

With Regard to Local Contents Rule (Non-tariff Barriers to Trade): After Announcing the Shanghai-Hong Kong Stock Connect, is the Chinese Capital Market Suitable for Korean Investors?*

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Abstract

Purpose – As the U.S.-China trade war has become considerably worse, the Chinese government is considering applying non-tariff barriers to trade, especially local contents rule. The main purpose of this research is to check whether it is suitable for Korean investors to invest in the current Chinese capital market.

Design/methodology – In order to check the stability of the recent Chinese capital market, we investigated the behavior of foreign equity investment (including Korean equity investment) in the Chinese capital market after China announced the Shanghai-Hong Kong Stock Connect (SH-HK Connect). In this paper, we researched whether international portfolio investment would or would not contribute to an increase the volatility of an emerging market's stock market (Chinese capital market) when foreign investors make investment decisions based on the objective of short-term gains by rushing into countries whose markets are booming and fleeing from countries whose markets are falling.

Findings – The empirical results indicate that foreign investors show strong, negative feedback trading behavior with regard to the stock index of the Shanghai Stock Exchange (SSE), and when the performance of foreign investors in the Chinese stock market was fairly good. Also, we found evidence that the behavior of foreign investors significantly decreased volatility in SSE stock returns. Consequently, the SH-HK Connect brought on a win-win effect for both the Chinese capital market and foreign investors.

Originality/value – It appeared that the Chinese capital market was very suitable for Korean investors after the China's declaration of the SH-HK Connect. However, the win-win effect was brought on by the Chinese government's aggressive capital control but the capital controls could possibly cause financial turmoil in the Chinese capital market. Therefore, Chinese reform in industrial structure and the financial sector should keep pace with suitable capital control policies.

Keywords: Capital Market Openness, Chinese Economy, Foreign Investor, Shanghai-Hong Kong Stock Connect, Volatility

JEL Classifications: F21, G11, G15, Q37

1. Introduction

The latest tit-for-tat trade tariff increases by China and the U.S. are pushing the global economy closer to the tipping point of a severe slowdown. In 2018, U.S. import goods from

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China totaled \$540 billion, and China's import goods from the U.S. totaled \$120 billion. Currently, the total of U.S. tariffs applied exclusively to Chinese goods was \$250 billion. The result is that the U.S. is able to charge additional tariffs on \$290 billion in Chinese goods. However, since the total of Chinese tariffs applied exclusively to U.S. goods was \$110 billion, China could only charge additional tariffs on the value of \$10 billion in U.S. goods. Therefore, the Chinese government has considered the application of non-tariff barriers to trade, especially use of the local contents rule.

The local contents rule consists of policies imposed by governments that require firms to use domestically-manufactured goods or supplied services in order to operate in an economy. In other words, in order to perform business in China, foreign companies must use the Chinese factors of production, such as use of Chinese land, Chinese labor, and Chinese capital. The Chinese government tries to achieve a variety of policy objectives that target employment, industrial, and technological development goals. Therefore, the research to check the stability of Chinese labor, land, and the capital market should be assessed prior to future business opportunities in China, such as the One Belt One Road (OBOR) Project. OBOR is an initiative to build a large market that is unified among 152 member nations to develop a pool of talent to work, and to build capital inflow as well as a technology database. Belt refers to overland routes, which leads to China's desire to build an infrastructure. OBOR and the SH-HK Connect provided opportunity for growth and investment. First, we decided to research whether the Chinese capital market was suitable for investment by Korean investors after declaring the SH-HK Connect that worked to relax restrictions and facilitate the repair of the historical split in the Chinese Stock Market between its market's shares between international and local investors.

2. Research Questions

A number of studies have recently focused on the idea that international portfolio investment has destabilized emerging markets, leading to a recent rash of financial dilemmas. International portfolio investments could contribute to an increase in the volatility of emerging markets when foreign investors make investment decisions based on the objective of making short-term gains by rushing into countries whose markets are booming and fleeing from countries whose markets are falling.

This is an important issue. For China, in particular, this was a key factor that accelerated a dramatic change after they announced the SH-HK Connect. Since China embraced an open and liberalized equity market for foreign investors after announcing their participation in the SH-HK Connect, a serious question has been raised about the contingency of foreign investors being a source of instability if they were to rush out of the market due to an investor loss of confidence and its companion, the risk of shock. Another concern is that if foreigners increase market volatility it will affect domestic investors that tend to "lose-out" to foreign investors in a vulnerable emerging market because foreigners have more sophisticated, investment technologies.

The questions studied in this paper are: (1) whether foreign equity investments (including Korean equity investment) are relatively more reversible than domestic investment during the research term and (2) whether foreign equity investors tend to increase the volatility of the market more domestic investors. This research is a comparative analysis of the different roles and impact of foreign equity investments on market volatility in a state-lead capital market.

In addition, we will assess whether international portfolio investment would or would not contribute to an increase in the volatility of an emerging market (Chinese capital market)

when foreign investors make investment decisions based on the objective of short-term gains via their rush into countries whose markets are booming and fleeing from countries whose markets are falling.

A check was conducted to ascertain whether foreign investors in the SSE increased the volatility of daily stock returns more than domestic investors in the Hong Kong Stock Exchange (HKEX) after becoming part of SH-HK Connect. In order to study the interrelationship between variables, the empirical procedure began with studying dynamic relationships between interested variables. In order to study the behavior of equity flows and their effect on the stock indexes of SSE and HKEX, vector autoregression (VARs) was employed to investigate the dynamic relationship between daily percentage changes in volatility of the stock indexes and the daily percent changes in net buy ratio (NBR) for foreign (Hong Kong and international investors) and domestic (Chinese) investors. Second, the Granger-causality was applied to explore the casual relationship in each of the variable systems. Lastly, the plotted impulse response function of the variables system was also employed.

3. Background

Shanghai-Hong Kong Stock Connect is the pilot program that allows mutual market access between the Shanghai and Hong Kong stock exchange. The stock connect was launched on November 17, 2014. The SH-HK Connect is the first controllable and expandable channel for mutual market access between Mainland China and Hong Kong by a broad range of investors. Qualified investors in Mainland China can purchase eligible shares listed on the HKEX Exchange via their own local broker (Southbound investment: HuGooTong), as can Hong Kong and international investors in order to purchase eligible Shanghai-listed shares (Northbound: KangGooTong).

The northbound trading link provides direct access to a Shanghai A-share market to both institutional and individual Hong Kong and overseas investors. Previously, foreign investment in this market was restricted to foreign institutional investors qualifying under the Qualified Foreign Institutional Investor (QFII) and Renminbi Qualified Foreign Institutional Investor (RQFII) programs.

The southbound link for trading Hong Kong listed shares is open to Mainland Chinese institutional investors and individual investors with at least an RMB 500,000 securities and cash account. Chinese investors could previously only access Hong Kong's equity market through the Qualified Domestic Institutional Investor (QDII) scheme.

Northbound and southbound trading will be subject to separate sets of aggregate and daily quotas at launch. The northbound aggregate quota is set at RMB 300 billion, while the southbound aggregate quota is set at RMB 250 billion. The quota is calculated on a netting basis at the end of each trading day. The daily quota limits the maximum net buy value of cross-boundary trades under the scheme. The northbound daily quota is set at RMB 13 billion while southbound daily quota is set at RMB 10.5 billion.

4. Literature Review

Zhang and Jaffry (2015) investigated the influence of the SH-HK Connect on a single, minute intraday high frequency volatility spillover between the two stock markets via the application of the BEKK-GARCH model. Their findings demonstrate that strong bi-volatility spillover exists in the connected period (November 17, 2014~December 17, 2014).

As Zhang and Jaffry (2015) discovered, Huo and Ahmed (2017) found that a high frequency analysis of minute-by-minute data suggested that the SH-HK Connect significantly strengthened volatility spillover between the two markets. However, it was not surprising because their sample period ended about five months after the launch of the program. Also, they found a weak and unstable co-integration relationship after the Connect, while the conditional variance of both stock markets also increased. Also, Huo and Ahmed (2017) showed that the Connect contributed to market efficiency and activeness because of the increase in foreign investor participation.

According to Bai and Chow (2017), the SH-HK Connect showed a significant, short-run effect on Shanghai stock markets, but not on Hong Kong's that had asymmetric effects attributed primarily to the different levels of market maturity. More precisely, the Connect, as an ideal exogenous shock affected stock liquidity for Chinese firms.

Lin (2017) applied ARMA-t-BEKK-AGARCH models to the Hang Seng Index and Shanghai Stock Exchange Composite Index. Lin (2017) showed that the causality of volatility was bidirectional both before and after the SH-HK Connect. However, the unidirectional feature of shock spillover from the Hong Kong market to Shanghai had not changed.

Since the government usually regulates the money supply through the Central Bank, the liquidity of the stock market was influenced through these government actions. Wang et al. (2017) used the GARCH model to estimate the effects of government policies on the price spread volatility. They found significant effects of the SH-HK Connect on Shanghai stock market volatility through the use of daily data, although the impact on the Hong Kong market was minimal.

Ruan et al. (2018) conducted a study by considering the SH-HK Connect on the efficiency of both markets using the SSE and HKEX daily closing prices. The results indicated a counter-intuitive effect that after the implementation of the Connect, the Hong Kong market became less efficient than the Shanghai market.

5. Empirical Results

In this research, we employed inbound (Northbound) transactions data of the net purchases of domestic securities by foreign investors, in order to study the behavior of foreign equity flows and their effect and volatility on the Chinese (Shanghai) stock market. In addition, we utilized outbound (Southbound) transactions data of the domestic investor's net purchases of foreign (Hong Kong) securities, to study the behavior of domestic equity flows and their effects on the foreign (Hong Kong) stock market and its volatility. The data used in this paper were trading amounts by different types of investors in the SSE and HKEX after declaring the SH-HK Connect (November 17, 2014) to May 31, 2016. The end date was chosen based on Shanghai stock market stabilization after the dramatic stock market crashes in August 2015 and January 2016.

The original database obtained from the Industrial and Commercial Bank of China (ICBC) contained the daily Yuan amount of purchases and sales made by different types of investors. Types of investors were classified in to two categories: Chinese institutions and individuals (Southbound investment) and foreign investors (Northbound investment). Chinese institutions included banks, insurance companies, investment and trust companies, other financial institutions, and non-financial companies. The foreign (Hong Kong and international) investors included both foreign institutions and foreign individual investors. This quantitative data enabled us to investigate the patterns of investment by different investor types.

We used NBR (Net Buy Ratio) to measure the investment pattern of foreign investor groups in the SSE and domestic (Chinese) investor group in the HKEX. The NBR for an

investment group was calculated by subtracting the sell amount from the buy amount and dividing by the total trading amount, which is the sum of the buy and sell amounts (Song Young-Rae, Yang Yong-Jun, and Oh Hyung-Sik, 2009). The NBR is defined as:

$$NBR_{t,i} = \frac{(Buy\ amount)_{t,i} - (Sell\ amount)_{t,i}}{(Buy\ amount)_{t,i} + (Sell\ amount)_{t,i}} \quad (1)$$

Note: the NBR for group i on day t .

Grinblatt and Keloharju (2000) and Griffin et al. (2003) argued that NBR could capture both directions (buying and selling) of investor trading patterns and their relative magnitudes. Therefore, NBR was appropriate in explaining the inclination of investors to buy and sell rather than net buy amounts or total trading amounts (NBR>0: the stock buying of an investor group; NBR<0: the stock selling of an investor group).

Next, we used conditional variance through the employment of Bellerslev's (1986) GARCH (generalized autoregressive conditional heteroskedasticity) model to measure volatility of each stock index's daily returns. Conditional variance was derived from the weighted average of lagged squared residuals at time t from an appropriate model of each stock index's daily return.

$$\begin{aligned} \gamma_t &= u + \sum_{i=1}^p \phi_i \gamma_{t-i} + \sum_{i=1}^p \delta_i \varepsilon_{t-i} + \varepsilon_t \\ \varepsilon_t | (\varepsilon_{t-1}, \varepsilon_{t-2}, \dots) &\sim N(0, \sigma_t^2) \\ \sigma_t^2 &= \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \alpha_2 \sigma_{t-1}^2 \end{aligned} \quad (2)$$

Where γ_t is each stock's return represented as log first difference of each stock market's daily composite index, u is a drift term, and ε_t is the white-noise process. ARMA (1,1) was chosen as the model that best fit each stock's returns. σ_t^2 is a conditional variance, which is a function of ε_{t-1}^2 and σ_{t-1}^2 .

For an empirical model, we used the impulse response function (IRF) in a vector autoregression model (VAR). The VAR model can be expressed as follows:

$$B_0 X_t = \beta + \sum_{i=1}^3 B_i X_{t-i} + \varepsilon_t \quad (3)$$

Where lags were selected by the Akaike Information Criterion (AIC) and the vector X included the two variables we used NBR for an investment group (NBR_t), volatility of each stock's daily returns (Vol_t), and each stock index's daily return ($Return_t$). ε denotes the vector of serially and mutually uncorrelated structural innovations. NBR_{For} and NBR_{Dom} indicate NBR_t for foreign and domestic (Chinese) investment groups, respectively.

In order to investigate the effect of NBR for an investment group on the volatility of each stock index's daily returns, the impulse response function (IRF) was employed in this analysis. We carried out the empirical analysis for the global financial crisis period from November 17, 2014 to May 31, 2016.

The IRF estimates the responses for endogenous variables in the current and future of a one-time shock on the variables in the VAR system. The IRF can be technically described in vector MA(∞) form as follows:

$$X_t = \mu + \varepsilon_t + \Psi_1 \varepsilon_{t-1} + \Psi_2 \varepsilon_{t-2} + \Psi_3 \varepsilon_{t-3} \dots \quad (4)$$

Where X_t is a vector containing the endogenous variables, the matrix Ψ_s can be expressed as $\partial X_{t+s} / \partial \varepsilon'_t = \Psi_s$. The row i and column j element of Ψ_s indicates the impact of a one-unit increase in the j^{th} variable's innovation at date t ($\varepsilon_{j,t}$) on the i^{th} variable at time $t+s$ ($X_{i,t+s}$). The coefficients sets $\partial X_{i,t+s} / \partial \varepsilon'_{j,t}$ are the IRFs that show the response of $X_{i,t+s}$ to a one-time impulse in $X_{j,t}$ when all other variables are constant.

As shown in Table 1, according to the unit root test these variables were found to be stationary. Thus, we do not need to specify the first difference of the logarithm.

Table 1. Unit Root Tests

Variable	Augmented Dickey-Fuller Test Statistic			
	Northbound		Southbound	
Vol _t	-18.99 ***	(0.000)	-3.52 ***	(0.008)
Return _t	-17.10 ***	(0.000)	-17.43 ***	(0.000)
NBR _t	-10.47 ***	(0.000)	-5.65 ***	(0.000)

Notes: 1. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.001$.

2. Respectively, intercept is included in the ADF equation.

3. The ADF test is applied to the period from November 17th, 2014 to May 31st, 2016.

Fig. 1 and Fig. 2 show the results of the IRF. Fig. 1 displays the impulse response of Shanghai stock market return's volatility to the Shanghai stock index return; NBR for foreign investors to SSE index during the sample period, November 17, 2014 to May 31, 2016. Fig. 2 displays the impulse response of the Hong Kong stock market returns volatility to the Hong Kong stock index return with NBR for domestic investors to the HKEX index during the same period.

As shown in Fig. 1, when the impulse is NBR for foreign investors to SSE, the response of the SSE returns volatility is significantly positive up to the second period. This is evidence that SSE market volatility was affected by foreign equity investment. That is, if foreign investors sell, the volatility was decreased; in short, foreign investment significantly decreased volatility of SSE stock returns.

Fig. 1 also shows that when the impulse is the SSE return, the response of the NBR for foreign investors to SSE is significantly negative up to the third period. This is evidence of the "negative feedback trading" behavior of foreign investors on SSE stock. Inversely, according to the response of return to NBR, if foreign investors buy, the earning rate of foreigners increased. Simply put, if foreign investors sell, the total earning rate decreased. This means foreign investors in SSE showed good investment performance during the research term.

Furthermore, Fig. 1 indicates that when the impulse is the SSE stock return, the SSE stock return's volatility showed a significant response with a negative sign. The result shows there is "volatility asymmetry." That is, the SSE stock return's volatility is higher as foreign investor's stock return declines; namely, the SSE stock return's volatility is lower when foreign investor's stock return inclines.

Fig. 2 indicates that when the impulse is the HKEX stock return, the volatility of the stock return shows a significant response, with a negative sign. This result means there is "volatility asymmetry." That is, the HKEX stock return's volatility is higher as domestic investor's stock returns decline. In other words, the HKEX stock return's volatility is lower when foreign investor's stock return inclines.

Fig. 1. IRFs Results for Foreign Investment Groups to Shanghai Stock Exchange (SSE)

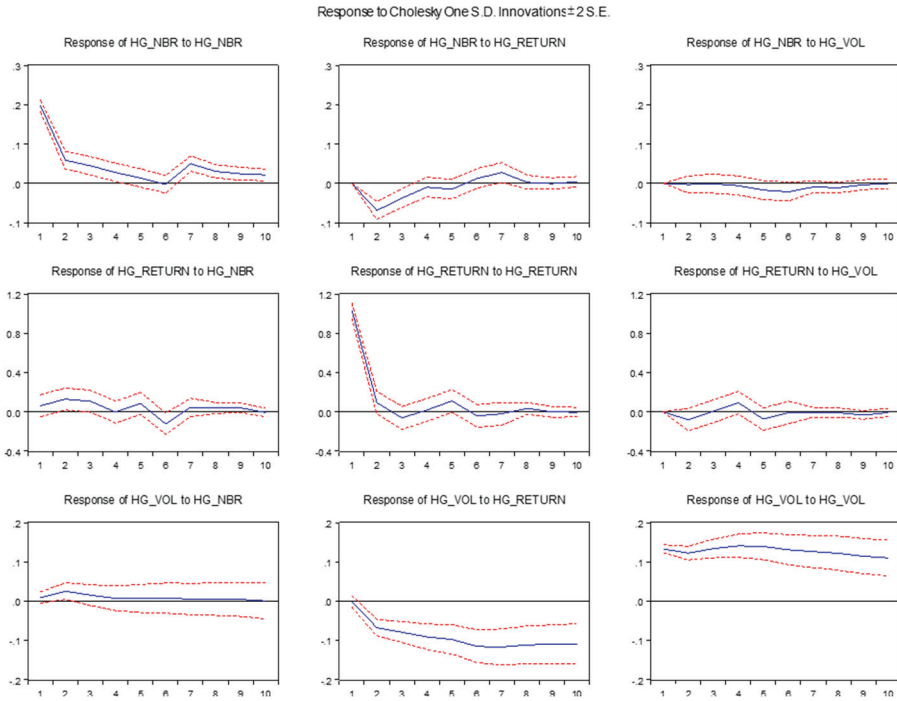
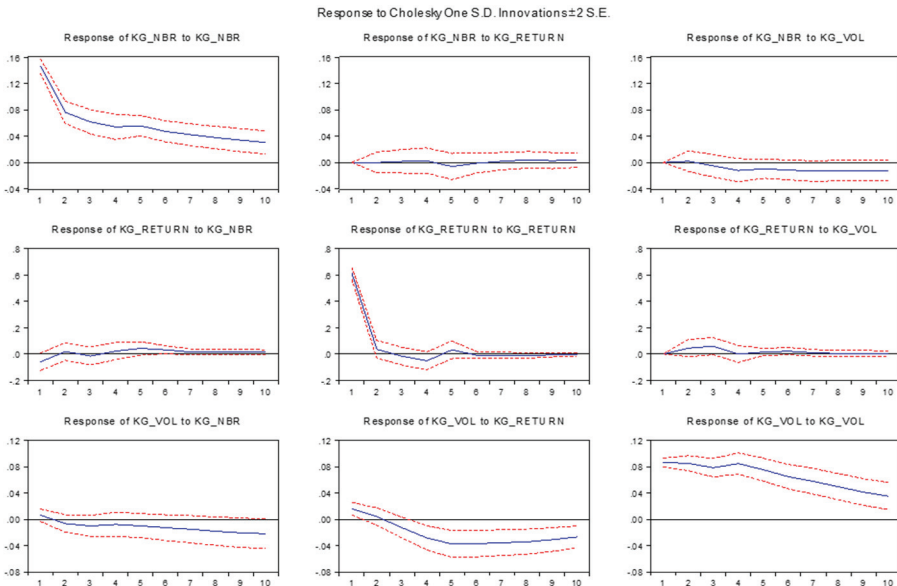


Fig. 2. IRFs Results for Domestic Investment Groups to Hong Kong Stock Exchange (HKEX)



The research results presents strong evidence of negative feedback trading by foreign investors in the Chinese stock market during the research term. Overall, we found some evidence that during the research period, foreign equity investment significantly decreased the stock return's volatility in the Chinese stock market. Moreover, it was found that the stock return volatility of the Chinese stock market was higher when the stock return declined. Consequently, we found that equity investment by foreigners in the Chinese stock market tended to decrease market volatility levels after the SH-HK Connect. Also, foreign investor's performance in Chinese stock market was fairly good. In short, the Shanghai-Hong Kong Stock Connect (the SH-HK Connect) brought forth a win-win effect for both the Chinese capital market and foreign investors.

6. Conclusion

While Mainland investor trade of Hong Kong stocks under the southbound link was initially weak, trading volumes picked up substantially in April 2015 showing a total southbound turnover of over RMB 235 billion total turnover (up from RMB 18 billion in December 2014) and a total northbound turnover of RMB 155 billion (up from RMB 76 billion in December 2014). With the steep sell-off of China shares in July 2015, northbound turnover in the period June 29 to July 10, 2015 dropped to RMB 15.5 million, while southbound turnover dropped to HK\$ 6.4 million for the same period.

Although the Shanghai-Hong Kong Stock Connect started, the Chinese financial market was normally subjected to a high degree of government control that tended to have a relatively limited range of investment opportunities for savers. Unlike developed countries that tend to have well-developed stock markets, the Chinese stock market can be fairly rudimentary in nature with companies being traditionally heavily reliant on banks for funding.

After China's huge stock crash in August 2015 and January 2016, the China Securities Regulatory Commission (CSRC) was busy implementing capital control policies: limiting stock index futures trading, banning short selling, cutting margin ratios, locking up the holdings of large shareholders, and conducting investigations for potential legal action against short sellers and those selling off big blocks.

According to our research results, Shanghai-Hong Kong Stock Connect brought a win-win effect for both the Chinese capital market and foreign investors. It seems as if the Chinese capital market is very suitable for investment by Korean investors after China announced the SH-HK Connect. However, the kinds of aggressive capital control imposed could cause financial turmoil in the Chinese capital market (Yoo Sung-Jin and Chung Sang-Kuck, 2019). In fact, an International Monetary Fund (IMF) study recognized that there were capital controls as part of the policy options available to the governments of emerging economies (Ostry et al., 2010). The capital controls were imposed to counter the potential negative effects of sudden foreign capital inflows, such as from the SH-HK Connect. However, Chinese banks are usually either state owned or subject to heavy government control aimed at maintaining low, real interest rates designed to stimulate investment. A major problem that results from the low, real interest policies imposed is that they tend to further discourage saving that is already low because of low income levels. This results in domestic (Chinese) investors preferring to save and invest in the shadow banking sectors.

While most of the largest Chinese companies are State Own Enterprises (SOEs), the economy's primary engine is the private sector that contributes 60 percent of the GDP growth, 90 percent of new jobs, and more than half of all fiscal revenue. Recently, private sectors have suffered disproportionately under the Chinese government's aggressive campaign against debt and financial risk. While SOEs generally enjoy easier access to loans

from state-owned banks, private companies have been the major recipients of credit from non-bank lenders. Privately owned companies in China could survive by tapping funds from the country's enormous shadow banking sector. However, shadow financing began to dry up because of the campaign to stabilize debt in non-financial companies, which is estimated to be about 300 percent of GDP. The combination of a sharp contraction of shadow banking and a slowing economy has left many private groups starved of capital and seeking white knights to rescue their businesses. Aggressive capital controls possibly cause financial turmoil in the Chinese capital market. Therefore, Chinese industrial structure reform and financial sector reform should keep pace with suitable capital control policies.

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