of economic policy measures to prevent the occurrence of an acute BoP crisis (only applicable to all EU member states).	Lending facility financed by market borrowing by the EU.	Max lending capacity of €60 billion. Financed through capital markets using the credit of the EU.

Table 3.1. Major RFAs and Basic Structure (Continued)

Arrangement	Member Countries					
	Establishment	Legal basis	Institutional frameworks	Objectives	Type	Resource size and funding structure
3) European Financial Stability Facility (EFSF)	All Euro area member states: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Slovenia, Spain					
	Established in May 2010 as a temporary mechanism to support the Euro area until June 2013.	Agreement	Private company set up under Luxembourg Law.	Preserve financial stability by providing temporary stability support.	Lending and other financing facility financed by market borrowing.	Max lending capacity of €440 billion. Borrowings are backed by guarantees of Euro-area MS based on their share in paid-up capital of the ECB.
4) European Stability Mechanism (ESM)	Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovak Republic, Slovenia, Spain. The ESM is open to EU member states outside the Euro area for ad hoc participation in financial assistance operations for Euro-area member states.					
	Inaugurated in October 2012 as a permanent crisis resolution mechanism for financial stability in the Euro area.	Treaty	Intergovernmental institution under international law. Board of Governors is made up of the Finance Ministers of Euro-area member states.	Provide financial assistance to member countries experiencing or threatened by financing difficulties.	Loan and other financing facility drawn from pooled member resources (via capital contributions), supplemented by market borrowing.	Max lending capacity of €500 billion (total lending capacity of EFSF/ESM is €700 billion) against capital contribution of €700 billion. €80 billion is paid in capital, in 5 equal installments. €620 callable capital from 17 Euro-area member states.

Table 3.1. Major RFAs and Basic Structure (Continued)

Arrangement	Member Countries					
	Establishment	Legal basis	Institutional frameworks	Objectives	Type	Resource size and funding structure
Eurasian Economic Community (EurAsEC) Anti-Crisis Fund (ACF)	Armenia, Belarus, Kazakhstan, Kyrgyz Republic, Russian Federation, and Tajikistan					
	Established in 2009	Treaty	ACF is treaty-based but is not a legal entity. ACF Council consists of ministers of finance of member states. Eurasian Development Bank manages the capital of ACF.	- Supports Budgets and BoP disequilibria and promotes FX reserve stability. - Assists the implement of large investment projects.	Loans drawn from pooled member resources (via budget contribution).	Capital contributions from member states totaling US $8.5 billion.
Chiang Mai Initiative Multilateralization (CMIM)	Brunei Darussalam, Cambodia, China, Indonesia, Japan, Republic of Korea, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam					
	Established in March 2010. The CMI was originally established in May 2000 as a network of bilateral swap arrangements.	Agreement	Based on a contract called "The CMI Multilateralization Agreement." not a legal entity, the ASEAN+3 Macroeconomic Research Office (AMRO) was established as a company under Singaporean law. Lending decisions are made by 2/3 qualified majority of the voting power.	-Provides short-term liquidity for BoP difficulties based on supplement of the existing multilateral financing arrangements.	USD-Local currency swap arrangements among ASEAN+3 countries (13) plus HKMA.	US $240 billion from 2012.

Table 3.2. Major RFAs' organizational framework and activities

<table>
<tr><th>Arrangement</th><th>Lending instruments</th><th>IMF engagement</th><th>Governance</th><th>Recent activities</th></tr>
<tr><td colspan="5">RFAs in the European Union</td></tr>
<tr><td>1) Balance of Payments Assistance Facility</td><td rowspan="2">Loans and appropriate financing facility. Can be used for precautionary financing. Amount, duration and other terms are decided by the Council.</td><td>No formal link to fund-supported program but organized jointly in recent cases.</td><td rowspan="2">Financial assistance will be granted by a decision by the Council, acting by a qualified majority on a proposal from the EC.</td><td>-</td></tr>
<tr><td>2) European Financial Stabilization Mechanism (EFSM)</td><td>The EFSM Regulations state that its activation will be in the context of joint EU/IMF support.</td><td>Two joint EU/IMF-supported programs, in Ireland and Portugal, have been approved to date for a total financial assistance of €163 billion, of which €48.5 billion is under the EFSM.</td></tr>
<tr><td>3) European Financial Stability Facility (EFSF)</td><td rowspan="2">(i) Loans to member states in financial difficulties; (ii) intervention in debt primary and secondary markets; (iii) precautionary assistance; (iv) loans to governments for bank recapitalization.</td><td>The Framework Agreement envisages that financial support shall be provided in conjunction with the IMF.</td><td>The EFSF is a société anonyme set up under Luxembourg law. Key decisions under the EFSF Framework Agreement are reserved to Euro-area member countries.</td><td></td></tr>
<tr><td>4) European Stability Mechanism (ESM)</td><td>A Euro-area member state requesting financial assistance from the ESM.</td><td>Key decisions made by the Board of Governors consisting of the finance ministers of the Euro-area member countries. Proportional voting rights based on the number of ESM shares.</td><td>- Financial assistance to stabilize the Cyprus crisis by providing €10 billion from 2013 to 2016.
- Financial assistance to recapitalize the banking sector in Spain from 2010 to 2013. The total committed amount was €41.33 billion.</td></tr>
</table>

Note: Initial contents are taken from the table of Miyoshi et al. (2013); we have added and updated some information from RFA website sources

Table 3.2. Major RFAs' organizational framework and activities (Continued)

Arrangement	Lending instruments	IMF engagement	Governance	Recent activities
Eurasian Economic Community (EurAsEC) Anti-Crisis Fund (ACF)	(i) Financial credits are extended for central governments to support stabilization programs; (ii) investment loans are available to governments and companies implementing large investment projects of regional integration as well as large national investment projects.	No explicit role for the IMF.	The ACF is not a legal entity or an organization. The ACF Council, top decision-making body, consists of the ministers of finance of the member states. The Eurasian Development Bank manages the resources of the ACF, and its ACF Manager conducts evaluation of programs of requesting members.	The ACF approved the Financial Credits of US $70 million to Tajikistan in August 2010 and US $3 billion to Belarus in June 2011.
Chiang Mai Initiative Multilateralization (CMIM)	90-day swaps that can be renewed up to 7 times (IMF linked portion - max 3 years, IMF delinked portion - max 2 years). In addition, CMIM Precautionary Line was introduced in 2014.	Increased the IMF de-linked portion from 20% to 30% in 2014.	Decisions on drawings are made by a 2/3 majority at the executive level decision-making body consisting of deputy-level representatives of the ASEAN+3 finance ministries and central banks and the Monetary Authority of Hong Kong SAR. The voting power is distributed to members according to the amount of contribution, supplemented by basic votes allocated equally.	-

3.4. Recent Case Studies: The European Stability Mechanism (ESM) and the Chiang Mai Initiative Multilateralization (CMIM)

Since the 2008 financial crisis, the financial assistance modalities and policy interventions of RFAs have expanded. They now go beyond mere insurance of liquidity and foreign currency management to encompass more specialized modalities and objectives aimed at establishing overall market stability. As the objectives of RFAs have broadened to include regional market stabilization, the size and scope of their assistance has increased to cover not only national governments but also national industries (or the entire private sector) upon request of member countries. According to macro conditions and geopolitical interests among member countries, RFAs have faced different development paths and constraints.

The policies of the ESM offer a representative example of this new approach. Upon receiving an assistance request from a member country, the ESM reviews the nature and objectives of the bailout before deciding on the type and extent of assistance in coordination with the IMF. The ESM then provides loans or issue notes to solicit financing from the market. In addition, after providing financial assistance, the ESM runs a surveillance program to monitor the need for additional assistance and to ensure that loans are repaid.

The 2008 crisis in Spain offers an example of an RFA providing assistance to the private sector rather than to a national government. In this instance, after the crash in the US real estate market triggered a global financial crisis (leading to an increased liquidity demand in the financial markets and causing solvency problems for private banks), the Spanish government requested a 100 billion euro loan from the EU in 2010. The EFSF and ESM provided the Fund for Orderly Bank Restructuring (FROB), a Spanish government agency, with 39.47 billion euros in December 2012, followed by 1.86 billion euros in the form of floating rate notes in 2013. The Spanish government then channeled this money to local private banks. After these loans were

provided, the ESM announced in December 2013 that the financial assistance program for Spain had been completed.

During this bailout program, the ESM also helped general capital market adjustment and stabilization as the yield on Spanish 10-year bonds fell from 8 percent in early 2012 to 4 percent by the end of 2013. Spain will start repaying the loans in 2022 and aims to complete repayment by 2027. During this period, Spain will remain within the monitoring program of the ESM and IMF, who will keep a close watch on the economic situation and repayment capacity of the country.

The situation in Greece, on the other hand, serves as an example of an RFA providing assistance directly to a national government. Faced with a worsening economic situation and increasing national debt after the 2008 financial crisis, Greece applied to the EU and IMF for bailouts in May 2010. The EU and IMF provided initial packages of financial assistance worth 80 billion euros and 30 billion euros, respectively. However, the austerity measures demanded by the EU and IMF ended in failure due to strong resistance from the Greek people. In October 2011, the EU decided to write off 53.5 percent of Greek bonds held by private investors and provided a second bailout, which totaled 130 billion euros. In July 2015, Greece failed to make payments on the IMF loan. This failure signaled a possible national default.

However, after negotiations with the troika of the IMF, ECB, and EC, Greece agreed to privatize state assets worth 50 billion euros, to reform its banks and public institutions, and to implement austerity measures in return for additional assistance of 82–86 billion euros and an extension of repayment dates. In this case, because the bailout is contingent upon policy reform, intervention by the IMF and EU was inevitable. In addition, given the uncertainty of loan repayment by Greece, the member countries' trust, faith, and regional ties—preconditions for the continued existence of an RFA —may be undermined. In other words, although this RFA was created to overcome the shortcomings of the IMF, given the fundamental principle of good

faith among member states and the limits of political and economic interventions, Greece's success or failure in this crisis will be an important cornerstone for assessing the efforts made by the EU and the ESM, and for the future development of RFAs.

In the case of Spain, problems arose from bad bank loan losses in the commercial sector, not from the public sector. This led to the spread of contagion risk and political measures were limited, whereas the fiscal crisis in Greece was continuously affected by developments in the Eurozone. The troika had to implement actual bailout plan conditions and intervene in Greek politics, both intentionally and unintentionally. We cannot ignore the possibility that the Greek problem derives from a growing economic gap between Eurozone countries, and therefore also threatens the fundamental union of the Eurozone community. Although both cases have contributed to the financial crisis and economic depression in the Eurozone, the two approaches and corresponding solutions vary depending on the essence of the problem and the risk evaluation. In addition, the risks from financial companies' bad loan problems in southern Europe in 2009 were transferred to creditor markets in EU countries. This will continue to pose potential problems in the EU until the Eurozone returns to a normal growth path. From this case, we can infer that the fundamental condition of an RFA is not only the regional alliance and dedication of member countries but also its professional risk assessment capacity, as shown by the ongoing management of bailout plans to prevent contagion risk within member countries.

The example of the CMIM is different from the ESM as its member countries retain their own monetary policy tools such as currencies and independent central banks. In addition, many of the member countries belong to the emerging and mid-developed economy group. Unlike the case with the ESM, member countries of the CMIM have different currency schemes and political backgrounds. There are limits regarding the policy approaches and mutual assistance available to reflect the economic benefits of each member country. Due to these limitations,

the involvement and political intervention scope of the CMIM can only be ancillary when compared with the ESM.

This RFA has been nurtured by Asian countries since 2000. The existing Chiang Mai Initiative (CMI) was recently extended into the CMIM by doubling its funding capacity, implementing a precautionary line (CMIM-PL), and increasing the portion independent of the IMF to 30% in total contributions. Under former CMI status, member countries could gain assistance with liquidity problems under bilateral swap agreements. However, the member countries did not apply the program due to the IMF stigma effect and limited funding size. Indeed, when the global financial crisis hit the Asian market in 2009, Korean and Indonesian currency market volatility increased to such an extent that it became a potential threat to maintaining stable foreign exchange reserve levels. As a result, both countries chose to make direct currency swap agreements with their counterparties' central banks rather than applying a CMI program. As the expected liquidity risk amount was relatively small and it was more a precautionary provision than an actual funding request under crisis conditions, the CMI was not utilized by member countries at that time.

Since the establishment of CMIM, ASEAN + 3 countries plan to expand its functionality both by offering liquidity provision under crisis and by enhancing a multilateral swap network for efficient trade between member countries by maintaining emerging currency stability in the private sector. Due to this enhancement, cooperation between central banks and the CMIM organization has become a key success factor of the scheme. The ASEAN +3 Macroeconomic Research Office (AMRO), the surveillance unit of the ASEAN + 3 countries, was launched in 2015. The AMRO will monitor and analyze regional economies and deliver appropriate policy measures and remedial actions to member countries of the CMIM. By establishing its own regional surveillance organization, it is expected that the CMIM itself and its member countries will take independent policy decisions and apply the program more flexibly. In this way, the

CMIM will be able to strengthen the Crisis Resolution Mechanism (CRM) systematically as well as introducing a Crisis Prevention Function (CPF). The AMRO's CRM activities include monitoring the IMF delinked portion of CMIM financing and overall CMIM activities with regard to the assets and loans applied. In the case of the CPF, it is intended to establish a unified crisis prevention facility to promote more flexible and efficient crisis prevention activities for member countries. This will be done by setting up qualification standards for requesting countries and by giving discretion to the executive-level decision-making body.

To date, RFAs have been more focused on short-term liquidity provision support among regional members. However, a higher level of involvement in public policy and the private sector is required in this era of financial globalization. Due to the development of financial markets and greater trade and economic interdependencies under globalization, the importance of RFAs and their relation to fiscal and monetary policy has grown. As we learn from the Eurozone cases, advanced forms of RFAs, like the ESM, perform risk management roles for the regional group as well as promoting regional cooperation for sustainable growth within a region. In addition, we learn from the CMIM case that RFAs are evolving both through cooperation with the IMF and by establishing independent and systemized facilities throughout a region. Since 2009, monetary policy and currency competencies have dominated national market growth. The role of the RFA and its competitiveness affect both national and regional levels. To improve performance and sustainability, RFAs should develop and strengthen their economic and political capability, and their fundamental systems, based on their organizational goals and the interests of their member countries.

3.5. Conclusion

Crises stemming from financial globalization and development have raised the need for countries to respond to crises in a more prompt and efficient manner. One country's financial crisis is no longer limited within the county but spreads out to the region and to counterparties in the global market. As we witnessed with the Lehman Brothers case in 2009, the crisis spread dramatically across the US, Europe, and the global market, leading to a global financial crisis. With potential risks continuing in southern Europe, we cannot be fully confident that the crisis has yet been overcome. In this era of financial globalization, the role of global multilateral organizations such as the IMF and BIS has become more important. These multilaterals have strengthened their capacity to deal with crises and requests for help. However, due to the stigma effect associated with the IMF and its limited financing and staff resources, developing countries have become reluctant to seek IMF support. With its current funding volume and capacity, it has also become more difficult for the IMF to deploy prompt and efficient support for countries around the world.

For these reasons, led by the emerging markets, RFAs have now been set up to provide more efficient and flexible support in cases of temporary liquidity or financial market crisis within a region. In line with this effort, the G20 has emphasized the importance of coordination among multilaterals, the IMF, BIS, and central banks across the world.

Through a review of individual RFAs, we have examined the basic structure and organizational framework of nine RFAs. Most active RFAs have authority in accordance with international law and have established a cooperative system through voluntary funding efforts in their respective regions. Currently, the ESM in the EU seems to have the most advanced form in that it has achieved regional integration, supports member countries, influences the financial policies of member countries, and advocates for financial market reform. In particular, it has been successful in working closely with the IMF. The AMF and ACF are cooperating in a

similar way with large-scale joint projects or funding support within the region. In comparison, the NAFA and CMIM have a relatively limited scope of objectives and areas of support; however, they are gradually expanding their support.

The growth of RFAs has helped to reduce the costs for developing countries to maintain foreign exchange reserves and overcome temporary financial distress without a huge cost burden. They also offer timely financial support. In addition, RFAs can be more flexible in facilitating crisis resolution and strengthening borrowing countries' competitiveness, as they can adjust conditionality to reflect the borrowing country's economic and political circumstances. This is in complete contrast to the stringent sanctions associated with bailout packages imposed on Asian countries by the IMF during the Asian financial crisis.

For the successful operation of RFAs, researchers emphasize the need for a sufficient and stable funding structure. In addition, they argue that RFAs need a surveillance capacity to ensure a sufficient liquidity supply and smooth repayment. The ability for swift decision-making and a firm legal basis for the organization are also considered imperative. Most importantly, it is critical to cooperate with multilateral institutions, such as the IMF and BIS, in order to absorb their know how in surveillance programs and risk management methods, to ensure objectivity in negotiations for conditionality, and to provide an ongoing program for member countries until the applicants actually overcome the crisis. As we observe in the ESM case, close cooperation with the IMF program has enabled the RFA to provide appropriate assistance to member countries with clear conditionality and surveillance. However, ongoing risk management and monitoring issues remain and will not dissipate until the economies of applicant countries are back on track. In the case of the CMIM, we see how RFA development can be based on the different interests of member countries. The CMIM tends to place greater emphasis on crisis prevention and looks to promote economic efficiency within the region by utilizing the currency swaps network in the private sector. These RFA functions can be

influenced by the regional interests of member countries and macropolitical conditions. It is also important to note that financial agreements between countries should be based on an internationally agreed set of principles to ensure a fairer and more efficient exploitation of this instrument for higher transparency and longer lasting competencies.

RFAs are in varying stages of development and will face many challenges in the future such as enhancing transparency and adjusting voting rights and governance structure. Close cooperation with multilateral institutions such as the IMF helps RFAs to become more systematic and efficient. Through such cooperation, they can accumulate know-how and specialties to meet their fundamental goals, reflecting the specific needs of the region. As observed in previous sections, although RFAs have shown different approaches and development goals to date, the important common ground of their existence is that they promote the crisis-fighting function and pursue the stability of regional economies by cooperation between member countries. In addition, RFAs tend to use their own discretion, providing some independence from the IMF in delivering diversified and flexible ways for assistance. To achieve further sustainable growth for themselves and within the region, RFAs should improve their fundamental purpose of crisis fighting as well as developing a strategic expansion of their role to meet regional interests, reflecting macroconditions and different political agendas.

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