Decomposing Capital Flows and Assessing the Impact of Capital Flows on Asset Markets: Empirical Evidence from the ASEAN-4 Countries

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Structure of the Presentation

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• Part 1: Decomposition and Waves of Capital Flows
  – Methodology
  – Results and Analysis
• Part 2: The Impact of Capital Flows on Asset Markets
  – Methodology
  – Results and Analysis
• Conclusions and Policy Implications
Motivation

• Ten years after AFC 1997/98, portfolio inflows especially the equity and debt flows have started to gain its importance in Asian countries and heightened after GFC (2008)

• Two factors: Push and Pull
  - Push factor: Several rounds of QE injection led to large capital inflows into the region
  - Pull factor: Interest rate differential and faster economic growth in the EMEs including Asia.
Introduction of QE led to massive injection of liquidity in the advanced economies

Expansion of advanced economies’ central bank balance sheets

Global Liquidity

Note: Central bank balance sheets refer to asset positions of respective central banks, scaled to GDP
Source: Haver analytics

Note: Global liquidity proxied by GDP-weighted M2 of US, Euro area, Japan and UK
Source: BIS Consolidated Banking Statistic, IMF IFS, BNM staff calculations
Stronger growth prospects and higher rates of return meant Asia was more attractive to investors.

GDP levels (USD bn)

Emerging market economies

Advanced economies

Spread between Asia and US 10-year Government bond yields

Source: IMF

Source: Bloomberg
There have been massive capital flows into Asia

Cumulative net foreign portfolio inflows to selected emerging economies, 2009-1Q 2013

Residential property prices have risen in EMEs

Source: Haver, national authorities, BNM calculations

IN – India, ID – Indonesia
Source: Haver, national authorities
Decomposition of Capital Flows

- **Debt-Led Flows (excluding Bank Flows):** Debt securities in portfolio investments + other Investments pertaining to non-banking sectors (exclude financial derivatives)

- **Equity-Led Flows:** Direct Investments + Equity Portfolio Investments

- **Bank-Led Flows:** Currency and Deposits + Loans + Other Liabilities (exclude financial derivatives).
Episodes of Capital Flows

Following Forbes and Warnock (2011):

- **Surges**: an episode when gross capital inflows increase sharply
- **Stop**: an episode when gross capital inflows decrease sharply
- **Flight**: an episode when gross capital outflows increase sharply
- **Retrenchment**: an episode when gross capital outflows decrease sharply

*The y-o-y change in the four quarter moving average is above or below two standard deviations of the historical average or above or below one standard deviations of the historical average for several consecutive periods.*
Part 1: Results of Decomposition

Capital Inflows into Malaysia

USD bil

Capital Inflows into Indonesia

USD bil

Banking flows
Debt flows (excluding banks)
Equity flows
Capital Flows into Philippines and Thailand

Capital Inflows in Philippines

Capital Inflows in Thailand

USD bil

Banking flows
Debt (excluding banking flows)
Equity

USD bil

Banking flows
Debt (excluding banking flows)
Equity

Years:
1990Q1 to 2013Q4

Years:
1990Q1 to 2013Q4

BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA
Capital Outflows From Malaysia and Indonesia

**Capital Outflows from Malaysia**

- **USD bil**
- **Banking flows**
- **Debt flows (excluding banks)**
- **Equity flows**

**Capital Outflows from Indonesia**

- **USD bil**
- **Equity flows**
- **Debt flows (excluding banks)**

BANK NEGARA MALAYSIA
CENTRAL BANK OF MALAYSIA

[Image of charts showing capital outflows from Malaysia and Indonesia with data from 2002Q1 to 2014Q1 for Malaysia, and 2001Q1 to 2013Q1 for Indonesia]
Capital Outflows from Philippines and Thailand

Capital Outflows in Philippines

USD bil

Banking flows
Debt (excluding banking flows)
Equity

Capital Outflows from Thailand

USD bil

Banking flows
Debt (excluding banking flows)
Equity
Main take away from the decomposition

- Capital Inflows: During the period of GFC, there was liquidation/withdrawal of debt holdings.
- Shift of investors’ appetite from equities to debt instruments post GFC.

- Capital Outflows: There was liquidation/withdrawal of debt instruments abroad by the ASEAN-4 residents at the early stage of GFC.
- There was an increase in the residents’ holdings of portfolio debt instruments abroad.
Part 1: Results of Capital Flows’ Episodes

Period of ‘Surge’ and ‘Stop’ in Malaysia

Period of ‘Retrenchment’ and ‘Flight’ in Malaysia

Change in gross inflows

1 SD bands

2 SD bands

Change in gross outflows

1 SD bands

2 SD bands
**Period of ‘Surge’ and ‘Stop’ in Indonesia**

- Change in gross inflows
- 1 SD bands
- 2 SD bands

**Period of ‘Retrenchment’ and ‘Flight’ in Indonesia**

- Change in gross outflows
- 1 SD bands
- 2 SD bands
Period of ‘Surge’ and ‘Stop’ in Philippines

Period of ‘Retrenchment’ and ‘Flight’ in Philippines

Change in gross inflows
- 1 SD bands
- 2 SD bands

Change in gross outflows
- 1 SD bands
- 2 SD bands
Period of ‘Surge’ and ‘Stop’ in Thailand

Period of ‘Retrenchment’ and ‘Flight’ in Thailand

Change in gross inflows
- Change in gross outflows
- 1 SD bands
- 2 SD bands
Three key takeaways from the findings:

- Debt-led flows led to surge episodes post GFC across ASEAN-4

- The flight episodes in Thailand and Malaysia are mostly in the form of banking-led flows

- The retrenchment episodes during pre and post GFC are in the form of bank-led flows and debt-led flows for ASEAN-4 countries
Part 2: The relationship between capital flows and asset prices

- The growth in international capital flows is the result of greater financial liberalization and sophistication in markets.
- Capital movements help growth through a more global efficient allocation of resources.
- However, the international capital flows are very volatile in nature, with the tendency of reversing direction when there is the slightest hint of risk.
- Large capital inflows are often associated with booms in asset prices and leading to higher risk of financial crisis.
  - Liquidity flows directly into the banking system which is then channelled into unproductive sectors
- Periods of where there surges in capital flows appear to related to subsequent increases in asset prices for M’sia, the Philippines and Thailand.
Identifying Periods Asset Price Booms

1. A Composite Asset Price Index comprising of Equity Price and House Price Indices is constructed using the Conference Board approach.

2. An excessive deviation of the composite asset from its long term trend is defined as a “boom” period. “Excessiveness” is determined by:
   - Extracting the long-term trend of the Composite Asset Price Index using the 2-sided Hodrick-Prescott filter
   - Ad hoc testing for threshold of the asset price gaps which results in economic distress 8 quarters ahead (Noise-to-Signal approach)

3. Finally, apply the probit panel data approach to examine if capital flows have a significant impact on the excessive asset price deviations (represented by the constructed dummy). The general form of the probit model: \( \left( DUM_{i,t} = 1 \right) = \alpha + \beta X_{i,t} + \epsilon_{i,t} \)
Asset Price Gaps for ASEAN-4

- Asset prices appear to build up in periods prior to AFC and GFC.
- Thailand and Malaysia showed the strong asset price boom in 1996 prior to AFC. Indonesia showed a milder price boom.
- For the GFC, Thailand showed asset price booms as early as 2003, but other ASEAN-4 signal asset price booms only in 2006.
Part 2: Results from the Probit Model

- Results suggest that:
  - Deviations of fundamental macro variables from their long-term trends increase the probability of asset price imbalances.
  - Build ups in reer gap, house price gap and output gap increase the probability of asset price imbalances by 17%, 26% and 27% respectively.
  - Credit growth also increases the probability by 16%.
  - Capital flows is found have a significant impact on asset prices but small.

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<th>Variable</th>
<th>Coefficient</th>
<th>p-value</th>
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<td>Reer Gap&lt;sub&gt;i,t&lt;/sub&gt;</td>
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<td>Real interest rates&lt;sub&gt;i,t-3&lt;/sub&gt;</td>
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<tr>
<td>Capital inflows&lt;sub&gt;i,t-5&lt;/sub&gt;</td>
<td>0.0002</td>
<td>0.06</td>
</tr>
</tbody>
</table>

McFadden R-squared = 0.49

QPS = 0.20

LPS = 0.31

KS = 0.75
Conclusion

- ASEAN-4 countries experienced sharp increases in debt (mainly) and equity inflows led to the capital surges post GFC.

- Capital flows also is found to have a significant but small impact. However, this may not truly reflect the impact as capital flows may have increase the liquidity in the banking system which in turn increases the credit to the unproductive sector.

- More attention needs to be given to the relationship between capital flows and credit. Also, the role of liquidity driven credit in asset price imbalances.

- High variability and low predictability of capital flows will continue to be a concern for most economies, especially in the environment of increasing financial globalisation. Therefore, policy makers need to live with the volatility and use macro economic and macroprudential measures to maintain economic and financial resilience.
Thank you
Capital flows and Asset Prices: Some Views from Past Studies

- A number of empirical studies, analysing episodes of large capital inflows, highlight the existence of a strong association between capital flows and booms in asset prices:

- Studies focusing on Asian economies:
  - Jansen (2003) finds capital inflows to be associated with higher asset prices for Thailand (an increase of 1% in capital inflows increases real stock prices 1% on impact and ultimately, more than 3%).
  - Kim and Yang’s (2008) panel VAR results on Asian economies suggest that although capital inflows contribute to booms in asset prices, they only explain a small part of asset price fluctuations.

- The stylised evidence suggests that periods of surges in capital coincides with build ups in asset price gaps for ASEAN -4:

**Stylised evidence of periods of surges in capital flows and asset price gaps**

**Indonesia**

**Thailand**

**Malaysia**

**Philippines**