Impact of Market Openness on Growth and Stability in Korea

Wonchang Jang*

Abstract

A controversy about whether liberalization through market opening is a necessary and sufficient condition for a stable and balanced growth in the developing countries was retriggered by the 2008 global financial crisis. This paper aims to analyze 1) the impact of market openness on the economic growth and financial development, 2) the dynamic correlation between the compositional change in foreign investments and the returns of domestic financial markets, 3) the effect of foreign portfolio investment on the stock market activity (liquidity and profitability). Our empirical findings infer that the income level has a positive relationship with financial openness and the foreign portfolio investments cause price fluctuations in the domestic stock market. These results imply that the precautionary and effective policies such as prudential regulations on the short-term capital transactions are strongly needed to emerging markets in order to prevent the excessive fluctuations in the financial markets over the macroeconomic fundamentals.

Keywords : Market Openness, Foreign Investment, VAR Model

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* First Author: Associate Professor, School of Economics, Inha University, Incheon, Korea. E-mail: wjang@inha.ac.kr, Phone: 031-860-7786, Fax: 031-860-7772

1. INTRODUCTION

A controversy over whether liberalization through market opening is a necessary and sufficient condition for a stable and balanced growth in national economy was retriggered by the 2008 global financial crisis. Among the academia and government in the emerging economies it is insisted that the pace of opening the financial markets should be controlled for the macroeconomic stabilization and the prudential regulations on the short-term capital transaction are in need if the market is structurally vulnerable to the external shocks. By analyzing the capital flows of the international financial markets, it is seen that the indirect financing such as bank loans was the main channel of international financing during the 1970s~1980s. Since the 1990s, there has been a conversion to the direct financing such as equities and bonds for direct and portfolio investments.¹⁾ In Korea, the structure of foreign investment has changed since 2000 following the global market trend. The weight of equity investments have increased up to 80 percent of the total foreign portfolio investments in 2005. This shows that the short-term capital movements have been centering mainly on the stock market. Thus, regardless of the macroeconomic fundamentals, a sudden change in foreign portfolio investment is likely to cause the instability of the emerging economy.

Since the 1990s Korea has experienced the severe economic shocks -the East Asian financial crisis of 1997 and the global financial crisis of 2008. In the process of overcoming the East Asian financial crisis, Korea had to open its financial markets to attract the international liquidity and abandon capital control system in return. Hence, the macroeconomic stabilization policies are necessary to counteract the procyclicality of capital movements, especially portfolio investments. This paper focuses on the following three subjects. First, the relationship between financial openness and economic growth in Korea is analyzed. Second, we examine the relationship between financial openness and financial development. Third, the effect of the compositional change in foreign investments on the returns of stock and foreign exchange market in Korea is analyzed.

According to Lucas (2009), open economies tend to converge to high income level whereas closed economies are likely to remain at a low income level, arguing that international transmission of ideas through market opening operates as a mechanism of economic convergence. Hauner and Prati (2008) analyzed the annual data of 91 countries during 1973-2005 and found out that trade openness measured by average tariff rate has led domestic financial openness measured by the regulatory level of financial transactions. Their finding shows that in the short-term, financial openness promotes financial development, but in the long-term, it seems to hamper financial reform. Bordo and

¹⁾ Lane and Milesi-Ferretti (2000)

Rousseau (2012) examined the linkages between financial development, international trade, and economic growth using data since 1880 for seventeen now-developed “Atlantic” economies. They found that before the Great Depression finance and trade reinforced each other, but that this relationship did not persist after the World War II. In addition, throughout the sample period, financial development has positive effects on economic growth, while trade affects growth strongly and independently after 1945.

Recent studies on the effects of foreign investment in Korea are done by Seungwon Kim (2010), Deok Ryong Yoon et al. (2009), Chae-shick Chung (2011), etc. According to Seungwon Kim (2010), foreign direct investment caused a positive effect in economic growth but foreign portfolio investment had a limited growth effect accompanied by market volatility. Deok Ryong Yoon et al. (2009) find that when a rapid change in foreign portfolio investment occurs, the volatility of stock and foreign exchange market increases. Chae-shick Chung (2011) also argues that since the domestic financial markets are synchronized with the boom and bust cycle of the world economy, a countercyclical policy on foreign capital flows is needed in order to stabilize the economy.

The rest of paper is organized as follows. Section 2 describes an overview of financial openness and development in Korea. Section 3 describes the data and empirical methodology, and section 4 reports the empirical results. Section 5 concludes.

2. Overview of Financial Openness and development in Korea

This paper measures financial openness from two aspects. First, we measure a qualitative index of financial openness as the degree of capital account liberalization. We work with the Chinn-Ito Index which is measured based on the regulations on cross-border financial transaction reported to IMF.²⁾ Second, the intensity of capital movements (the ratio of capital transaction volume to market size) is measured as the degree of financial exposure, which is a quantitative index of financial openness. We measure capital transaction volume as the sum of inflows and outflows of direct and portfolio investment, and market size as gross domestic product, respectively.

Figure 1. and Figure 2. show the trend of financial openness in Korea for the last three decades (1980-2010) by comparing the qualitative and quantitative indices. The qualitative index which represents the level of financial deregulation indicates a relatively low

²⁾ The Chinn-Ito Index is the first standardized principal component of four dummy variables on the restrictions on external accounts. The Index takes on higher values the more open the country is to cross-border capital transactions with a mean of zero. The values of Index measured in 2011 range from 2.44 to -1.86. See Chinn and Ito (2008) for details.

financial openness during 1980s and the late 1990s, while we see a rapid improvement since the global financial crisis of 2008. The quantitative index measured as the intensity of capital movements shows a steady openness except for the financial crisis periods.

Source : Chinn and Ito, http://web.pdx.edu/~ito/kaopen_2010.xls

Figure 1.

Financial Openness in Korea - (a) Qualitative Openness (Degree of Capital Account Liberalization)

Source: The Bank of Korea, Economic Statistics System (<http://ecos.bok.or.kr>)

Figure 2.

Financial Openness in Korea - (b) Quantitative Openness (Ratio of capital transactions to GDP)

Most of the cross-border capital transactions in Korea consist of direct and portfolio investments. The net outflow of direct investment increased from 20 million dollars in 1980 to 20 billion dollars in 2010. During the same period, the net inflow of portfolio investment (equity and debt securities) increased rapidly from 0.13 billion dollars to 42.48 billion dollars. Especially during 2006-2008, the inflows of foreign investment into the debt securities (bonds and notes) market exceeded the outflows of equity securities (stocks) market. It shows that a sudden change in portfolio investments has been occurred during the global financial crisis due to a flight-to-quality phenomenon.

Table 1. shows the descriptive statistics of direct investment and portfolio investment in Korea during 1980-2010. In case of direct investment the outflows have exceeded the inflows on average, but vice versa in portfolio investments. This implies that the external shocks on domestic financial markets come from the change in portfolio investments. Figure 3. and Figure 4. illustrate the trend of major components of direct investment and portfolio investment. Since 2005, the outflow of direct investment surpassed the inflows. Since 2006, foreign equity investment turned to net outflows, which shows the capital flight due to the global financial crisis. Instead, foreign debt investments have increased rapidly in consequence of a flight to quality.

Table 1.

Descriptive Statistics of Direct/Portfolio Investment in Korea (1980 - 2010)

	Mean	Standard Deviation	Min.	Max.
Direct Investment (Equity capital) -net flows	-2128.43	6069.72	-20074.30	5287.20
Direct Investment (Equity capital) -inflows	2091.31	2497.11	6.00	8889.20
Direct Investment (Equity capital) -outflows	-4219.75	5718.73	-20614.90	-26.40
Portfolio Investment -net flows	5021.52	14280.77	-26057.80	49727.70
Equity Securities -inflows	2276.23	11415.46	-33622.70	24856.40
Equity Securities -outflows	-2568.88	9810.67	-52550.10	7124.00

	Mean	Standard Deviation	Min.	Max.
Debt Securities -inflows	6735.94	11868.51	-4164.30	59106.20
Debt Securities -outflows	-1421.76	5346.50	-16024.20	16360.30

Source: The Bank of Korea, Economic Statistics System (unit: million US dollars)

Figure 3.

Trend of Direct/Portfolio Investment - (a) Direct Investment (Equity Capital Investment)

Source: The Bank of Korea, Economic Statistics System (unit: million US dollars)

Figure 4.

Trend of Direct/Portfolio Investment - (b) Portfolio Investment
(Equity and Debt Investment)

In this paper, the financial market development is measured by following three indices. First, the degree of credit creation is measured by the ratio of monetary base (M2) to GDP. Second, the development of banking market is measured by the ratio of bank loans to GDP. Third, the development of capital market is measured by the ratio of stock market capitalization to GDP. The degree of credit creation measured by the ratio of M2 to GDP (M2/GDP) has steadily increased from 0.33 of the early 1980s to 1.42 of 2010. The ratio of domestic credit to GDP (DomesticCredit/GDP) has stagnated at the level of 0.4 until the 1997 financial crisis, but showed a steady increase up to 0.9 during the 2000s. Compared to other indices, the ratio of stock market capitalization to GDP (MarketCap/GDP) is volatile and continues to increase during the 2000s except for 2008 global financial crisis. The trend of financial developments is illustrated in Figure 5.

Source: The Bank of Korea, Economic Statistics System

Figure 5.
Financial Developments in Korea

3. Data and Empirical Methodology

This paper aims to find the empirical evidence on 1) the impact of market openness on the economic growth and financial development, 2) the dynamic correlation between the compositional change in foreign investment and the returns on the domestic financial markets, 3) the impact of a change in foreign equity investment on the stock market activity (liquidity and profitability). We use the data collected by the Bank of Korea and Chinn and

Ito (2010). To test the impact of market openness, we use OLS (ordinary least squares) estimation with annual data spanning 1980-2010. For dynamic analysis on foreign investment, we estimate VAR (vector autoregressive) model with monthly data spanning 1993-2011.

First, we estimate equation (1) using OLS method to analyze the impact of market openness on the economic growth.

$$Growth_t = \alpha_o + \beta F_t^T + \delta T_t + \mu_t \quad (1)$$

Here, economic growth denoted by $Growth_t$ at time t . F^L is the degree of capital account liberalization of Chinn-Ito (2010) as a qualitative index of financial openness, and F^T is the intensity of capital movements (direct and portfolio investment) as a quantitative index of financial openness. T denotes trade openness measured as the ratio of export/import volume to GDP.

Second, we estimate equation (2) by OLS method to analyze the effect of market openness on financial development.

$$FD_t = \alpha_o + \beta F_t^L + \gamma F_t^T + \delta T_t + \mu_t \quad (2)$$

Here, FD_t denotes the degree of financial development measured as three indices, 1) the ratio of monetary base (M2) to GDP, 2) the ratio of domestic credit (bank loans) to GDP, 3) the ratio of stock market capitalization to GDP.

Third, we analyze the dynamic interaction between the compositional change in the foreign portfolio investments and the rate of returns on the stock and foreign exchange market with equation (3)-(4) using VAR estimation. Here, we define the compositional change in foreign investment as the change in the weight of portfolio investment.

$$\Delta R_t^{KOSPI} = \alpha_t + \sum_{i=1}^k \beta_i \Delta R_{t-i}^{KOSPI} + \sum_{i=1}^k \gamma_i \Delta R_{t-i}^{W/\$} + \sum_{i=1}^k \delta_i \left[\frac{FPI}{FDI + FPI} \right]_{t-i} + \mu_t \quad (3)$$

$$\Delta R_t^{W/\$} = \alpha_t + \sum_{i=1}^k \beta_i \Delta R_{t-i}^{KOSPI} + \sum_{i=1}^k \gamma_i \Delta R_{t-i}^{W/\$} + \sum_{i=1}^k \delta_i \left[\frac{FPI}{FDI + FPI} \right]_{t-i} + \mu_t \quad (4)$$

Here, R^{KOSPI} and $R^{W/\$}$ are the rate of returns on stock price index (KOSPI) and foreign exchange rate (W/\$) in Korea.³⁾ FDI and FPI represent foreign direct investment and foreign portfolio investment, respectively.

³⁾ A rate of return is calculated as $100 * 1n \left(\frac{P_t}{P_{t-1}} \right)$

Fourth, we test the impact of a change in foreign investment on the domestic stock market activity with OLS regression equation (5)-(6). This paper focuses on the compositional change in foreign portfolio investment and the intensity of foreign equity trading. We analyze the change in the stock market activity with two indices, 1) turnover ratio for liquidity 2) price-earnings ratio for profitability.

$$TOR_t^{KOSPI} = \alpha_o + \beta \left[\frac{FEI}{FEI + FBI} \right]_t + \gamma \left[\frac{FEB + FES}{EB + ES} \right]_t + \mu_t \quad (5)$$

$$PER_t^{KOSPI} = \alpha_o + \beta \left[\frac{FEI}{FEI + FBI} \right]_t + \gamma \left[\frac{FEB + FES}{EB + ES} \right]_t + \mu_t \quad (6)$$

TOR and *PER* represent overall turnover rate and price-earnings ratio in the stock market. *FEL* and *FBI* denote foreign equity and bond investment, while *FEB* and *FES* are foreign equity buying and selling amount. *EB* and *ES* represent total equity buying and selling amount in the stock market.

4. Empirical Results

Table 2. reports the results of OLS estimation on the relationship between market openness and economic growth. We find that financial openness has a positive effect on the per capita real GNI in terms of both qualitative (degree of capital account liberalization) and quantitative (intensity of capital movements) variables, whereas trade openness has no statistically significant effect. However, market openness didn't have a significant effect on the economic growth rate.

Table 2.

Effects of market openness on economic growth using OLS regression: Equation (1)

		Dependent variable: Economic growth	
		Per capita real GNI level	Per capita real GNI growth rate
Independent variable	Degree of capital account liberalization	182.97** (68.49)	-0.99 (2.16)
	Intensity of capital movements	16678.14* (2491.71)	-39.81 (50.55)
	Trade openness	397.24 (257.83)	-10.62 (7.53)

	Dependent variable: Economic growth	
	Per capita real GNI level	Per capita real GNI growth rate
Constant	395.71** (149.74)	14.53** (4.12)
No. obs.	31	31
R^2	0.8704	0.2291

Note : Standard errors are in parentheses. * Statistical significance at the 1% level, ** Statistical significance at the 5% level

Table 3. presents estimates of OLS regression equation (2). First, the qualitative financial openness has a positive impact on financial development measured as the ratio of domestic credit to GDP and the ratio of market capitalization. Second, all three measures of financial development showed a positive response to the quantitative financial openness measured as the intensity of capital movements. Third, trade openness has no significant effect on financial development except for domestic credit.

Table 3.

Effects of market openness on financial development using OLS regression: Equation (2)

		Dependent variable: Financial Development		
		M2/GDP	Domestic Credit/GDP	Market Capitalization/GDP
Independent variable	Degree of capital account liberalization	0.06 (0.07)	0.07* (0.02)	0.18* (0.05)
	Intensity of capital movements	10.41* (2.09)	3.52* (0.70)	5.94* (1.55)
	Trade openness	0.22 (0.23)	0.60* (0.10)	0.10 (0.24)
Constant		0.41* (0.13)	-0.01 (0.06)	0.18 (0.15)
No. obs.		31	31	31
R^2		0.7630	0.8633	0.6941

See note for Table 2.

The estimation results of VAR model using equation (3)-(4) are summarized in Table 4. It is found that the price fluctuation of stock market tends to increase as the weight of portfolio investment in the foreign investment increases, while foreign exchange market is not likely to respond. In addition, the price fluctuation of foreign exchange market has followed that of stock market, not vice versa. Figure 6. shows the impulse response functions of VAR estimation. Unexpected shock (one standard deviation) from the weight of foreign portfolio investment to the change in stock price persists up to 2 periods (the left panel of the bottom) and a stock price shock has a more persistent influence on the price fluctuation of foreign exchange market up to 3 periods (center panel of the top).

Table 4.

Estimation Results of VAR Model: Equation (3)-(4)

Variables	ΔR_t^{KOSPI}	$\Delta R_t^{W/\$}$
$\left[\frac{FPI}{FDI + FPI} \right]_{t-1}$	3.392** (1.615)	0.625 (0.416)
$\left[\frac{FPI}{FDI + FPI} \right]_{t-2}$	-1.508 (0.942)	0.111 (0.065)
ΔR_{t-1}^{KOSPI}	-0.840* (0.242)	-0.079* (0.027)
ΔR_{t-2}^{KOSPI}	0.079* (0.025)	0.196* (0.057)
$\Delta R_{t-1}^{W/\$}$	0.149 (0.099)	-0.248* (0.081)
$\Delta R_{t-2}^{W/\$}$	0.144 (0.073)	-0.272* (0.093)
Constant	-1.50 (0.781)	-0.56 (0.329)
No. obs.	225	225
R^2	0.1182	0.0606

See note for Table 2.

Note : drkospi, drner, and rfi denote the change in returns of stock price index, the change in returns of foreign exchange rate, and the change in the weight of foreign portfolio investment, respectively.

Figure 6.
Impulse Response Functions

The estimation results on the change in foreign portfolio investment are summarized as Table 5, Table 6 and Table 7. First, for the whole sample period (Jan. 1993-Dec. 2011), the weight of equity in foreign portfolio investment as well as the weight of foreign transactions in the stock market increased the turnover rate, which means the foreigners' transactions contributed to the liquidity of the domestic stock market. However, the weight of equity in foreign portfolio investment did not have a statistically significant effect on price-earnings ratio, while the increase in the foreigners' equity transactions lowered the market profitability.

Second, we divide the sample period into two sub-sample periods (1993-1999 and 2000-2011). In the 1990s the weight of foreign transactions in the stock market had no meaningful effect on the liquidity of stock market, but it lowered the market profitability. The weight of equity in foreign portfolio investment increased the liquidity but lowered the profitability. During the 2000s the weight of foreign transactions had a significantly negative effect on both liquidity and profitability. The negative coefficient on the turnover ratio implies that the stronger the foreign investment is, the less active the stock market is

due to fears of massive capital flight. Contrary to the 1990s, the weight of equity in foreign portfolio investment had no meaningful effect on the liquidity and the profitability of stock market.

Table 5.

Effects of foreign investment on stock market using OLS regression: Equation (5)-(6)

a. Whole Sample Period: Jan. 1993 – Dec. 2011

		Dependent variable: Stock Market Activity	
		Turnover rate	Price-earnings ratio
Independent variable	Weight of foreign equity investment	14.598* (4.293)	0.643 (0.357)
	Weight of foreign stock trading	26.064** (9.208)	-13.642* (4.233)
Constant		18.639* (5.177)	17.194* (5.210)
No. obs.		228	228
R^2		0.07	0.04

Table 6.

Effects of foreign investment on stock market using OLS regression: Equation (5)-(6)

b. Sub-sample Period I: Jan. 1993 – Dec. 1999

		Dependent variable: Stock Market Activity	
		Turnover rate	Price-earnings ratio
Independent variable	Weight of foreign equity investment	20.106* (5.914)	-2.416** (0.862)
	Weight of foreign transactions in stock market	64.877 (40.352)	-41.468* (11.845)
Constant		5.480 (3.437)	17.707* (5.312)
No. obs.		84	84
R^2		0.19	0.13

Table 7.

Effects of foreign investment on stock market using OLS regression: Equation (5)-(6)

c. Sub-sample Period II: Jan. 2000 – Dec. 2011

		Dependent variable: Stock Market Activity	
		Turnover rate	Price-earnings ratio
Independent variable	Weight of equity in foreign portfolio investment	-2.139 (1.421)	-1.201 (0.752)
	Weight of foreign transactions in stock market	-157.707* (46.176)	-55.623* (16.573)
Constant		67.053* (18.108)	27.322* (6.752)
No. obs.		144	144
R^2		0.34	0.24

See note for Table 2.

5. Conclusion

Korea has promoted globalization through market opening since the 1990s and experienced both gains and losses by growth and instability. Especially since the recent global financial crisis, as the change in the composition of foreign capital flows into Korea is pronounced, a policy response for macroeconomic stabilization is in dire need. This paper, based on the empirical analysis of the effect of market openness on economic growth and financial development, dynamic interaction between the change in the composition of foreign investment and returns of financial markets, etc. derives some implications as follows. First, both qualitative and quantitative openness of the financial markets in Korea have influenced a significantly positive effect on the economic growth measured as per capita real GNI level, while trade openness did not. However, market openness in finance and trade didn't have a significant effect on the economic growth measured as per capita real GNI growth rate. Second, the qualitative openness in the financial markets has a positive effect on financial market development in terms of domestic credit and stock market capitalization. All three indices of financial development showed a positive

response to the quantitative financial openness measured as the intensity of capital movements. However, trade openness has no significant effect on financial development except for domestic credit.

Third, the change in stock market returns has responded to the change in the weight of foreign portfolio investment, but the foreign exchange market has not interacted with the foreign portfolio investment. In addition, the change in returns of foreign exchange market has followed that of stock market, not vice versa. Fourth, for the whole sample period (Jan. 1993-Dec. 2011), the foreign equity investments increased the liquidity of the stock market, but lowered the market profitability. During the 1990s, the weight of equity in foreign portfolio investment increased the liquidity but lowered the profitability, while it had a significantly negative effect on both liquidity and profitability during the 2000s. Contrary to the 1990s, the weight of equity in foreign portfolio investment had no meaningful effect on the liquidity and the profitability.

Based on the empirical findings of this paper, it is reasonable to infer that the income level is likely to have a positive relationship with financial openness. Financial openness policy helps to develop its domestic financial markets. We also argue that the change in the composition of foreign investments causes the price fluctuation of stock market. Therefore, in case the international financial markets get stabilized and capital flows are resumed, the precautionary and effective policies such as prudential regulations on short-term capital transactions are strongly needed to emerging markets in order to prevent the excessive fluctuations in the financial markets over the macroeconomic fundamentals.

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