TIAC-BNM Monetary and Financial Economics Workshop
“Monetary Policy in Theory and Practice"

Financial stress, economic activity and monetary policy in the ASEAN-5 economies

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Disclaimer: The views expressed here are do not represent those of Bank Negara Malaysia.
A Preamble
Globalization of Finance and its Enigma ...

• Today people are primarily influenced by price action.

• But prices in financial markets often bear no resemblance to what is really going on fundamentally in the economy, but rather reflect the staggering liquidity which has been introduced in the global system.

• This is the result of modernisation and globalisation of finance...
“I had been puzzled about the quantitative relationship between the subprime problems and the stock market. I think that the actual money at risk is on the order of $50 billion from defaults on subprimes, which is very small compared with the capitalization of the stock market. It looks as though a lot of the problem is coming from bad underwriting as opposed to some fundamentals in the economy. So I guess I’m a bit puzzled about whether it’s a signal about fundamentals or how it’s linked to the stock market.”
Some views...

- It wasn’t bad underwriting or bad fundamentals, but rather the globalisation and modernisation of financial markets that led to **reduced monetary control exerted by traditional monetary policy instruments**.

- In 2006, there was acceptance that “something” else was driving liquidity conditions. On March 23, 2006, the Federal Reserve System ceased the publication of the M3 monetary aggregate.
Diverse cracks to stress

A glass is cracked but not broken. So it is ok to go on doing business as usual.

But when it really breaks ... this is why measuring financial stress will show the signs of cracks but not the time when it breaks.
The study
Three main questions

1. What is the impact of higher financial stress on the real economy?
2. How does monetary policy behave when financial stress increases?
3. What is the role of financial stress in the monetary policy transmission to the real economy?

Empirical Methodology

- Structural Vector Autoregression (SVAR)

Sample

- ASEAN-5 economies: Indonesia, Malaysia, Philippines, Singapore and Thailand
- Time period
  - 1997-2013
  - Spans three major financial episodes: AFC, technology bubble burst and GFC
Analysis is premised on use of financial stress indices as indicators of systemic financial stress

Constructing the ASEAN-5 Financial Stress Indices (FSI)

Market Segments & Indicators

1. Banking Sector
   - Relative returns
   - Relative volatility (β)

2. Equity Market
   - Market returns
   - Volatility (GARCH)

3. Foreign Exchange Market
   - Exchange market pressure

4. Domestic Bond Market
   - Yield volatility

Aggregation to Systemic Financial Stress Index

- Weighted sum of market specific indicators, with weights reflecting the markets’ financing shares

Avg. Financing Shares

<table>
<thead>
<tr>
<th>Country</th>
<th>Banking Sector</th>
<th>Equity Market</th>
<th>Domestic Bond Market</th>
<th>Foreign Exchange Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesia</td>
<td>34</td>
<td>29</td>
<td>18</td>
<td>19</td>
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<tr>
<td>Malaysia</td>
<td>32</td>
<td>36</td>
<td>23</td>
<td>23</td>
</tr>
<tr>
<td>Philippines</td>
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<td>Singapore</td>
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<tr>
<td>Thailand</td>
<td>49</td>
<td>23</td>
<td>17</td>
<td>10</td>
</tr>
</tbody>
</table>

Analysis is premised on use of financial stress indices as indicators of systemic financial stress.
ASEAN-5 Financial Stress from 1997 to 2016

Note: Shaded areas are periods when the index values exceeded the 80th percentile threshold, defined in Tng, Kwek and Sheng (2012) as periods of high stress.
A closer look at financial stress in Malaysia across market segments
Methodology: Variables and causality assumptions in the SVAR

External Factors
- Commodity prices
- Global output
- External financial stress

Domestic Financial Factors
- Domestic financial stress
- Exchange rate
- Bank Credit
- Interest rate

Domestic output and prices
Methodology: The SVAR model’s structure

The SVAR model:  \( AX_t = B(L)X_{t-1} + \varepsilon_t \)

Matrix of contemporaneous coefficients:

\[
A = \begin{bmatrix}
    a_{11} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
    a_{21} & a_{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\
    a_{31} & a_{32} & a_{33} & 0 & 0 & 0 & 0 & 0 & 0 \\
    a_{41} & a_{42} & a_{43} & a_{44} & 0 & 0 & 0 & 0 & 0 \\
    a_{51} & a_{52} & a_{53} & a_{54} & a_{55} & 0 & 0 & 0 & 0 \\
    a_{61} & a_{62} & a_{63} & a_{64} & a_{65} & a_{66} & 0 & 0 & 0 \\
    a_{71} & a_{72} & a_{73} & a_{74} & a_{75} & a_{76} & a_{77} & 0 & 0 \\
    a_{81} & a_{82} & a_{83} & a_{84} & a_{85} & a_{86} & a_{87} & a_{88} & 0 \\
    a_{91} & a_{92} & a_{93} & a_{94} & a_{95} & a_{96} & a_{97} & a_{98} & a_{99}
\end{bmatrix}
\]

Variable Ordering

<table>
<thead>
<tr>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity prices</td>
</tr>
<tr>
<td>World production</td>
</tr>
<tr>
<td>US financial stress</td>
</tr>
<tr>
<td>Production</td>
</tr>
<tr>
<td>Prices</td>
</tr>
<tr>
<td>Interest rate</td>
</tr>
<tr>
<td>Bank credit</td>
</tr>
<tr>
<td>Exchange rate</td>
</tr>
<tr>
<td>Financial stress</td>
</tr>
</tbody>
</table>

Other model details:

- Restrictions in lag coefficients to prevent domestic variables from affecting global variables
- Variables in log level terms (except the interest rate and financial stress)
- Lag length of 4 (Schwarz=1, Akaike=average of 4 among 5 economies)
What is the impact of financial stress on real economic activity?

Impulse responses of production to a 1 standard increase in financial stress

Note: Solid lines are responses to one standard deviation shocks. The dotted lines are 95th percentile bootstrapped confidence intervals.
The two-way interaction between financial stress and monetary policy

1. Interest rate behaviour when financial stress increases

**Impulse responses of interest rate to a 1 standard increase in financial stress**

Note: Solid lines are responses to one standard deviation shocks. The dotted lines are 95th percentile bootstrapped confidence intervals.
The two-way interaction between financial stress and monetary policy

2. Financial stress responses to an interest rate shock

Impulse responses of financial stress to a 1 standard increase in interest rate

Note: Solid lines are responses to one standard deviation shocks. The dotted lines are 95th percentile bootstrapped confidence intervals.
Does financial stress alter the transmission of monetary policy to the real economy?

Impulse responses of production to a 1 standard increase in interest rate with financial stress endogenous (blue line) and exogenous (red line)

Note: Solid lines are responses to one standard deviation shocks. The dotted lines are 95th percentile bootstrapped confidence intervals.
Key findings & some policy implications

1. Higher financial stress leads to lower real economic activity
   - Rapid initial impact, followed by gradual dissipation

2. Central banks tend to reduce interest rates when financial stress increases
   - Substantial cross-country variation in magnitude and time dynamics

3. Lower interest rates have limited effectiveness in lowering financial stress, but effective in stimulating economic activity through other channels

4. Need for complementary policies to directly address sources of financial stress
   - Countercyclical fiscal policy
   - Direct financial market interventions
Thank You