

# The Macroeconomic Effects of Oil Price Shocks on ASEAN-5 Economies

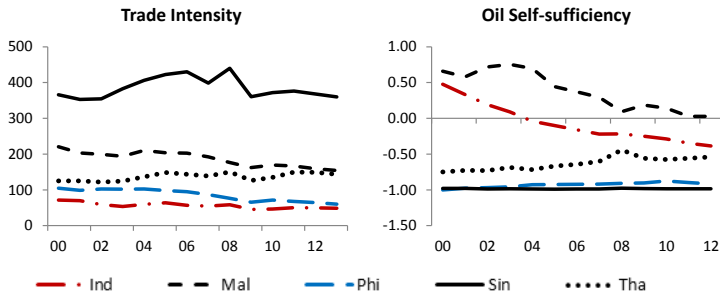
**Mala Raghavan**  
**Economics Research Workshop**  
**Bank Negara Malaysia**

9 November 2015



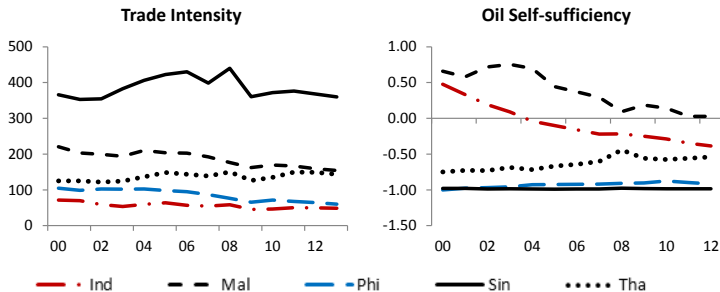
- 1 Introduction
  - Background: ASEAN-5's Exposure to Oil Market
  - Objective
- 2 The Evolution of the Global Oil Market
  - Oil Price Shocks
  - ASEAN-5 and Oil Shock Transmission Mechanism
- 3 Econometric Framework
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  - Global Oil Price
  - Responses of ASEAN-5 to Various Oil Shocks
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# ASEAN-5's Exposure to Oil Market



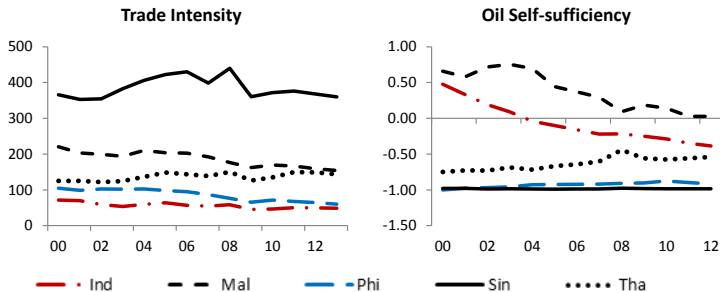
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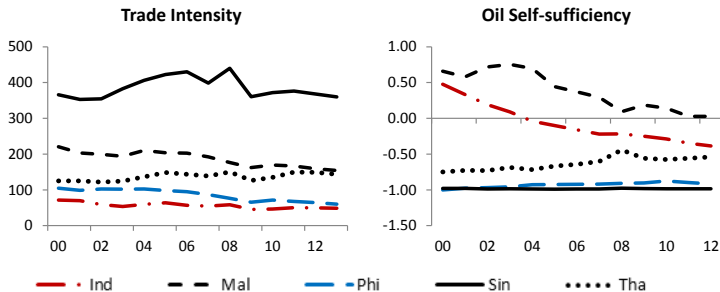
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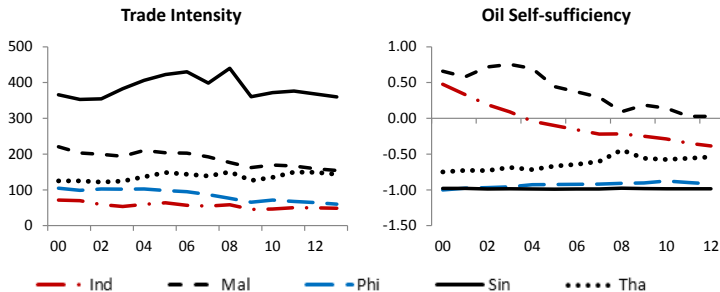
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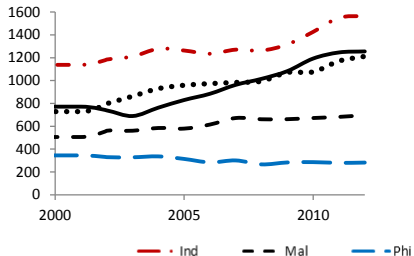
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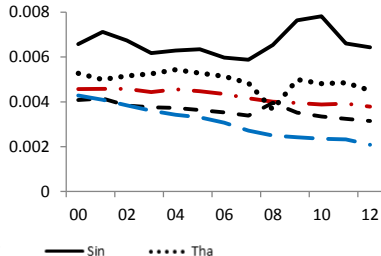
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  - highlighting the oil dependency- net oil exporter or net oil importer

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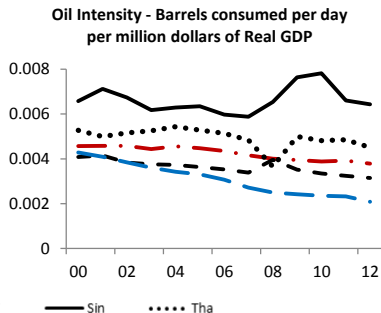
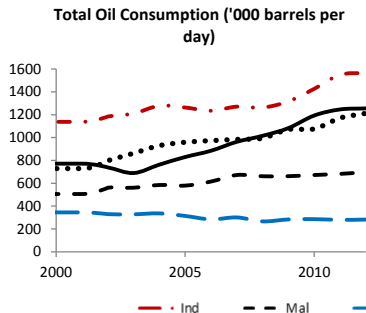
Total Oil Consumption ('000 barrels per day)



Oil Intensity - Barrels consumed per day per million dollars of Real GDP

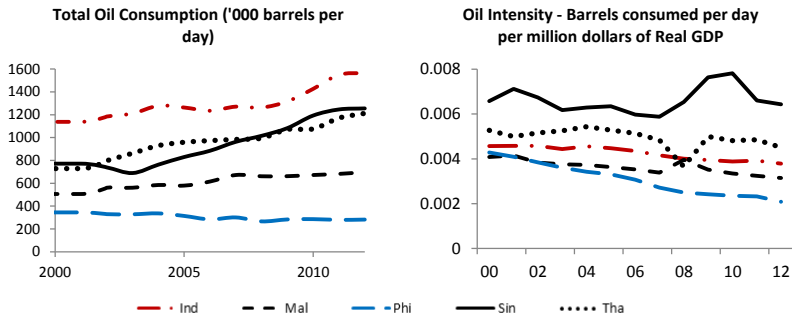


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- Oil intensity is marginally declining, due to a rapid rise in GDP compared to the rise in oil consumption.

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- **WHY???**

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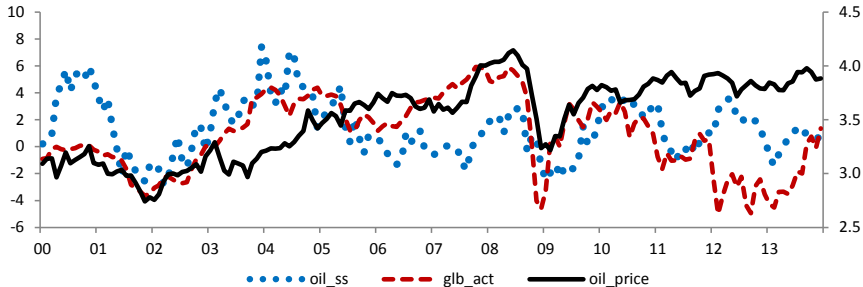
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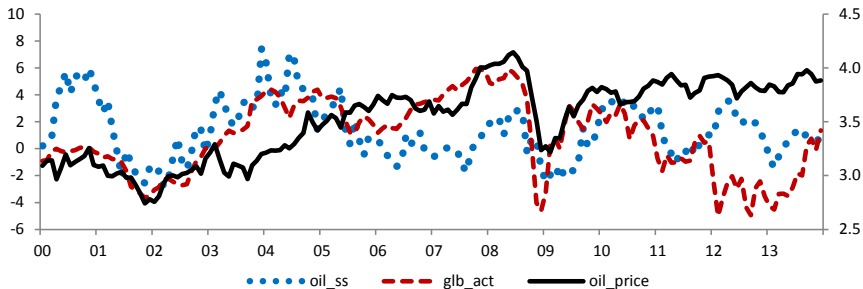
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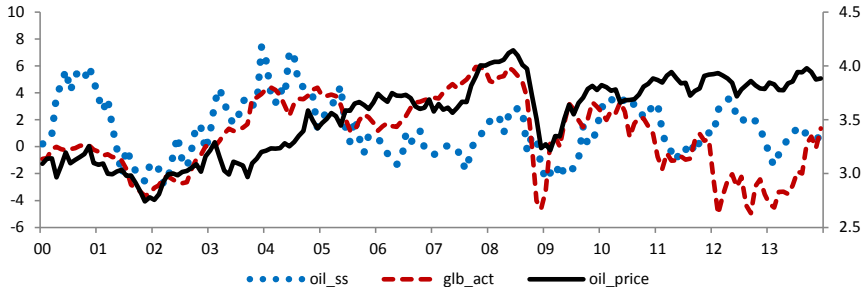
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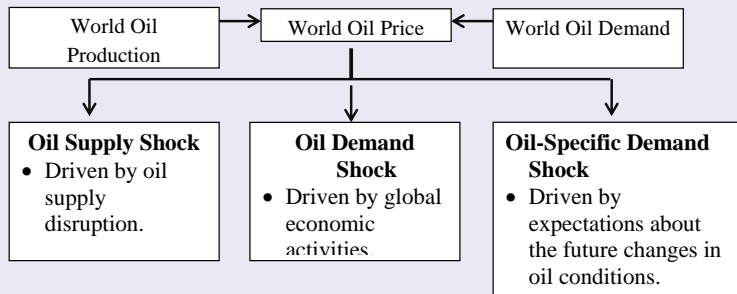
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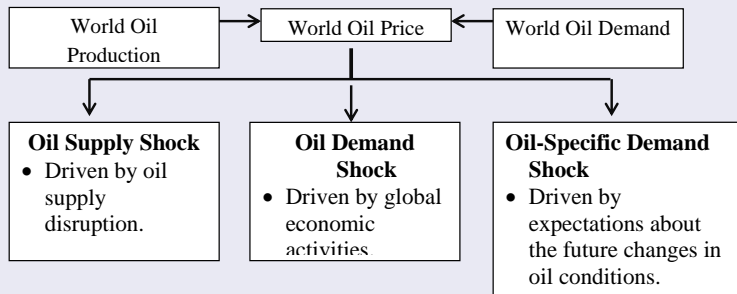
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- From 2010 onwards, however, the oil price kept rising despite the weakening of global economic activities.

# Drivers of oil price

## Three main drivers of oil price shocks as defined by Killian (2009)

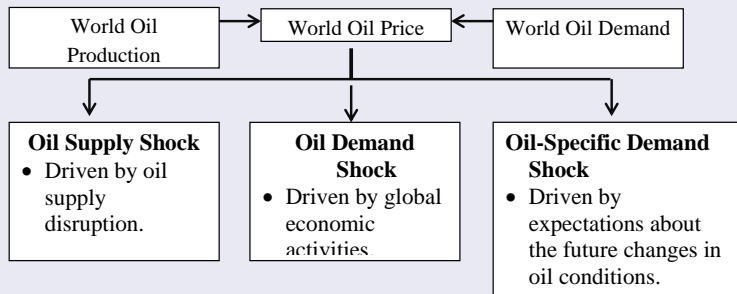


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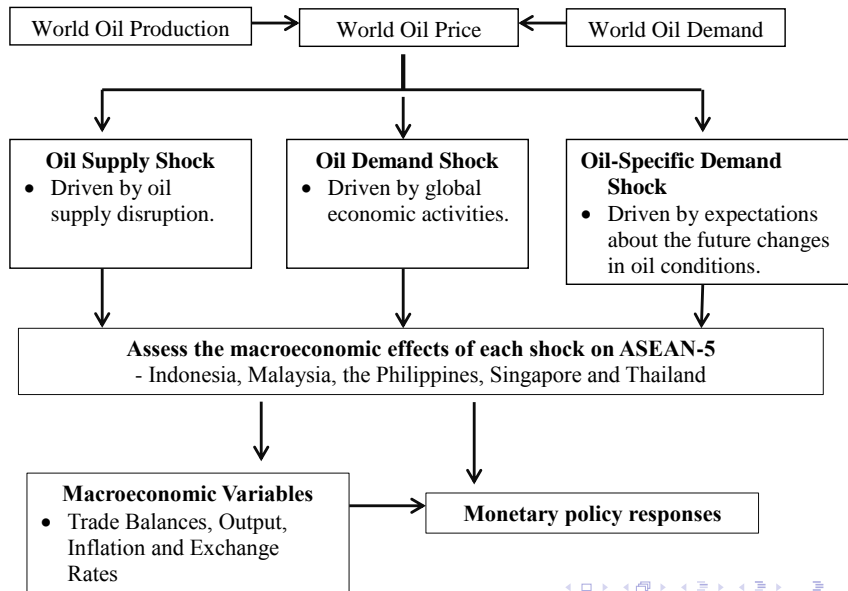
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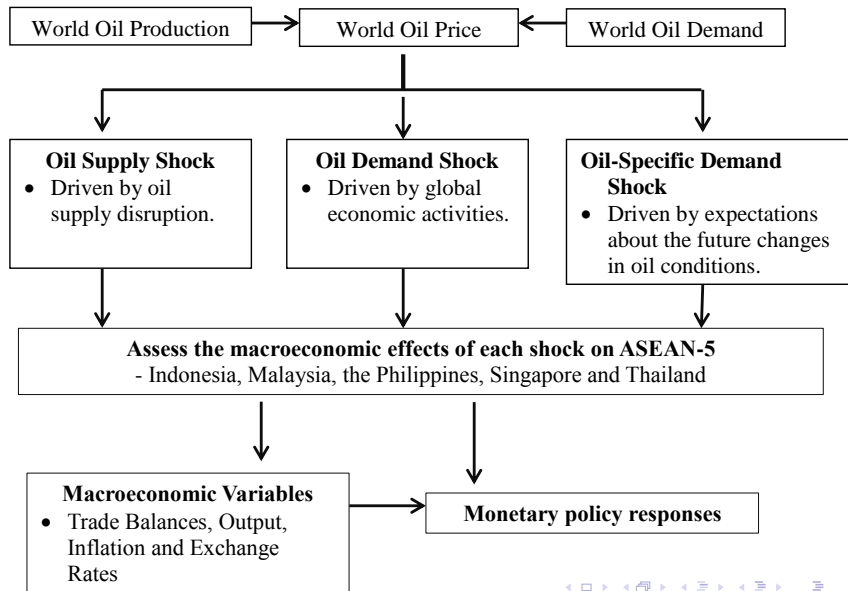


- The economic consequence of each of these shocks are very different;
- Relevant to monetary policy makers for devising appropriate monetary policy measures.

# ASEAN-5 and Oil Shock Transmission Mechanism



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# Choice of Variables and Period of Study

- Period of study: **January 2000 to December 2013**(168 Observations)

## Variables

Variable	Description	Transformation
<b>Oil Block</b>		
$os_t$	Global Oil Production	Percentage change per annum
$ga_t$	Global Real Activity	Deviation from trend
$op_t$	World Oil Price Index,	Percentage change per annum
<b>Domestic Block</b>		
$tb_t$	Real Trade Balance	SA and detrended
$y_t$	Industrial/Manufacturing Production	Logs, SA and detrended
$\pi_t$	Consumer Price Index	Percentage change per annum
$r_t$	Inter-Bank Rate/TBR	Percentage
$q_t$	Real Effective Exchange Rate	Logs, SA and detrended

Sources of Data - US Energy Information Website; Kilian - UM Personal Website;  
Spot Oil Price: West Texas, Datastream

# Structural Vector Autoregressive (SVAR) Framework

SVAR(p)

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$$\mathbf{A}_0 \mathbf{X}_t = \mathbf{A}_1 \mathbf{X}_{t-1} + \dots + \mathbf{A}_p \mathbf{X}_{t-p} + \boldsymbol{\varepsilon}_t \quad (1)$$

- $\mathbf{X}_t$  is a  $(n \times 1)$  vector of variables
- $\mathbf{A}_i$  is a  $(n \times n)$  coefficient matrix for  $i = 0, 1, \dots, p$ .
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 a_{31}^{(0)} & a_{32}^{(0)} & 1 & 0 & 0 & 0 & 0 & 0 \\
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- Impulse response function (IRF)
- Historical decomposition (HDC)

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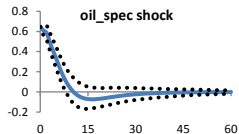
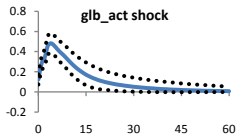
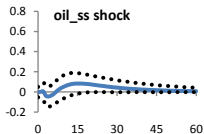
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## Generate

- Impulse response function (IRF)
- Historical decomposition (HDC)
- Variance decomposition (VDC)

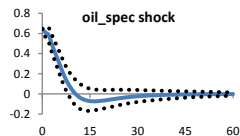
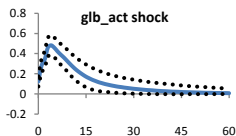
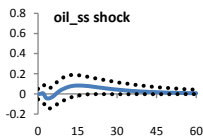
# Responses of global oil price to oil supply, oil demand and oil specific shocks

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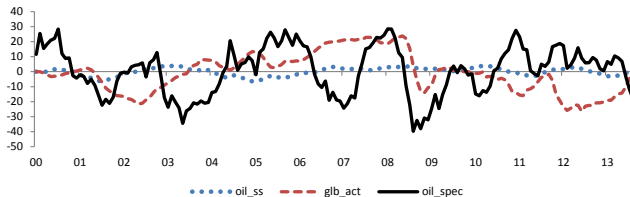


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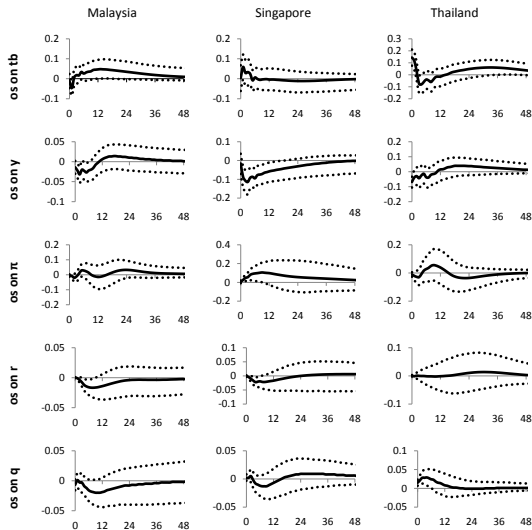


- HDC - Since 2000, the oil-supply shocks have made comparatively small contributions to the world oil price.



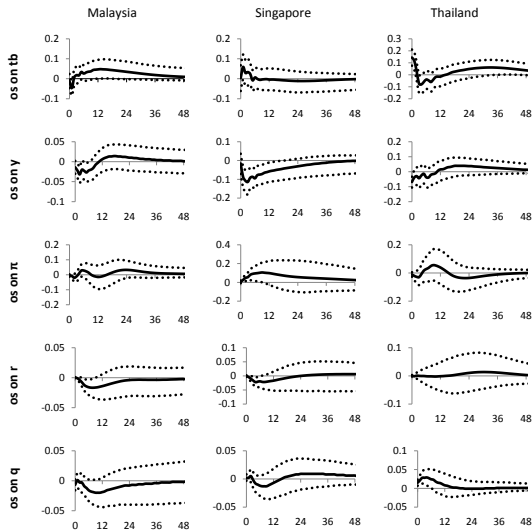
# Responses of ASEAN-5 to oil supply disruption shocks

- $y$  ( $\downarrow$ );  $\pi$  ( $\uparrow$ ); Transitory stagflationary effect; monetary policy tend to be more accommodative. Exporter:  $tb$  ( $\uparrow$ ) and  $q$  ( $\downarrow$ ); Importers:  $tb$  ( $\downarrow$ ) and  $q$  ( $\uparrow$ );



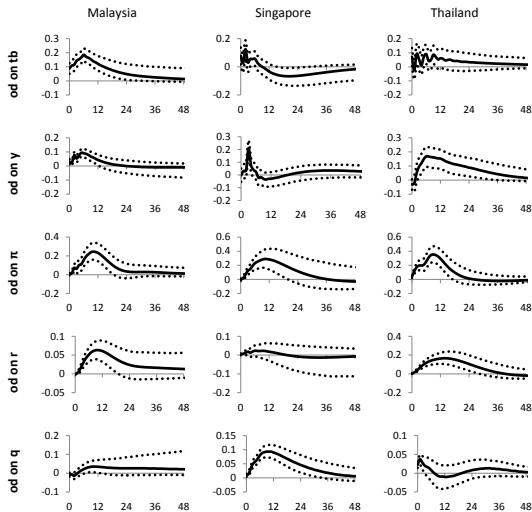
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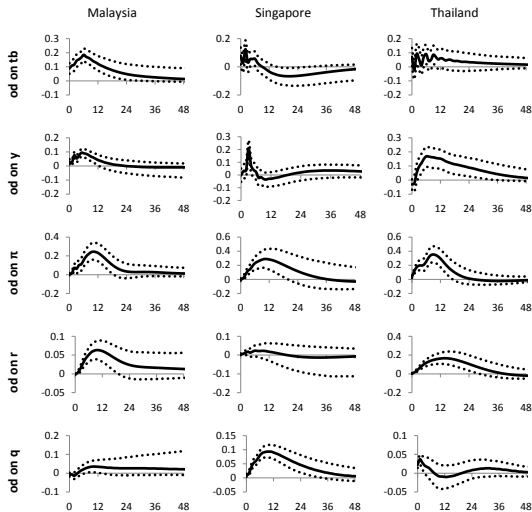
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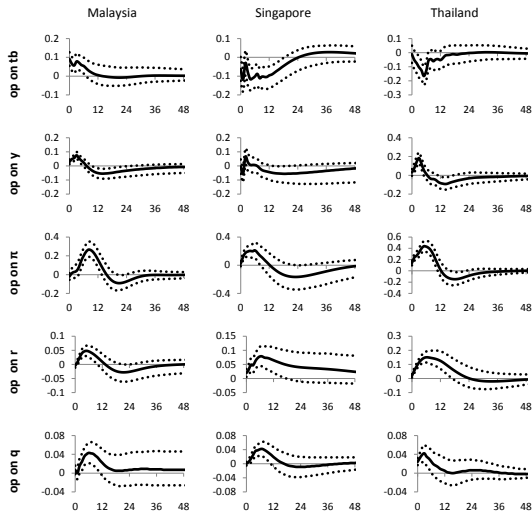
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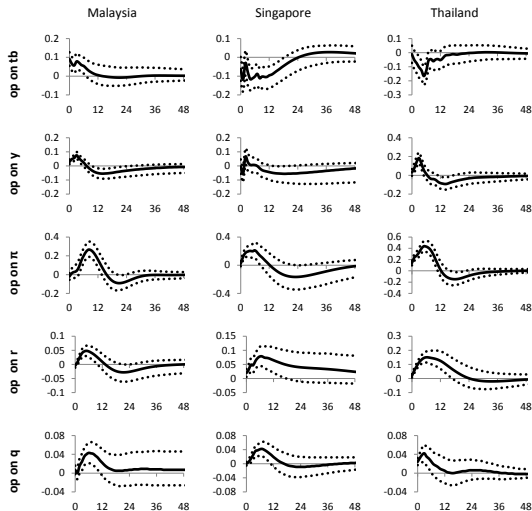
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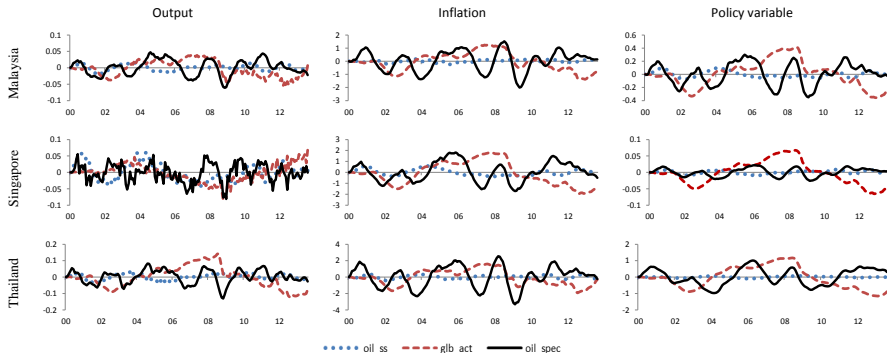
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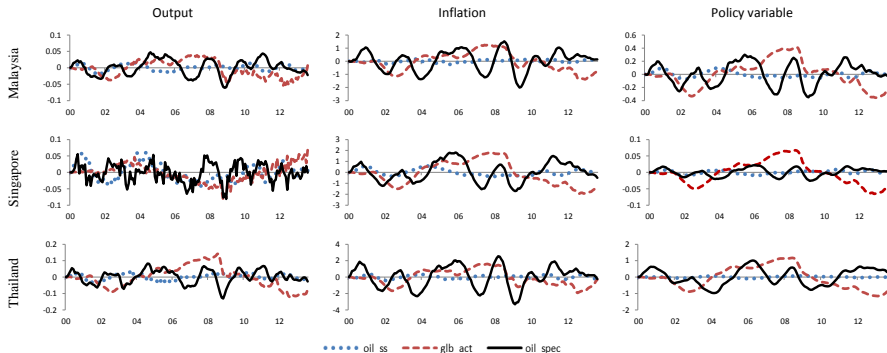
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- Oil demand shock is dominant in explaining the variations in ASEAN-5 output
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- This is crucial for the operational conduct of monetary policy for achieving price and output stabilities.

# Thank You