THE IMPACT OF CHINA'S SLOWDOWN ON THE ASIA-PACIFIC REGION: AN APPLICATION OF THE GVAR MODEL

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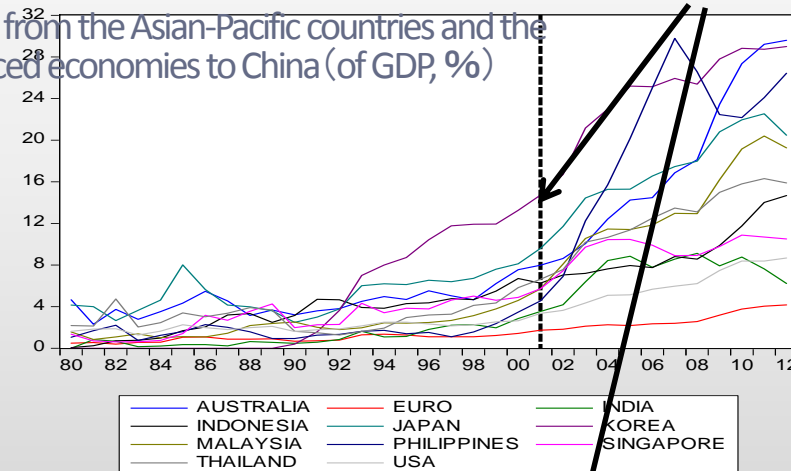Hitoshi Oshige: Seikei University
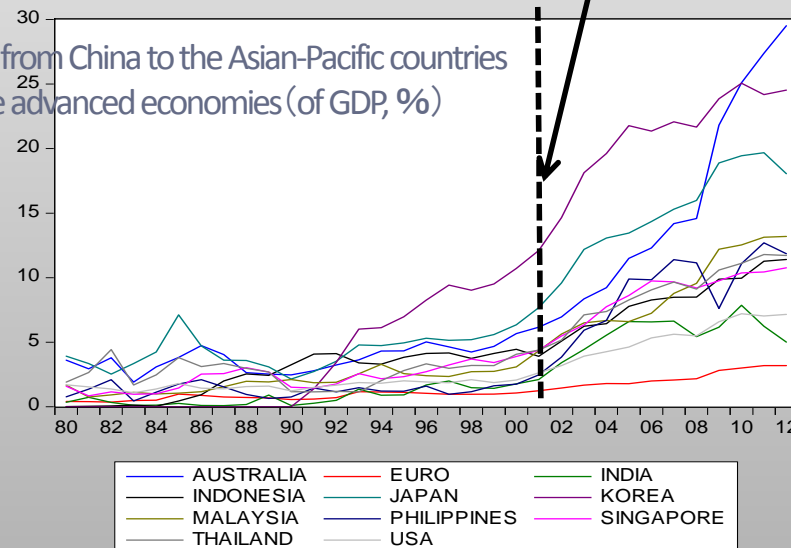
Background ;
Links between China, Asia and the World

➤ Risk of China's slowdown

  ✓ Fall of growth targets

  ✓ Problem of "Shadow-bank"

  ✓ Investment-driven economy

  ✓ Over-production

China joins WTO

Export from the Asian-Pacific countries and the advanced economies to China（of GDP, **%**）

Import from China to the Asian-Pacific countries and the advanced economies（of GDP, **%**）

Previous Literature

Pesaran, Schuermann, and Weiner (2004)（PSW)

- Development of the GVAR methodology

Dees, di-Mauro, Pesaran, and Smith (2007)（DdPS)

- Based on the work by PSW, it incorporates such method as the bootstrapping

Cesa-Bianchi, Pesaran, Rebucci and Xu (2011)（CPRX)

- Focus on the impact of China's economic growth on the Latin American countries

Han and Ng (2011)

- Use the GVAR model, and generate the forecasts of 5 ASEAN countries

Matsubayashi（2013）

- Investigate the effect of monetary policy shocks in the US and European countries to the East Asian countries

Theme and Contribution of this Study

- Theme of this Study: How has the impact of China's slowdown to the Asian and the Advanced countries been changed through the evolution of trade structure?
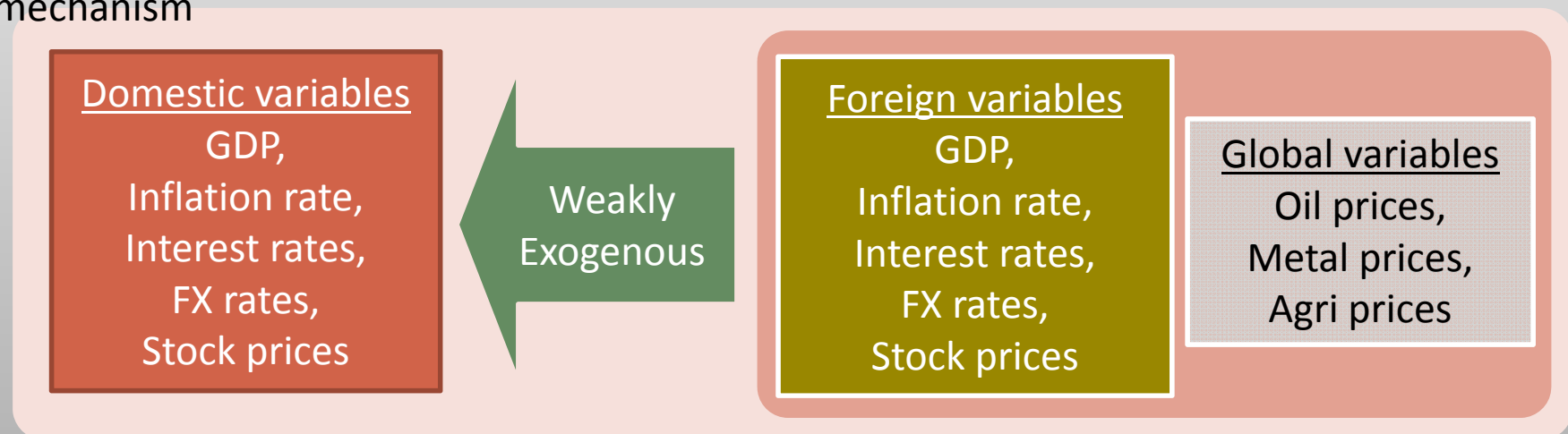
- Contribution of this Study :

1. Effect of the slowdown of the "growing China" to Asian and advanced countries
   - No previous GVAR study, except one, has focused on this issue.

2. Transmission of shocks through commodity prices such as the metal and the agricultural prices, in addition to the oil price.
   - China imports not only the oil but also the metal and the agricultural products from the overseas. Thus it worth examining the shock transmission through multiple commodities.

3. Extend the sample period until 2013 Q1, which covers the period of the Lehman Shock and the sovereign bond crisis in the Euro area
   - Typical dataset used by GVAR literature covers until year 2009.
   - Recent figures are vital in order to access the effect of Chinese economy

Approach

➢ Using the Global Vector Autoregressive (GVAR) model, we estimate the economic impact of China's slowdown to the Asian and advanced countries

➢ In order to capture the possible structural changes in the recent economic crisis (such as the Lehman shock and the Euro sovereign bond crisis, the sample period is extended from 2010Q1 to 2013Q1

➢ In addition to the crude oil price, two other commodity prices, i.e. the metal price and the agricultural product price, are included

Global Vector Autoregressive (GVAR) model :
A system of country-specific VAR models, liked together to capture the shock transmission mechanism

Domestic variables	Weakly Exogenous	Foreign variables	Global variables
GDP, Inflation rate, Interest rates, FX rates, Stock prices	←	GDP, Inflation rate, Interest rates, FX rates, Stock prices	Oil prices, Metal prices, Agri prices

Global VAR model

Global Vector Autoregressive (GVAR) Model:
A system of country-specific VARs, each of which includes "star variables"

i = country
t = time (quarterly)

$$X_{it} = a_{i0} + a_{i1}X_{it-1} + \boxed{a_{i2}X_{it}^* + a_{i3}X_{it-1}^*} + u_{it}$$

$$X_{it+1} = a_{i0} + a_{i1}X_{it} + \boxed{a_{i2}X_{it+1}^* + a_{i3}X_{it}^*} + u_{it+1}$$
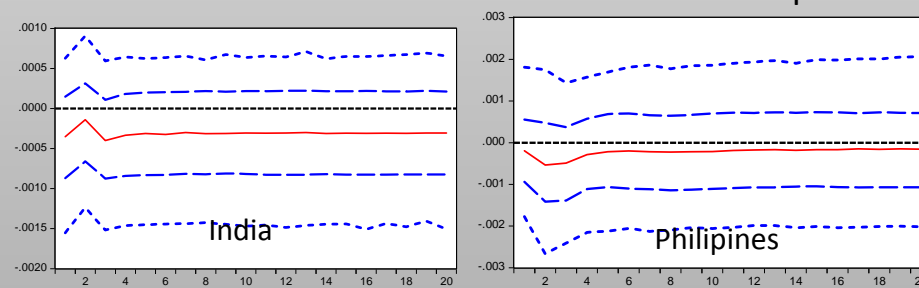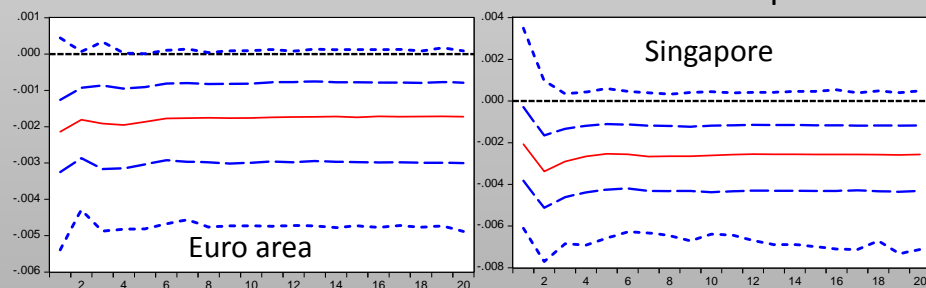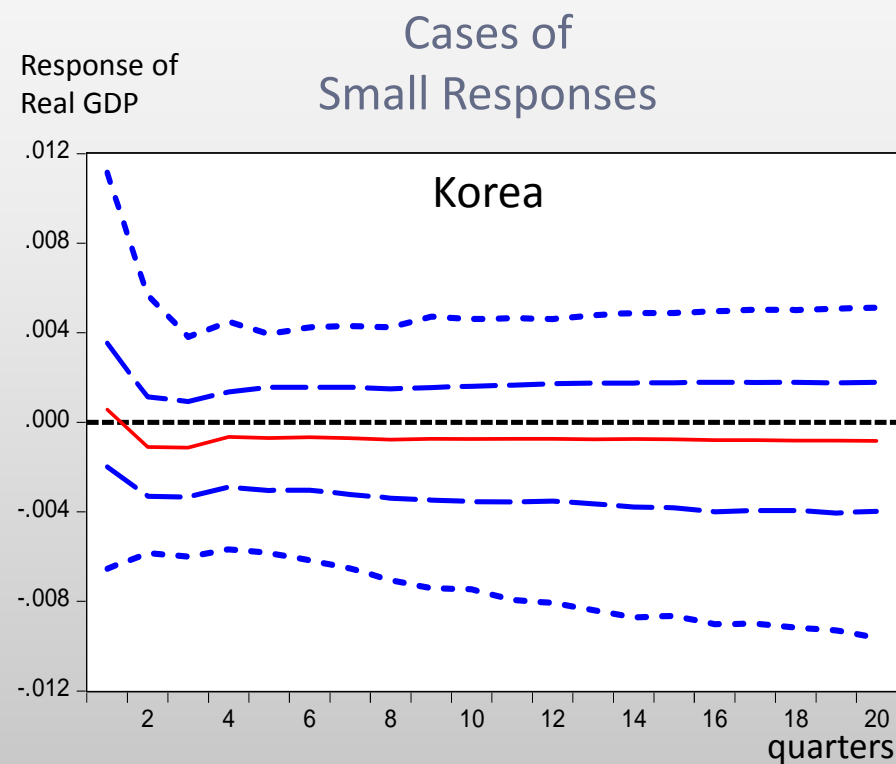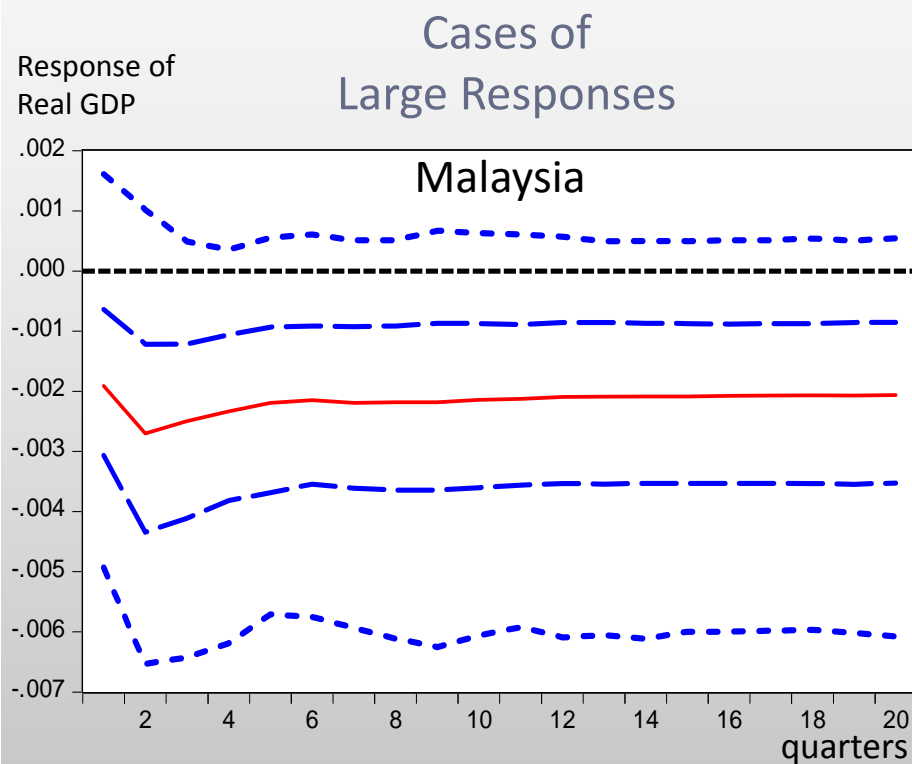
Effects from the overseas

$$X_{it} = \begin{bmatrix} \text{realGDP} \\ \text{CPI} \\ \text{real FX rate} \\ \text{stock prices} \\ \text{short int rate} \\ \text{long int rate} \end{bmatrix}$$

$$X_{it}^* = w_1 X_{Japan\ t} + w_2 X_{Indonesia\ t} + \cdots$$

Effects of China's slowdown to the economic growth of the Asian and advanced countries

Give one SD negative shock to China's GDP

Response of Real GDP — Cases of Large Responses (Malaysia, Euro area, Singapore)

Response of Real GDP — Cases of Small Responses (Korea, India, Philipines)

Conclusion: China's slowdown surely depress the emerging as well as advanced countries, implying that China is transforming from an emerging economy to an economic power

1. **Deepening linkages between China and the Asian countries**

   ⇨ Conclusion #1: As the size of Chinese economy increases, it deepens the linkages with many Asian countries

   ⇨ On the other hand, the negative effects on India, Korea, and Philippines are less than the other countries, suggesting that China's rival countries get benefits

2. **Focus on the other commodity prices**

   ⇨ Conclusion #2: China's slowdown lowers the prices of the metal and/or the agricultural product, hence decreases the natural resource exporting countries (such as Australia and New Zealand).

3. **Global economy after the Lehman Shock**

   ⇨ Conclusion #3: 1% drop of China's real GDP lowers the real GDP of the Euro zone approximately by 0.5%, implies that the Euro area is highly depending upon China

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