

Managing Capital Flows in Local Currency Bond Markets

Introduction

Capital inflows have surged in recent years after a sharp drop during the 2008/09 global financial crisis.

The volume and pace of capital flows to emerging East Asian economies have surged, posing a serious challenge to macroeconomic management and financial stability.⁵ The strong foreign investor appetite for the region's assets is reflected in the fact that net capital inflows rose from their troughs in early 2009 to their recent peak in just 5 quarters: by mid-2010, gross inflows had surpassed previous highs attained in 2007. Conversely, it took 25 quarters for net capital inflows to fully recover in the aftermath of the 1997/98 Asian financial crisis (IMF 2011).

The recent surge in inflows has been characterized as the third wave of capital inflows into the region. The first wave started in the early 1990s, but was disrupted by the crippling Asian financial crisis. The second wave began in the early 2000s and ended with the onset of the global financial crisis. In 2008, following the Lehman collapse, there was a reversal of capital flows as market uncertainty rose and increased risk perception resulted in a flight to safe assets.

The reversal in capital inflows after the global financial crisis lasted only a short while and had minimal impact on the region's financial systems.

Fortunately for the region, the impact of capital outflows on the broader economy during the 2008/09 global financial crisis was less disruptive than during the 1997/98 Asian financial crisis. Part of the reason was that Asian policymakers had learned well the lessons from the previous

crisis and by 2008 the region had strengthened both its financial systems and macroeconomic fundamentals. Although there were initially large capital outflows from the region during the global financial crisis, these did not precipitate a banking or currency crisis. The region's economies and financial systems remained resilient and did not suffer as much as those of the United States (US) and Europe. When investors realized that the economic and financial conditions in emerging East Asia remained robust, foreign funds soon returned to the region.

The swift resumption of capital inflows into the region in 2009 was seen as a strong vote of confidence in the region's economies, underscoring their resilience in the face of the global financial crisis. However, as the size of the capital inflows continued to grow, especially in 2010, concerns arose about a repeat of the 1997/98 Asian financial crisis. Policymakers feared that a surge in capital flows could lead to asset bubbles and put upward pressure on exchange rates. There were also concerns about sudden reversals of capital inflows, which could destabilize asset prices and financial markets. As can be seen from the severe recession following the 1997/98 Asian financial crisis, the cost of capital flow volatility can be very high indeed.

Capital inflows in recent years have been driven by both improved economic fundamentals in the region and low interest rates in advanced economies.

The increased capital inflows into emerging East Asia are not necessarily a result of just domestic reforms and policies—the “pull factors.” They also reflect the ultra-loose monetary policies in the industrial economies and low returns in mature markets—the “push factors.” These factors have led to a major rebalancing of global institutional portfolio flows toward Asian assets, driven by improving economic fundamentals,

⁵ Emerging East Asia, as discussed in this section, comprises the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; and Thailand.

diversification needs, lower portfolio volatility, and the hunt for yields. The US Federal Reserve's continued quantitative easing could further spur capital inflows into the region. This has sparked concerns among the region's policymakers over how to manage these inflows. In particular, portfolio flows to the region have emerged as a channel for volatility originating in the mature markets of the US and Europe due to distortions in the interest rate regimes in these developed markets.

This special section examines the role of the region's local currency (LCY) bond markets as conduits for volatile capital flows. Emerging East Asia's LCY bond markets have grown by leaps and bounds since the 1997/98 Asian financial crisis. At that time, the lack of well-developed LCY bond markets was cited as a major contributor to the currency and maturity mismatches that plagued the region during the crisis.

LCY bond markets in the region have seen strong interest from foreign investors.

Emerging East Asia's LCY bond markets have shown remarkable growth. The region's LCY bonds have emerged as a distinct asset class and are now attracting strong foreign investor interest. Foreign holdings of domestic Asian government bonds have significantly risen in recent years, driven by yield differentials, the growth potential of the region, and expectations of currency appreciation. But these foreign inflows into Asian domestic bond markets, which are a relatively new phenomenon, have also been volatile and could pose challenges to monetary authorities and market regulators. Monitoring and managing capital inflows into LCY bond markets is important as these inflows can have an impact on fiscal and monetary policies.

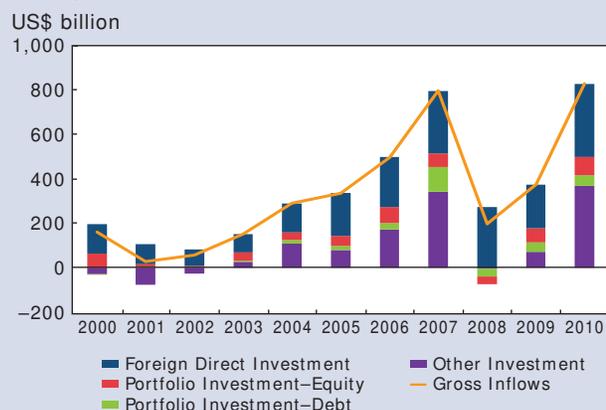
Historical Overview of Capital Inflows

The capital inflows into the region can be broadly divided into three categories: (i) foreign direct

investment (FDI), (ii) portfolio investment, and (iii) other investment. Certain types of capital flows are seen to be more conducive for development than others. FDI, in particular, is seen as the most desirable type of capital inflows because it facilitates the transfer of technology and opens up opportunities for new markets abroad. Further, FDI is seen to be more stable and less prone to sudden reversals. In fact, FDI flows in 2000–10 remained relatively stable in emerging East Asia, even during the 2008/09 global financial crisis when other types of inflows dropped precipitously (Figures 13, 14).

Portfolio investment comprises bond and equity flows, and is usually perceived to be the most volatile of capital flows. Bond and equity investors are generally viewed as short-term investors chasing after the latest investment trend. Portfolio flows are not considered to be as beneficial to a host economy as FDI since they do not involve the transfer of knowledge and technology. In addition, they can be subject to herding behavior and contagion effects, which can lead to sudden, large capital outflows. This was demonstrated in 2008 after the collapse of Lehman Brothers when there was a huge outflow of portfolio investment from the region.

Figure 13: Composition of Gross Inflows in Emerging East Asia

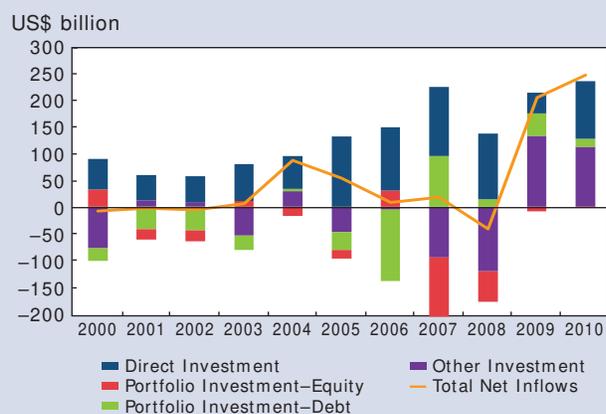


Notes:

a. Gross Inflows = Foreign Direct Investment + Portfolio Investment + Other Investment.

b. Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; and Thailand.

Source: ADB staff calculations based on balance of payments data (BPM5) from *International Financial Statistics*, IMF.

Figure 14: Composition of Net Inflows in Emerging East Asia**Notes:**

- a. Net Inflows = Net Direct Investment + Net Portfolio Investment + Net Other Investment.
 b. Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; and Thailand.
 Source: ADB staff calculations based on balance of payments data (BPM5) from *International Financial Statistics*, IMF.

The final type of capital inflows is other investment, which consists mostly of bank lending. Traditionally, bank lending is seen as more stable than portfolio flows as banks usually prefer to maintain long-term relationships with their clients. However, past experience suggests that during crises banks tend to pull back from their lending. For example, during the 1997/98 Asian financial crisis, most of the reversal in capital flows was driven by a plunge in bank lending. Not surprisingly, other investment flows remained low in many Asian economies in the aftermath of the Asian financial crisis. However, there has been an increase in other investment flows into the region in recent years.

FDI remains an important component of capital flows into the region, but there is considerable diversity across countries.

Looking at the capital account composition, FDI continues to be a major source of capital inflows for emerging East Asia (**Table 9**). Roughly comparable in size to FDI is other investment inflows. There has also been a trend toward a greater share of portfolio investment inflows, both

in equity and debt. However, the aggregate data masks considerable diversity within the region in the composition of capital flows in 2000–10. In Malaysia and Thailand, for example, FDI has grown in importance and represents a huge portion of capital inflows. In Indonesia, FDI and portfolio debt investment combined account for about half of all capital inflows. FDI remains the largest source of capital inflows into the PRC, but portfolio investment and other investment are growing in importance over time. Finally, capital inflows into the Republic of Korea's capital account are mostly in the form of portfolio investment.

Portfolio investment's share of capital inflows has been growing due to financial market liberalization and development.

Since the early 1990s, and continuing after the 1997/98 Asian financial crisis, the share of portfolio investment in the region's capital account has increased, although FDI and other investment still comprise the lion's share. As a result, there are rising concerns that portfolio investment flows could become a source of volatility in emerging East Asia. The growing share of portfolio investment in the capital account can be attributed to the gradual liberalization and development of financial markets in the region. Furthermore, the degree of capital market integration has also been increasing, coupled with a push by policymakers to encourage greater intra-regional investment flows.

Debt security portfolio investment has also grown in emerging East Asia. In Indonesia, Malaysia, the Philippines, and Thailand, debt market investment began increasing as a share of portfolio inflows in 2004. By 2009/10, in the aftermath of the global financial crisis, portfolio inflows to the region went mainly to debt markets. The growth in portfolio debt securities investment in much of the region could be an indication that the bond markets in these countries are developing and becoming more attractive for foreign investors. On the other hand, foreign investment in debt securities in the PRC remains minimal.

Table 9: Composition of Gross Capital Inflows Over Time (% of total inflows)

	1980–89			1990–99			2000–10					
	Foreign Direct Investment	Portfolio Investment		Other Investment	Foreign Direct Investment	Portfolio Investment		Other Investment	Foreign Direct Investment	Portfolio Investment		Other Investment
		Equity	Debt			Equity	Debt			Equity	Debt	
China, People's Rep. of	37.06	–	12.71	50.23	90.14	2.24	3.76	3.86	63.18	10.17	0.50	26.15
Hong Kong, China	–	–	–	–	(26.69)	(39.59)	2.20	164.08	49.42	18.17	(0.13)	32.54
Indonesia	9.58	–	1.85	88.57	50.51	(7.31)	26.72	30.08	50.66	14.46	52.97	(18.09)
Korea, Rep. of	27.18	–	14.48	58.34	15.53	25.25	27.38	31.84	15.03	9.30	52.38	23.28
Malaysia	51.78	–	27.12	21.10	81.14	–	(8.31)	28.92	103.62	(9.88)	21.76	(9.81)
Philippines	15.88	–	3.07	81.05	22.76	4.69	22.06	50.49	48.28	17.65	37.66	(3.59)
Singapore	44.41	3.99	-0.57	52.17	48.06	5.02	0.32	46.60	44.40	5.85	1.26	48.49
Thailand	20.95	10.89	4.37	63.79	35.46	13.18	11.12	40.24	86.41	23.14	5.99	(15.55)

– = data unavailable, () = negative.

Source: ADB staff calculations based on balance of payments data (BPM5) from *International Financial Statistics*, IMF.

As portfolio inflows tend to be volatile, it is important to understand what is driving the inflows.

As capital inflows can be volatile, policymakers are keen to better understand the determinants of such inflows into the region. While it is clear that capital flows can bring benefits to the receiving economy, there are risks associated with volatile capital flows. For policymakers to better judge their benefits and costs, they need to understand the determinants of capital inflows.

One reason for the increased concern is that in most countries in the region portfolio investment is more volatile than FDI (**Table 10**). Other investment flows are also showing increasing volatility in most countries (**Table 11**). As emerging East Asian

economies continue to develop their financial systems and the share of other investment and portfolio flows in the capital account grows, capital flow volatility is also increasing.

A major fear of the region's policymakers is that capital flows might suddenly reverse. This is what happened in 2008 at the height of the global financial crisis when large amounts of capital began flowing out of the region. **Table 12** shows that in 2008 nonregional investors were more likely to withdraw their funds than regional investors. (The exception was the case of Indonesia, where regional investors withdrew more of their money than nonregional investors.) Therefore, there is some basis for the claim that regional investors are more confident in emerging East Asia's medium- and long-term prospects than

Table 10: Coefficient of Variation of Capital Inflows

	PRC	HK	ID	KR	MY	PH	SG	TH
Foreign Direct Investment	1.14	0.53	1.72	1.24	0.86	0.93	1.19	1.06
Equity Capital	1.11	1.73	1.24	1.31	0.74	0.90	1.22	1.02
Reinvested Earnings	0.66	0.62	–	–	–	1.63	–	0.37
Other Capital	0.79	1.62	13.57	1.10	1.31	1.77	0.89	2.53
Portfolio Investment	1.50	1.55	1.90	1.69	44.14	2.03	3.89	1.71
Equity Securities	0.99	1.16	4.44	4.12	7.37	2.11	3.99	1.79
Debt Securities	1.29	37.55	1.72	1.90	8.10	2.16	5.12	2.99
Other Investments	2.33	17.70	3.98	3.30	5.78	1.89	1.60	6.15
Gross Inflows	1.34	1.77	1.59	1.52	1.84	1.21	1.35	1.63

– = data unavailable; HK = Hong Kong, China; ID = Indonesia; KR = Republic of Korea; MY = Malaysia; PH = Philippines; PRC = People's Republic of China; SG = Singapore; TH = Thailand.

Source: ADB staff calculations based on balance of payments data (BPM5) from *International Financial Statistics*, IMF.

Table 11: Coefficient of Variation of Capital Inflows Over Time

	1980–89				1990–99				2000–10			
	Foreign Direct Investment	Portfolio Investment		Other Investment	Foreign Direct Investment	Portfolio Investment		Other Investment	Foreign Direct Investment	Portfolio Investment		Other Investment
		Equity	Debt			Equity	Debt			Equity	Debt	
China, People's Rep. of	0.59	–	1.02	0.90	0.57	1.22	1.39	4.62	0.56	0.82	1.03	1.36
Hong Kong, China	–	–	–	–	0.35	1.52	0.28	0.36	0.49	1.05	130.88	2.36
Indonesia	0.52	–	3.02	0.51	1.10	6.82	1.22	1.74	1.47	1.16	1.13	3.14
Korea, Rep. of	1.08	–	3.37	6.26	1.08	0.83	1.38	2.20	0.67	7.40	1.12	3.32
Malaysia	0.43	–	1.44	3.88	0.27	–	1.30	1.64	0.61	7.37	4.59	7.07
Philippines	1.47	–	2.05	1.42	0.51	1.74	1.21	0.74	0.56	2.32	1.99	22.96
Singapore	0.47	1.21	1.10	0.97	0.53	1.39	2.17	1.64	0.56	2.89	3.25	0.85
Thailand	1.03	1.69	2.63	0.73	0.64	1.15	1.50	3.14	0.40	1.41	4.54	6.38

– = data unavailable.

Note: Coefficient of variation is calculated as standard deviation divided by average of values corresponding to a period range.

Source: ADB staff calculations based on balance of payments data (BPM5) from *International Financial Statistics*, IMF.

nonregional investors. But even as emerging East Asia's intra-regional share of portfolio investment has risen, nonregional sources remain much more important (**Table 13**). The region's policymakers should facilitate greater intra-regional investment to encourage greater capital flow stability.

Rising Foreign Participation in Emerging East Asian Bond Markets

One of the most significant financial developments in emerging economies, particularly emerging East Asia, has been the rapid growth of LCY debt markets. In the past 10 years, emerging East Asia's LCY bond markets have grown by over 16% annually and now account for nearly 10% of total global bonds outstanding. The region's expanding LCY bond markets have reduced the need to borrow in foreign currency (FCY), allowing governments and companies to borrow more in LCY and at longer maturities.

Growth in the use of LCY bonds has helped facilitate management of the region's economies and increased financial stability.

A heavy reliance on foreign borrowing in the past has complicated the use of macroeconomic policy as a countercyclical tool. For example, when faced with an economic slowdown, expansionary policies

Table 12: Portfolio Investment Decline in 2008 by Region (% of total per region)

	Emerging East Asia	Rest of the World	Total Decline in Portfolio Investment
China, People's Rep. of	33.36	45.47	39.77
Hong Kong, China	44.69	45.93	45.77
Indonesia	52.29	31.13	35.85
Korea, Rep. of	7.27	48.79	43.26
Malaysia	35.97	48.78	45.09
Philippines	22.11	49.46	46.94
Singapore	31.30	50.25	48.71
Thailand	38.25	43.52	42.70

Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; and Thailand.

Source: IMF Coordinated Portfolio Investment Survey.

tend to cause exchange rates to depreciate. This has the impact of increasing the debt servicing costs of FCY bonds, forcing governments to either reduce spending or raise taxes. Large holdings of FCY debt also tend to lead to monetary policies that are primarily focused on managing exchange rates rather than stabilizing the domestic economy. The growth of LCY bond markets has mitigated some of these difficulties in economic management and improved the resilience and financial stability of many emerging East Asian economies.

Not only has there been a shift toward greater reliance upon LCY bonds recently, the region's investor base is also diversifying. While domestic

Table 13: Regional Sources of Portfolio Investment Liabilities (% of total investment)

	Origin of Investment	1997	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
China, People's Rep. of	Emerging East Asia	5.41	49.91	43.21	41.83	46.56	41.83	39.83	47.05	52.06	45.53	49.72	55.10
	Rest of the World	94.59	50.09	56.79	58.17	53.44	58.17	60.17	52.95	47.94	54.47	50.28	44.90
Hong Kong, China	Emerging East Asia	4.52	5.70	7.63	7.06	7.47	12.14	12.74	12.39	12.64	9.02	8.57	10.47
	Rest of the World	95.48	94.30	92.37	92.94	92.53	87.86	87.26	87.61	87.36	90.98	91.43	89.53
Indonesia	Emerging East Asia	18.22	17.01	26.10	15.81	16.02	19.71	17.95	22.28	16.57	16.91	23.36	19.71
	Rest of the World	81.78	82.99	73.90	84.19	83.98	80.29	82.05	77.72	83.43	83.09	76.64	80.29
Korea, Rep. of	Emerging East Asia	0.78	11.49	13.98	14.82	13.00	10.43	11.25	13.32	21.77	21.48	17.11	18.48
	Rest of the World	99.22	88.51	86.02	85.18	87.00	89.57	88.75	86.68	78.23	78.52	82.89	81.52
Malaysia	Emerging East Asia	23.24	43.17	45.59	37.31	37.81	37.18	29.61	28.79	33.57	26.60	24.55	25.37
	Rest of the World	76.76	56.83	54.41	62.69	62.19	62.82	70.39	71.21	66.43	73.40	75.45	74.63
Philippines	Emerging East Asia	6.14	21.84	16.72	13.19	11.34	9.51	8.90	9.22	13.53	12.38	13.55	11.46
	Rest of the World	93.86	78.16	83.28	86.81	88.66	90.49	91.10	90.78	86.47	87.62	86.45	88.54
Singapore	Emerging East Asia	3.30	6.94	9.56	11.82	11.55	11.01	9.77	8.13	10.90	10.23	13.65	12.51
	Rest of the World	96.70	93.06	90.44	88.18	88.45	88.99	90.23	91.87	89.10	89.77	86.35	87.49
Thailand	Emerging East Asia	10.78	31.32	30.65	26.54	23.84	21.90	17.66	15.51	16.71	12.42	15.33	15.26
	Rest of the World	89.22	68.68	69.35	73.46	76.16	78.10	82.34	84.49	83.29	87.58	84.67	84.74

Note: Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; and Thailand.

Source: IMF Coordinated Portfolio Investment Survey.

banks and financial institutions still dominate many LCY bond markets, their share is declining as both domestic and foreign institutional investors like mutual funds, pension funds, and insurance companies grow in importance. In particular, foreign investors' holdings of emerging East Asian LCY bonds have increased significantly over the past few years and they play an important role in developing these markets. Apart from expanding the investor base and improving liquidity, they bring in expertise and technology that is beneficial to developing local markets. In general, investor heterogeneity tends to promote trading as different classes of investors have varying risk profiles and trading strategies. Therefore, foreign participation can help price discovery and lead to more liquid and efficient markets, all of which help to lower the cost of borrowing.

The attraction of emerging East Asian LCY bonds lies in strong credit quality and the potential for further currency appreciation. The credit quality of Asian debt has improved significantly in recent years, as evidenced by ratings upgrades in Indonesia and the Philippines. The improved credit quality has been driven by strong growth prospects, fiscal discipline, increased financial openness, rising

productivity, growth in corporate profitability, and attractive yields. By most measures, emerging East Asian governments are in much better fiscal health than the US and eurozone economies.

Increased foreign investor participation has helped reduce yields and improve liquidity and efficiency in the region's LCY bond markets.

Greater foreign investment has helped depress yields in the region by increasing the demand for LCY bonds. Foreign investors may act as an important provider of liquidity in many local markets. Domestic banks and financial institutions, which are still the major buyers of government debt in the region, tend toward a buy-and-hold strategy. Furthermore, the scrutiny of foreign investors and analysts may help improve the monitoring and assessment of credit risks in the region.

However, certain classes of foreign investors can also increase volatility because of their sensitivity to macroeconomic imbalances. During times of market stress, this can impact the conduct of monetary policies if central banks intervene to stabilize government bond yields and exchange

rates. The region witnessed the withdrawal of foreign funds in some local markets after the collapse of Lehman Brothers in September 2008. This led to a jump in bond yields and pushed up the cost of borrowing for governments and companies. When authorities unveiled massive fiscal support packages and eased monetary policies, and the region's economies subsequently recovered, foreign investors soon returned to emerging East Asia's LCY bond markets.

What Is Driving Foreign Fund Inflows into the Region?

To better understand the nature of capital flows in the region, we try to examine the determinants of the level of foreign holdings in government securities. As mentioned above, the factors determining capital flows can be classified broadly into two categories. The first group—push factors—are related to conditions specific to the sending country. Examples of push factors include economic conditions and interest rates in the sending country that influence how investors perceive the attractiveness of investing abroad. The ongoing loose monetary policies in the US and Europe, and the resultant low interest rates, are major push factors causing capital to flow from the developed economies into emerging markets.

The second group—pull factors—are related to conditions in the receiving country. These could include domestic economic conditions and structural factors such as legal frameworks, rule of law, and the existence of capital controls. For example, a stable domestic macroeconomic environment that generates falling inflationary expectations could be expected to increase domestic demand for monetary assets that can be supplied by capital inflows. A positive productivity shock that increases the efficiency of the economy could also attract more capital inflows.

For policymakers in the region trying to manage capital inflows, it is important to distinguish between push and pull factors. If capital flows are driven more by push factors, this would suggest that the receiving countries are more vulnerable to

external shocks and policymakers in the receiving countries will have less influence over such flows. However, if capital flows are mostly the result of pull factors, policymakers in the receiving country will have a greater ability to influence capital flows. In addition, if there is a common external factor driving capital flows into the region, there may be a need for regional cooperation among the countries affected to manage the capital flows.

To better understand the factors driving foreign flows into the region, we estimate a panel regression model using quarterly data from 1Q04 through 4Q11 for four Asian economies—Indonesia, the Republic of Korea, Malaysia, and Thailand—to examine the determinants of foreign participation in an LCY bond market.⁶ Our specification is based on the risk–return framework of portfolio management and can be written as follows:

$$ShareFl_t = \beta_0 + \beta_1 Spread_t + \beta_2 ERPremium_t + \beta_3 ERVolatility_t + \beta_4 Ratings_t + \beta_5 BAS_t + \varepsilon_t$$

The dependent variable in our regression equation is the percentage share of foreign holdings in an LCY bond market. Our independent variables consist of factors that affect the returns and risks of foreign investors participating in an LCY bond market. The first variable is the government bond yield spreads between local markets and global markets (US Treasuries), denoted as *Spread*. This is measured by the difference in yields on 5-year LCY government bonds and the yield on the 5-year US Treasury bond. A higher spread will be expected to increase foreign participation. Next we have the expected change in exchange rates (*ERPremium*), measured using the 6-month forward premium. This variable indicates the expected currency gains investors can realize from holding an LCY bond, with a higher premium representing greater exchange rate appreciation gains for foreign investors.

We then include several variables to measure risk such as exchange rate volatility (*ERVolatility*),

⁶ S. Mitra and T.H. Ng. 2013. Managing Foreign Fund Flows into Asia's Local Currency Bond Markets. *Asian Capital Market Development and Integration: Challenges and Opportunities*.

credit ratings (*Ratings*), and the bid-ask spread (*BAS*). The exchange rate volatility measures valuation risks as fluctuations in the exchange rate make it difficult for investors to forecast the dollar value of an LCY investment and creates uncertainties in the dollar pricing of an asset; thus, a negative relationship between volatility and foreign investor participation is expected.

Aside from valuation risks, investors are also concerned about default risks. A commonly used indicator for default probability is sovereign credit ratings as these capture characteristics pertaining to economic structure, growth prospects, external liquidity, fiscal performance, debt burden, and monetary flexibility, all of which are important indicators of the economy's health and repayment capacity. Our credit ratings variable is constructed using the numerical scale from Standard & Poor's (S&P) sovereign credit ratings. Higher values indicate lower ratings, hence we expect to see a negative relationship between credit ratings and foreign participation. The bid-ask spread is a measure of bond market liquidity and can also indicate risks where a large spread indicates an illiquid market. We would expect foreign participation to be less in markets with higher bid-ask spreads.

Higher yields, appreciating currencies, improved credit ratings, and lower exchange rate volatility increase foreign participation in LCY bond markets.

The results of our estimation are shown in column 1 of **Table 14**. Our return and risk variables are all significant and have the expected sign. The result of the estimation confirms that higher returns in domestic bond markets, both in terms of yield spreads and expected appreciation of regional currencies, are significant factors influencing foreign portfolio inflows into domestic government bond markets. Higher exchange rate volatility discourages foreign investment in LCY bond markets as it increases fluctuations in the value of portfolio holdings in FCY terms. The credit ratings of emerging East Asian markets are a significant factor in influencing foreign participation in local

debt markets, while higher liquidity also helps in attracting foreign investors. Non-resident investors, particularly short-term or leveraged players, prefer deep and liquid markets for easy entry and exit. Our results show that lower bid-ask spreads, which indicate greater liquidity, are associated with higher levels of foreign participation. A liquid financial market enables investors to better price their investments and minimize price fluctuations, resulting in reduced uncertainty in return valuation.

The Lehman crisis had an impact on foreign participation but not financial openness.

To account for possible structural breaks following the Lehman Brothers collapse, the equation was extended to include a crisis dummy (*Lehman*) that takes on the value of 1 in the crisis period. In addition, we have also added a measure of financial openness (*FinOpen*) that captures the degree of restrictions imposed on foreign investors. We use the financial openness index computed by Chinn and Ito (2008) as our indicator.⁷ The resulting equation is below:

$$\begin{aligned} ShareFI_t = & \beta_0 + \beta_1 Spread_t + \beta_2 ERPremium_t \\ & + \beta_3 ERVolatility_t + \beta_4 Ratings_t + \beta_5 BAS_t \\ & + \beta_6 Lehman_t + \beta_7 FinOpen_t + \varepsilon_t \end{aligned}$$

The results of the estimation with the two additional variables are shown in column 2 of Table 14. We found the dummy variable for the Lehman collapse to be significant. This suggests that foreign fund inflows into the region continue to be affected by global conditions. However, the coefficient for financial openness was not found to be significant. One reason could be that the increase in global liquidity has made capital controls less of a constraint. Another reason is that since the countries in our sample all have relatively open capital markets the differences in financial openness scores may not be big enough to be an important factor.

⁷ M. Chinn and H. Ito. 2008. *A New Measure of Financial Openness*. *Journal of Comparative Policy Analysis*. 10(3). pp. 378-407.

Table 14: Regression Results

Dependent Variable: Foreign Holdings of LCY Bonds (as % of LCY bond market size)

	Model Specifications		
	(1)	(2)	(3)
Yield Spread (%)	1.655 (0.724)*	1.897 (0.645)**	1.517 (0.623)*
Exchange Rate Premium	0.009 (0.003)**	0.009 (0.003)**	0.010 (0.002)**
Exchange Rate Volatility	-0.024 (0.008)**	-0.022 (0.007)**	-0.022 (0.008)**
Credit Ratings (FCY Sovereigns)	-25.033 (4.248)**	-24.866 (4.574)**	-22.278 (5.879)**
Bid-Ask Spread (%)	-0.068 (0.023)**	-0.072 (0.023)**	-0.082 (0.026)**
Dummy Variable for Lehman Collapse		-2.236 (0.229)**	
Financial Openness		0.503 (0.586)	
Interaction Term (Lehman Dummy * VIX)			-0.052 (0.005)**
Domestic Credit (% of GDP)			0.089 (0.026)**
Constant	89.438 (14.834)	88.468 (15.876)	73.522 (19.502)
R-squared	0.857	0.861	0.871
Adjusted R-squared	0.845	0.847	0.857
No. of Observations	108	108	108

FCY = foreign currency, GDP = gross domestic product, LCY = local currency.

Notes: 1. * and ** indicate significance at the 5% and 1% level of significance, respectively.

2. Standard errors are in parenthesis.

3. All variables are stationary.

Lower global risk perceptions and more developed domestic financial markets are contributing to higher foreign participation in emerging East Asia's LCY bond markets.

Risks in advanced countries' financial markets may also be an important determinant of foreign participation in the region's LCY bond market. Higher risks in these markets may result in greater risk aversion among foreign investors, thus reducing interest in the region's bond market. The VIX, a measure of volatility in equity markets, is used to measure risks in foreign financial markets. To capture whether market jitters in mature markets are transmitted to emerging

markets through foreign investors' appetite for LCY bonds, VIX is entered as an interaction term ($VIX * Lehman$) in the equation. A negative coefficient for the interaction between the Lehman crisis dummy and the VIX indicates a flight to safety in which nervous foreign players move out of emerging bond markets perceived to be riskier. The banking sector is likewise an important player in the domestic bond market as banks act as both market-makers and investors. The banks can either compete with foreign investors in their demand for LCY bonds or encourage foreign investment as a healthy banking sector increases investor confidence in the domestic financial system; a positive coefficient indicates the latter relationship. Domestic credit (DC) is added to

the specification to measure the size of the banking sector:

$$\begin{aligned} \text{ShareFl}_t = & \beta_0 + \beta_1 \text{Spread}_t + \beta_2 \text{ERPremium}_t \\ & + \beta_3 \text{ERVolatility}_t + \beta_4 \text{Ratings}_t + \beta_5 \text{BAS}_t \\ & + \beta_6 (\text{VIX}_t * \text{Lehman}_t) + \beta_7 \text{DC}_t + \varepsilon_t \end{aligned}$$

The results of the expanded regression are shown in column 3 of Table 14. We found the interaction term to be negative and significant. This highlights the potential for sudden withdrawals of funds from the region during periods of heightened global uncertainty and crisis. We also find that domestic credit positively affects foreign flows into the LCY bond market, highlighting the important role of the banking sector in bond market development. Banks and financial institutions are the largest holders of government bonds in most emerging East Asian markets, where they act as key market-makers.

Managing Foreign Fund Inflows

Both domestic and global factors are important determinants of inflows into the region's bond markets.

Our empirical results suggest that push and pull factors are both responsible for capital inflows into the region's LCY bond markets. Improved macroeconomic conditions, and the subsequent improvement in credit ratings and stability in exchange rates, have all contributed to increased capital inflows. Bond market characteristics, such as liquidity, also prove to be significant in attracting foreign investors. This suggests the importance of continuing to develop LCY bond markets—increasing the market size, improving return prospects, and enhancing market liquidity—to bring stability to beneficial foreign participation.

However, we also found that the conditions in global financial markets affected the flow of funds in the region. Global market volatility has a significant negative impact on foreign participation in emerging East Asian LCY bond markets. This highlights the potential for sudden withdrawals during periods of heightened global uncertainty and crisis. While the region looks relatively

well-placed to deal with any sudden reversal in capital flows, policymakers must remain vigilant. Strong macroeconomic fundamentals within emerging East Asia suggest the cause of future capital reversals will likely emanate from outside the region, most likely due to volatility in global financial markets. This may drive investors away to safe haven assets—as happened in 2008.

Large inflows of funds can complicate policy management and may require balancing the needs of different policy objectives.

The significant impact of capital inflows has made policymakers more aware of the importance of judiciously managing them. Even inflows of funds of a more permanent nature can complicate policy management and may require policymakers to make tradeoffs on policy objectives. Large amounts of capital inflows put pressure on exchange rates and increase demand in the economy, potentially leading to exchange rate appreciation and overheating, respectively. Capital inflows may also result in asset price inflation and inflationary pressures if the authorities either do not allow the exchange rate to appreciate or are unable to engage in sterilization activities. Large capital flows through domestic bond markets can also hamper the monetary policy transmission mechanism. Central banks in Indonesia, the Republic of Korea, and Malaysia have raised policy rates at various points in the last few years to dampen the impact of rising liquidity. But large inflows of foreign investment in domestic bonds in these countries have exerted downward pressure on long-term interest rates, thereby constraining the transmission of the upward adjustments in policy rates.

The concerns of policymakers about capital inflows are not limited to macroeconomic effects. The impacts of capital inflows are usually magnified through the financial system. Inflows from abroad can help ease liquidity constraints and result in higher consumption and investment. This will tend to exacerbate the highs and lows of economic cycles. Higher credit and lending will tend to fuel asset price inflation, which could result in a

bubble. Borrowing that tends to be secured by assets as collateral is likely to accelerate as asset values rise.

Authorities in the region have implemented measures to manage capital inflows.

Given the myriad concerns about the impacts of capital inflows, authorities have tried to introduce measures to control surging inflows. These measures are usually aimed at avoiding excessive appreciation of the exchange rate, which could lead to a loss of export competitiveness, or ensuring that the domestic financial system and real economy are able to withstand the stress generated by sudden outflows.

Appropriate measures will depend on the objectives that policymakers are trying to pursue. If the aim is to maintain the competitiveness of the export industry, then allowing the exchange rate to appreciate to discourage further inflows is not an option. However, intervening in the foreign exchange market to moderate an increase in the exchange rate can also be costly. The increased supply of LCY from purchasing FCY will have to be sterilized. Otherwise, the increase in liquidity could destabilize the economy. The cost of sterilization is basically the difference between the interest rate that the monetary authorities have to offer on the securities it sells and the interest rate that the authorities receive from foreign reserves. These costs can rapidly rise so such interventions are usually seen as a short-term solution only. The lack of a well-developed government bond market could force the central bank to use short-term instruments to sterilize, which, in turn, can drive up short-term rates and attract more capital inflows that will only make open market operations more challenging.

Capital control measures can be used to limit destabilizing inflows.

In response to previous crises, authorities in the region established measures to control excessively volatile capital inflows. Since then, there has been

a change in attitude among international financial institutions toward the use of capital controls. For example, the International Monetary Fund (IMF) has recently suggested that capital flow management tools may be deployed in some situations, although these controls should not be seen as a substitute for macroeconomic adjustments. The IMF also emphasized the shared responsibility of capital control management among the countries in which the capital flows originate.

Within the region, capital control measures are usually addressed at limiting capital inflows that can be destabilizing to the economy. This is consistent with the IMF view that capital controls are justified to preserve financial stability in cases where excessive borrowing could threaten the health of the domestic financial system. Capital controls are usually introduced in situations where there are distortions in the domestic economy that can result in an excessive level of foreign borrowing. In this sense, restrictions on capital inflows are a second-best solution to the problem of imperfect markets. Capital controls may also be useful to insulate an economy from foreign financial shocks, preserve monetary policy independence, and encourage more long-term capital flows. However, the evidence of success in restricting the amount of capital flows is mixed. Further, there are concerns that capital controls' effectiveness may be temporary as there are usually other methods and channels available to circumvent capital controls. While capital controls may not be effective in managing the volume of capital inflows, they can affect the composition of the inflows, for example, by encouraging more investment in financial assets with longer maturities.

Another concern about the use of capital controls is the potential for diverting flows to another country or economy, thereby passing on the financial stability risks. For this reason, there is scope for countries to coordinate their policy actions to achieve a more efficient outcome. This would likely involve the participation of both the receiving and originating countries of the capital flows. Although it may be difficult to get the cooperation of originating countries to help mitigate the risks

of financial instability in receiving countries, it is important to encourage originating countries to adopt policies that would minimize the spillover effects in other countries.

Several emerging East Asian economies introduced capital control measures to slow the large amounts of capital inflows during the period of recovery following the 1997/98 Asian financial crisis. For instance, The Bank of Korea implemented a ban on financial firms buying FCY-denominated bonds sold locally, known as *kimchi* bonds, to prevent excessive short-term external debt, which was a key contributor to both the 1997/98 and 2008 financial crises. Given the high level of foreign holdings of LCY bonds in Indonesia, the government introduced a bond stabilization program that permits the use of state funds to purchase bonds in case of a massive sell-off.

Conclusion

For several of the small and open economies of emerging East Asia, managing capital inflows implies that authorities should employ an array of instruments to maintain financial stability while still allowing the smooth conduct of monetary policy. A key consideration in achieving that goal is to have well-developed and liquid government bond markets that will allow central banks to focus on their price stability objectives through open market operations. Increasing the issue size and holding more frequent auctions can also promote liquidity by having more “on the run” issues in the market. To the extent that these issues are better priced, secondary trading may be encouraged. Further, the presence of hedging instruments can also promote market activity as these instruments can lower risks. A liquid money market that ensures bondholder access to the cash market also reduces risks and promotes bond market liquidity.

Excess global liquidity will continue to present challenges for central banks in emerging East Asia as they seek to keep exchange rates flexible when

it is not feasible to fully absorb a sudden surge of large-scale inflows. This could result in volatile exchange rate swings that undermine trade and investment activities. On the other hand, there are multiple instruments— from short-term capital controls to administrative tools such as capital market return taxes—that can be intermittently employed to regulate pro-cyclical capital flows. But policymakers and regulators should be aware of the limitations of such instruments. Lastly, macroprudential policies should also be pursued to avoid potential asset bubbles and maintain financial stability. Given the exogenous nature of capital flows and the growing linkages between domestic, regional, and global markets, there is a case for greater cooperation between domestic, regional, and global authorities to build financial system resilience.

While the use of capital controls can be a useful tool for policymakers in managing capital flows, the policy focus for the region should be to improve the functioning of domestic financial systems to ensure that inflows of foreign capital will be put toward productive uses. Also, strengthening macroeconomic fundamentals will make an economy more resilient and less vulnerable to outside shocks. Episodes of capital flow reversals tend to be associated with either macroeconomic imbalances or problems with the domestic financial system that could be exacerbated by a regional or global crisis. Concerns about fiscal solvency and overvaluation of exchange rates tend to be the common triggers of capital outflows. A financial system that is perceived to be overstretched or insolvent may also prompt foreign investors to flee. While ensuring that macroeconomic fundamentals and the financial system are in order will reduce the risk of capital outflows, countries may also suffer capital outflows if global risk perceptions increase such as happened in 2008. In this case, while strong macroeconomic fundamentals and a resilient financial system may not prevent capital outflows, they can help ensure that the economy will be better able to withstand the shock and respond to it.