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**Working Paper**

## How Capital Flows Affect Economy-Wide Vulnerability and Inequality: Flow-of-Funds Analysis of Selected Asian Economies

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# HOW CAPITAL FLOWS AFFECT ECONOMY-WIDE VULNERABILITY AND INEQUALITY: FLOW-OF-FUNDS ANALYSIS OF SELECTED ASIAN ECONOMIES

*Iwan J. Azis and Damaris Yarcia*

**NO. 136**

July 2014

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REGIONAL ECONOMIC INTEGRATION**



ADB Working Paper Series on Regional Economic Integration

## How Capital Flows Affect Economy-Wide Vulnerability and Inequality: Flow-of-Funds Analysis of Selected Asian Economies

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No. 136 | July 2014

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## **Abstract**

In contrast to the situation that preceded the 1997–1998 Asian financial crisis, Asia today is a region with excess savings where corporate savings dominate. In the mid-2000s, the extent of liquidity was further amplified by massive capital flows, particularly bank-led flows. The flows were briefly interrupted by the global financial crisis, before debt-led flows began to dominate, following the Quantitative Easing (QE) policy in the United States. Using flow-of-funds data, this study determines that the surge in liquidity in Asian financial systems has changed the behavior of agents and institutions. The general trend shows that agent preferences for investing in financial instruments have increased as financial liberalization provides more opportunities to do so. This can have economy-wide repercussions, ranging from financial instability to widening income disparity and falling employment elasticity. In the banking sector, an increase in non-core sources of funding influences banks' asset allocation, with loans increasing rapidly, escalating the risks of pro-cyclicality and asset bubble creation.

*Keywords:* Excess Savings, International Fund Flows, Financial Risks, Volatility

*JEL Classification:* E44, F32

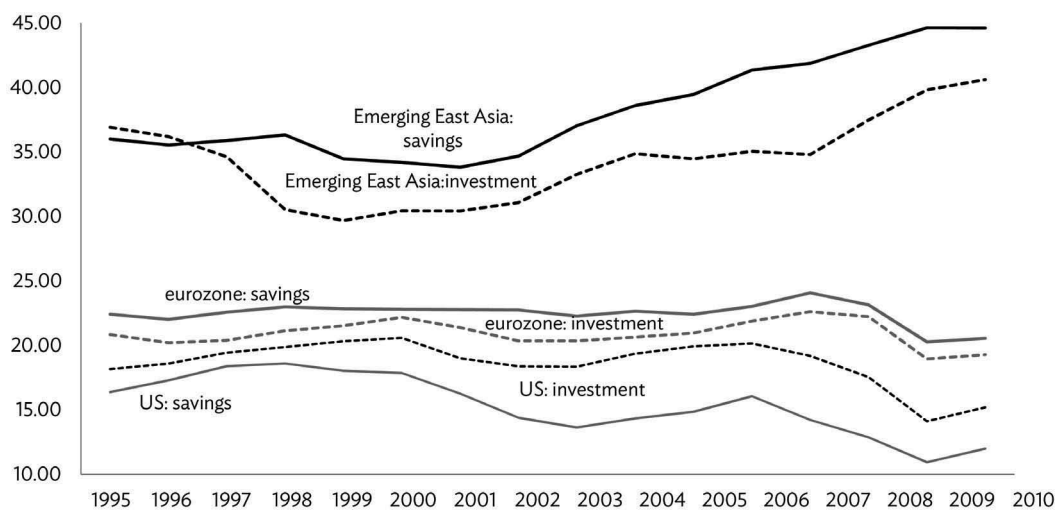




## 1. Introduction

There has been a dramatic change in the Asian economy in recent decades: excess investment has turned into excess savings. The turning point was the 1997–1998 Asian financial crisis (AFC) (Figure 1). The analysis of flow-of-funds (FOF) data reveals a change in agents' behavior, with an increased preference for investing in financial assets. Asymmetry in incentive systems and growing opportunities for financial investment (“financialization”)—resulting from financial liberalization and innovation—have contributed to such a trend. With expectations and uncertainty playing a determining role in firms' behavior, the corporate sector's savings are particularly high.

**Figure 1: Saving and Investment (% of GDP)**



Notes: Gross domestic savings = gross domestic product (GDP) less final consumption expenditure (total consumption). Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. The Eurozone comprises Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain. Emerging East Asia comprises the People's Republic of China; Hong Kong, China; Indonesia; Rep. of Korea; Malaysia; Philippines; Taipei, China; Thailand; and Viet Nam.

Source: World Development Indicators (accessed 21 August 2012); For Taipei, China, ADB Statistical Database System (accessed 21 August 2012).

Asia's liquidity conditions since the AFC have been further complicated by increased inflows of capital. With loose monetary policies and growing risks in advanced economies during and after the 2008–2009 global financial crisis (GFC), capital flocked to emerging markets. The size of these capital flows to Asia surged, and their volatility increased as well.

While growing demand for financial assets and rising capital flows boosted financial sector development and stimulated growth, the risks of financial instability also increased. Debt and bank-led flows shifted dramatically from negative to positive positions in the early 2000s. Debt-led flows, in particular, significantly expanded during the post-GFC period (Azis and Shin 2013). Volatile debt flows can undermine long-term financing in capital markets, especially

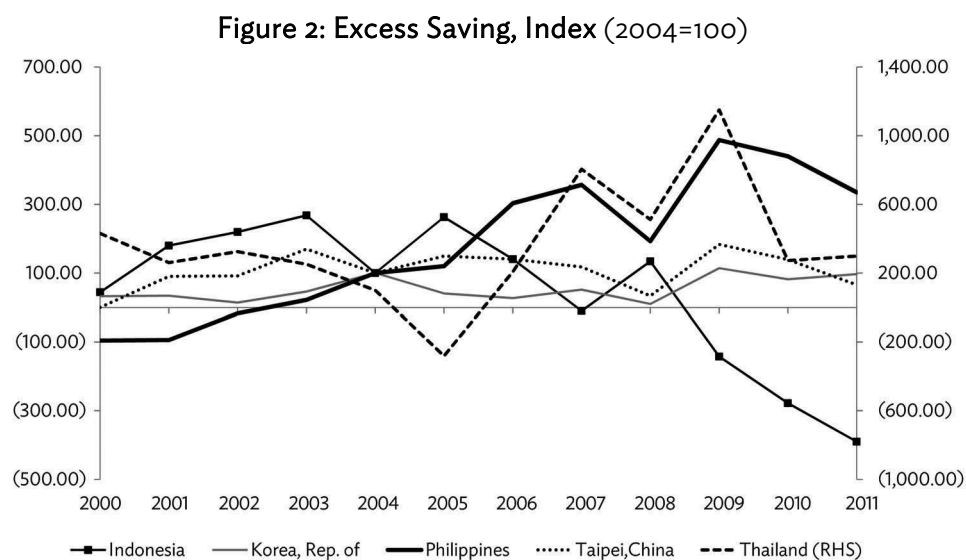
bond markets, while volatile bank-led flows can exacerbate pro-cyclicality, which can undermine credit markets. This is on top of the risks associated with growing pressures on exchange rates that led policy makers to respond with sterilized interventions or other forms of capital controls, lowering the effectiveness of standard monetary policy. At the same time, the socio-economic risks associated with growing income inequality and falling employment elasticity have increased.

After discussing the trends in and nature of excess savings and capital flows in Asia, this paper analyzes the consequences of such trends on agents' preferences and the economy-wide impacts. In particular, we highlight the potential vulnerabilities associated with macro-financial and socio-economic risks.

## 2. Excess Savings

This paper assesses five Asian economies to illustrate the changing trends and characteristics of excess savings: Indonesia; the Republic of Korea; the Philippines; Taipei,China; and Thailand. The period under review is divided into pre-GFC (2000–2007) and GFC (2008–2011). A graphical presentation is used to match assets and liabilities by instrument for each of the three economic agents: financial institutions, households, and corporations (non-financial). For clarity, only five key instruments are shown, the rest are lumped under the grouping “others.”

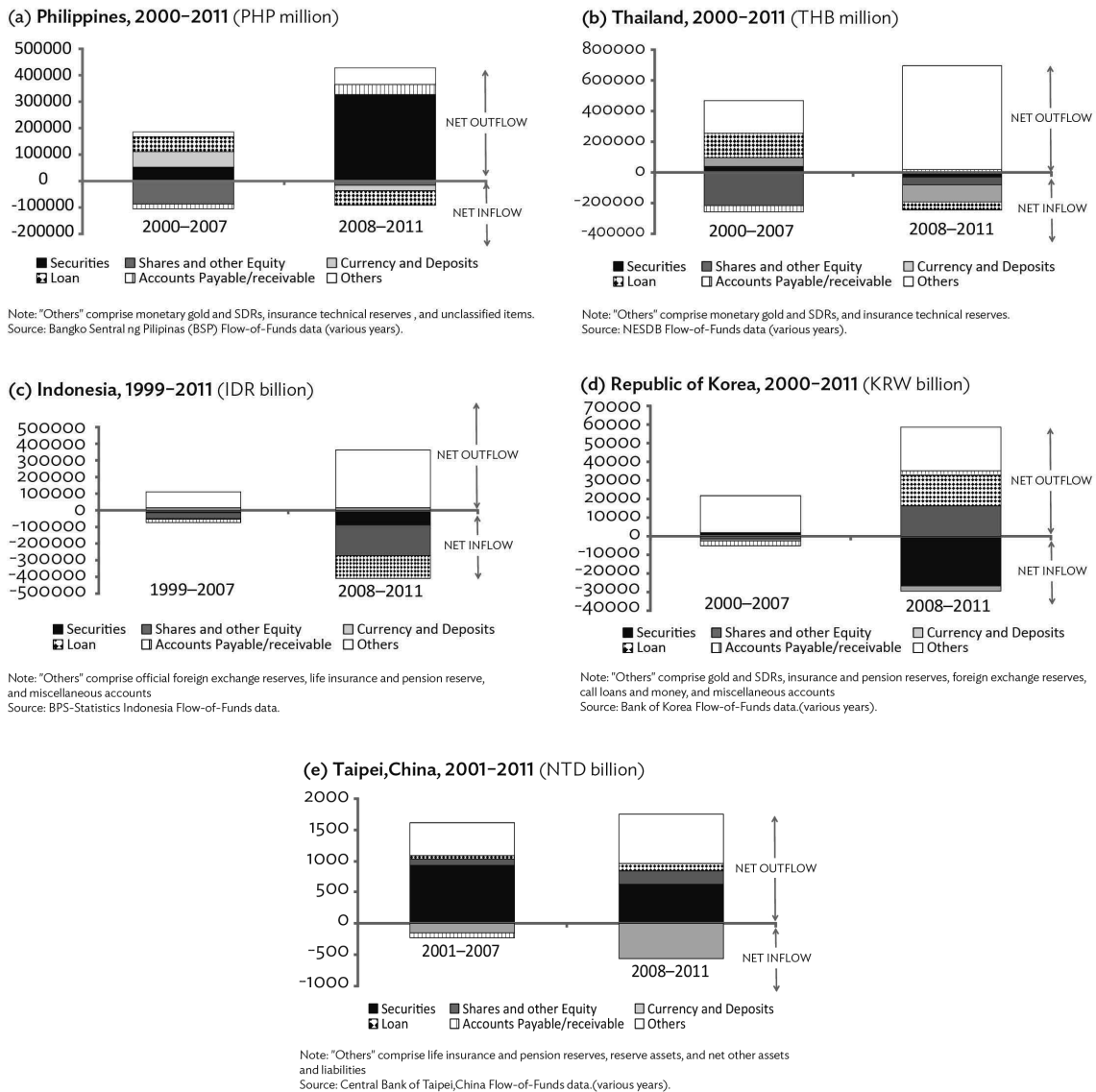
Some Asian economies experienced sharp increases in excess savings in the second half of the 2000s (Figure 2). This is most evident in the case of the Philippines and Thailand. An exception is Indonesia, which was increasingly in deficit during the same period.



Source: Flow-of-Funds data of individual countries (various years).

Even at the aggregate level, a change in the composition of excess saving is evident. For example, prior to the GFC, currency and deposits, loans, and securities all equally contributed to Philippines’ outflows. Post-GFC, outflows from the Philippines were largely in the form of securities. In terms of net inflows, loans increased in Indonesia, the Philippines, and Thailand during the GFC, while net outflows of loans and equities increased in the Republic of Korea and Taipei,China. Suffice to say, there has been a significant change in the level and in the composition of excess savings over the period (Figure 3).

**Figure 3: Excess Saving by Financial Instrument**



Except for Taipei,China, household loans rose significantly during the GFC in all economies under review. In Indonesia, the Philippines, and Thailand, household loans more than doubled relative to amounts in the pre-GFC period (Appendix 1). Together with the rise in loans, households became conservative during the GFC as they shifted their assets from securities to cash, deposits, and insurance funds (Appendix 2). Due to the rising household preference for liquidity during the GFC, banks generally benefited through expanding deposit bases as reflected in the rise of liabilities in the form of currency and deposits, while non-bank financial institutions benefited through increased pension reserves. Aside from increases in cash, there were also increases in non-core sources of funds in the financial sector during the GFC. These particular components capture capital flows intermediated by financial institutions as evidenced by their increasing share of non-core liabilities, which also reflects changes in the wholesale funding market. In the Philippines and Thailand, the contributions of other accounts payable and securities has increased since the GFC. The Republic of Korea experienced an increase in the share of equities, while Indonesia saw a rise in the share of loans and equities. In Taipei,China, non-core liabilities remained fixed and core sources of funds rose. The trend and changes in the composition of assets and liabilities of the financial institutions in each economy are shown in Appendix 3.

Easy money inevitably also affects how assets are held. Apart from ensuring greater liquidity, the policies of advanced economies led financial institutions in the Republic of Korea, the Philippines, and Taipei,China to increase their holdings of securities. Those in Thailand and Indonesia increased issuance of loans and accounts receivable.

The impact of easy money extended to the corporate sector as well. Securities markets served as the main conduit in the Republic of Korea, as funds from securities rose significantly between the pre-GFC and GFC periods. Funds from securities and equities increased in Indonesia; the Philippines; Taipei,China; and Thailand; but bank loans in these economies rose by an even larger proportion. Corporate assets also showed some changes. Apart from the higher allotment for liquidity, which was the common stance among economic agents during the crisis, corporate portfolios showed an increase in the relative share of equities in all economies during the GFC. In addition, accounts receivable and loans rose in the Philippines; accounts receivable rose in the Republic of Korea; and other items such as official foreign exchange reserves, insurance, and pension reserves and miscellaneous accounts rose in Indonesia. The trends in and composition of financial assets and liabilities of the corporate sector in each economy under review are displayed in Appendix 4.

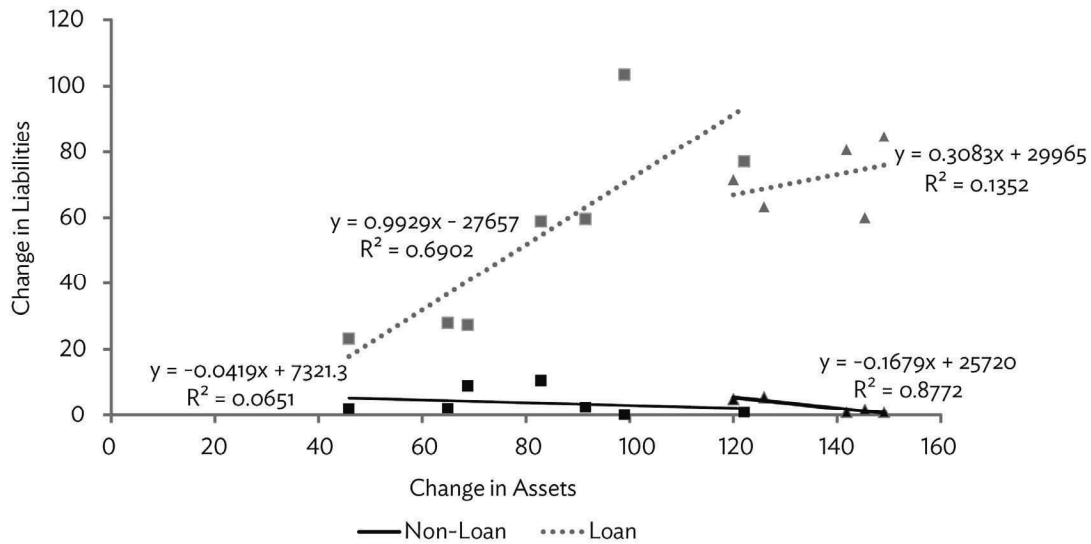
### **3. Agents' Preferences and Rising Corporate Savings**

Given the trend of excess savings in Asia, to what extent has the behavior of households, the financial sector, and firms changed, particularly after the GFC? By using 2000–2006 to reflect the pre-GFC period (depicted by squares) and 2007–2011 for the GFC and post-GFC period

(depicted by triangles),<sup>1</sup> we matched the flow of different components of liabilities and assets of each agent based on FOF data and estimated the trendline in both periods for each economy under review. We compared the (i) correlation of liabilities with total assets across different types of liabilities and (ii) correlation of assets with non-core liabilities (or core liabilities in the case of households) across different types of assets. The former aims to capture which type of liabilities move in sync with changes in assets (source of funds), and the latter aims to capture which type of assets agents invest their non-core liabilities in (use of funds).

Loans are the dominant source of funds for households across all five economies for both periods (Appendix 1). However, while the elasticity of loan liabilities with respect to assets declined over the period, that of non-core liabilities (non-loan) rose; that is, the co-movement of assets with non-loan liabilities strengthened in 2007–11 in Indonesia and Thailand. Meanwhile, household debt is a particular issue for the Republic of Korea. Indeed, growing at about 5% annually and having doubled in the last 10 years, the Republic of Korea’s household debt reached more than 90% of gross domestic product (GDP) and 127% of disposable income in 2012. In 2000–06, household debt rose nearly in sync with every change in total assets, generating an elasticity of 0.99 (Figure 4).

**Figure 4: Household Liabilities Republic of Korea, 2000–2011 (KRW trillion)**



Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).

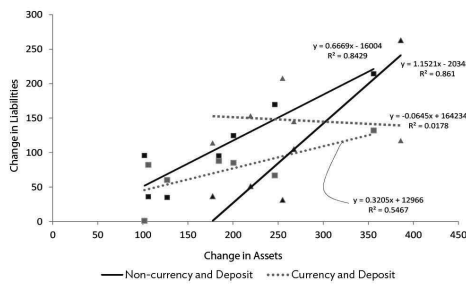
Source: Bank of Korea Flow-of-Funds data (various years).

<sup>1</sup>To capture the differences between the pre-GFC and post-GFC periods, particularly the changes in slopes, a normal year was included in both the GFC and post-GFC periods.

The increase in the elasticity of non-core liabilities with respect to changes in total assets is even more pronounced in financial institutions and firms. Except for the Philippines, financial institutions' non-core liabilities generally move more in sync with changes in total assets than do their core liabilities (currency and deposits). This is shown by the steeper slopes of non-currency and deposit liabilities compared to currency and deposits liabilities. And the elasticity of non-currency and deposit liabilities with respect to total assets increased during the GFC and post-GFC periods for Indonesia, the Republic of Korea, the Philippines, and Thailand (Figure 5).

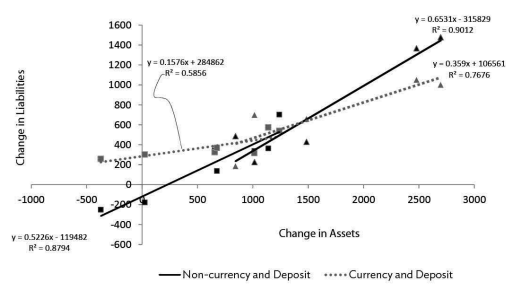
**Figure 5: Financial Institution Liabilities**

**(a) Republic of Korea, 2000-2011 (KRW trillion)**



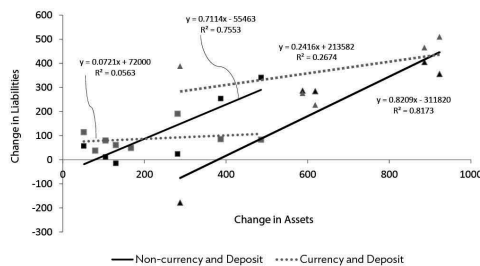
Note: In order to capture change in behavior the period is divided into 2000-06 (squares) and 2007-11 (triangles).  
 Source: Bank of Korea Flow-of-Funds data (various years).

**(b) Thailand, 2000-2011 (THB billion)**



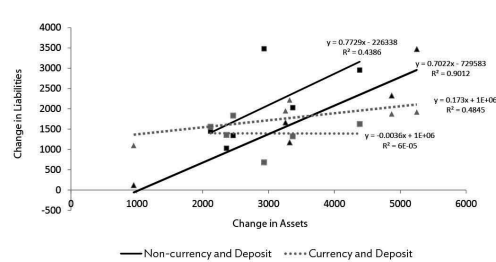
Note: In order to capture change in behavior the period is divided into 2000-06 (squares) and 2007-11 (triangles).  
 Source: NESDB Flow-of-Funds Data (various years).

**(c) Indonesia, 1999-2011 (IDR trillion)**



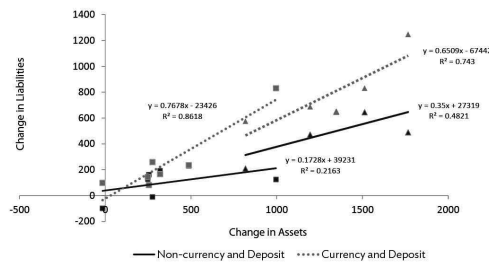
Note: In order to capture change in behavior the period is divided into 1999-2006 (squares) and 2007-11 (triangles).  
 Source: BPS-Statistics Indonesia Flow-of-Funds data (various years).

**(d) Taipei,China, 2001-2011 (NTD billion)**



Note: In order to capture change in behavior the period is divided into 2000-06 (squares) and 2007-11 (triangles).  
 Source: Central Bank of Taipei,China Flow-of-Funds data (various years).

**(e) Philippines, 2000-2011 (PHP billion)**



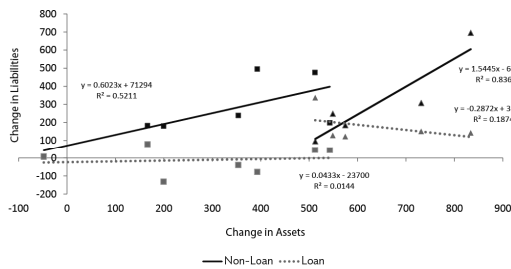
Note: In order to capture change in behavior the period is divided into 2000-06 (squares) and 2007-11 (triangles).  
 Source: Central Bank of Taipei,China Flow-of-Funds data (various years).

In the corporate sector, the elasticity of loan liabilities with respect to changes in total assets turned negative during the GFC and post-GFC periods in Indonesia; the Philippines; Taipei,China; and Thailand. On the other hand, the elasticity of non-loan liabilities remains higher than the elasticity of loan except in the Rep. of Korea.

While there may be exceptions, it is clear from Appendix 1, Figure 5, and Figure 6 that movements in total assets became more correlated with movements in non-core liabilities during the GFC and post-GFC periods across households, financial institutions, and firms.

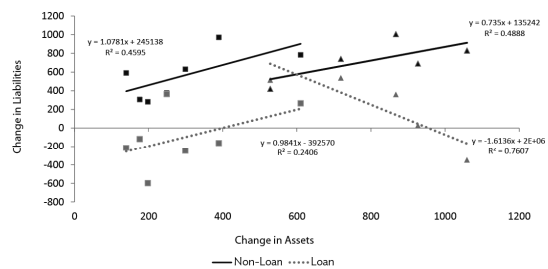
**Figure 6: Corporate Liabilities**

**(a) Philippines, 2000–2011 (PHP billion)**



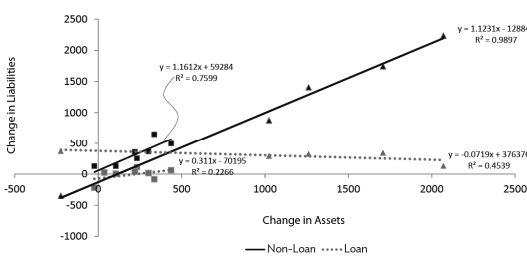
Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
Source: BSP Flow-of-Funds data (various years).

**(b) Thailand, 2000–2011 (THB billion)**



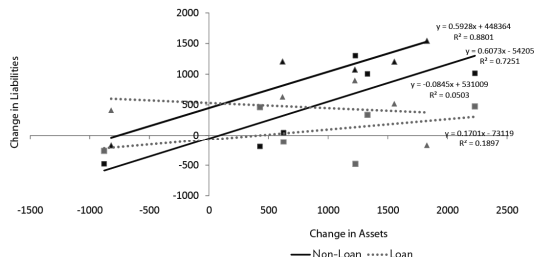
Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
Source: NESDB Flow-of-Funds data (various years).

**(c) Indonesia, 1999–2011 (IDR trillion)**



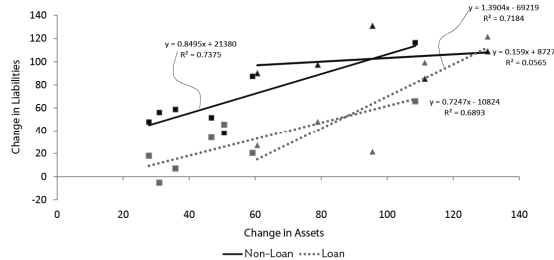
Note: In order to capture change in behavior the period is divided into 1999–2006 (squares) and 2007–11 (triangles).  
Source: BPS-Statistics Indonesia Flow-of-Funds data (various years).

**(d) Taipei,China; 2000–2011 (NTD billion)**



Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
Source: Central Bank of Taipei,China Flow-of-Funds data (various years).

**(e) Republic of Korea, 2000–2011 (KRW trillion)**



Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
Source: Bank of Korea Flow-of-Funds data (various years).



With non-core liabilities increasingly becoming a major driver of total asset holdings of economic agents, how much do they drive non-core assets? Different patterns emerge across the three economic agents.

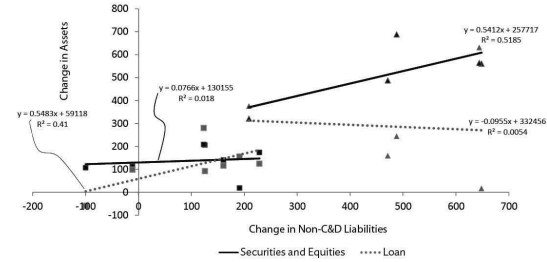
Households tend to hold traditional and liquid assets like currency and deposits, and this trend intensified during the GFC and post-GFC periods. This was true for the Republic of Korea and Thailand where households reduced investments in securities and equities as loan liabilities rose, and instead increased their liquidity multifold. The elasticity of securities and equities, on the other hand, increased for households in Indonesia; the Philippines; and Taipei,China.

Two opposite patterns emerged for financial institutions in terms of their response to increasing funds from non-traditional sources: (1) increased lending, and (2) higher levels of investment in securities and equities. Rising non-currency and deposit liabilities of financial institutions is associated more with higher levels of investment in securities and equities in the Philippines; and Taipei,China. This trend intensified during the GFC and post-GFC periods. Bank loans were unresponsive to increases in non-core liabilities in these economies. In the case of Indonesia, the financial sector continues to prefer investing in securities rather than loan though the degree of preference declined after the GFC. In contrast, higher bank lending accompanied increases in non-core liabilities in the Republic of Korea and Thailand, with elasticity remaining stable throughout both periods under review at 0.5 and 0.9, respectively (Figure 7). The elasticity of non-core assets, particularly securities and equities, fell in 2007–11 in these two economies.

Firms in the Philippines and Thailand, faced with the same increase in funds from non-traditional sources, invested more in securities and equities, significantly raising the elasticity of these instruments with respect to changes in non-core liabilities. Korean firms increased their issuance of accounts receivables and held more currency (Figure 8). While no particular instrument drove changes in the asset holdings of firms in Indonesia or Taipei,China, the elasticity of total non-loan assets with respect to non-core corporate liabilities increased in both economies. (Non-loan assets include currency and deposits, securities, equities, accounts receivables, and other miscellaneous instruments.)

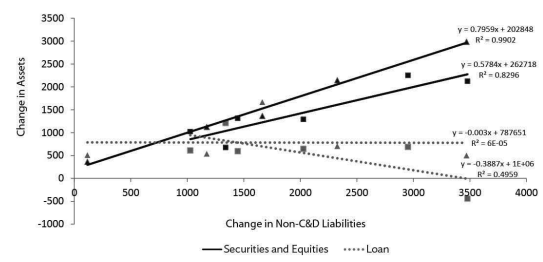
Figure 7: Financial Sector Assets

(a) Philippines, 2000–2011 (PHP billion)



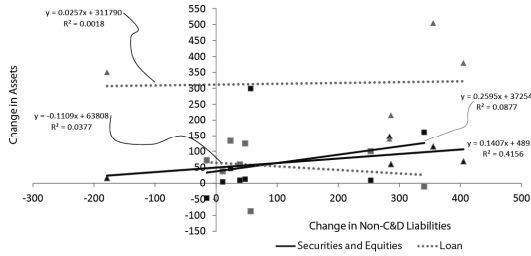
Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
 Source: BSP Flow-of-Funds data (various years).

(b) Taipei,China; 2001–2011 (NTD billion)



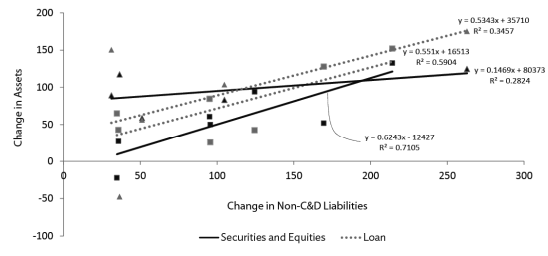
Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
 Source: Central Bank of Taipei,China Flow-of-Funds data (various years).

(c) Indonesia, 1999–2011 (IDR trillion)



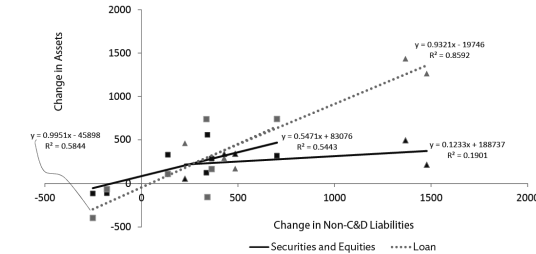
Note: In order to capture change in behavior the period is divided into 1999–2006 (squares) and 2007–11 (triangles).  
 Source: BPS-Statistics Indonesia Flow-of-Funds data (various years).

(d) Republic of Korea, 2000–2011 (KRW trillion)



Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
 Source: Bank of Korea Flow-of-Funds data (various years).

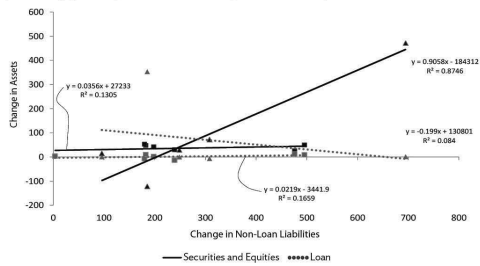
(e) Thailand, 2000–2011 (THB billion)



Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles).  
 Source: NESDB Flow-of-Funds data (various years).

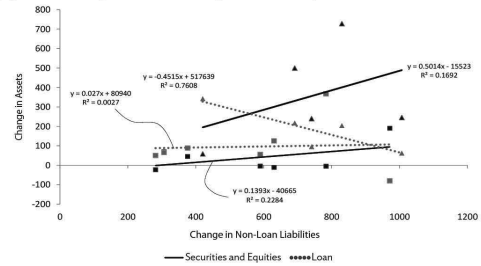
Figure 8: Corporate Assets

(a) Philippines, 2000–2011 (PHP billion)



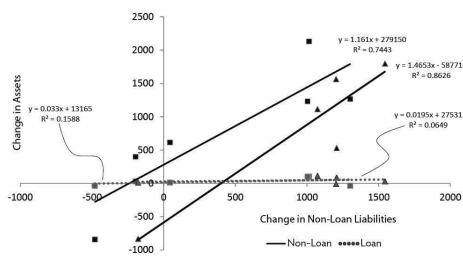
Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles). Source: BSP Flow-of-Funds data (various years).

(b) Thailand, 2000–2011 (THB billion)



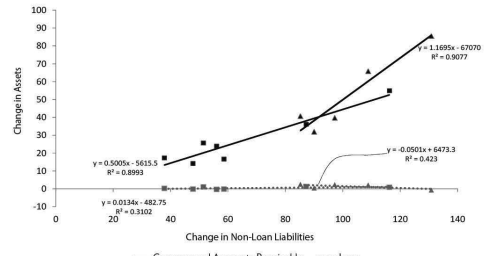
Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles). Source: Central Bank of Taipei, China Flow-of-Funds data (various years).

(c) Taipei, China; 2001–2011 (NTD billion)



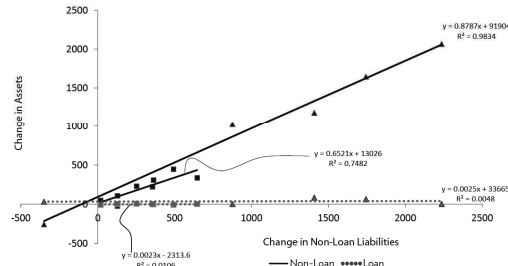
Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles). Source: Central Bank of Taipei, China Flow-of-Funds data (various years).

(d) Republic of Korea, 2000–2011 (KRW trillion)



Note: In order to capture change in behavior the period is divided into 2000–06 (squares) and 2007–11 (triangles). Source: Bank of Korea Flow-of-Funds data (various years).

(e) Indonesia, 1999–2011 (IDR trillion)



Note: In order to capture change in behavior the period is divided into 1999–2006 (squares) and 2007–11 (triangles). Source: BPS-Statistics Indonesia Flow-of-Funds data (various years).

It is therefore clear that the region’s abundant liquidity associated with excess savings and capital inflows has had an impact on agents’ behavior. In general, as agents expand their balance sheets, enabled by funds raised at relatively low costs, they tend to diversify their asset holdings. The corporate sector’s preference toward financial assets such as securities and equities significantly rose in some economies. On the other hand, with growing non-core components on the liabilities side, the financial sector allocates most of the additional funds to either loans or other risky financial assets such as securities and equities. As discussed previously, there is a risk of pro-cyclicality in such a scenario. Also, as a large portion of loans has been directed toward the property sector and other consumer credit, this might contribute to the build-up of bubbles. Although the magnitude of non-core liabilities in some economies is still small, if left unattended it can threaten macro-economic and –financial stability. Table 1 presents a summary of the results.

**Table 1: Behavior of Economic Agents in Response to Changes in Financial Flows**

	Preferences Towards Different Sources of Liabilities			Response of Assets to Increase in Non-core Liabilities		
Households	Pre GFC Loan	Post GFC Loan	= ↓	Pre GFC C&D	Post GFC C&D	↑ except for Indonesia; Taipei,China
	>	≤		>	≥	
	Pre GFC Non-loan <sup>1</sup>	Post GFC Non-loan	= ↑ except for Republic of Korea	Pre GFC Securities and SOE	Post GFC Securities and SOE	↑ except for Republic of Korea; Thailand
	except for Republic of Korea; Taipei,China			except for Rep. of Korea; Philippines		
	Loan still dominates but preference for it is tapering across all economies, while preference for non-loan is on the rise and in some cases surpassing loans			Currency and Deposit is still the preferred asset but preference for securities and SOE is on the rise		
Financial Institutions	Pre GFC C&D	Post GFC C&D	↑ except for Rep. of Korea; Philippines	Pre GFC Loan	Post GFC Loan	= ↑ for Indonesia; Rep. of Korea; Thailand
	<	<		≤	<	
	Pre GFC Non-C&D	Post GFC Non-C&D	= ↑	Pre GFC Securities & SOE	Post GFC Securities & SOE	↑ for the Philippines; Taipei,China
	except for the Philippines			except for Rep. of Korea; Thailand		
	All economies showed a clear increase in the preference for non-deposit source of funds			2 patterns emerged in response to increase in non-core liabilities: (1) increase in preference for securities and shares and other equity and drop in loans –Philippines and Taipei,China (2) increase in preference for bank lending and drop in securities and SOE– Indonesia, Rep. of Korea and Thailand		
Corporations	Pre GFC Loan	Post GFC Loan	↓ except for Rep. of Korea	Pre GFC Loan	Post GFC Loan	= ↓
	≤	<		≤	<	
	Pre GFC Non-Loan	Post GFC Non-Loan	= ↑ except for Rep. of Korea; Thailand	Pre GFC Non-Loan <sup>2</sup>	Post GFC Non-Loan <sup>2</sup>	↑
	except for Rep. of Korea					
	Preference for loans is on a decline while preference for non-loan liabilities is increasing although slightly tapering			Clear preference for non-loan assets and it is getting stronger (accelerating)		

SOE= Shares and other Equity; GFC=Global Financial Crisis; C&D=Currency and Deposit

<sup>1</sup> No data on non-loan liabilities for the Philippines pre-GFC

<sup>2</sup> securities and SOE for Philippines and Thailand; currency and accounts receivable for Rep. of Korea.

Note: ≤ or ≥ is used if there are cases where difference between elasticities is within ±10 percentage points. Therefore, < or > signify presence of stronger difference between elasticities for all economies. Same approach is used in comparing elasticities between periods, “=” is added if change in the elasticity is within ±10 percentage points. Therefore, ↓ or ↑ signify a stronger decrease or increase in elasticity of demand for a financial instrument between periods for all economies.

Source: Authors’ illustration.

One of the interesting phenomena in Asia after the 1997–1998 AFC has been the surge in corporate savings. This subject has attracted the attention of analysts because they see it as having contributed to excess savings, with the “savings glut” being labeled by some as the reason behind global imbalances. Looking at the examples of Indonesia, the Republic of Korea, and the Philippines, corporate savings surged after the AFC, and did so dramatically in Indonesia. (The savings trend of different agents in each economy is displayed in Appendix 5). An International Monetary Fund (IMF) report raised this issue in arguing that at the same time Asia’s corporate investment stagnated, household savings did not provide enough of an offsetting trend to lead to an increase in national savings (Jain–Chandra, Nabar, and Porter 2009).<sup>2</sup>

A careful look at more recent FOF data, however, gives a rather different picture. It is true that corporate savings rose, but corporate investment has also increased since the mid-2000s. Even during the GFC, corporate investment in Indonesia continued to rise, whereas in the Republic of Korea and the Philippines it fell in 2009 before rising again. As a result, the excess savings (or net savings) of the corporate sector actually went down. Furthermore, the fall in corporate excess savings in Asia has been compensated by relatively high—and in some cases increasing—household excess savings, especially after the GFC (Appendix 5). Nonetheless, it remains important to understand the phenomenon of rising corporate savings in Asia, especially since the increase has been larger than in other regions (Cardarelli and Ueda 2006).

What determines the level of corporate savings in Asia? Based on a multiple linear regression model, the results in Table 2 show that the size of the economy and favorable market conditions exert a positive influence. As expected, a higher degree of monetary liquidity, better stock market performance, greater mobility of capital, and a bigger current account surplus are all associated with larger corporate savings. In contrast, when consumer demand increases, firms tend to save less as they respond by raising investment and other capital expenditures. Greater financial inclusion and easier access to financial markets also cause firms to save less.<sup>3</sup> With easy access to markets, the perceived need for savings is consequently smaller. It is also likely that lower interest rates—due to increased bank deposits associated with greater inclusion—reduce firms’ incentive to save. These relationships hold across different specifications.

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<sup>2</sup> S. Jain–Chandra, M. Nabar, and N. Porter. 2009. Corporate Savings and Rebalancing in Asia. *Regional Economic Outlook: Asia and the Pacific*.

<sup>3</sup> Inclusion is proxied by the ratio of agricultural loans to total loans, as most low income households in Asia are associated with agricultural and farm activities.

**Table 2: Regression Analysis of Corporate Savings**  
**Dependent Variable: Corporate Savings/GDP (%)**

Explanatory variables	Full	Macro
Log of GDP per capita	19.52*** (4.99)	16.51*** (4.76)
Current account/GDP (%)	0.40** (2.62)	0.42*** (2.84)
Deposit interest rate (%)	0.59^ (1.49)	0.08 (0.19)
Lending interest rate	-0.57 (-1.03)	0.11 (0.19)
Govt. savings/GDP (%)	-0.26 (-1.28)	-0.56*** (-2.69)
Stock market index	0.00* (1.83)	0.00 (1.78)
M2/GDP (%)	0.06** (2.10)	0.11*** (3.78)
Private external debt/GDP (%)	0.04 (0.51)	-0.05 (-0.60)
Log of household consumption per capita (1 lag)	-11.91*** (-3.93)	-11.07*** (-3.48)
Financial openness index	3.74*** (3.89)	6.20*** (7.85)
Government effectiveness index	-10.64*** (-3.45)	
Agricultural loans/total loans (%)	-0.58** (-2.55)	
Price volatility	0.003 (0.01)	
Constant	-68.51** (-3.78)	-57.41*** (-3.91)
F-statistic	23.62***	23.19***
R-squared	0.8458	0.7972
Adjusted R-squared	0.8100	0.7628
No. of observations	70	70

Note: t-statistics are in parentheses; \*\*\*significant at 1%, \*\*significant at 5%, \*significant at 10%, ^significant at 15%.

Source: Authors' calculations.

To the extent that the act of saving generally reflects anticipated risks, any conditions considered to reduce risks will lower the need for the corporate sector to save. This explains why higher levels of government savings, perceived as lowering risks to the economy, are also associated with lower levels of corporate savings. Government savings crowding out private savings is consistent with the Ricardian Equivalence concept, although the extent of the relation depends on the fiscal policies taken (Corbo and Schmidt-Hebbel 1991). Through a series of tests, per capita GDP and the current account balance-to-GDP ratio are consistently found to be the most important variables in explaining corporate savings.

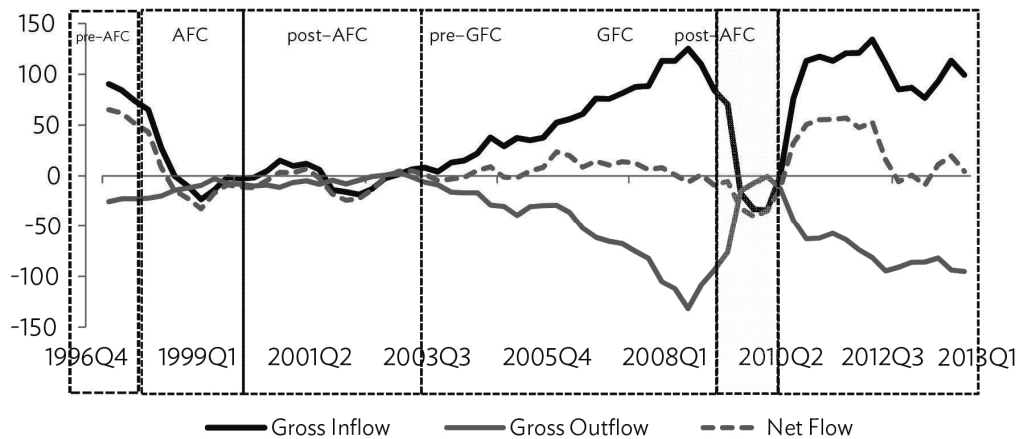
#### 4. Capital Flows

In the midst of excess savings, emerging Asia's macro-financial liquidity was further enhanced by rising capital inflows. The combination of low interest rates and quantitative easing (QE) policies in advanced economies sparked capital flows to emerging Asia. At the same time, the latter has exhibited strong pull factors due to its steady growth performance, stable economies, and higher investment returns. Of the roughly US\$1 trillion in net private capital flows to emerging market economies each year, about half has gone to Asia. Since the AFC, flows outside short-term foreign debt have been dominant. Gross inflows increased significantly, but outflows have also been on the rise since the AFC. Outward foreign direct investment (FDI) and equity investment increased too, providing foreign asset buffers for the region when markets become volatile, as was shown to be the case in the Republic of Korea during the GFC.

After recovering from a sharp fall during the AFC in 1997–1998, gross inflows fluctuated before beginning to grow steadily and significantly in 2002. These flows peaked in mid-2007 and started to fall as the recession in the US led to a liquidity crisis. BNP Paribas' decision to terminate withdrawals from three hedge funds and the bursting of the US housing bubble, which saw the values of securities tied to US real estate plummet, damaged global financial institutions.<sup>4</sup> A sharp drop during the GFC led gross inflows to hit a bottom lower than that reached during the AFC. Meanwhile, almost symmetrically, gross outflows began to rise in 2002 and peaked in mid-2007. The pattern of capital flows, however, changed after the GFC. The ultra-easy money policies and growing risks in advanced economies exerted a strong "push" factor for capital to flow into emerging Asia. As a result, the size of gross inflows far exceeded that of gross outflows. The trend in other countries is very similar: gross inflows rose sharply during the mid-2000s, plunged during the GFC, before surging again in 2009 (Figure 9).

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<sup>4</sup> In August 2007, a number of central banks in advanced economies were actively pumping liquidity into the financial system to calm nerves amid fears of a credit crunch. The trigger for the panic was the decision by BNP Paribas to block withdrawals from three hedge funds due to "a complete evaporation of liquidity." The subsequent bank run included the first run on a leading United Kingdom (UK) bank since the mid-19th century.

**Figure 9: Gross and Net Capital Flows— Selected Asian Countries (\$ billion)**

Notes: Based on a 4-quarter moving sum. For inflows, refers to bank flows from other investments on the liabilities side (assigned a positive value); for outflows, on the asset side (assigned a negative value). Comprised of Indonesia, Rep. of Korea, Philippines, and Thailand.

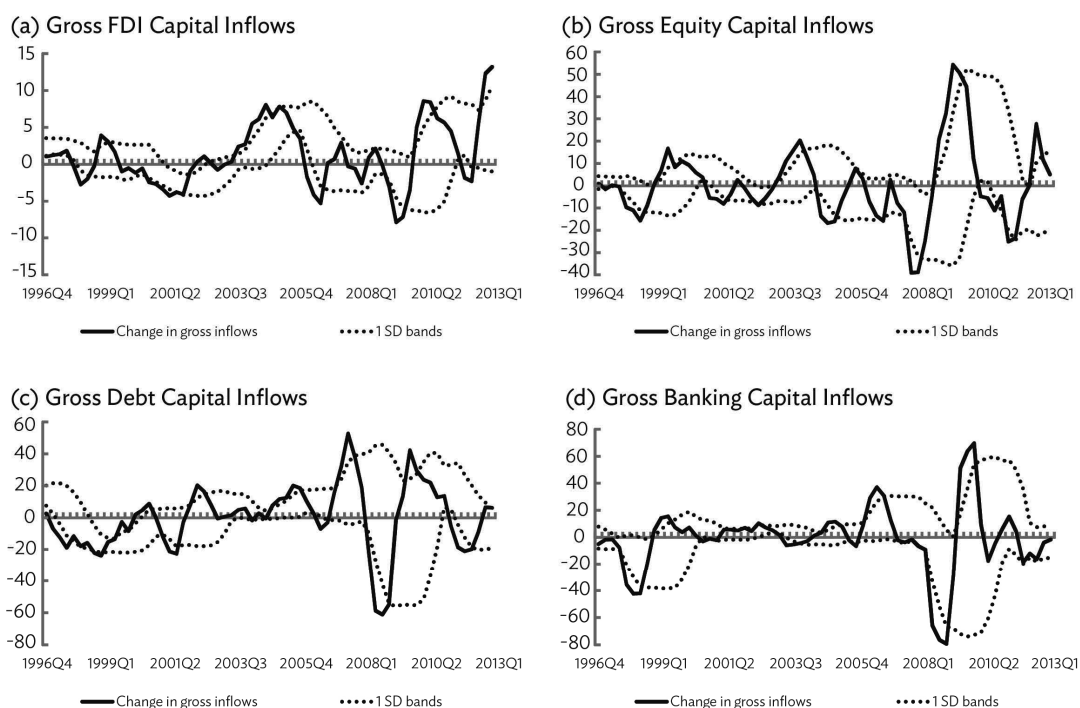
Source: ADB calculations using data from IMF's *Balance of Payments Statistics (BPM5 and BPM6)*.

To analyze the intensity of flow volatility we use the term “surges” when there is a sharp increase in inflows and “stops” when there is a sharp decrease in inflows. For gross outflows the corresponding terms are “flight” (sharp increase) and “retrenchment” (sharp decrease). Furthermore, to distinguish the types of capital flows we use the following classifications: (i) “FDI” consisting of direct investment, (ii) “debt” comprising debt securities and other investment including derivatives, (iii) “bank” flows, and (iv) “equity” for equity portfolio.<sup>5</sup> Flows are FDI-led, equity-led, debt-led, and bank-led if the increase in flows is mainly driven by FDI, equity, debt, or banks, respectively.

Growing production networks, in line with the new supply-chain model, are among the most important pull factors for FDI in the region, with East and Southeast Asia alone accounting for more than one-fifth of all global FDI flows. However, a large portion of these FDI flows are absorbed by the People’s Republic of China (PRC). The rebalancing process of moving toward more domestic-demand-oriented growth also offers opportunities for investors to exploit growing domestic demand in the region. Flows through equity markets have also been strong due to positive global sentiment toward reforms being carried out in many Asian countries. Foreign purchases of domestic stocks have surged, as have inflows through non-bank private creditors. Amid a low-return and slow-growth environment in industrial countries, the steady growth of Asia’s bond markets offers a good opportunity for foreign investors. In some countries, the foreign-owned share of LCY bond markets is now as high as one-third. Increased bank deposits by non-residents have added to the size of inflows as interest rate differentials persist.

<sup>5</sup> See K.J. Forbes and F. Warnock. 2012. Capital Flow Waves: Surges, Stops, Flight, and Retrenchment. *Journal of International Economics*. 88 (2). However, unlike in their analysis, we distinguish “debt” from “bank” because the latter is more prone to deleveraging and pro-cyclicality, and therefore it has a more direct impact on the real sector.



Figure 10: Gross Capital Inflows—Selected Asian Countries<sup>1</sup>

<sup>1</sup>Computed as year-on-year change based on a 4-quarter moving sum. Inflows refer to bank flows from other investments on the liabilities side (assigned a positive value), outflows refer to the asset side (assigned a negative value). Episodes based on a 1 standard deviation (SD) band.

Source: ADB calculations using data from IMF's *Balance of Payments Statistics*.

At the same time, the vulnerability and volatility of capital flows matters more than net flow amounts. Using one standard deviation of the change in the mean of capital flows as the limit (shown by dashed lines in Figure 10), beyond which the flows are labeled differently according to their waves, the following episodes were observed in ASEAN+3:<sup>6</sup>

#### Surge Episodes

Equity-led: 2009Q4–2010Q1

Debt-led (excl. banking flows): 2002Q1–Q3, 2007Q2, and 2007Q4

Bank-led: 1999Q1–Q3, 2004Q1, 2009Q3, 2010Q2, and 2012Q4

#### Stop Episodes

Equity-led: 2000Q4, 2004Q4, 2006Q4–2007Q1, and 2008Q1–Q3

Debt-led (excl. banking flows): 1997Q1–Q3 and 2001Q1–Q3

Bank-led: 1996Q4, 1997Q4–1998Q2, 2008Q4–2009Q1, and 2011Q3–2012Q1

<sup>6</sup> A similar approach was taken for capital outflows (not shown here).

Flight Episodes

Equity-led: 2007Q2–Q4

Debt-led (excl. banking flows): 1999Q2, 2005Q4, and 2009Q4–2010Q2

Bank-led: 1999Q2–Q3, 2002Q4–2003Q2, 2004Q3, and 2006Q1–Q2

Retrenchment Episodes

Debt-led (excl. banking flows): 1998Q1–Q2, 2008Q1–Q2, and 2012Q2

Bank-led: 1996Q4–1997Q1, 1998Q3–Q4, 2002Q1–Q2, 2004Q4–2005Q2, 2008Q3–2009Q1, and 2012Q3

For South Asia, the following pattern is observed (the figures are not shown here but are available upon request):

Surge Episodes

Equity-led: 2003Q4, 2007Q2–Q4, and 2009Q4–2010Q1

Debt-led (excl. banking flows): 1999Q1, 2000Q4–2001Q1, 2005Q1–Q3, 2006Q4–2007Q1, and 2010Q2

Bank-led: 1999Q2 and 2003Q2–Q3

Stop Episodes

Equity-led: 1998Q2, 2008Q3–2009Q1, 2012Q1

Debt-led (excl. banking flows): 2001Q4–2002Q2, 2006Q2, 2009Q2, and 2012Q2–Q3

Bank-led: 2008Q2

Flight Episodes

Equity-led: 2006Q4, 2007Q2, and 2012Q2–Q4

Debt-led (excl. banking flows): 2000Q4–2001Q2, 2004Q2, and 2008Q4

Bank-led: 2000Q3, 2003Q3–2004Q1, 2006Q1, and 2009Q1

Retrenchment Episodes

Equity-led: 2011Q1–Q4

Debt-led (excl. banking flows): 1998Q3, 2000Q1, 2001Q4–2002Q2, 2005Q2, and 2007Q3

Bank-led: 1998Q4, 1999Q2, 1999Q4, 2007Q4–2008Q1, and 2010Q2

Thus, the results show that the rising volatility of capital flows has not been uniform across Asia, but in the majority of cases debt-led and bank-led flows occurred most frequently, implying that they are the most volatile. Unlike bank-led flows, debt-led flows are facilitated by asset managers, acting presumably on behalf of investors including pension funds and insurance companies. Their investment behavior is guided largely by risk returns and market conditions, not by the standard macro policy. The latter may only be able to affect a particular trend, for example, to improve overall macroeconomic fundamentals but not necessarily alter the incentive structure and overall market conditions. To ensure financial stability, such policy needs to be supplemented by macro-prudential policy.

The case of debt-led flows is largely explained by the growing status of emerging market bond assets as a safe haven when investors shun risky holdings like equities while at the same time

seeking high risk-returns (Azis and Shin 2013). The yields on traditionally safer US Treasuries and the yields on emerging market debt moved in the same direction during the period under review. The downgrade in global growth expectations pushed LCY bond yields in emerging Asia lower in tandem with those in advanced economies, implying that credit risks associated with LCY emerging market bonds were significantly lower than in the past. Emerging markets were seen as the only global growth story and offered a better safe haven than investing elsewhere. Yet, due to their relatively small size and limited liquidity, Asia's LCY bond markets have been prone to even small perturbations. The share of foreign ownership is relatively high in Indonesia and Malaysia (around one-third) and noteworthy in the Republic of Korea and Singapore (more than 10%). In these countries, sporadic and sudden outflows, as happened in June 2013 following the US Federal Reserve Chairman's remarks on the possibility of QE tapering, could easily rattle markets and cause exchange rates to fluctuate. Without reforms and improvements in market infrastructure, the impact might prove to be even more serious now that QE tapering is underway.

In the case of bank-led flows, deleveraging by European banks clearly contributed to the volatility. As funding conditions in Europe deteriorated toward the end of 2011, bleak economic prospects and doubts over fiscal sustainability undermined the value of sovereign and other assets. Bond issuance by banks fell, especially uncollateralized issuance in fiscally challenged countries, outflows due to fund withdrawals surged, particularly in Italy and Spain, and exposure to a number of European Union (EU) institutions dropped sharply.

At the same time, claims by US money market funds on European banks, especially French banks, fell significantly. The impact on emerging Asia was particularly felt in terms of a shrinking number of consolidated loans, new syndicated loans, and large bilateral loans from EU banking groups during the third quarter of 2011.<sup>7</sup> The terms on new loans to corporations and households were also tightened. As a result, gross outflows from emerging Asia rose toward the end of 2011. As the world's economic prospects remained dim, gross inflows also declined.

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<sup>7</sup> In contrast, lending by European banks to western Europe and other developed countries remained unchanged. At the time of writing, the amount of European bank lending to Asia was estimated at US\$280 billion, compared with US\$374 billion before the GFC.

**Table 3. Exposure to European, Japanese, and US Banks—Asia**  
(% of Borrower's Domestic Credit as of December 2012)

Borrower	Lender							
	US Banks	Japanese Banks	European Banks					Rest of Europe
			Total	France	Germany	UK	GIIPS	
<b>Asia</b>	2.2	2.7	4.4	0.5	0.4	2.6	0.1	0.7
Japan	1.8	na	1.8	0.4	0.2	0.6	0.0	0.2
<b>Developing Asia</b>	2.5	2.7	7.4	0.7	0.6	4.9	0.1	1.2
<b>ASEAN-4 + Viet Nam</b>	3.6	4.8	9.2	–	0.9	6.1	0.1	2.2
Indonesia	4.3	5.3	11.5	–	1.6	6.2	0.1	3.6
Malaysia	5.1	3.8	15.5	–	1.1	12.4	0.1	2.0
Philippines	7.1	3.8	13.0	–	1.1	7.9	0.2	3.8
Thailand	2.1	6.0	3.6	–	0.4	2.2	0.0	0.9
Viet Nam	1.1	2.4	7.1	–	1.0	3.1	0.1	3.0
<b>NIEs</b>	8.9	11.7	28.8	2.4	1.6	20.0	0.3	4.4
Hong Kong, China	10.0	31.6	71.4	3.9	2.3	57.4	1.0	6.8
Republic of Korea	7.9	4.4	12.4	1.6	1.1	7.6	0.1	1.9
Singapore	19.9	18.6	65.9	6.9	5.4	34.8	0.5	18.3
Taipei,China	5.5	6.5	9.8	0.8	0.5	7.1	0.0	1.4
People's Republic of China	0.6	0.5	1.9	0.2	0.2	1.1	0.1	0.3
India	10.5	7.7	20.0	2.0	3.1	11.1	0.3	3.5
United States	na	3.6	9.8	0.3	1.5	3.0	0.7	3.2
Eurozone	3.6	2.5	26.4	5.6	4.8	4.8	4.0	7.1

– = unavailable; GIIPS = Greece, Ireland, Italy, Portugal, Spain; na = not applicable; NIEs = newly industrialized economies; UK = United Kingdom, US = United States.

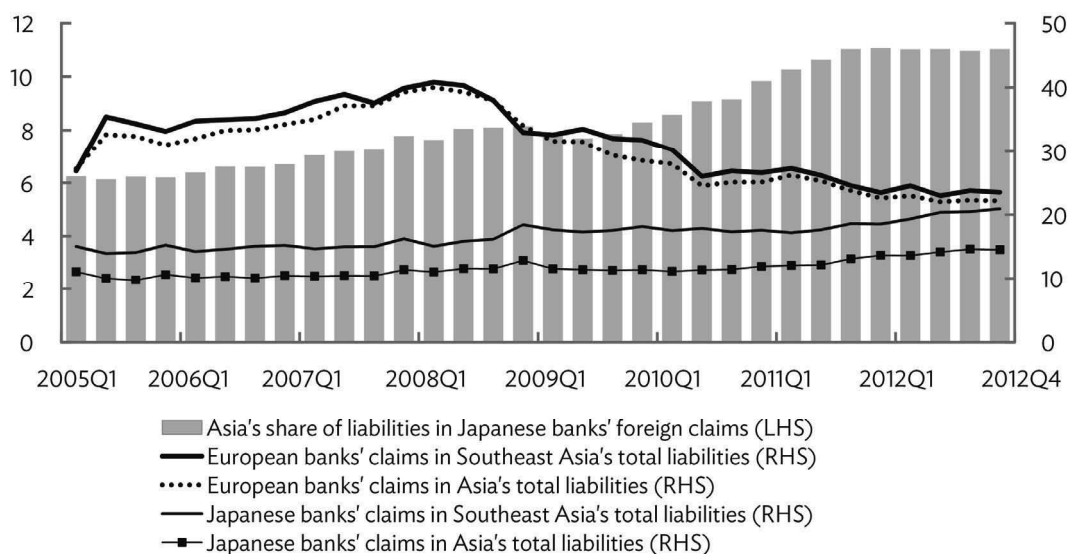
Notes: Eurozone comprises Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain. Highlighted cells imply an increase in exposure compared with September 2008 in terms of domestic credit percentage value greater than US\$100 million. Domestic credit or domestic claims based on IMF definition of international financial statistics.

Source: ADB calculations using data from Table gD (Consolidated Foreign Claims of Reporting Banks—Ultimate Risk Basis) of the Bank for International Settlements and CEIC.

Beginning in 2012, signs emerged that financing from non-European banks and bond market investors was compensating for the pullback from European banks, especially in trade finance. In particular, Japanese banks seemed to be filling the gap (Figure 11). Their share of foreign claims has remained quite stable since the GFC. Cross-border lending to Asia from banks based in Australia; the Republic of Korea; and Taipei,China also began to increase, as did

lending from UK and US banks (Table 3).<sup>8</sup> Combined with the decelerated speed of European deleveraging, this led to a reversal in net flows by the end of 2012. Such a changing pattern resulted in increased volatility of bank-led flows during the GFC.

**Figure 11: Japanese and European<sup>1</sup> Banks' Foreign Claims in Asia<sup>2</sup> (% share of total claims)<sup>3</sup>**



LHS = left-hand scale, RHS = right-hand scale.

<sup>1</sup>European banks (excluding British banks) based on Bank for International Settlements (BIS) definition.

<sup>2</sup>Asia excludes Australia, Japan, and New Zealand due to differences in the structure of their economies with the rest of Asia.

<sup>3</sup>Total foreign claims of banks from 22 BIS reporting economies.

Source: ADB calculations using data from BIS Table 9D (accessed on 11 July 2013).

## 5. Economy-Wide Vulnerability

### 5.1 Macro-Financial Risks

The difference between the recent episode of capital flows and the pre-AFC period is that this time the increased inflows occurred while the region had excess savings. Moreover, compared with the flows during the AFC, those following the GFC were larger in size and more volatile. It is well-known that capital flows can be beneficial to recipient countries, but their volatile pattern and pro-cyclicality can also act as a channel for the build-up of financial risks and imbalances. The large increase in the highly volatile debt-led and bank-led flows described in the preceding section pose a difficult challenge for policy makers seeking to maintain macro-financial stability.

<sup>8</sup> An increasingly important part of bank financing, however, remains unidentified. This is likely due to the absence of data from key economies, especially the People's Republic China; Hong Kong, China; and Singapore.

Bank-led flows can alter the size and composition of banks' balance sheets such that the risks of a banking crisis may increase. On the asset side, loan-to-value ratios can grow quickly due to excessive credit expansion and other forms of risky investment, while on the liability side an increase in non-core liabilities through bank-led flows can heighten banks' risky behavior and increase leverage (Forbes and Warnock 2012). In times of external shock, as in the case of deleveraging by Eurozone banks, flows of bank credit can also be disrupted. With a stronger currency as a result of capital inflows, banks are willing to take even more risks by extending more credit as the balance sheet positions of borrowers improve.<sup>9</sup>

The seriousness of these risks is applicable to Asia, particularly in a region that is bank-dependent with a relatively open capital account, and where banks' leverage tends to exceed the cyclical norms. Indeed, data show that the rate of growth of bank credit in emerging Asia since the GFC has exceeded the long-term trend. This rapid growth of credit has also coincided with growing demand for property that has led to a persistent increase in property prices, exposing the region to the risks associated with the bursting of a bubble.

Another type of vulnerability relates to long-term financing through bond markets. To avoid a repeat of the double mismatch that led to the disastrous AFC, long-term LCY financing has been sought by policy makers in the region. In addition to reducing an over-reliance on banking sources, the development of LCY bond markets can also help countries establish benchmark pricing for other financial assets. Furthermore, the long-term nature of bond markets is favorable for infrastructure financing. This is particularly important in the context of Asia's need to convert excess savings and capital inflows into productive activities including infrastructure development with respect to health, education, and the environment.

As discussed earlier, in some countries the size of the LCY bond market is small. When the share of foreign (especially non-regional) ownership is large, markets become vulnerable to foreign withdrawals. The volatility that may result can adversely impact market liquidity and reduce the attractiveness of the bond market—as it directly impacts investor perceptions of the collateral value of LCY bonds. Higher yields as a result of foreign withdrawals imply higher borrowing costs, which may cause the private sector to avoid using local markets to fund new investment. Meanwhile, competitiveness is also worsened by an appreciating exchange rate. To the extent that bond markets in most Asian economies are closely linked with banks (as the largest issuers and buyers), vulnerabilities in bond markets can easily translate into troubles in the banking sector and financial markets in general.

## 5.2 Socio-Economic Risks

While growing excess savings and increased capital flows have helped boost financial development and growth in Asia, these factors may have also contributed to worsening income inequality. This seems applicable to many Asian economies where financial inclusion is rather

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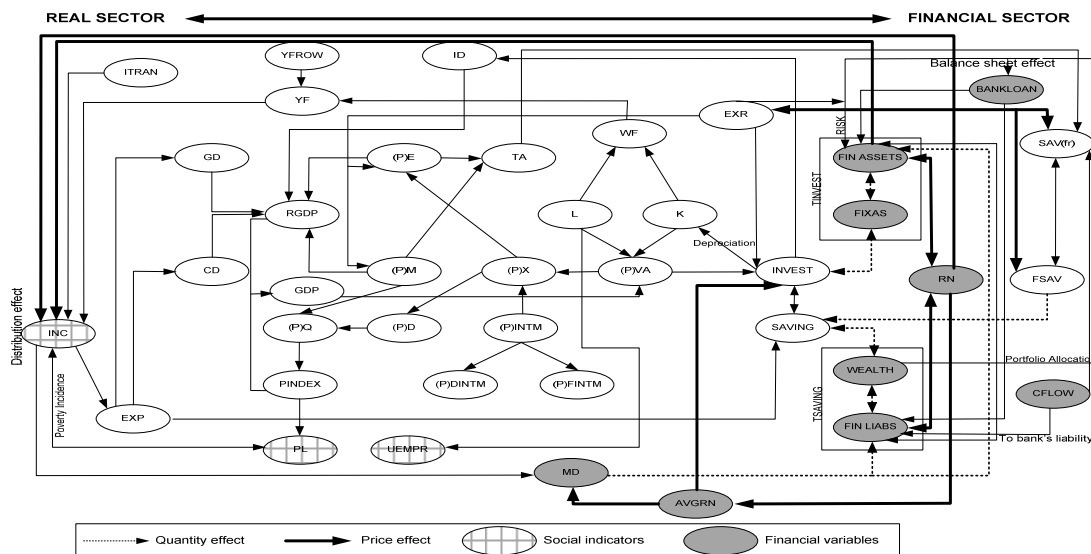
<sup>9</sup> The amplified effects of cross-border flows on the supply of credit due to the changing risk behavior of banks are shown in Bruno and Shin (2012).

limited. To the extent that higher inequality can lower growth prospects, the long-term net effect on growth is not always positive.

Excess savings and capital inflows largely invested in financial assets will benefit only a very small percentage of the population. As shown in the FOF analysis, there are signs indicating that funds raised through capital markets are invested in financial assets, not for business expansion or investment. The relatively high returns on financial investment and myriad problems with investing in the real sector—such as land acquisition, licensing, labor regulations, taxes, and other bureaucratic constraints—give more incentive to invest in financial assets. The employment-generating capacity is also smaller in the latter. Moreover, in most cases only a tiny fraction of people have access to stocks, bonds, mutual funds, derivatives, and other sophisticated financial instruments. A much larger share of the population is left with either limited or no opportunity to directly benefit from the fast-growing financial sector. This exacerbates the already high levels of inequality in many countries. If the fast-growing financial sector is too leveraged and too speculative to serve the real sector, the financial system has lost its main purpose; it becomes the master of the real sector, not the other way around. While the problems are more serious in advanced economies due to the size and sophistication of their financial markets, a similar predicament may develop in emerging Asia if these issues are not addressed.

The interlink between capital flows, financial development driven by excess savings, and income inequality is conceptualized in Figure 12. The left part of the diagram represents the dynamics in goods and factor markets (real sector), including exports and imports, and the right side captures the working of financial markets. The interconnection of both parts determines the outcome of the financial sector–income inequality nexus.

**Figure 12: Mechanism Linking Macro-Financial Liquidity Affected by Excess Savings and Capital Flows with Socio-Economic Conditions**



Source: Authors' illustration.

The real sector establishes income generation from output production ( $X$ ), where a portion of it is for the domestic market ( $D$ ) and the remaining portion is for exports ( $E$ ). Together with imports ( $M$ ), those sold in the domestic market generate the total supply of goods and services available ( $Q$ ). In both allocations, the substitution is imperfect.<sup>10</sup> The process to generate output  $X$  follows a standard input-output framework, where value-added ( $VA$ ) and intermediate inputs ( $INTM$ ) jointly determine the level of  $X$ . The growing production network and supply chain, in which the location of production is different from the country where the intermediate inputs are produced, suggests that one needs to distinguish between imported ( $FINTM$ ) and domestically produced ( $DINTM$ ). This distinction is important particularly for trade analysis in many emerging market economies where the import content of many export products is large.<sup>11</sup>

The income generation is derived from the  $VA$ , where returns on primary inputs of labor ( $L$ ) and capital ( $K$ ) are denoted by  $WF$ . In turn,  $WF$  generates factor incomes ( $YF$ ), including those from abroad ( $YFROW$ ). The total income level ( $INC$ ), however, consists of more than just factor income; it includes transfers between agents and institutions ( $ITRAN$ ). Tax payments that subtract income and subsidies that add income are examples of such transfers, the size of which depends on the prevailing fiscal policy. Thus, incomes of different agents, including households, are not only influenced by the level of economic activity but also by non-factor income.<sup>12</sup> The way subsidies are allocated can have a significant effect on the actual incomes of households; typically, most subsidies are allocated to low-income households.

But for those who hold financial assets, these two sources can be far smaller than the incomes accrued from financial assets. These financial asset holders are typically rich and urban-based, with easy access to financial markets. With  $FSL$  and  $KAL$ , including free flows of capital, they are in a much better position to reap the benefits of a growing financial sector. During the bubble period following capital inflows ( $FSAV$ ), they gain benefits from the increased value of their wealth in the form of financial assets ( $FIN\ ASSETS$ ) as well as an income stream generated from those assets ( $RN$ ), even when there is not much activity in the real sector of the economy. In many cases, this portion is larger than that from factor incomes. To the extent in a booming economy the financial sector often grows much faster than the real sector, the impact on income distribution can be predicted: the rich earn more than the poor, and incomes of urban households grow faster than those of the rural population, both of which result in worsening income inequality.

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<sup>10</sup> In a standard computable general equilibrium (CGE) model, the allocation between  $D$  and  $M$  follows the Armington's constant elasticity of substitution (CES) function, while the allocation between  $D$  and  $E$  follows a constant elasticity of transformation (CET) function.

<sup>11</sup> The dynamics of the use of imported inputs to produce goods that are exported, also known as vertical specialization (VS), has been analyzed by Hummels et.al. (2001). Amador and Cabral (2009) show that VS in high-tech products has increased dramatically since the 1980s, especially in the emerging market economies of Asia. Some even label it as a new paradigm in the organization of world production, representing an important element of international trade.

<sup>12</sup> The effect of income level on macro variables works through the expenditure side. Together with government expenditure ( $GD$ ) and exports ( $E$ ) minus imports ( $M$ ), real consumption ( $CD$ ) reflects the size of agents' expenditure ( $EXP$ ) out of their disposable income ( $YCON$ ). The latter is determined by the income level ( $INC$ ).



How significant are these impacts? Take the case of bank-led flows (CFLOW). Together with loans (BANKLOAN), these flows will directly augment the financial liabilities (FIN LIABS) of banks.<sup>13</sup> This will change the rate of return on financial assets (RN) and hence the financial returns received by holders of those assets (see the arrow linking RN and INC). RN also has a two-way relationship with the size and composition of assets of different agents. The fixed assets (FIXAS) will be used directly for investment in the real sector (INVEST) (e.g., investment in building and machinery) while the rest, including financial assets (FIN ASSETS), may enter the real sector indirectly via financial markets (e.g., a fund from equity issuance used for business investment). Along with government spending (GD), consumption expenditure (EXP or CD), exports (E), and imports (M), in real terms this investment (ID) generates real gross domestic product (RGDP).<sup>14</sup>

On the other hand, increased inflows either through FSAV or CFLOW (captured through foreign savings SAV[fr]) will have a macro-financial impact as they put pressure on the exchange rate (EXR) to appreciate. The resulting trade account (TA) may therefore worsen due to falling exports (E) and increased imports (M). In reality, however, almost all emerging market economies experiencing capital inflows responded by imposing some sort of capital controls either directly (e.g., through taxes or levy) or indirectly (e.g., sterilized intervention). This explains why in some countries net exports continue to grow. When net exports shrink, the growth of consumption (CD) and investment (ID) offsets the decline.

The resulting higher RGDP fuels further growth of the financial sector either due to strong fundamentals or simply market expectations. This enhances the income and SAVING (WEALTH) of rich households further, providing them with an additional stream of income from financial returns.<sup>15</sup> If, through portfolio allocation, the increased WEALTH is reinvested in financial instruments due to lucrative returns, the financial assets and earnings of rich households will further increase. In this way, the resulting magnitude of the growth-inequality nexus is amplified by the feedback cycle.<sup>16</sup> Hence, rising inequality is not only due to standard

<sup>13</sup> Note that the size of BANKLOAN is not only determined by the size of a bank's loanable funds but also by changes in net worth and external finance premia of both borrowers and lenders; this "credit channel" hypothesis was elaborated by Bernanke, Gertler, and Gilchrist (1996, 1999); Adrian and Shin (2009); Stiglitz and Greenwald (2003); and Stiglitz 2001.

<sup>14</sup> Other financial variables can also affect the aggregate economic activity by way of the money market. Along with the interest rate (AVGRN), which is the weighted average of financial returns (RN), household income (INC) determines the size of money demand (MD), which in turn affects the liability of different agents. If, for example, demand deposits increase, the assets of some holders (firms, government, households) will increase and so will the liability of other agents (banks). The changing size and composition of assets affects investment (INVEST) the same way the earlier path is described, and changes in liability will influence the level of saving. In this context, monetary policy that affects money demand in the money market determines savings and investment, and the level of aggregate economic activity.

<sup>15</sup> Changes in the exchange rate also cause some valuation effects: the local currency value of any asset denominated in foreign currency will increase (decrease) when the local currency appreciates (depreciates).

<sup>16</sup> Aside from income inequality, the poverty level and unemployment (UEMPR) are two other social indicators that are endogenously determined in the model framework. While unemployment is simply derived from the difference between labor demand (L) and fixed labor supply, the main aggregate variables in the real sector (X, D, E, M, and Q) are all determined along with their respective prices, PX, PD, PE, PM, and PQ. It is PQ that sets the overall price index (PINDEX), based upon which the price of the poverty line (PL) can be derived. When this PL is matched with endogenously determined household incomes, the poverty level can be estimated.

factors like technology, globalization, education, and domestic institutions, but it can also be driven by the non-inclusive nature of capital flows and excess savings.

## 6. Conclusion

In this paper, we examine the trend and characteristics of excess savings in selected Asian economies by using FOF data. Excess savings were regularly observed since the early 2000s, although the trend was interrupted in 2005 in Thailand. In Indonesia, the excess savings turned to excess investment after the 2008–2009 GFC. The rapid increase of corporate savings after the 1997–1998 AFC was first accompanied by stagnant investment. But beginning in the mid-2000s, corporate investment increased, and in some countries (e.g., Indonesia) it rose steadily even during the GFC such that the excess savings disappeared and turned to deficit. Yet, corporate savings in Asia remain distinctively higher than in other regions. By applying a set of variables, per capita GDP and the current account balance-to-GDP ratio consistently appear to be the most important determinants of corporate savings.

Along with the excess savings, rising capital inflows since early 2000 also added liquidity in the economy. While this has allowed the region to post steady and strong economic growth, agents in different economies exhibit different behavior as to what source of funds they prefer to raise from and where they invest their excess savings. Greater disposable income, more choices of financial instruments, and steady growth performance all contribute to changing preferences among agents. A bias toward investing in financial assets has been clearly detected, including after the GFC. In the financial sector, increased non-core sources of funding led to more diversified assets, but in some cases loans accelerated. As most of them presumably went to the property sector and some were allocated to consumer credit, the risks of pro-cyclicality and the likelihood of bubble creation increased, threatening macro and financial stability. Supplementing this analysis with capital flow data revealed that the size of bank-led flows has indeed been increasing, especially amid QE in the US and ultra-easy money policies in other advanced economies. Such flows are also becoming more volatile. Although in some countries the size of bank-led flows is still relatively small, if unattended the risk of pro-cyclicality can be exacerbated.

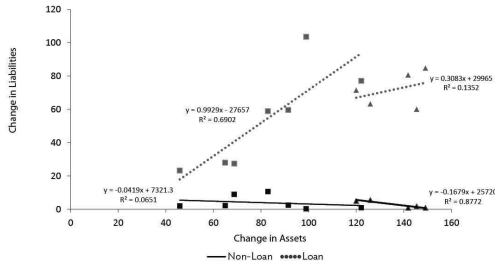
These economy-wide risks can extend further to socio-economic conditions. With the shift toward a greater preference for investing in financial assets, the already unfavorable condition of income inequality in Asia can be worsened, as only a very small percentage of the population has access to the fast-growing financial sector. The capacity of an economy to generate employment also decreases, as evidenced by declining employment elasticity, since the job-creating impacts of investing in financial assets are lower than investing in the real sector. In the last section, we showed an example of mechanisms through which capital flows that exacerbate excess savings will generate socio-economic impacts beyond macro and financial vulnerability.

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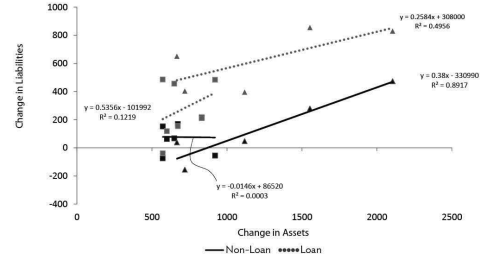
## Appendix 1: Household Liabilities

(a) Republic of Korea, 2000–2011 (KRW trillion)



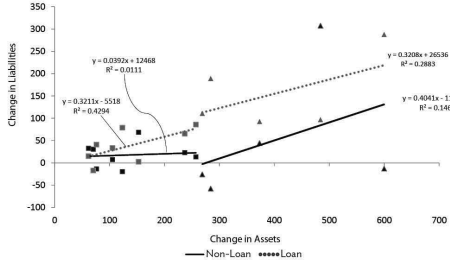
Note: In order to capture change in behavior the period is divided into 2000–2006 (squares) and 2007–2011 (triangles).  
 Source: Bank of Korea Flow-of-Funds data (various years).

(b) Thailand, 2000–2011 (THB billion)



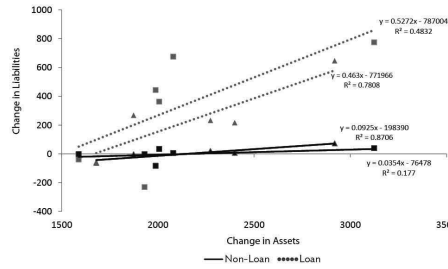
Note: In order to capture change in behavior the period is divided into 2000–2006 (squares) and 2007–2011 (triangles).  
 Prior to 2009, all household liabilities are in the form of loans.  
 Source: NESDB Flow of Funds Data (various years).

(c) Indonesia, 1999–2011 (IDR trillion)



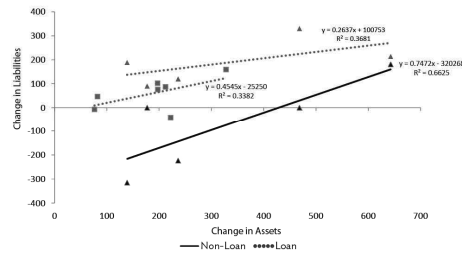
Note: In order to capture change in behavior the period is divided into 1999–2006 (squares) and 2007–2011 (triangles).  
 Source: BPS-Statistics Indonesia Flow of Funds data (various years).

(d) Taipei,China; 2001–2011 (NTD billion)



Note: In order to capture change in behavior the period is divided into 2001–2006 (squares) and 2007–2011 (triangles).  
 Source: Central Bank of Taipei,China Flow of Funds data (various years).

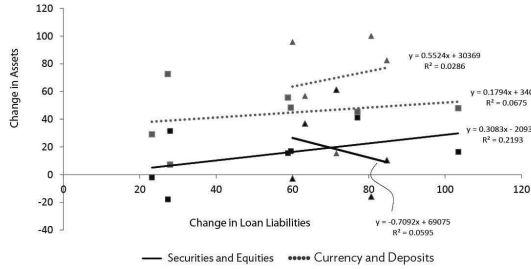
(e) Philippines, 2000–2011 (PHP billion)



Note: In order to capture change in behavior the period is divided into 2000–2006 (squares) and 2007–2011 (triangles).  
 Prior to 2009, all household liabilities are in the form of loans.  
 Source: BSP Flow of Funds data (various years).

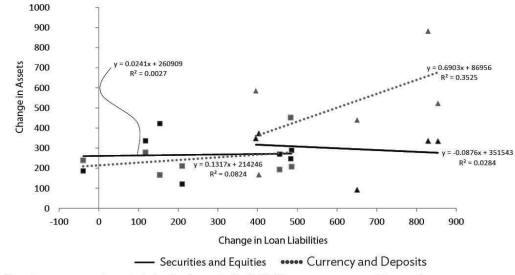
## Appendix 2: Household Assets

(a) Republic of Korea, 2000–2011 (KRW trillion)



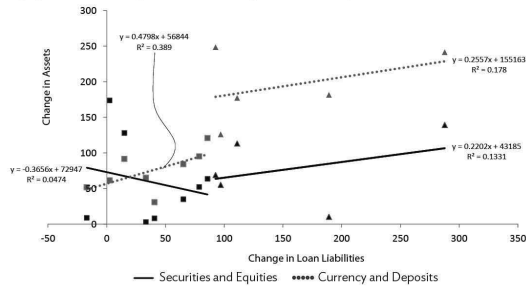
Note: In order to capture change in behavior the period is divided into 2000-2006 (squares) and 2007-2011 (triangles). Source: Bank of Korea Flow of Funds data (various years).

(b) Thailand, 2000–2011 (THB billion)



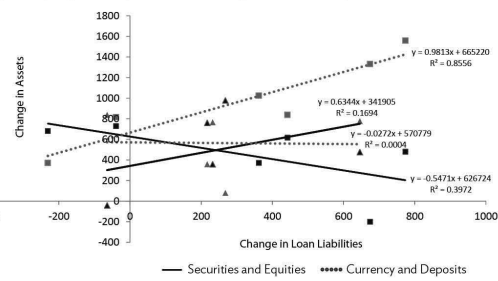
Note: In order to capture change in behavior the period is divided into two, 2000-2006 (squares) and 2007-2011 (triangles). Source: NESDB, Flow of Funds Data, Various years.

(c) Indonesia, 1999–2011 (IDR trillion)



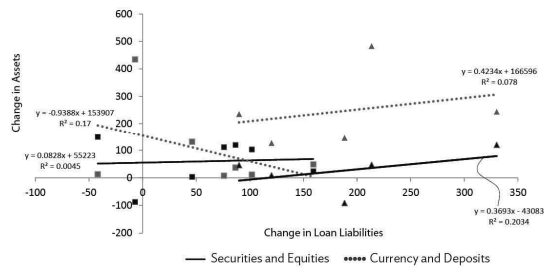
Note: In order to capture change in behavior the period is divided into 1999-2006 (squares) and 2007-2011 (triangles). Source: BPS-Statistics Indonesia, Flow of Funds data (various years).

(d) Taipei, China; 2001–2011 (NTD billion)



Note: In order to capture change in behavior the period is divided into 2001-2006 (squares) and 2007-2011 (triangles). Source: Central Bank of Taipei, China Flow of Funds data (various years).

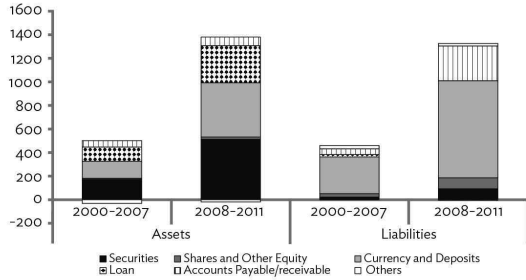
(e) Philippines, 2000–2011 (PHP billion)



Note: In order to capture change in behavior the period is divided into 2000-2006 (squares) and 2007-2011 (triangles). Source: BSP Flow of Funds data (various years).

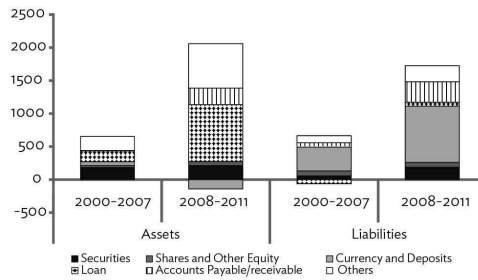
### Appendix 3: Financial Assets and Liabilities, Financial Institutions

(a) Philippines, 2000–2011 (PHP billion)



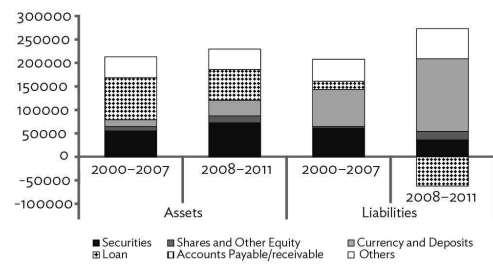
Note: "Others" comprise monetary gold and SDRs, insurance technical reserves, and unclassified items.  
Source: BSP Flow-of-Funds data (various years).

(b) Thailand, 2000–2011 (THB billion)



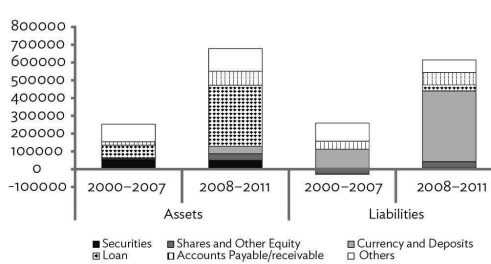
Note: "Others" comprise monetary gold and SDRs, and insurance technical reserves.  
Source: NESDB Flow-of-Funds data (various years).

(c) Republic of Korea, 2000–2011 (KRW billion)



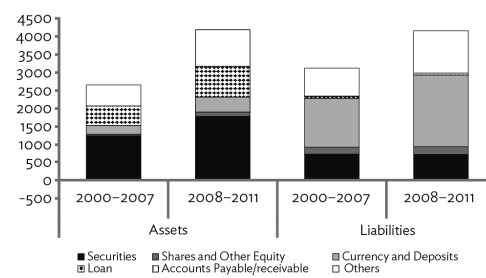
Note: "Others" comprise gold and SDRs, insurance and pension reserves, foreign exchange reserves, call loans and money, and miscellaneous accounts.  
Source: Bank of Korea. Flow of Funds data. Various years.

(d) Indonesia, 1999–2011 (IDR billion)



Note: "Others" comprise official foreign exchange reserves, life insurance and pension reserve, and miscellaneous accounts.  
Source: BP-Statistics Indonesia Flow-of-Funds data (various years).

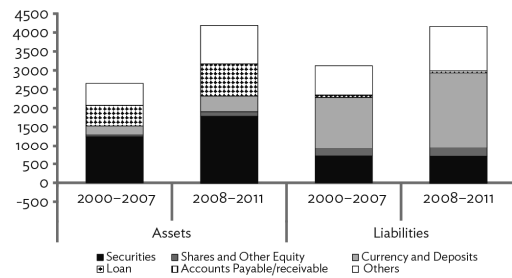
(e) Taipei, China; 2001–2011 (NTD billion)



Note: "Others" comprise life insurance and pension reserves, reserve assets, and net other assets and liabilities.  
Source: Central Bank of Taipei, China Flow-of-Funds data (various years).

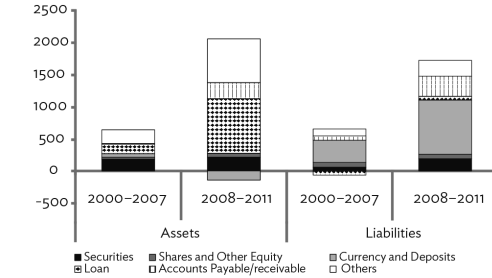
### Appendix 4: Financial Assets and Liabilities, Corporations

(a) Taipei,China; 2001–2011 (NTD billion)



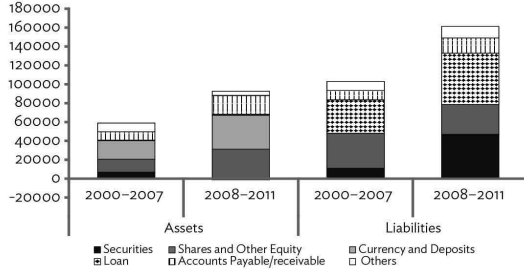
Note: "Others" comprise monetary gold and SDRs, insurance technical reserves, and unclassified items.  
Source: BSP Flow-of-Funds data (various years).

(b) Thailand, 2000–2011 (THB billion)



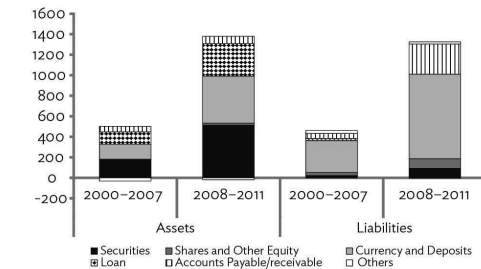
Note: "Others" comprise monetary gold and SDRs, and insurance technical reserves  
Source: NESDB Flow-of-Funds data (various years).

(c) Republic of Korea, 2000–2011 (KRW billion)



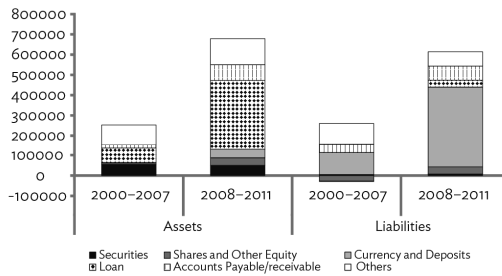
Note: "Others" comprise of gold and SDRs, insurance and pension reserves, foreign exchange reserves, call loans and money, and miscellaneous accounts  
Source: Bank of Korea. Flow of Funds data. Various years.

(d) Philippines, 2000–2011 (PHP million)



Note: "Others" comprise official foreign exchange reserves, life insurance and pension reserve, and miscellaneous accounts  
Source: BP-Statistics Indonesia Flow-of-Funds data (various years).

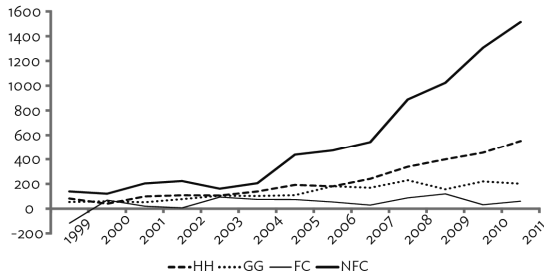
(e) Indonesia, 2000–2011 (IDR trillion)



Note: "Others" comprise life insurance and pension reserves, reserve assets, and net other assets and liabilities  
Source: Central Bank of Taipei,China Flow-of-Funds data (various years).

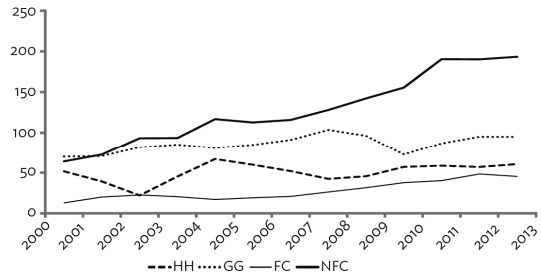
## Appendix 5: Gross Saving and Excess Saving, by Agent

(a) Gross Savings by Agent, Indonesia (IDR trillion)



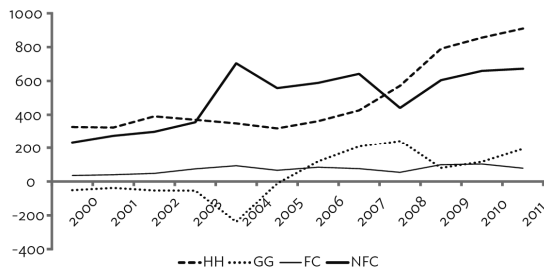
FC = financial institutions, GG = government, HH = households, NFC = corporations (non-financial).  
Source: BPS-Statistics Indonesia Flow-of-Funds data. Various years.

(b) Gross Savings by Agent, Republic of Korea (KRW trillion)



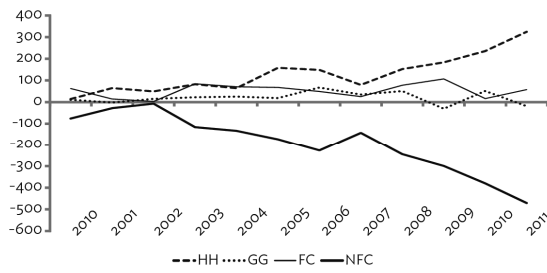
FC = financial institutions, GG = government, HH = households, NFC = corporations (non-financial).  
Source: Bank of Korea Flow-of-Funds data. Various years.

(c) Gross Savings by Agent, Philippines (PHP billion)



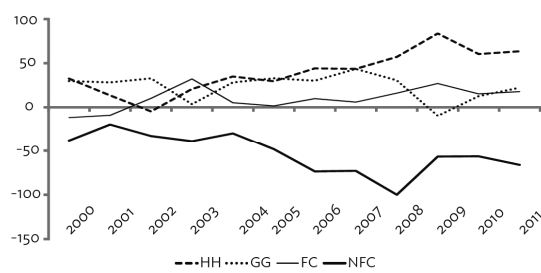
FC = financial institutions, GG = government, HH = households, NFC = corporations (non-financial).  
Source: BSP Flow-of-Funds data. Various years.

(d) Excess Savings by Agent, Indonesia (IDR trillion)



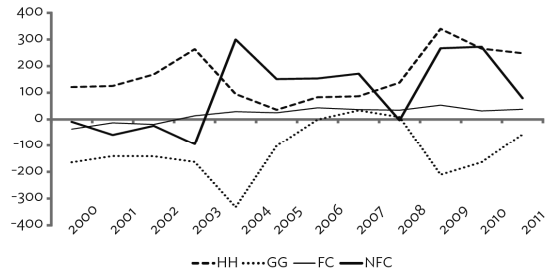
FC = financial institutions, GG = government, HH = households, NFC = corporations (non-financial).  
Source: BPS-Statistics Indonesia Flow-of-Funds data. Various years.

(e) Excess Savings by Agent, Republic of Korea (KRW trillion)



FC = financial institutions, GG = government, HH = households, NFC = corporations (non-financial).  
Source: Bank of Korea Flow-of-Funds data. Various years.

(f) Excess Savings by Agent, Philippines (PHP billion)



FC = financial institutions, GG = government, HH = households, NFC = corporations (non-financial).  
Source: BSP Flow-of-Funds data. Various years.



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## **How Capital Flows Affect Economy-Wide Vulnerability and Inequality**

### Flow-of-Funds Analysis of Selected Asian Economies

Using flow-of-funds data, this study examines how the surge in liquidity in Asian financial systems has changed the behavior of a variety of agents and institutions towards non-core liabilities and non-core assets, while for the financial sector it leads to a surge in loans. Changes in their behavior can have economy-wide repercussions, ranging from financial instability to widening income disparity and falling employment elasticity. In the financial sector, an increase in non-core sources of funding influences banks' asset allocation in favor of loans, thus escalating the risk of procyclicality and asset bubble creation.

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ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to approximately two-thirds of the world's poor: 1.6 billion people who live on less than \$2 a day, with 733 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.



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