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# Multilateral aspects of the capital flow management measures

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# Motivation

- There was little concern about the spillover effects of capital controls …

It is widely agreed that capital controls have no significant effects on aggregate volume of capital inflows as it can only shift the composition and lengthen maturity of flows.

What if the control successfully reduce the volume of certain types of flows into a country, but simply shift the challenges of large inflows into other countries.

# What this paper does…

- Examine cross market linkages within EAEs:
  by measuring correlations of volatility/shocks in stock returns and in net foreign equity flows.
- Identifies the mechanism of the spread of turmoil across countries in the region.
  Volatility spillover (pure contagion vs interdependence)
- Analyze whether unilateral movements creates side effects to neighboring countries.

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# What this paper does not do…

- Prove whether the coordinate action is superior to unilateral capital flow measures

- Assess effectiveness of capital flow measures vis-à-vis its objective.

# Organization of study

- Challenge from volatile capital flows
- Evidence of volatility spillover in EAEs
- Multilateral effects of the Capital flow management measures (CFMs)

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# ‘Challenges’ to EAEs from volatile capital flows

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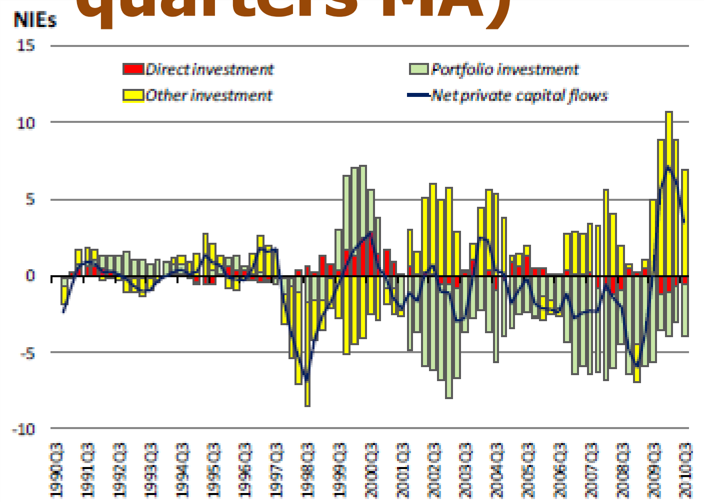
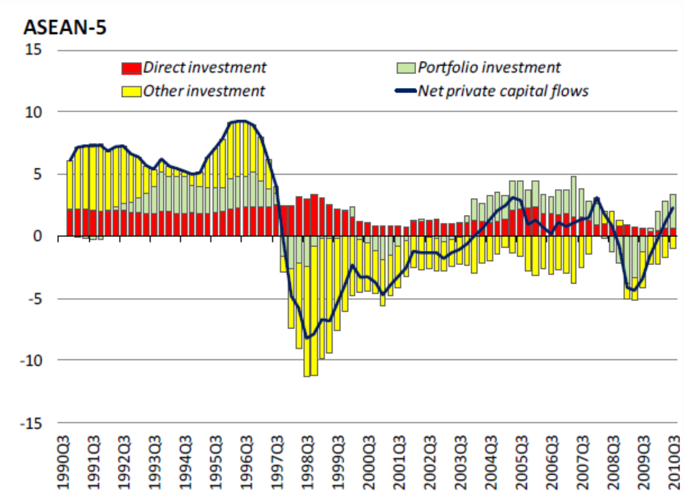
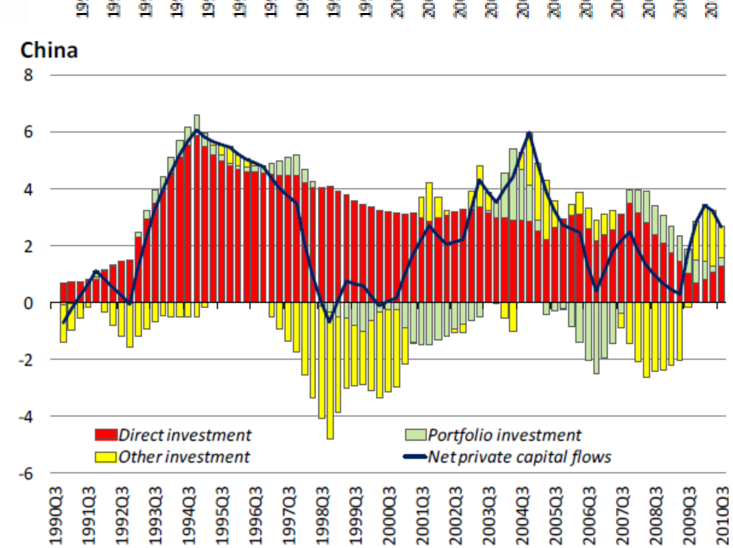
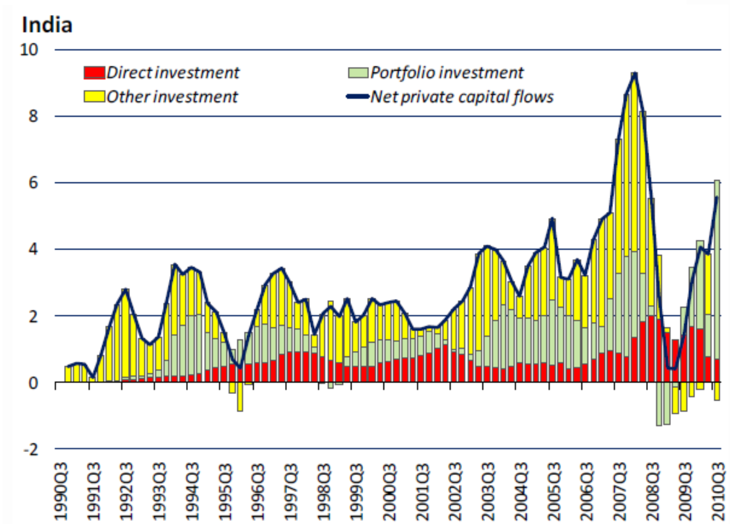
# Inflows are mainly for portfolio investment…

## Net private capital flows, 1990-2010 (% of GDP, 4 quarters MA)



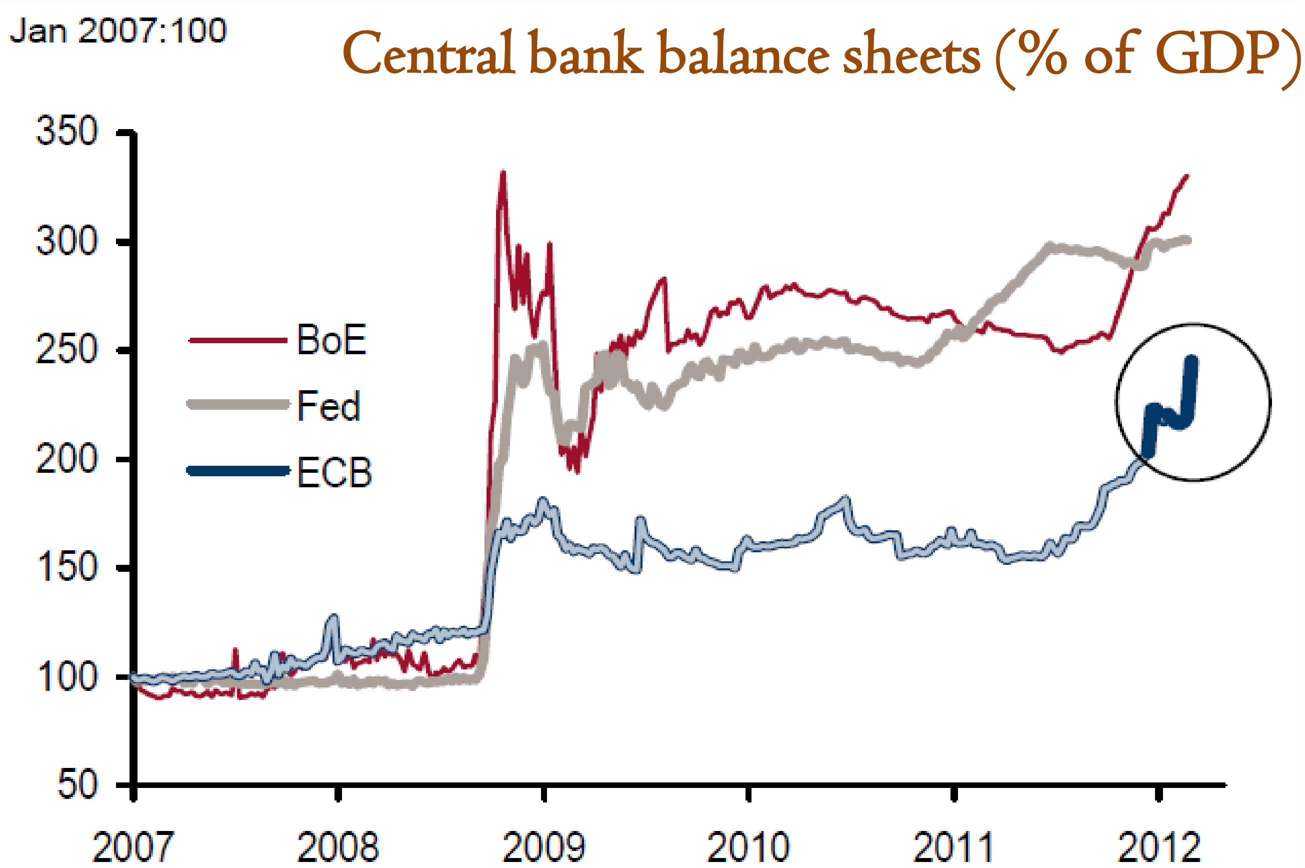




**Source: Pradhan et. Al. (2011)**

**Note: NIEs of Asia includes Hong Kong, Korea, Singapore, and Taiwan**

# …with the trend of larger inflows going forward




Source: Credit Suisse (29 February 2012)

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# Unfortunately, EAEs have financial markets with limited absorptive capacity.

| Billions USD | Stock market size | Bond market size | FX market size |
|---|---|---|---|
| Thailand | 218 | 180 | 7.4 |
| Malaysia | 90 | 183 | 7.3 |
| Indonesia | 130 | 98 | 3.4 |
| Philippines | 27 | 55 | 5.0 |
| Singapore | 282 | 115 | 265.9 |
| Korea | 1,627 | 1,085 | 43.8 |
| Japan | 4,280 | 11,521 | 312.3 |
| USA | 30,455 | 25,064 | 904.4 |

Source: WDI and BIS

Note: Stock market, total value at end-2010; Domestic debt securities, amount outstanding at end-2009; FX, average daily turnover in April 2010

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# How connected are these volatile capital flows in EAEs? and by which mechanism?

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# Data and methodology

- The time varying cross market correlation coefficients was calculated by DCC GARCH model (Engle, 2002)
- Event studies for multilateral impacts of the announcement of capital flows measures (CFMs) in EAEs during 2009-2010.
- Using stock market data:

1) Equity price (1992-present)
2) Net foreign equity flows (2006-present)

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# Define pure contagion versus interdependence

- This study follows definition of Forbes and Rigobon (2002) and Masson (1998, 1999).
- Contagion: crisis was triggered and spread by investor's psychological behaviour or panic movements rather than being induced by economic fundamental links.
- Interdependence/spillovers: a crisis in a country affects the fundamental of the neighbours through trade or financial linkages.

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# How to test for existence of contagion?

- The examination simply tests if this volatility transmission changes significantly after the shocks or crisis.
- Contagion is defined as a significant increase in cross-market linkages (co-movement) after shock.
- Interdependence or spillovers: two markets show a high degree of co-movement during period of stability/the co-movement does not increase significantly after shock.

# Crisis in one country could coordinate investor expectations. The co-movement in price would exist because of correlation in memories rather than fundamental.

**Comparing the two episodes of calm periods:** the degree of financial interdependence has increased from the pre-Asian crisis (1992-1996) to the pre-US crisis period.

**During the crisis period,** implied correlation for the equity return among ASEAN markets increase sharply in both the 1997 and 2008 crisis, however, the latter event incurs a more dramatic rise

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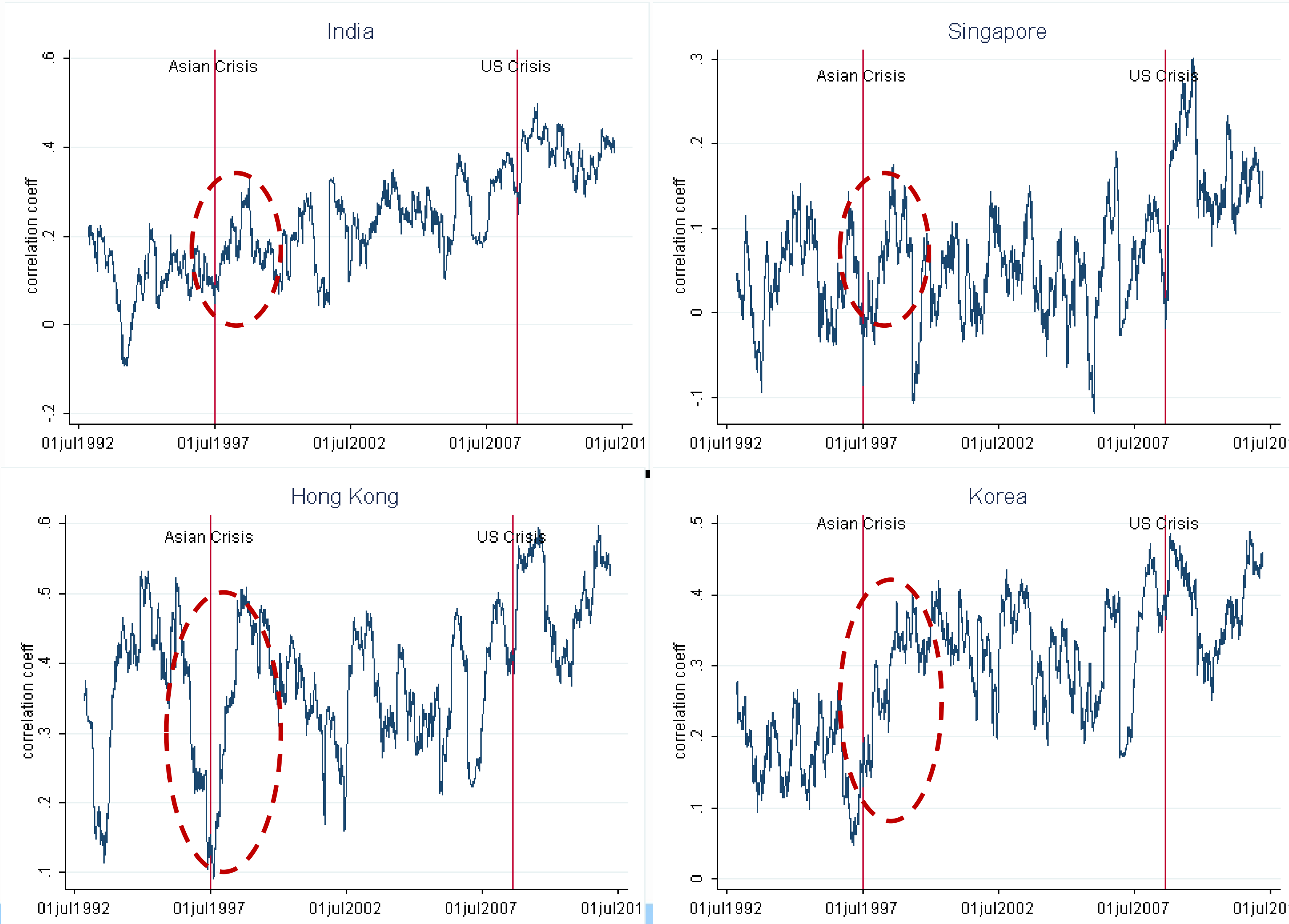
# Conditional correlation coefficient of stock returns (Thailand as a crisis originator in 1997)



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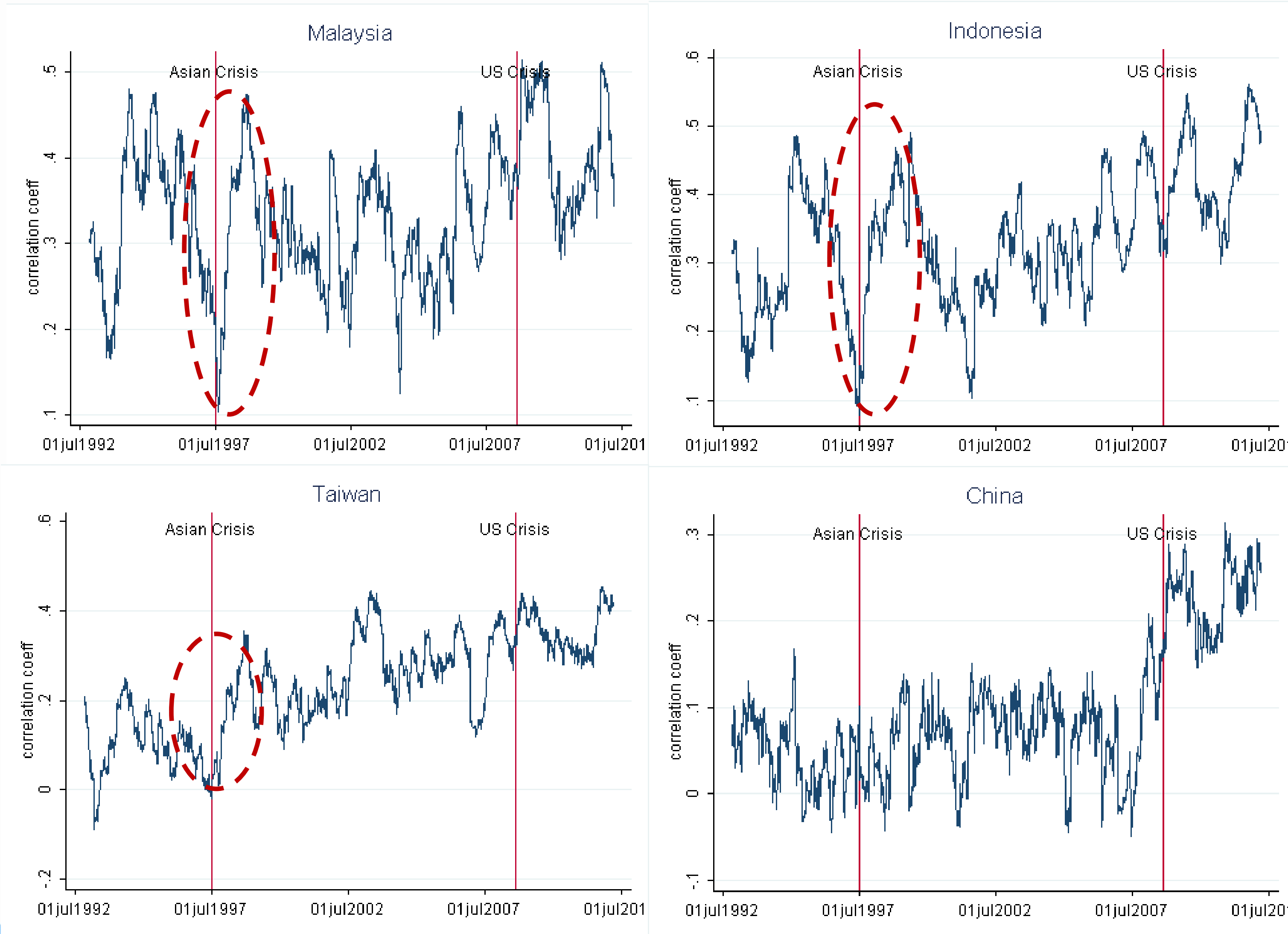

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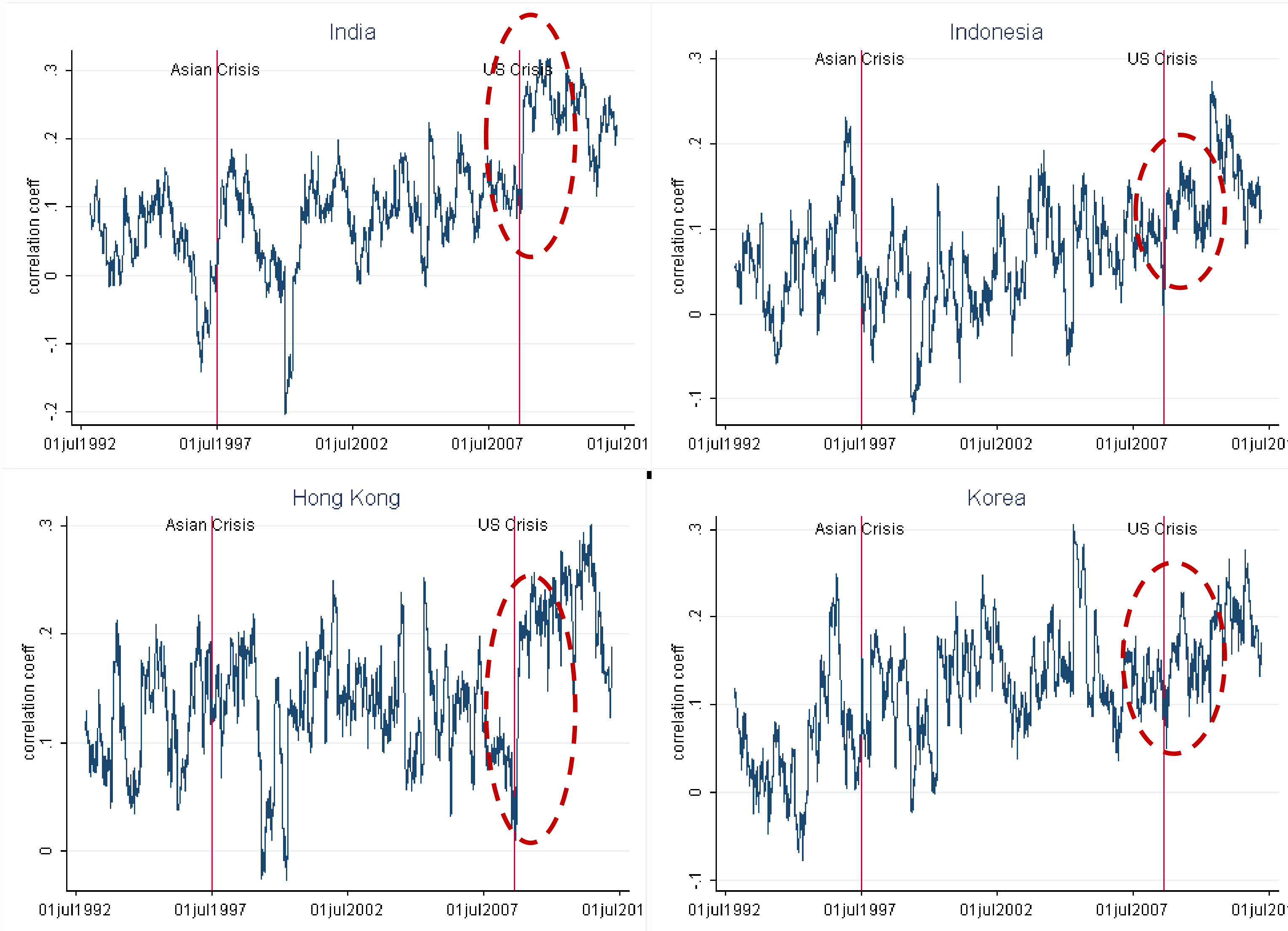

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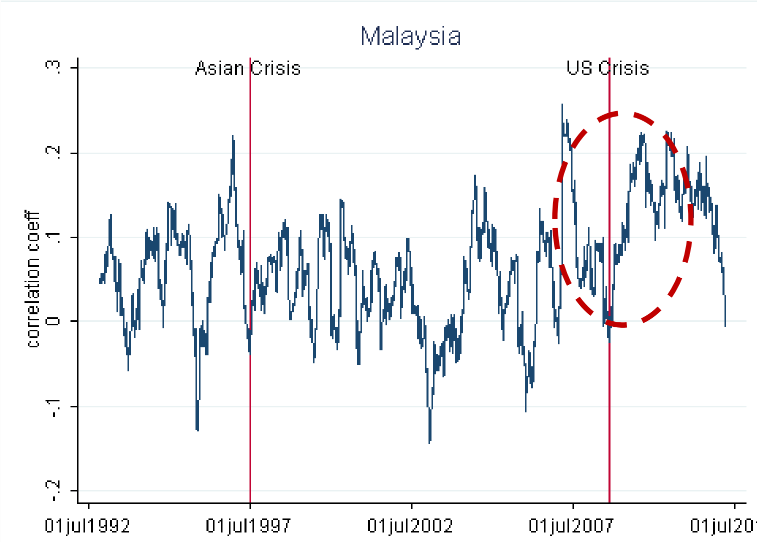
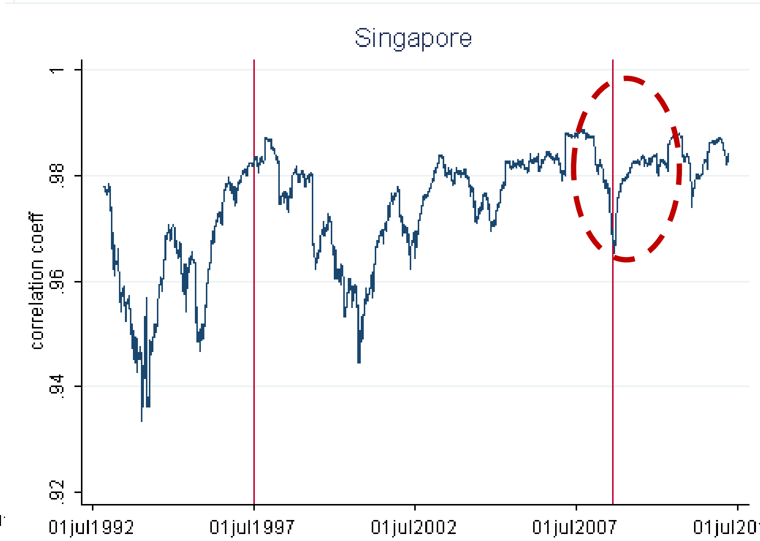
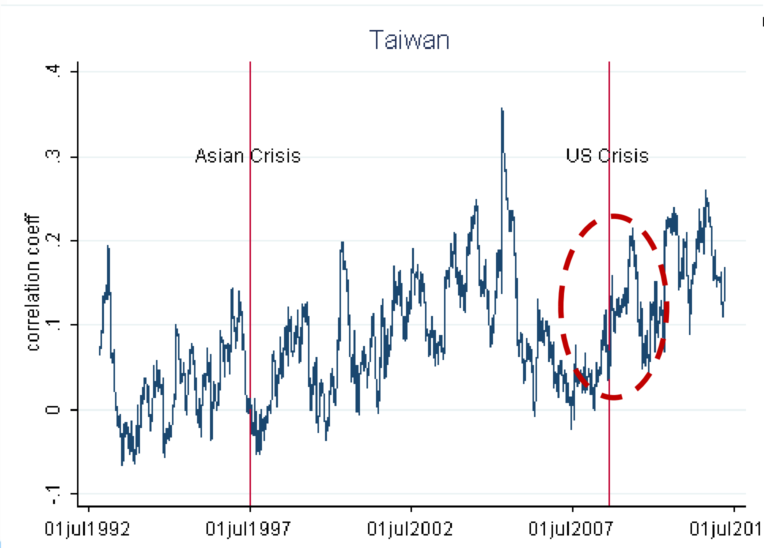
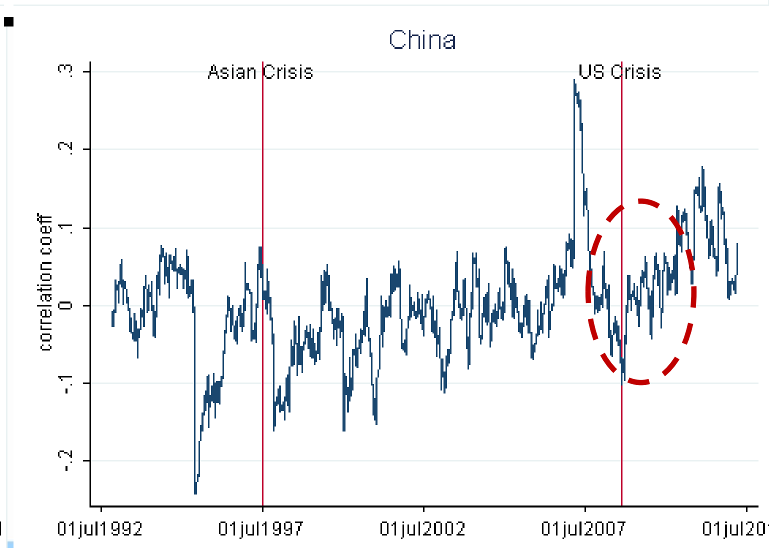


# Impacts of shock originated within EAEs could be more severe than those created outside the region

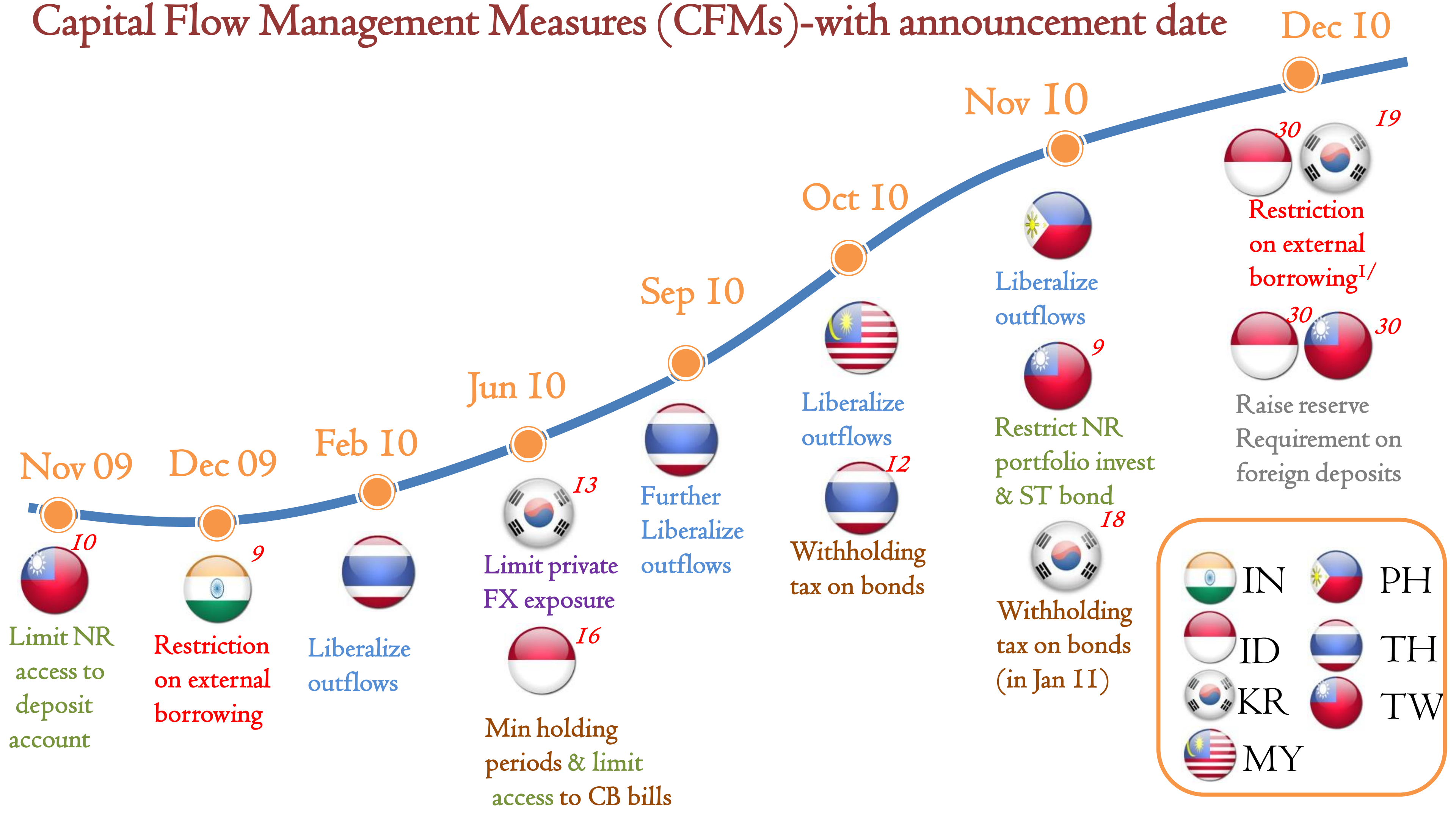
- Recently, there's significant increase in the pair-wise conditional correlation among Asian countries itself.
- Coefficients are even stronger than in comparison with the US.
- One could link this phenomenon to the increased financial integration, which has intensified contagion effects across markets.

# Policy response of each country in EAEs?

country in EAEs?

# Capital Flow Management Measures (CFMs) become popular toolkits among EAEs

## Capital Flow Management Measures (CFMs)-with announcement date




Note: [1/] Bank levy in 2011H2 for Korea; Limit bank ST borrowing in Mar 11 and raise RR on FCD in Mar & Jun 11 for Indonesia

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# Is there externality of the CFMs?

# Previous literatures on spillover effects of the CFMs

- Forbes et al. (2011) found that capital control in Brazil cause investors to change their portfolio allocation in such away that:

1. reduce allocation to Brazil
2. reduce allocation to countries believed to be more likely to use control
3. Increase allocation to other country in Latin America that have fewer restriction on capital flows

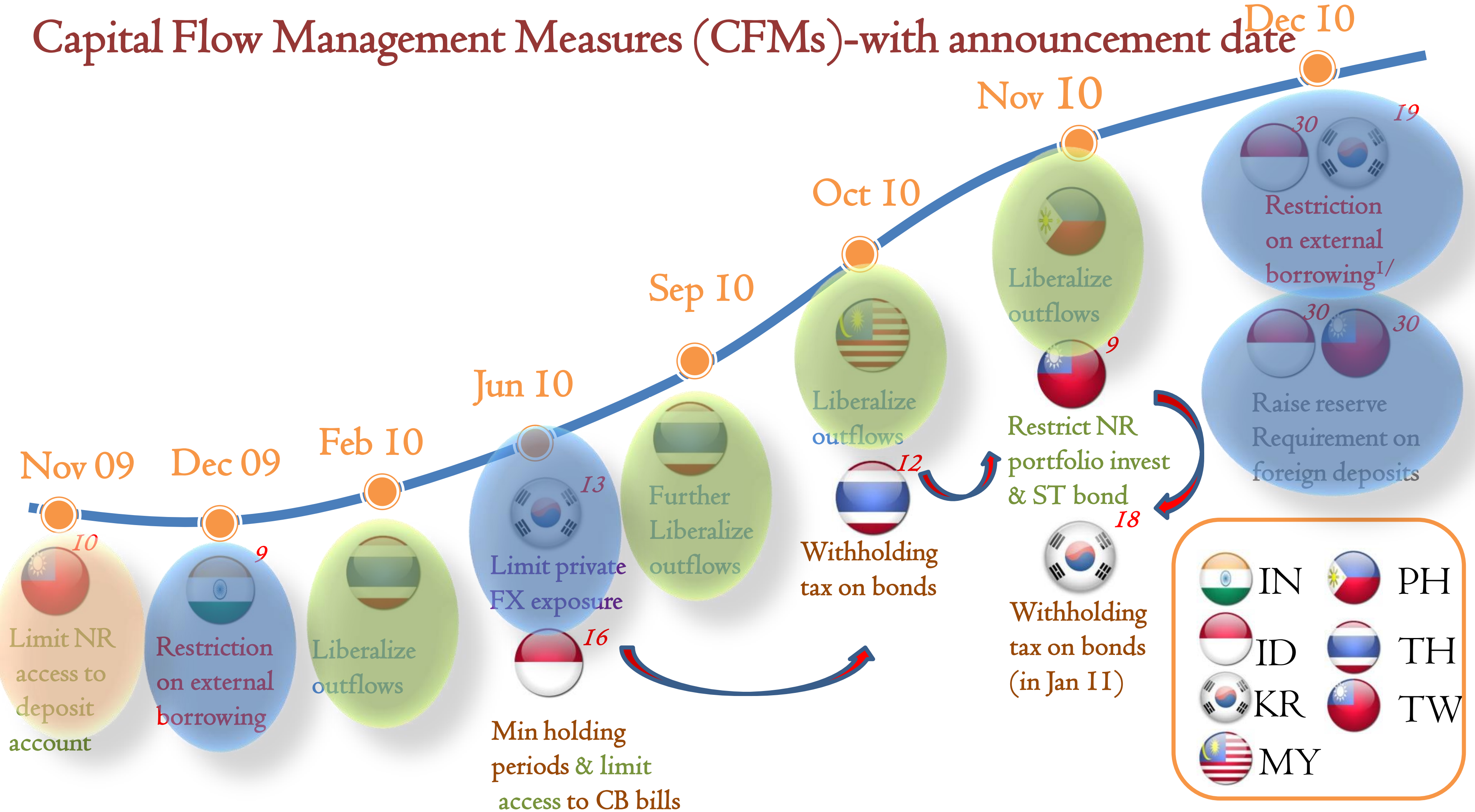
- Effect of capital control is through signaling rather than direct cost of the controls

# Previous literatures on spillover effects of the CFMs

- According to Edison and Reinhart (2001), equity markets continue to be internationally linked, despite the introduction or escalation of capital controls during the Asian financial crisis.
- In addition, following the introduction of the capital controls, one should expect the following phenomena in the financial variables

1) A decline in volatility spillover;
2) A structural breaks around the introduction of controls
3) less contemporaneous movement with international variables

# Capital Flow Management Measures (CFMs) become popular toolkits among EAEs

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# Finding

- Primary impact of capital control is not the direct cost to investors, but a signaling effects of government less supportive to foreign portfolio flows.
- Measure targeted fixed income investment could have significant effects on equity investment if controls cause policy uncertainty risk

# The finding suggest externalities of the CFMs

| Country | Dampen market volatility | Reduce co - movement with international variables | Externalities |
| --- | --- | --- | --- |
| **16 Jun 10: Indonesia -** Minimum holding period on central banks bill | Yes, temporary | Yes, temporary | Yes, raise volatility in TW |
| **12 Oct 10: Thailand** - withholding tax on bonds | Yes, temporary | Yes, temporary | Yes, raise volatility in TW |
| **9 Nov 10: Taiwan-** restrict NR investment in portfolio markets & ST govt bond | Yes, temporary | Yes, temporary | Yes, raise volatility in KR |
| **18 Nov 10: Korea -** withholding tax on bond | Limited impact | none | none |

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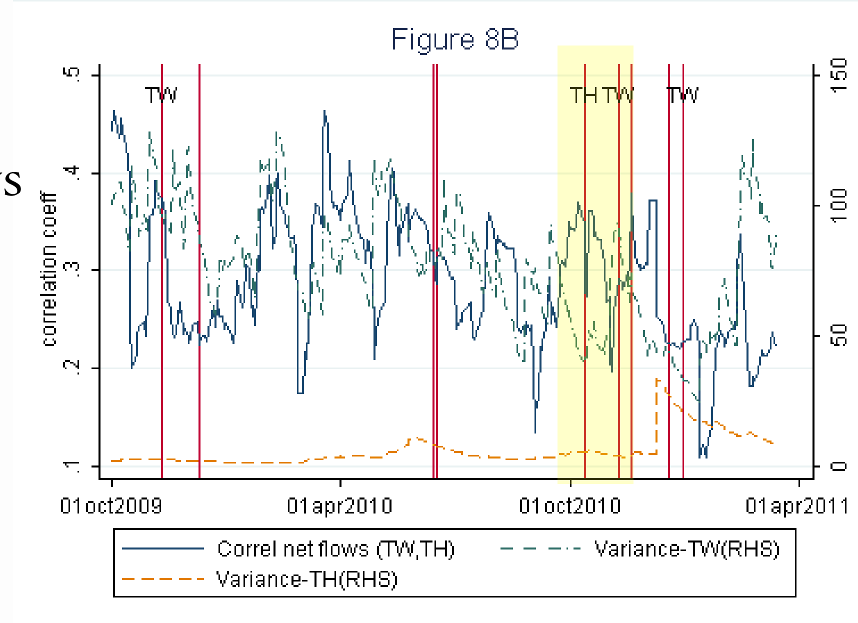
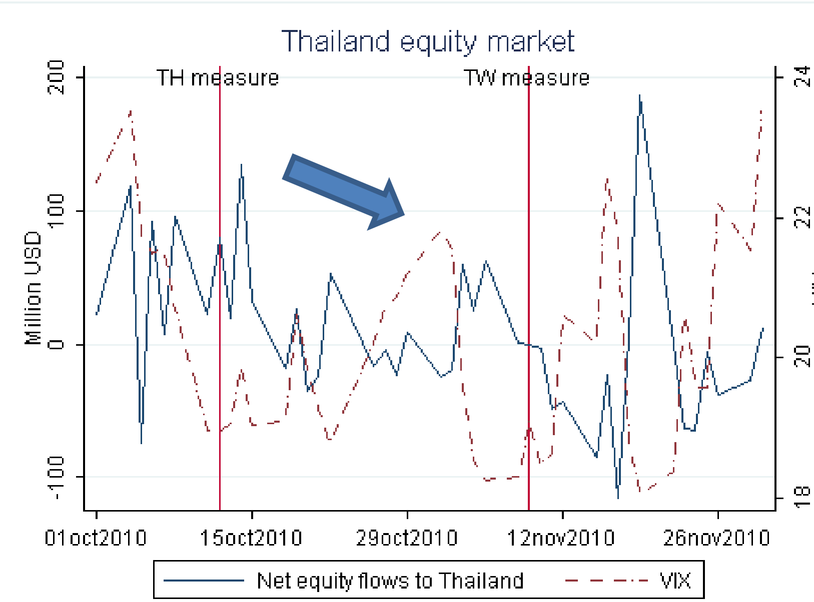
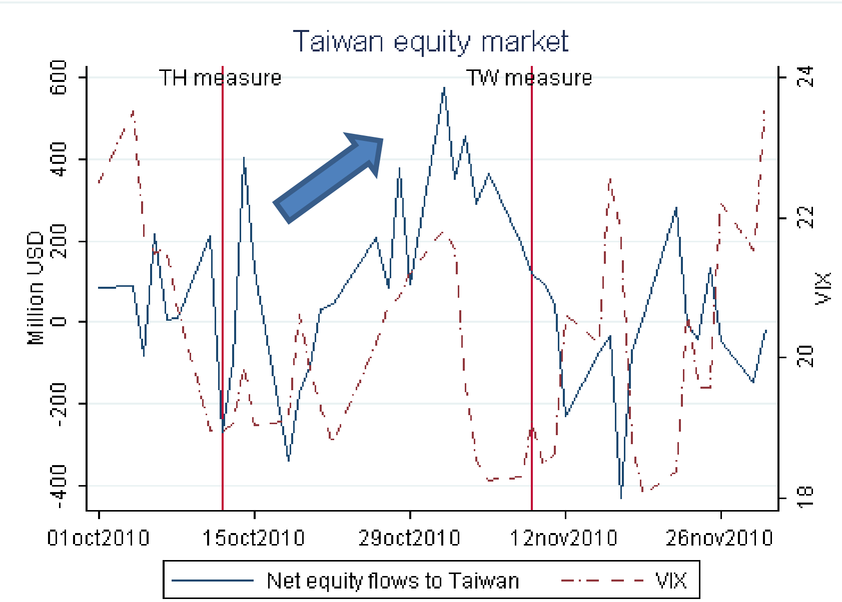
- Measure in Thailand diverts the flows away to Taiwan
- Pair-wise correlation decline due to lower volatility of flows into Thailand and higher volatility in Taiwan



# Conclusion

- Although CFMs may have temporarily reduce the portfolio flows into a country, it may occur at the expense of other countries.
- If several countries adopted controls as part of standard policy toolkits, spillover effect could be substantial.
- This support the role for international coordination or oversight of the use of control to avoid externality.