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The Effect of Korea's Macro-Prudential Measures

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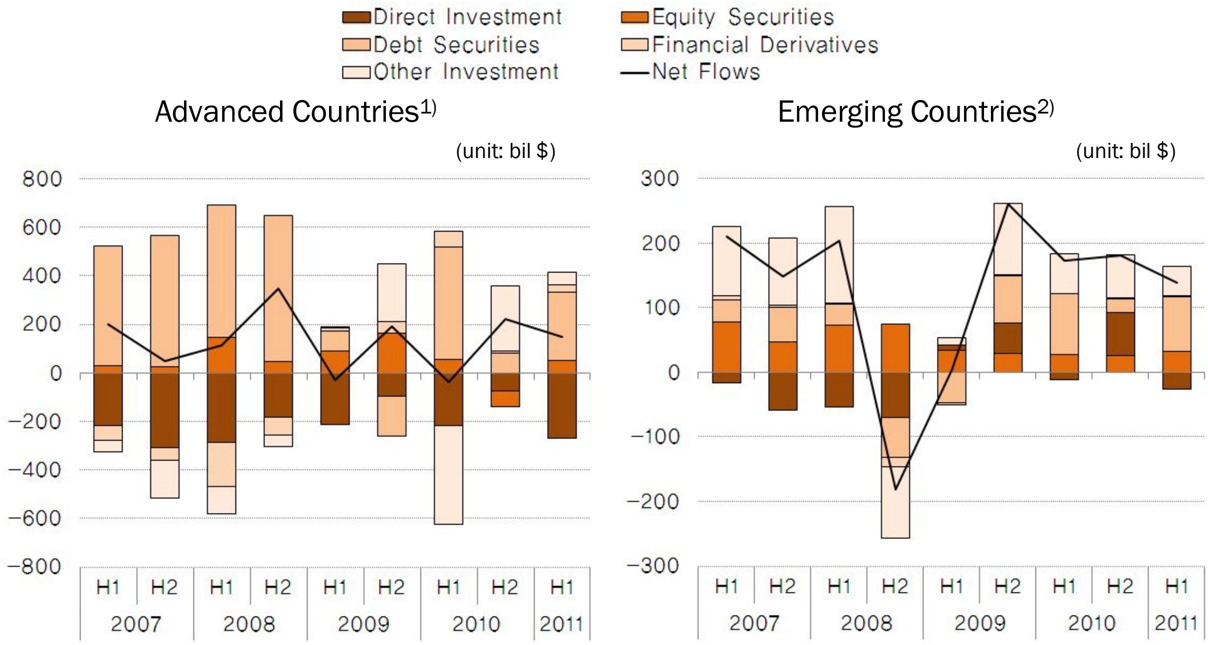
Recent Trends of Macro-prudential Measures

After experiencing the global financial crisis, some developing countries implemented various macro-prudential measures on capital flows. To look back, international capital flows have constantly increased since the 1990's, but they showed a sudden retraction during the global financial crisis. And over the crisis, capital outflow from both developed and developing countries took place. However, in the case of developed countries, the capital account did not fluctuate dramatically due to the withdrawals of their overseas investments. On the other hand, developing countries suffered significant capital flight, especially from portfolio and debt investments. As the international financial market recover from the crisis, some developing countries emplaced capital control in order to prevent the volatility of capital flows. For instance, Brazil has mobilized the financial transaction tax since September 2009 and Indonesia required 28 days long mandatory holding periods for foreign investors on their Bank Indonesia Certificates (SBI: Sertifikat Bank Indonesia) purchases since June 2010.

Figure 1. Capital Movements among Countries during Last 5 Years



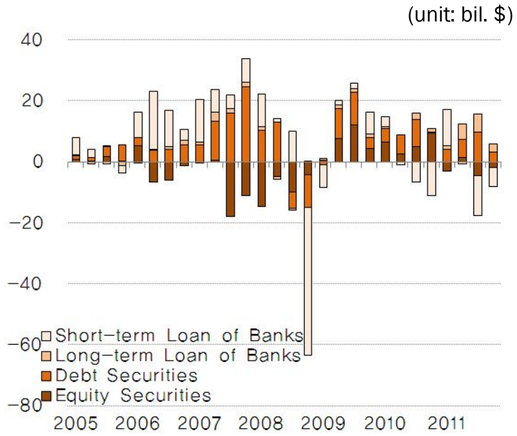
Note: 1) G7 countries: Canada, France, Germany, Italy, United Kingdom, United States.
2) MSCI emerging country: Brazil, Chile, Colombia, Mexico, Peru, Czech, Egypt, Hungary, Morocco, Poland, Russia, South Africa, Turkey, Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Taiwan, Thailand.
Source: IMF; Balance of Payments, CEIC.

Despite the fact that it's a popular subject, there is yet no consensus regarding the effectiveness of each nation's macro-prudential measures. Therefore, in this paper, we analyze the effect-tiveness of Korea's recent macro prudential measures. It is often hard to witness the clear impact of macro prudential measures even after such regulation is introduced. That is because some determinants of financial markets sometimes dilute its effect and various forms of macro-prudential measures (such as quantitative controls, price cap controls etc.) put out different outcomes making it difficult to evaluate the true impact of macro-prudential measures. Thus, we need to continuously evaluate the effects in order to enforce a regulation that fits its purpose, since inadequate regulations can bear high social costs.

Korea's Macro-Prudential Measures

After Asian currency crisis, Korean government greatly deregulated the capital and foreign exchange markets. And this resulted in an inflow of foreign capitals during the 2000's. However, the outbreak of global financial crisis in 2008 sucked out 69.5 bil. $ of short-term capital from Korean capital markets in 4 months (from Sept. 2008 to Jan. 2009). In specific, the largest withdrawal was made via bank short-term debts channel, which is about 43.7 bil. $. The retraction of foreign bond investments (13.4 bil. $) and the stock investments (7.4 bil. $) followed. Mean-while, the exchange rate soared by 24% and the stock index plummeted by 18%. Such foreign investment reversals happened regardless of Korea's stable macroeconomic condition at that time and worsened the economic slowdown.

Figure 2. Capital Inflows to Korea



Note: not including the liabilities of direct investment, financial derivatives, other investments
Source: Bank of Korea; Economic Statistics System(ECOS).

As the inflow of short-term capital sharply increased again after the crisis, Korean government announced 'Plan for the Capital Flows' Fluctuations.' This plan intended on reducing Korean economy's vulnerability towards external shocks.

First, the government limited the F/X forward position of banks in order to control the banks' foreign liability. Because the forward selling of exporting company increases the bank's foreign liability in the course of its F/X hedging activity. The specified limit of the forward position is 50% and below of their equity for the domestic banks and in the case of foreign banks' domestic branches, they need to maintain it under 250% of their capital. Besides such limitation, the monetary authority also took an action of restricting the use of foreign borrowings to non-domestic purposes, regulating foreign liquidity ratios and so on.

The tax on foreign investors' bond investments revived in January 2011, which was originally exempted before since March 2009. The tax rates are 14% for interest earnings and 20% for trade earnings. And the same rate applies for the domestic investors. The revival of this tax aims to reduce an expected return of foreign bond investments in order to restrict the capital inflows to the bond market.

In December 2010, macro-prudential levy on financial institution's non-deposit foreign currency liability was introduced. The rates of this levy, in effect from August 2011, decrease as the maturities get longer. The collected tax revenue is to be regarded as a resource for the support on foreign currency liquidity in case it's needed. This levy targets to lengthen the maturity of banks' foreign currency debts and to discourage the foreign currency borrowings.

Table 1. Korea's Three Macro-Prudential Measures and Their Expected effects

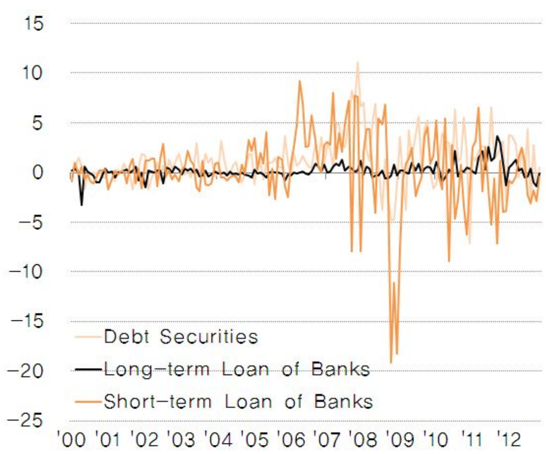
Measures	Contents	Effective date	Expected effects
Limitation on forward position	50% of bank capital(domestic banks), 250% (foreign banks)	Oct. 2010	Control on banks' short-term debts
	40% of bank capital(domestic banks), 200% (foreign banks)	July 2011	
Revival of tax on foreign investors' bond investments	14% (interest), 20% (trading)	Jan. 2011	Limit the influence of foreign investors on bond market
Macro-prudential levy on banks' foreign liabilities	0.20% (~ 1yr) 0.10%(1~3yrs) 0.05%(3~5yrs) 0.02%(5yrs and more)	Aug. 2011	Lengthening banks' foreign liabilities and collect fund for potential relief loans to banking sector

Effect of Korea's Macro-Prudential Measures

In this paper, we analyze the effects of three regulations; the limitation on forward position, the revival of tax on foreign investors' bond investments, and the macro-prudential levy. A test is constructed to see if the bond investments of foreign investors and banks' foreign liabilities including both short- and long-term are affected by the introduction of these three regulations. We expect the limitation on forward position to affect the banks' foreign liabilities and foreign bond investments as well, since the forward is also traded in order to hedge the F/X risks associated with the foreign bond investments. The effects of revived tax on bond investments are assumed to be limited since the tax exemption period, from March 2009 to December 2011, was short and coincided with the time when the international financial markets were experiencing high volatility.

Figure 3. Trend in the Net Inflow of Capital Analyzed in the Study

(unit: bil $)



Source: Bank of Korea; Economic Statistics System(ECOS)

The results of analysis show that the limitation on forward position largely decreased the banks' short-term foreign liability and slightly increased the long-term foreign liability. The effect on long-term foreign liability of the bank was smaller than that of short-term foreign liability. When the banks handle the forwards, they need to borrow US dollars in order to hedge F/X risks that are associated with them. And the forward normally matures within 1 year, so the banks need the short-term foreign liability to hedge F/X risks of the forwards. Therefore, the restrain on forward position reduced banks' short-term foreign liability by limiting the need for F/X hedging. And it also resulted in rising long-term liability of the banks through increasing the demands for foreign capital other than the forwards. However, the size of drop in short-term foreign liability seems to be more than a quadruple of an increased amount of long-term foreign liability, leaving the total foreign liability to decrease. Meanwhile, it can be said that the limitation on forward position will cause a decline in foreign investors' investment in bonds since they usually hedge F/X risks using the forwards. Nonetheless, such reduction seems to be statistically insignificant.

The revival of tax on foreign investors' bond investments increased the short-term foreign liability of the banks in statistically significant level, but did not have a notable impact on the long-term foreign liability and the foreign investors' bond investments. The period of tax exemption, from March 2009 to December 2011, was relatively short and coincided with the global financial crisis and the euro financial crisis. Thus, if we interpret the result in terms of tax exemption rather than the revival, we can say that the tax exemption decreases banks' short-term foreign liability. The foreign debt investors may think that the bond investment and the providing debt to Korean banks are two close alternatives. Therefore, the revival of tax on the foreign investors' bond investments may increase the incentives for investing in the banks' short-term debt. Moreover, we can say that the regulation does not decrease the incentives of capital inflows but rather creates the balloon effect, which only brings about other types of inflows.

The macro-prudential levy statistically increased banks' long-term foreign liability, but did not show statistically significant impact on reducing the short-term foreign liability and the bond investments by the foreign investors. Although the macro-prudential levy on bank liability burdens the banks, the total foreign liability of banks increased after the introduction of such regulation. However, we have to be careful about interpreting the results since the levy was imposed only for 5 months out of the whole period of analyzing the data (2000~2011).

Other than the capital controls, the trade volume and the global financial crisis have also affected the bond investments by the foreign investors and the banks' foreign liabilities. The trade volume determines the demand for foreign currency in Korea and that demand has been satisfied by the supply of the foreign investors' bond investments or the banks' foreign borrowings. Therefore, if we can find other suppliers of foreign currencies than debt investors, we might be able to reduce the effect of external financial shocks on the Korean economy.

Table 2. Effects of Macro-Prudential Measures

Variables		Bond investments	Short term liabilities	Long term liabilities
Capital Controls	the limitation on forward position	-1813.872	-4,016.102**	982.684**
		(1,322.51)	(2,005.93)	(469.95)
	the revival of tax on foreign investors' bond investments	1821.874	4,525.973**	192.339
		(1,215.95)	(1,829.73)	(432.50)
	the macro-prudential levy	-2010.765	-2685.09	1,927.497**
		(2,389.04)	(3,598.84)	(844.72)
R-squared		0.326	0.387	0.417

Note: 1) Standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1.
2) Coefficients of other variables are not shown for a simple presentation. Full regression analysis results can be provided upon request.

Conclusion

Korea's macro-prudential measures in the 2000's did not have an impact on the bond investments made by the foreign investors but did affect the maturity structure of the banks' foreign liability. The revival of tax on the foreign investors' bond investments did not have much effect since the tax exception period was short. The limitation on the forward positions and the imposition of macro-prudential levy intended on limiting the short-term liability and lengthening the maturity structures. Consequently, they increased the long-term foreign liability of the banks. The limitation on the forward position and the macro-prudential levy was introduced to alleviate the problem of short-term foreign liability, which was blamed as the weakness of Korean economy during the global financial crisis. Hence, we can conclude that they have achieved their intended goal.

One of the important goals of the macro-prudential measures is to prepare for the liquidity crisis, but this analysis does not address that possibility. Since the liquidity crisis did not occur after the implementation of the macro-prudential measures, the effect of those measures as a preparation for such crisis was not analyzed.

However, because the macro-prudential measures are effectively limiting the increase ratio of banks' short-term foreign liabilities, which were pointed out during the financial crisis, we can conjecture that those regulations will help to avoid the reappearance of liquidity crisis.

Besides the macro-prudential measures, we also need to adopt policies for maintaining and managing the stable supply of foreign currency. For instance, effort for a positive sovereign credit rate and proper national debt level is required. And in order to stabilize domestic financial market, we have to promote the capital market so that the effect of external shocks can be minimized. KIEP