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# Financial Integration and External Spillovers

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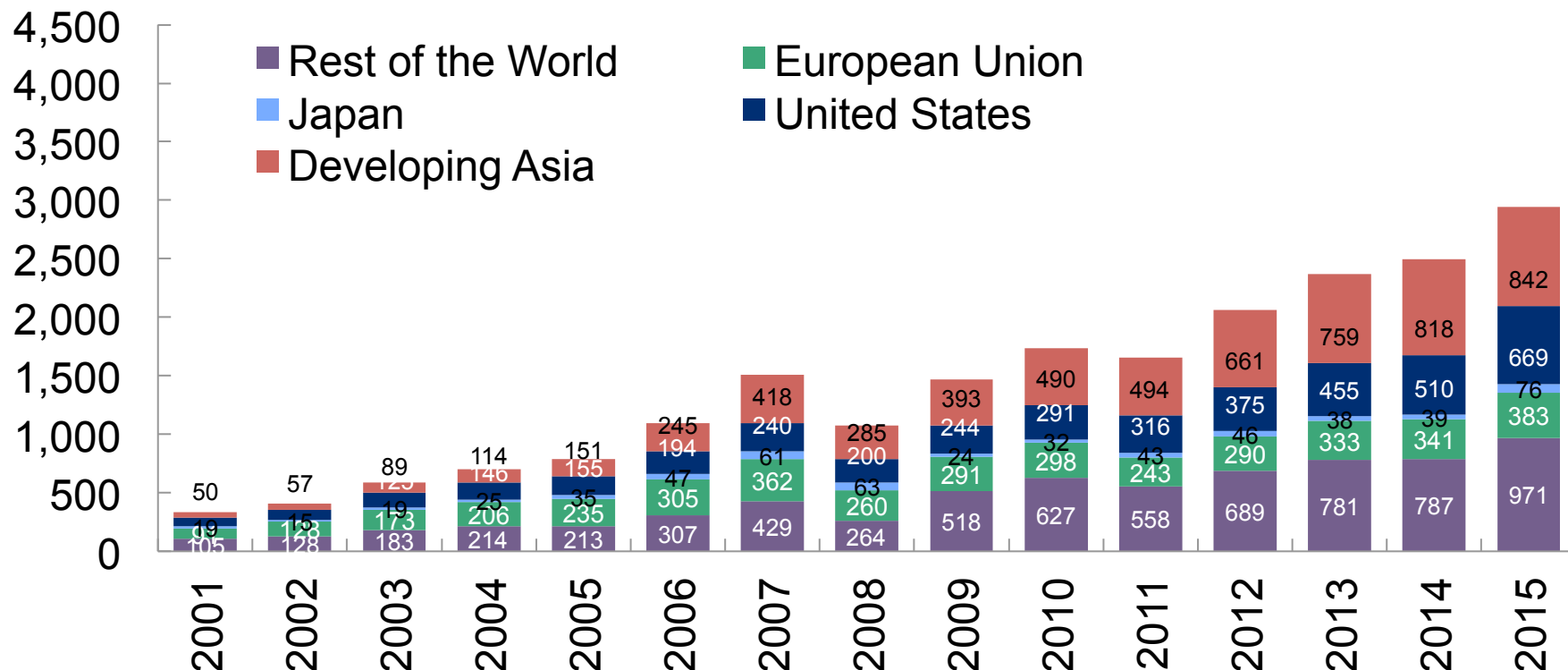


# Outline

- Evolution of financial integration in Asia
  - Quantity and price indicators
- Role of external shocks
  - Importance and transmission mechanism
- Main messages and policy recommendations

# Financial Integration in Asia

## Cross-border Portfolio Asset Holdings, Developing Asia, \$ billion

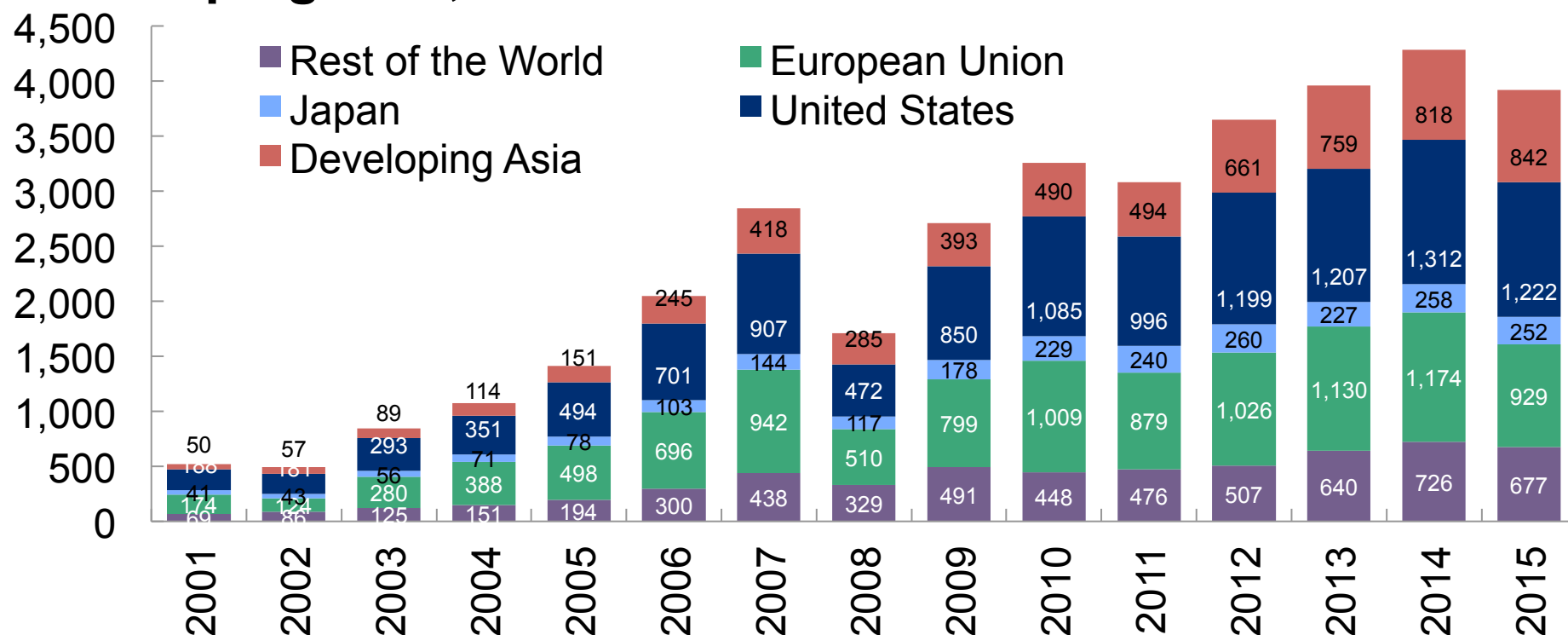


Note: Developing Asia consists of the 48 regional members of ADB, excluding Australia, Japan and New Zealand (15 reporting countries)

Source: ADB calculation using data from Coordinated Portfolio Investment Survey, International Monetary Fund.

# Financial Integration in Asia

## Cross-border Portfolio Liability Holdings, Developing Asia, \$ billion



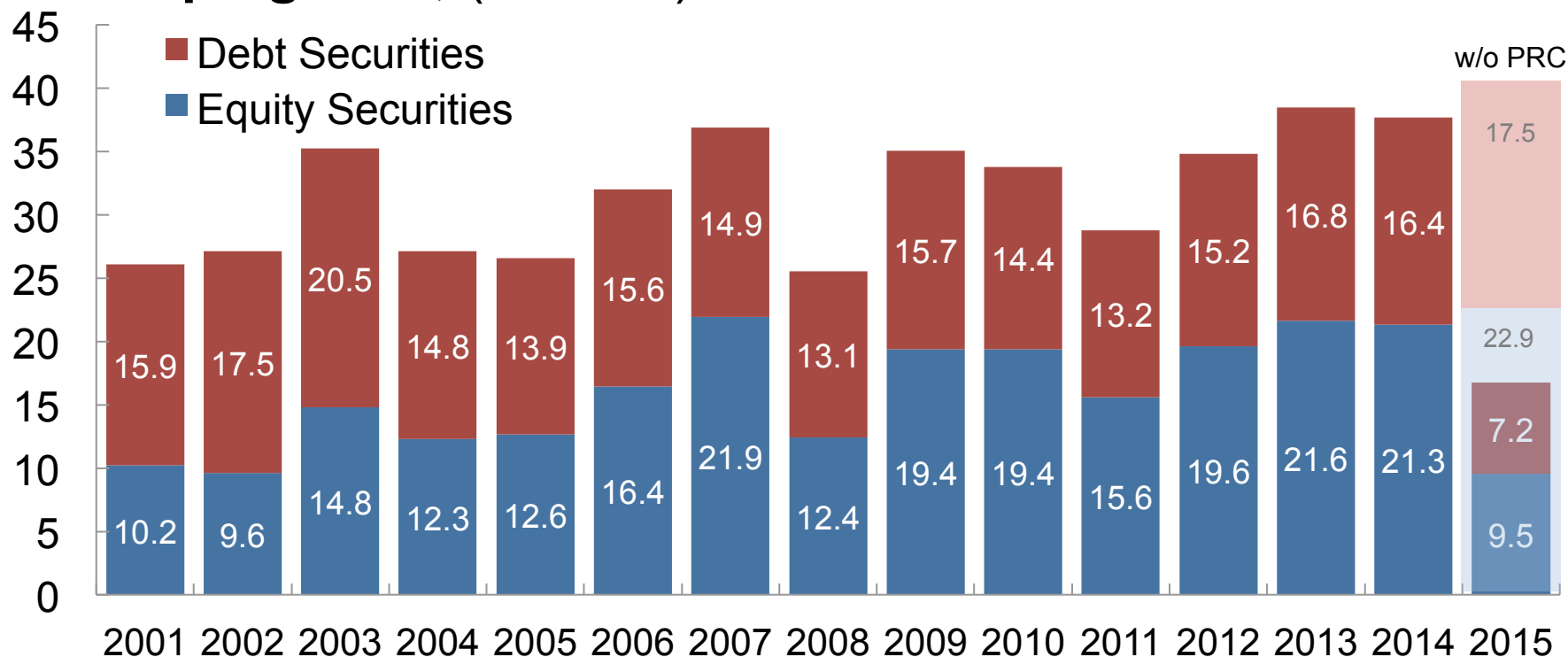
Note: Developing Asia consists of the 48 regional members of ADB, excluding Australia, Japan and New Zealand. (15 reporting countries)

Source: ADB calculation using data from Coordinated Portfolio Investment Survey, International Monetary Fund.



# Financial Integration in Asia

## Cross-border Portfolio Asset Holdings, Developing Asia, (% GDP)



Note: Developing Asia consists of the 48 regional members of ADB, excluding Australia, Japan and New Zealand.

Source: ADB calculation using data from Coordinated Portfolio Investment Survey, World Economic Outlook database, International Monetary Fund; and CEIC.



# Financial Integration in Asia

## Average Simple Correlation of Index Weekly Returns

	Stock Prices			Bonds	
	Pre-AFC 1Q1990-1Q199 7	Pre-GFC 1Q1999-3Q200 7	Post-GFC 3Q2009-3Q201 6	Pre-GFC 1Q2005-3Q200 7	Post-GFC 3Q2009-3Q201 6
<b>Asia-Asia</b>	0.16	0.28	0.36	0.16	0.26
<b>Asia-Japan</b>	0.15	0.26	0.30	0.19	0.20
<b>Asia-PRC</b>	0.03	0.07	0.20	0.00	0.18
<b>Asia-EU</b>	—	0.27	0.36	0.29	0.26
<b>Asia-US</b>	0.20	0.25	0.39	0.28	0.33

GFC: global financial crisis; PRC: People's Republic of China; EU: European Union; US: United States

Asia includes:

Bonds: Australia, PRC, Japan, Indonesia, India, Republic of Korea, Malaysia, Philippines, Singapore and Thailand.

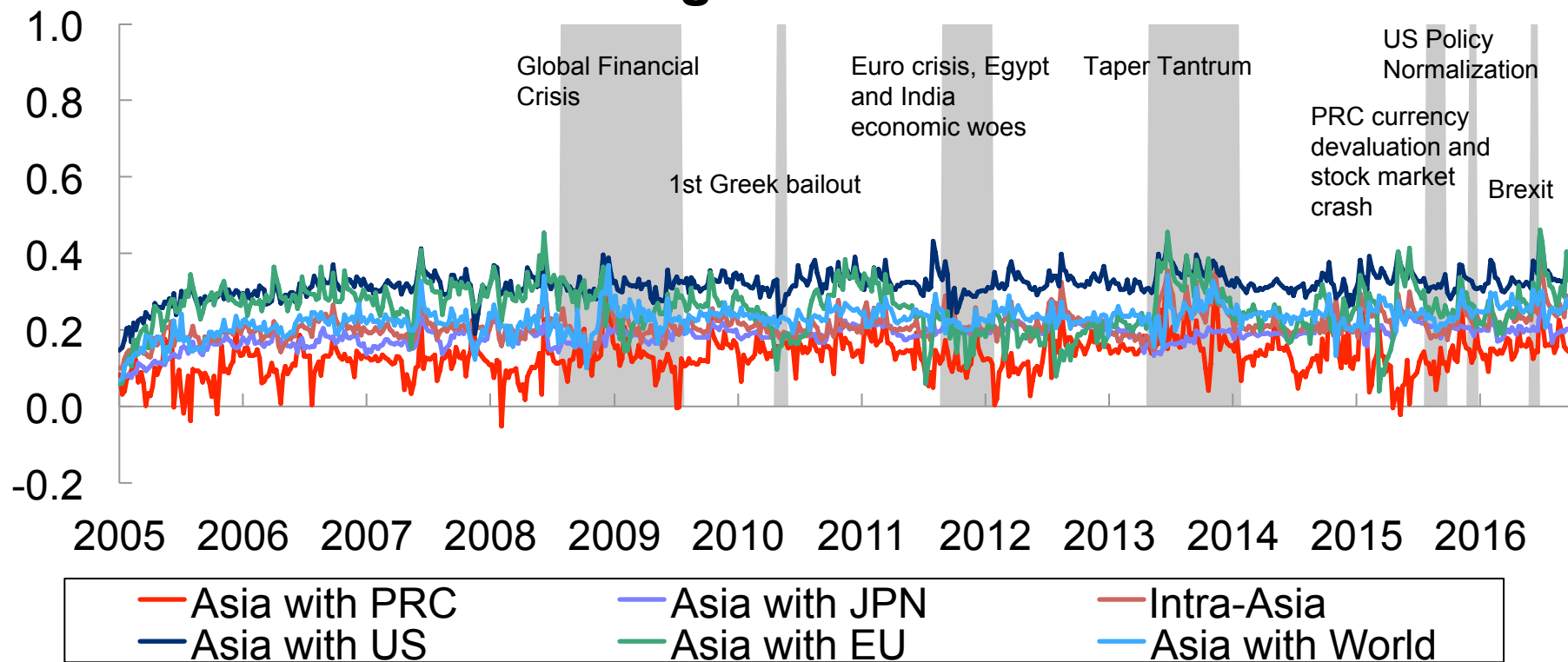
Stock prices: Bangladesh; PRC; Georgia; Hong Kong, China; India; Indonesia; Japan; Kazakhstan; Kyrgyz Republic; Korea, Rep. of; Lao PDR; Malaysia; Mongolia; Nepal; New Zealand; Pakistan; Philippines; Singapore; Sri Lanka; Taipei, China; Thailand; and Viet Nam.

For stock prices, Asia includes Australia; Source: ADB calculation using Bloomberg, CEIC, Stooq and *World Development Indicators*, World Bank.



# Financial Integration in Asia

## Conditional Correlations of Bond Markets, Asia with select economies and regions



PRC = People's Republic of China; JPN = Japan; EU = European Union; US = United States.

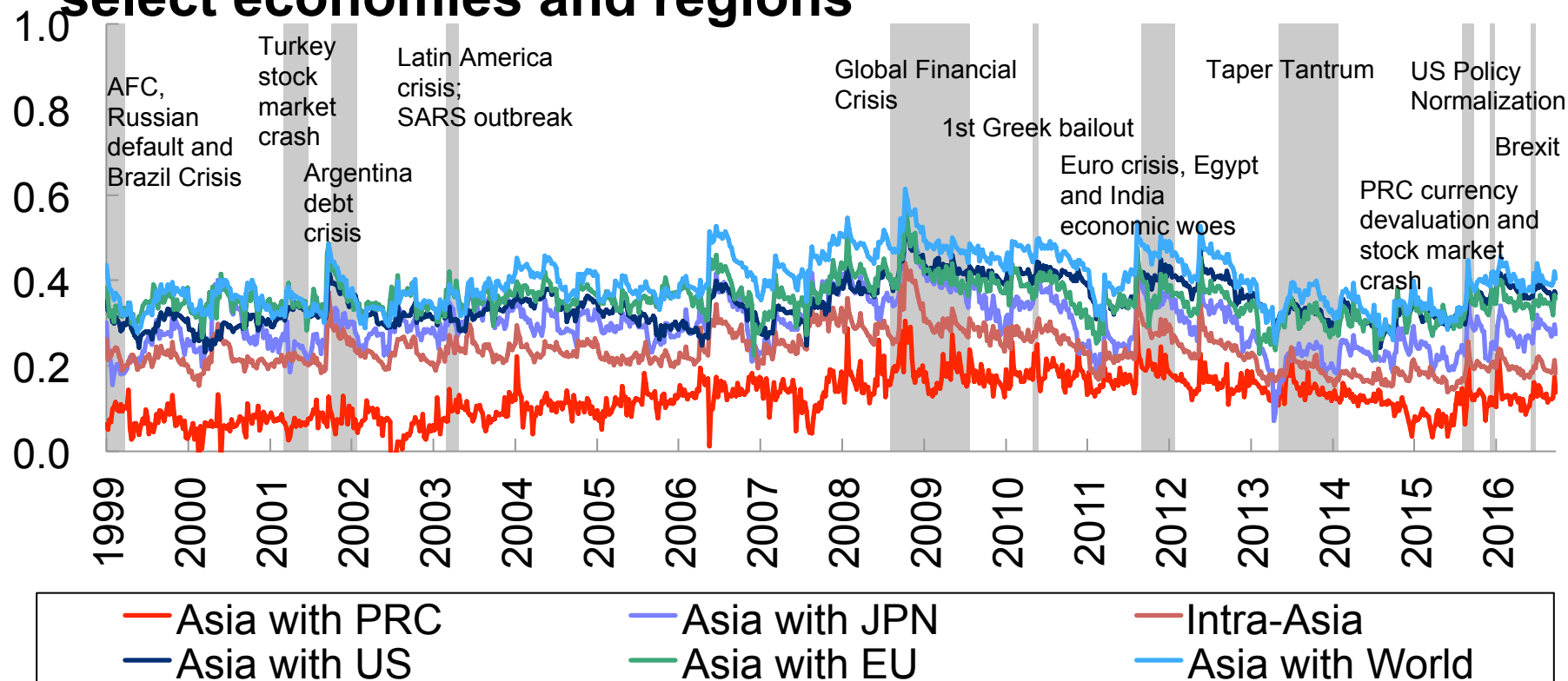
Asia includes Australia; PRC; India; Indonesia; Japan; Korea, Rep. of; Malaysia; Philippines; Singapore; and Thailand.

Source: ADB calculation using Bloomberg.



# Financial Integration in Asia

## Conditional Correlations of Equity Markets, Asia with select economies and regions



AFC = Asian Financial Crisis; PRC = People's Republic of China; JPN = Japan; EU = European Union; US = United States; SARS = Severe Acute Respiratory Syndrome.

Asia includes Australia; Bangladesh; PRC; Georgia; Hong Kong, China; India; Indonesia; Japan; Kazakhstan; Kyrgyz Republic; Korea, Rep. of; Lao PDR; Malaysia; Mongolia; Nepal; New Zealand; Pakistan; Philippines; Singapore; Sri Lanka; Taipei, China; Thailand; and Viet Nam.

Source: ADB calculation using Bloomberg, CEIC and Stooq.





# Role of External Shocks

## Research Questions:

- What are the determinants of Asian economies' business cycle variations and how did they change over time?
- What are the effects of external shocks to Asian economies and how important is their relative contribution to Asian business cycles' variations?

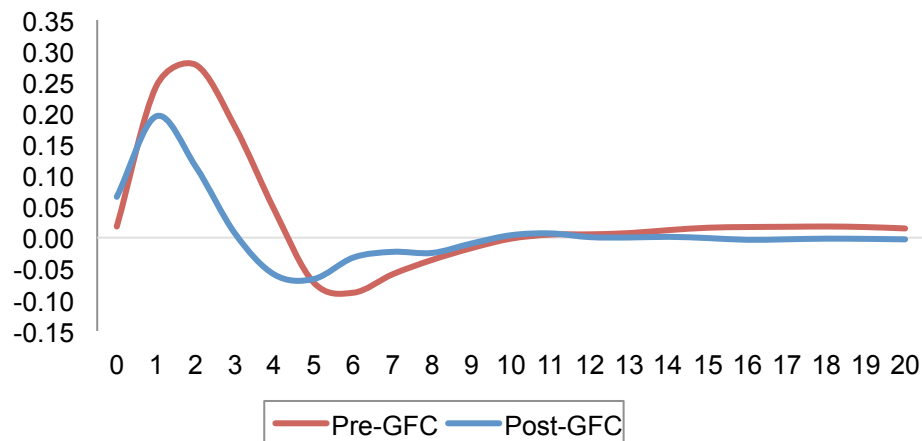
## Analytical Tool:

- Vector-autoregressive model using quarterly data of 10 Asian economies, applying a sample split pre-GFC (2001Q1 to 2008Q1) and post-GFC (2011Q1 to 2016Q2)
- External shocks: US monetary policy shocks, US+ PRC growth shocks and global volatility shocks

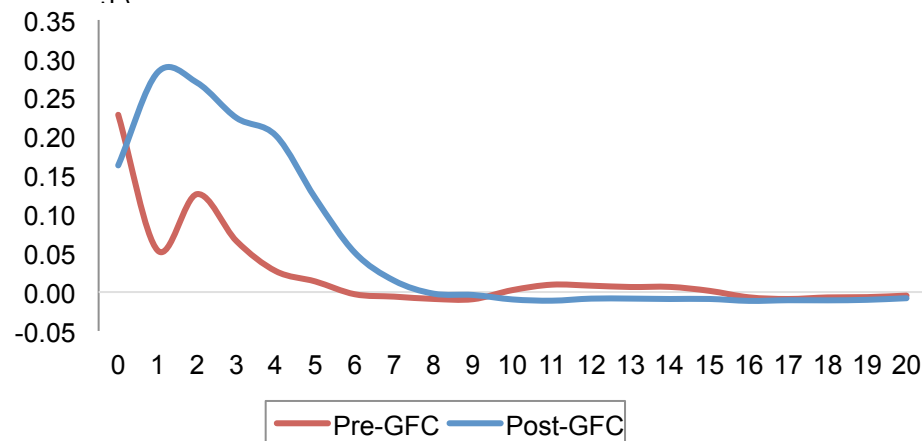


# External Shocks: Impulse Responses

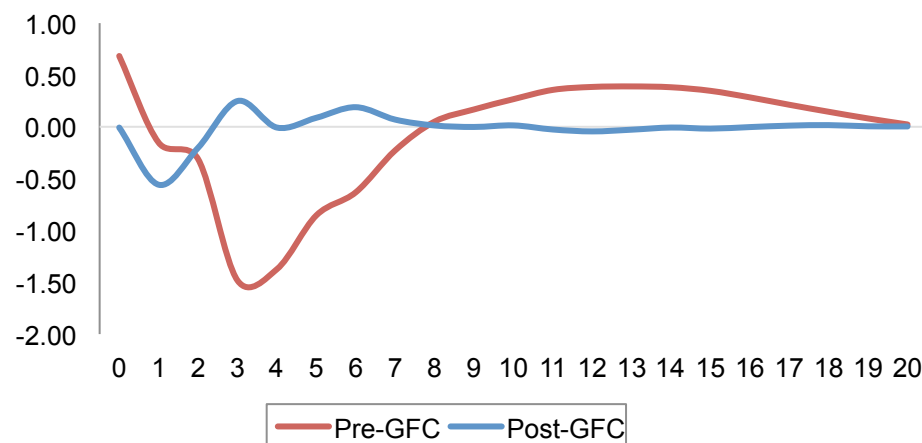
**Fig: Response to Real GDP growth shock in the US**  
(normalized to a 1 percentage point rise in US growth)



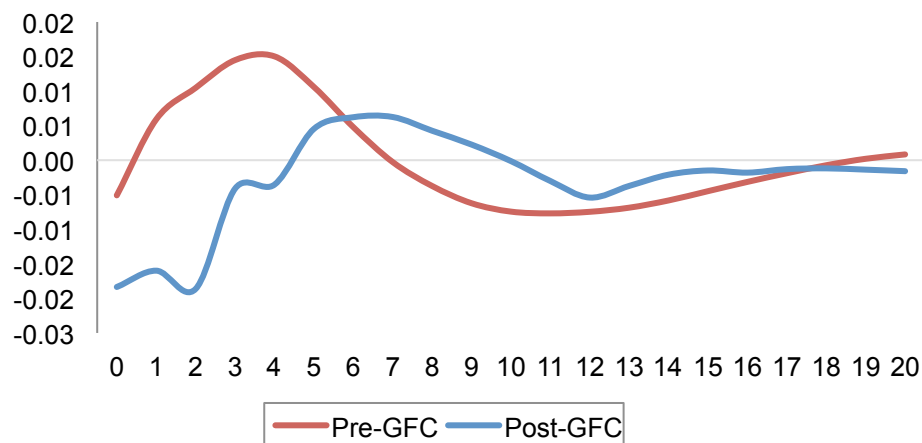
**Fig: Response to Real GDP growth shock in the PRC**  
(percentage point response to a 1 standard deviation rise in PRC)



**Fig: Response to Higher Global Volatility**  
(normalized to a 1 unit rise in the VIX index)

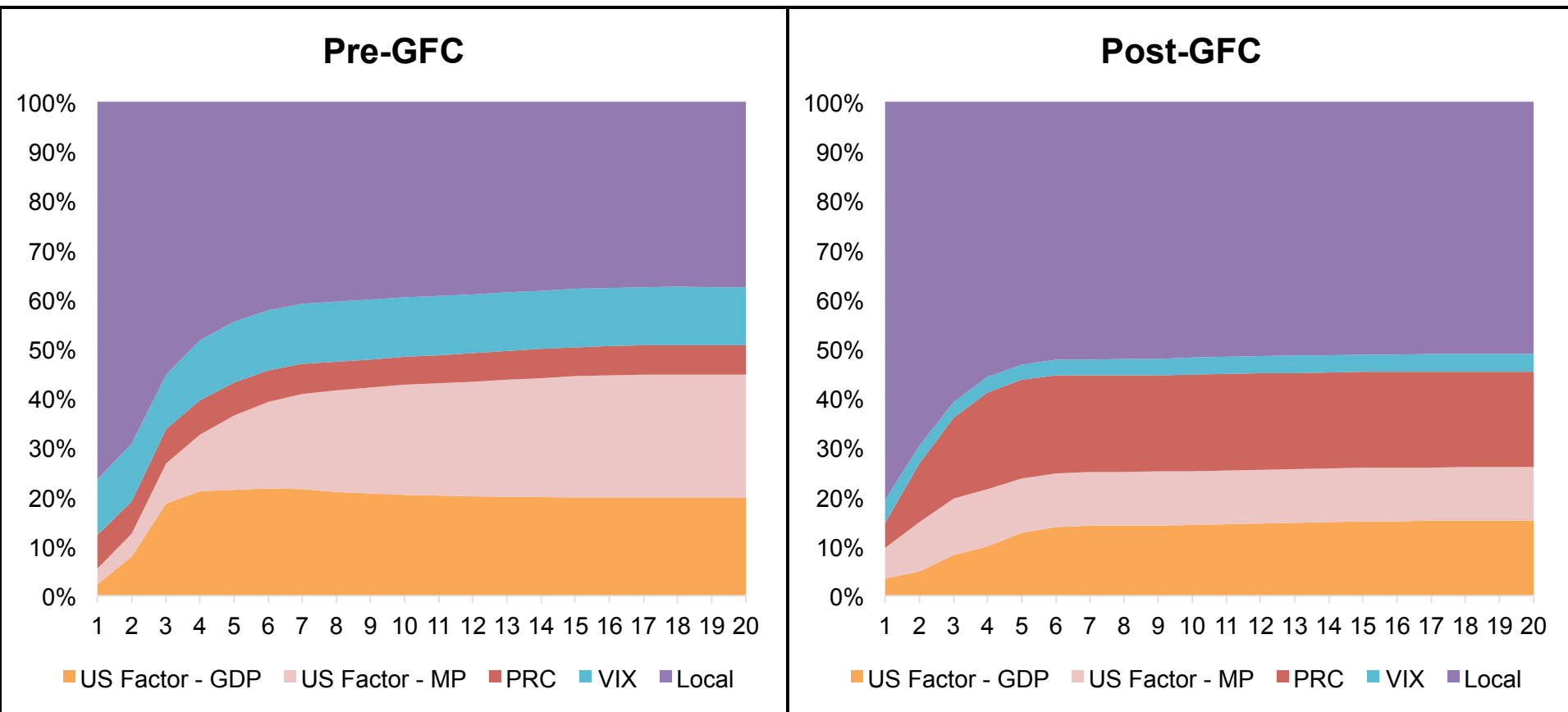


**Fig: Response to US monetary policy changes**  
(normalized to a 100 basis point rise in US Federal Funds Futures)



# External Shocks: Variance

## Decompositions of Asian Output Growth



# Key Messages

- Asia's financial markets continue to become more integrated both within the region as well as globally
- The degree of integration differs across financial markets:
  - Equity markets: more globally integrated than regionally
  - Debt markets: exhibit a stronger regional comovement, which got particularly pronounced since the Taper Tantrum
- Decreasing contribution of US factors in driving Asian economies' business cycles, while PRC's role increased after the GFC

# Policy Recommendations

- Financial integration results in increasingly **interconnected financial markets**, which may lead to additional **vulnerabilities** through risks arising from **spillover effects** and **heightened global financial volatility**.
  - Highlights the importance of building up **economic resilience**
- Potential policy measures:
  - Assuring an adequate level of fiscal space for **countercyclical fiscal policy** responses
  - Reducing macroeconomic and financial vulnerabilities with more **effective macroprudential measures** and **financial regulations**
  - Growing role for **regional institutions** to monitor macroeconomic and financial conditions and provide a financial safety nets

Thank you very much



# Appendix: SVAR Model Specification

Reduced form model:

$$\begin{pmatrix} X_t \\ Y_t \end{pmatrix} = C + \sum_{i=1}^p A_i \begin{pmatrix} X_{t-i} \\ Y_{t-i} \end{pmatrix} + U_t$$

- Identification: Choleski Decomposition of  $\Sigma U \rightarrow$  recursive ordering
- $X_t$ : External block, contemporaneously exogenous to structural shocks in  $Y_t$
- $Y_t$ : Internal block, reacts immediately to all shocks