

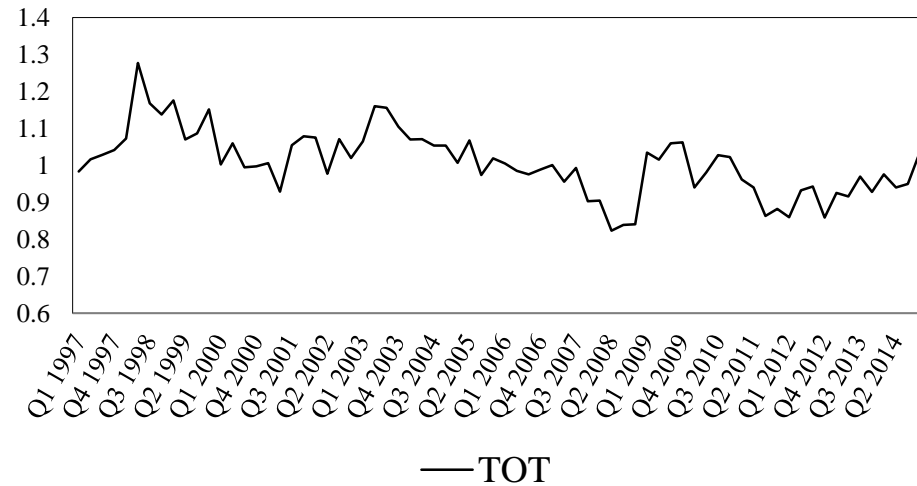
Introduction

Terms of Trade and Small Open Economies

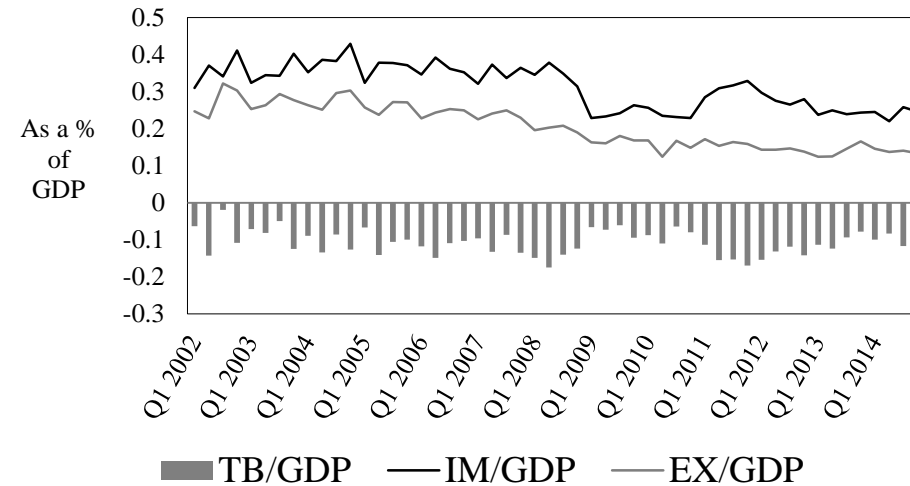
- Terms of trade volatility accounts for a larger fraction of the variance of output, output growth, current account, consumption and public and private savings in developing economies.
 - Mendoza (1995), Kose (2002), Easterly et al. (1993) and Age´nor et al. (2000)
- Domestic structural characteristics related to product and factor market flexibility, openness and exchange rate regime also influence the effect of terms of trade shocks.
 - Loayza and Raddatz (2007), Broda and Tille (2003), Broda (2004)

Terms of Trade and the Sri Lankan Economy

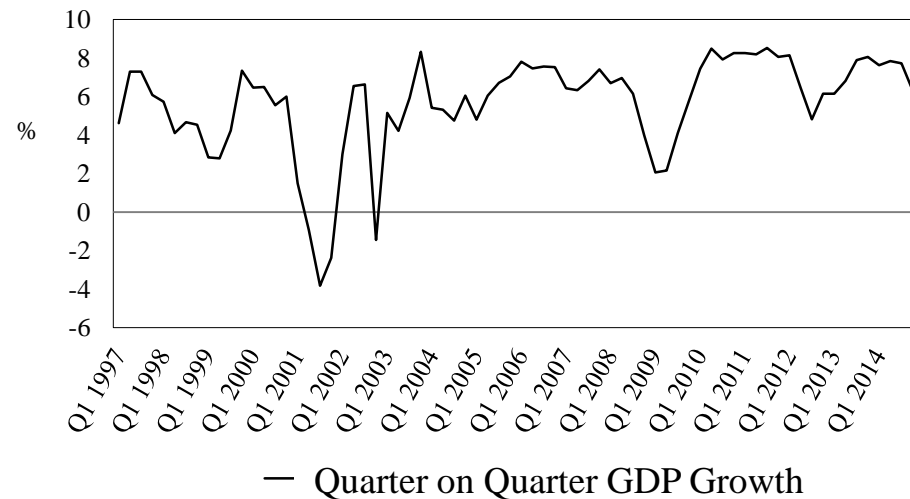
Terms of trade



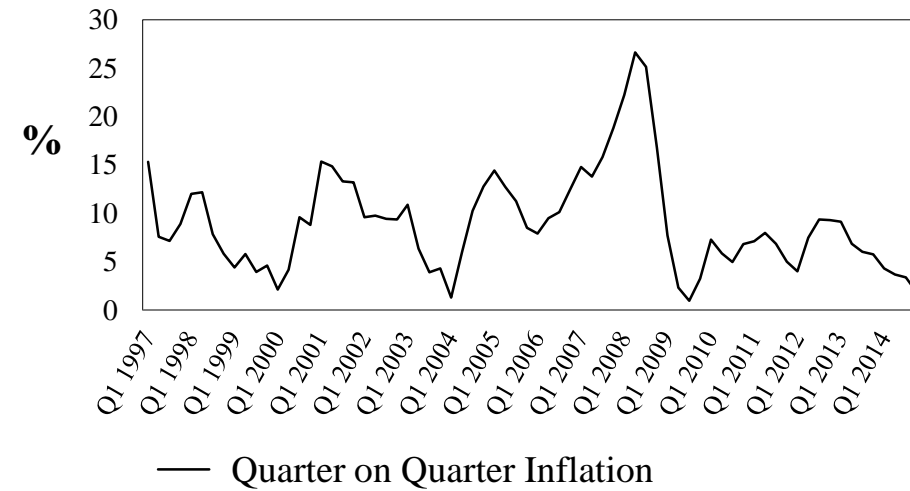
Trade deficit, exports and imports



GDP growth



Domestic inflation



Research Questions

- What are the sources of terms of trade fluctuations in Sri Lanka?
- Do all terms of trade shocks have a similar impact on the domestic macroeconomic variables?
- How do the Sri Lankan variables respond to shocks that cause terms of trade fluctuations?

Methodology

Terms of Trade Shocks in VAR Models

- Traditional approach
 - Otto (2003), Kent and Cashin (2003), Dungey and Pagan (2000)
- New approach
 - Jääskelä and Smith (2013)
 - World demand shocks, commodity-specific shocks, globalization shocks
 - Karagedikli and Price (2012)
 - World demand shocks, world supply shocks, globalization shocks

Methodology

VAR Model

$$\begin{bmatrix} w_t \\ d_t \end{bmatrix} = \beta x_t + \sum_{i=1}^p A_i \begin{bmatrix} w_{t-i} \\ d_{t-i} \end{bmatrix} + B \begin{bmatrix} \varepsilon_t^w \\ \varepsilon_t^d \end{bmatrix}$$

w_t = Vector of foreign variables

x_t = Vector of exogenous variables

= Lag coefficient matrix

ε_t^d = Domestic shocks

d_t = Vector of domestic variables

β = Coefficient matrix of exogenous variables

ε_t^w = World shocks

B = Contemporaneous impact matrix

$$w_t' = (\text{expr}_t, \text{impr}_t, y_t^*)$$

$$d_t' = (y_t, \text{cpi}_t, \text{int}_t, \text{reer}_t)$$

Methodology

Variables

W_t	$expr_t$ = real merchandise export unit price index
	$impr$ = real merchandise import unit price index
	y_t^* = level of trade-weighted output of Sri Lanka's major trading partners (India, USA, China, Singapore, United Kingdom, United Arab Emirates, Iran, Japan, Italy, Germany, Belgium, Malaysia and Hong Kong)
d_t	y_t = domestic output level
	cpi_t = domestic consumer price index
	int_t = domestic short-term interest rate
	$reer_t$ = real effective exchange rate of Sri Lanka

Data Sources : Central Bank of Sri Lanka, IFS database, OECD database, CEIC Global database, Direction of Trade Statistics database of IMF, Tilak Abeysinghe's homepage - <http://courses.nus.edu.sg/course/ecstabey/Tilak.html>

Sample : 1997Q1 to 2014Q4

Methodology

Lags selection

- 2 lags in the model

Dummy variable

gfc – Global Financial Crisis period

Lag structure

Dependent Variable	Independent Variable						
	<i>expr</i>	<i>impr</i>	y^*	y	<i>cpi</i>	<i>int</i>	<i>reer</i>
<i>expr</i>	*	*	*				
<i>impr</i>	*	*	*				
y_t^*	*	*	*				
y_t	*	*	*	*	*	*	*
<i>cpi</i>	*	*	*	*	*	*	*
<i>int</i>	*	*	*	*	*	*	*
<i>reer</i>	*	*	*	*	*	*	*

Methodology

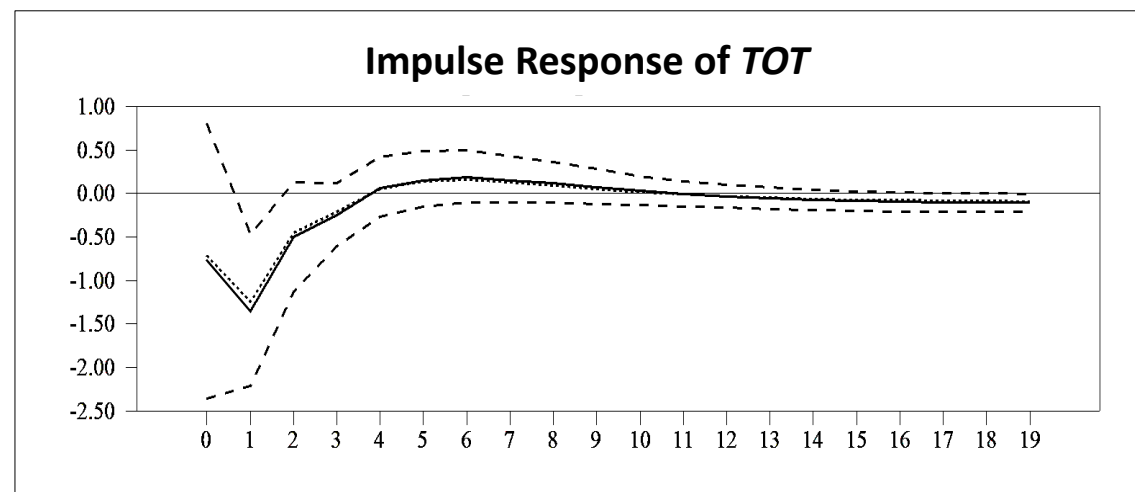
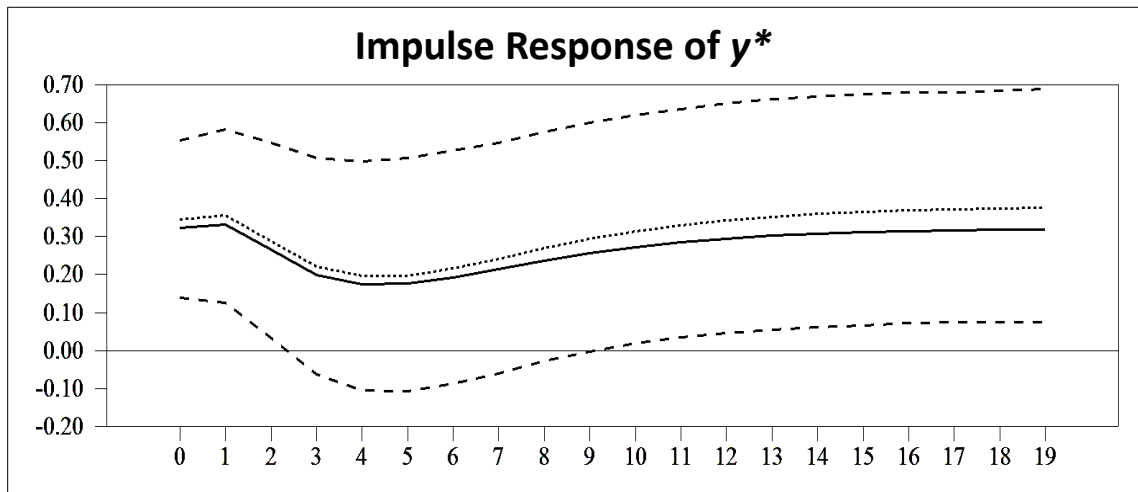
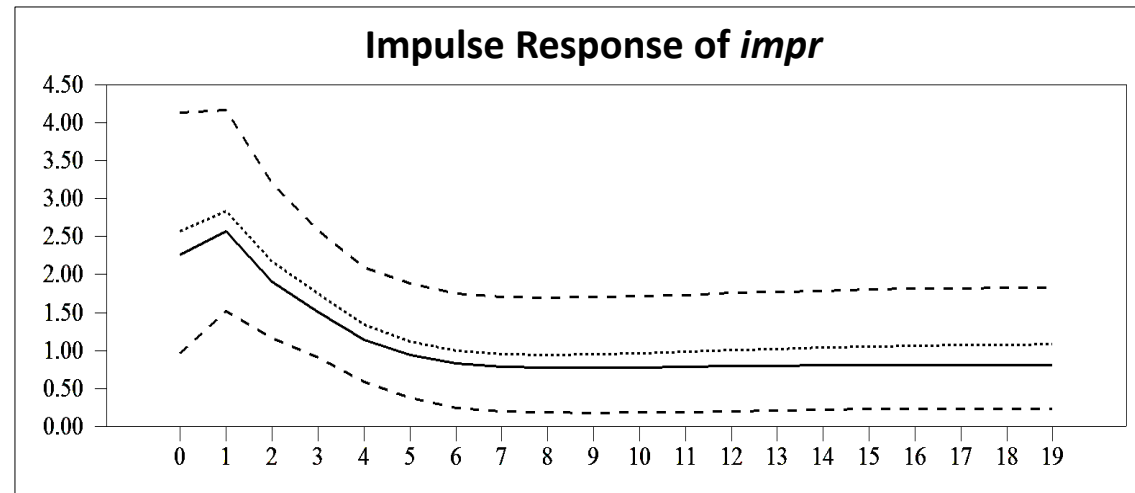
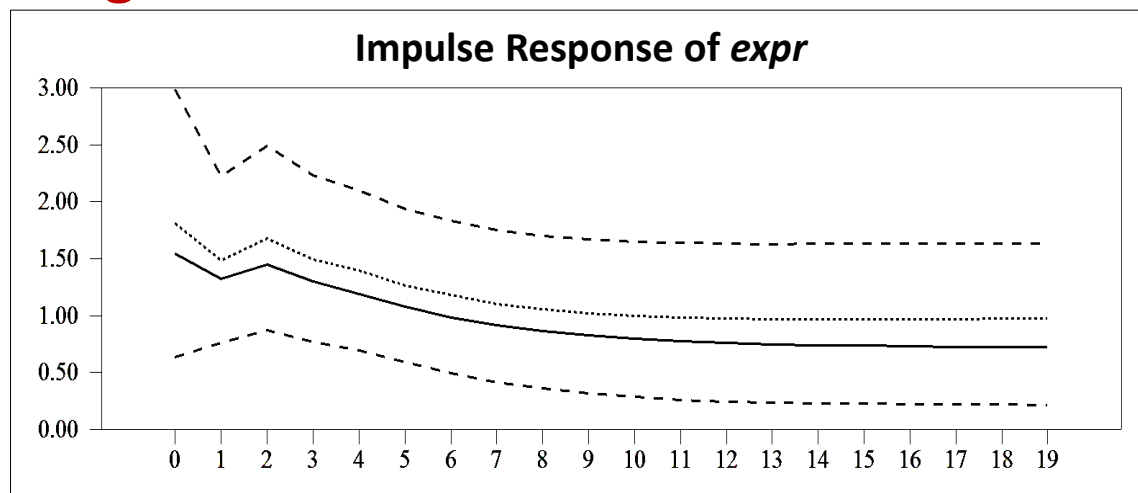
Sign restrictions

	<i>expr</i>	<i>impr</i>	y_t^*	Domestic Variables
World demand (positive) shock	+	+	+	NA
World supply (negative) shock	+	+	-	NA
Globalization (positive) shock	+	-	+	NA

Findings

World Demand Shock

Foreign Variables

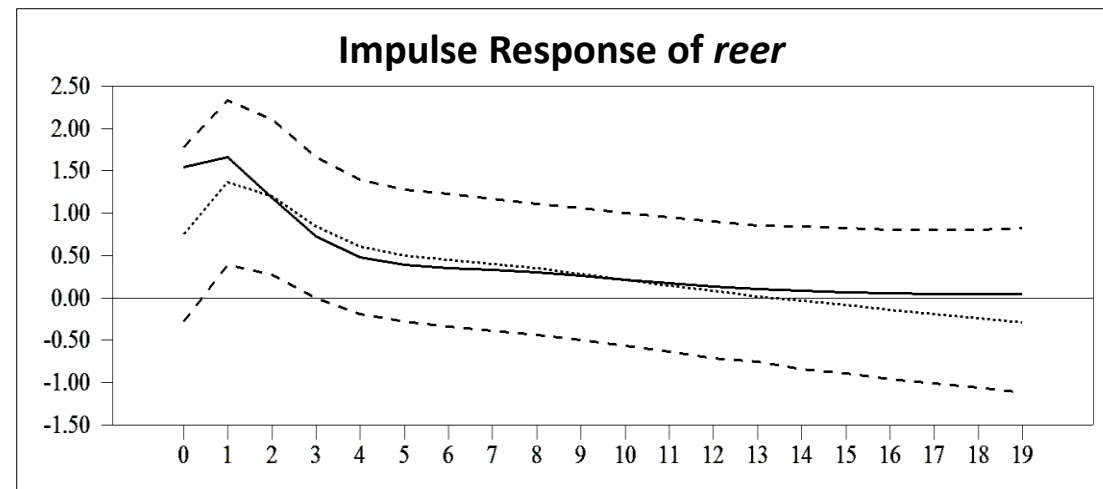
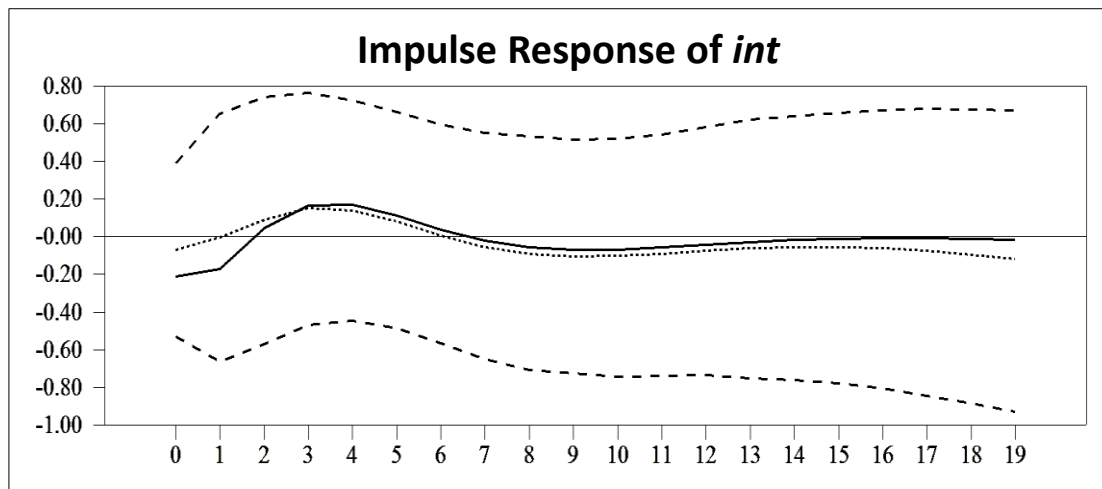
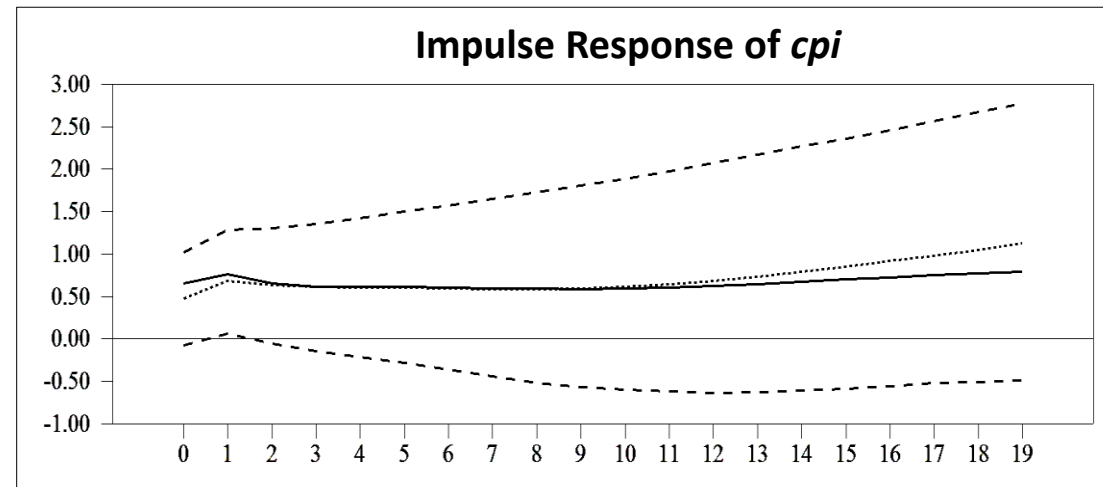
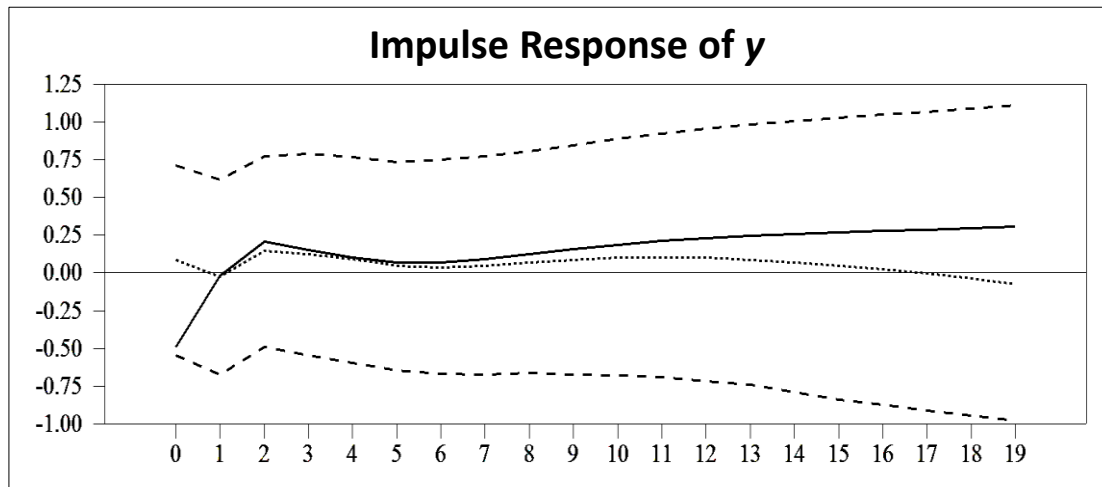


Note: Impulse responses of all variables are multiplied by 100 to obtain percentage increase.

----- Median - - - 16th and 84th Percentile — Median target

World Demand Shock

Domestic Variables

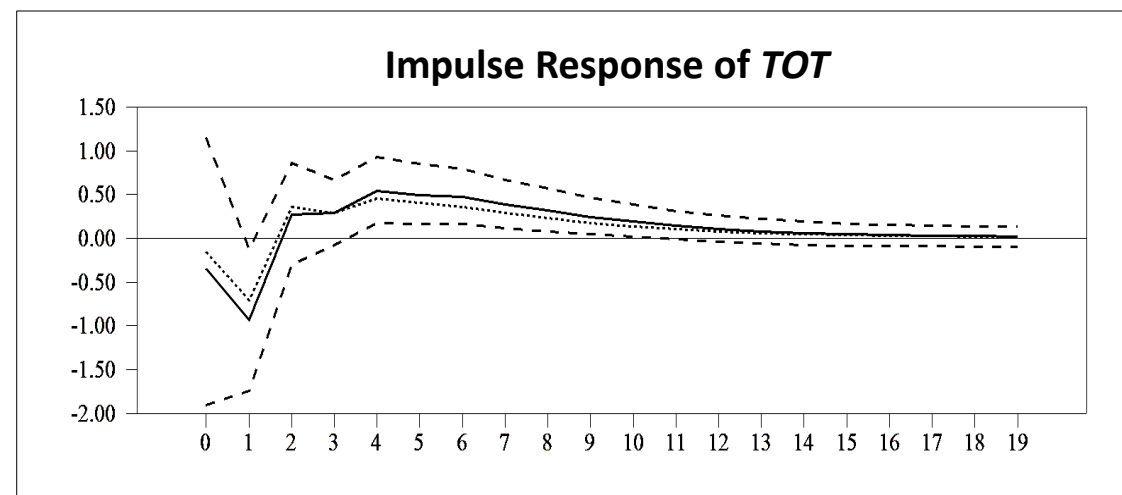
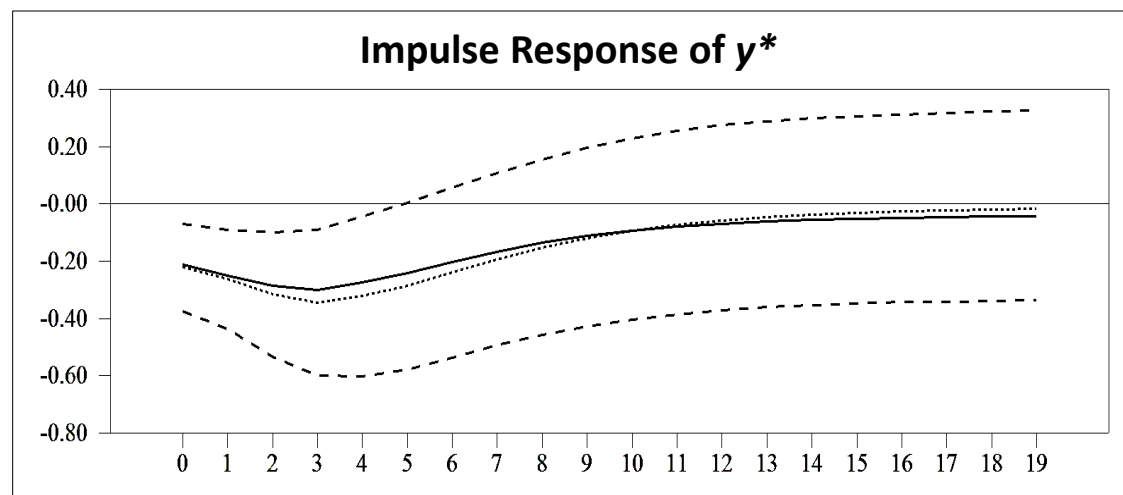
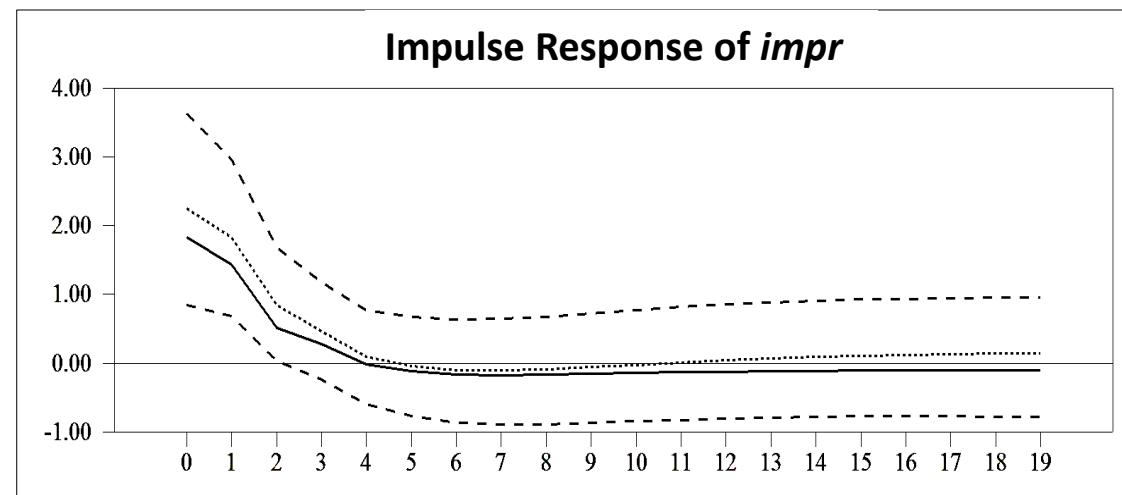
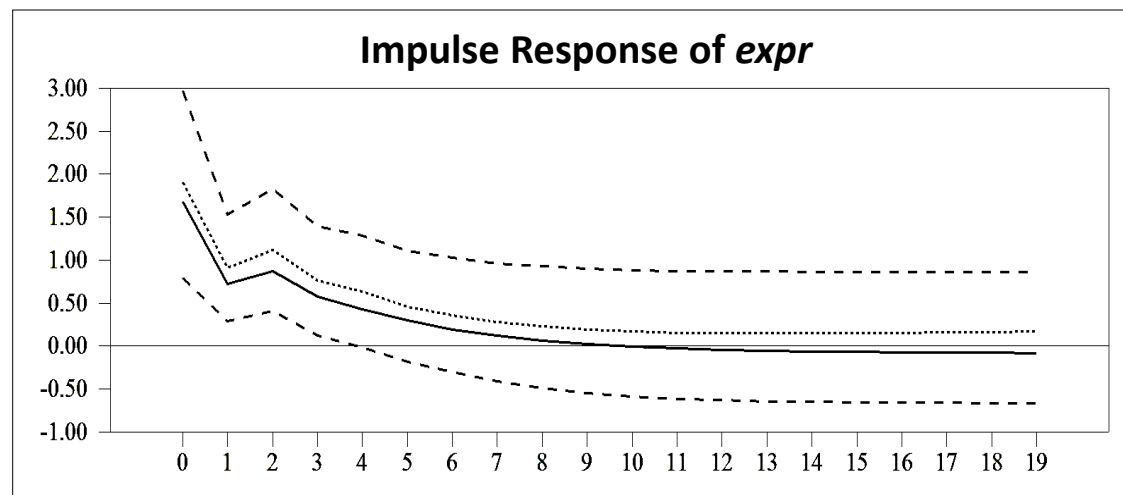


Note: Impulse responses of all variables, except domestic interest rate, are multiplied by 100 to obtain percentage increase.

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World Supply Shock

Foreign Variables

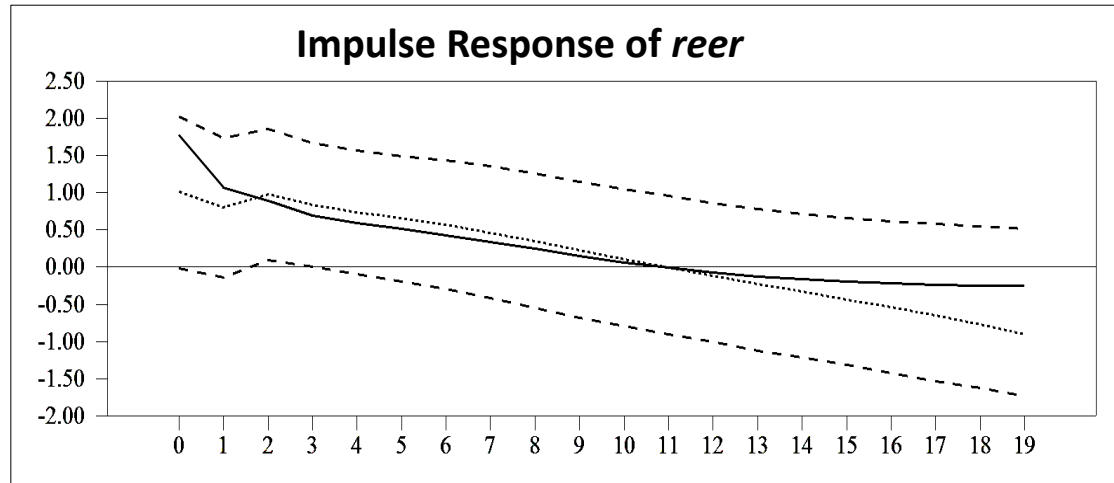
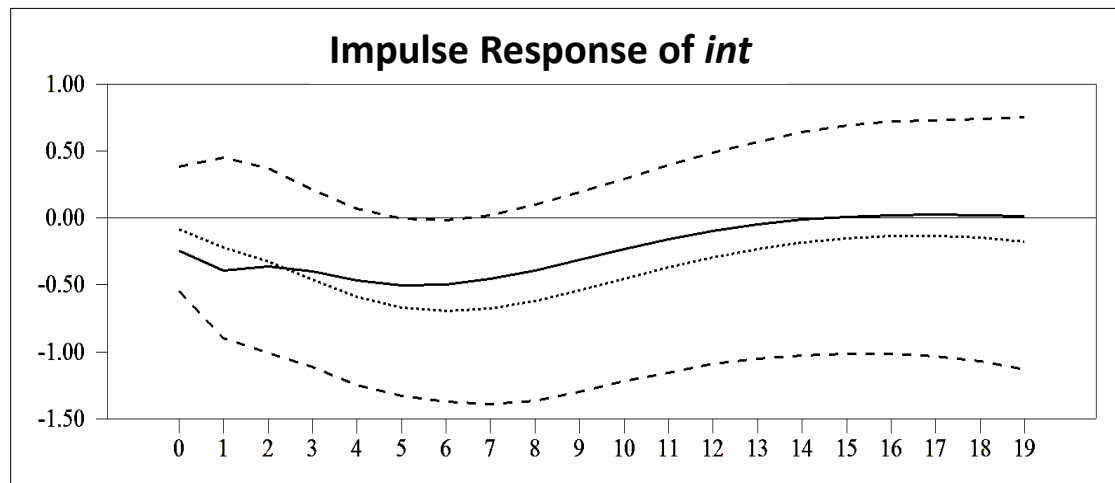
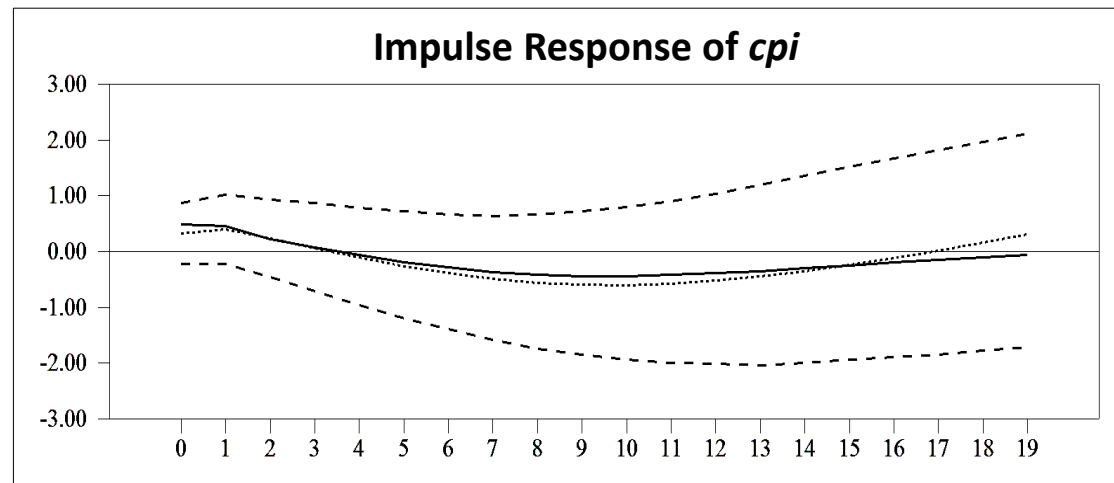
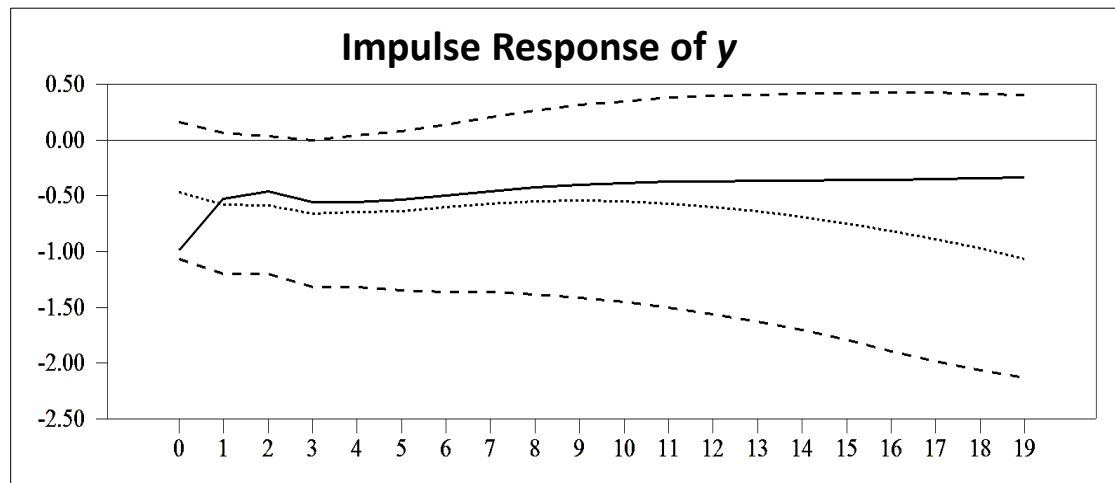


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World Supply Shock

Domestic Variables

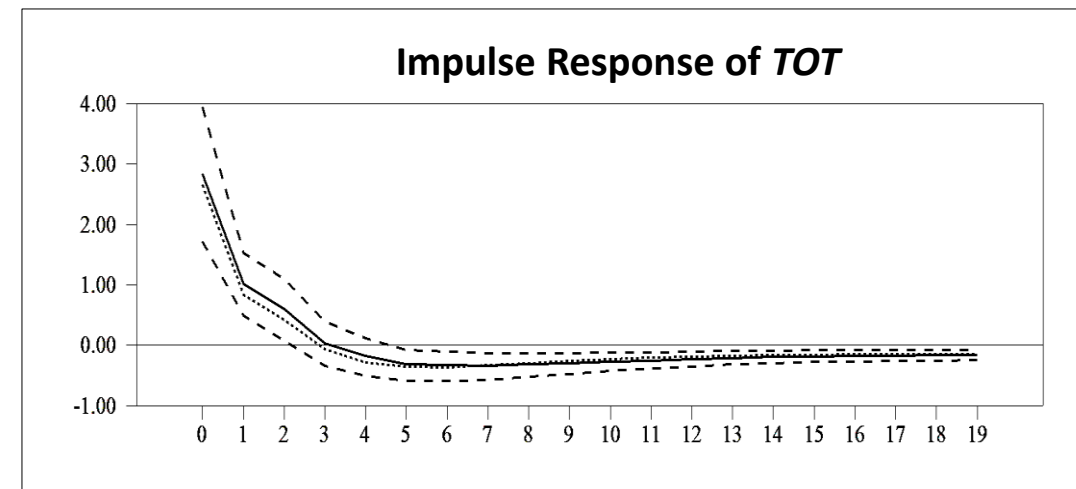
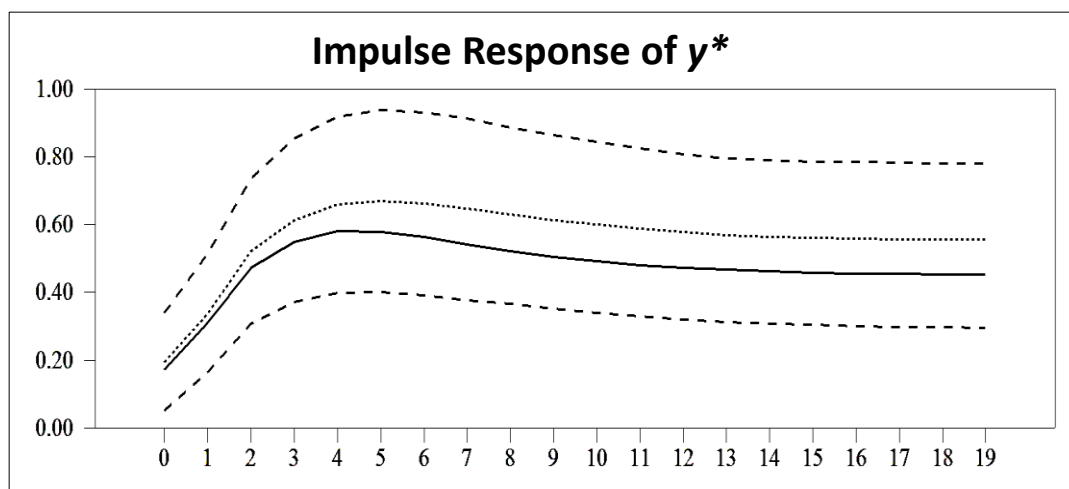
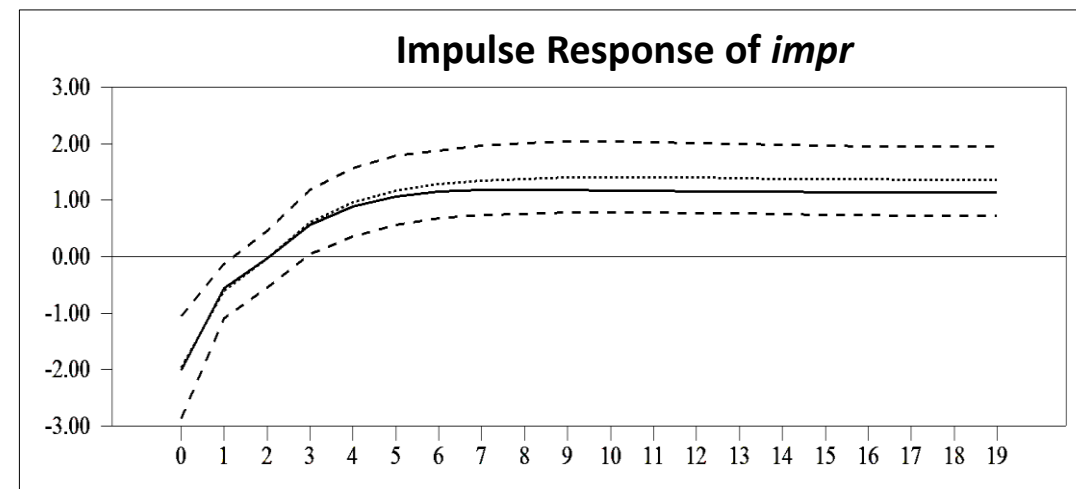
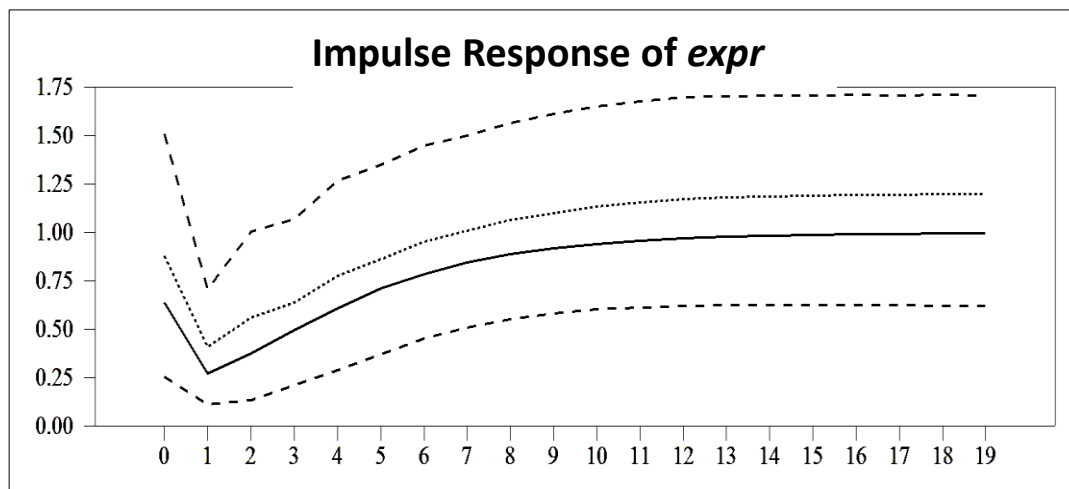


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Globalization Shock

Foreign Variables

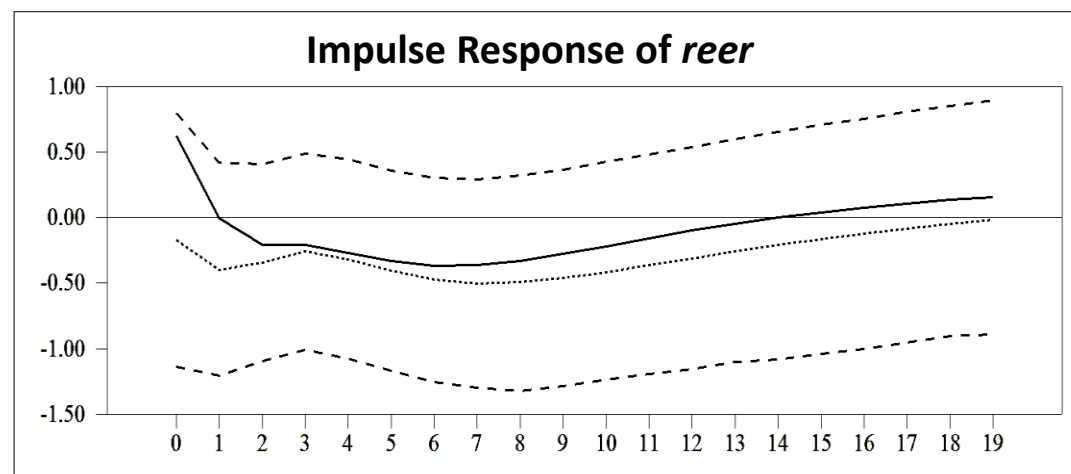
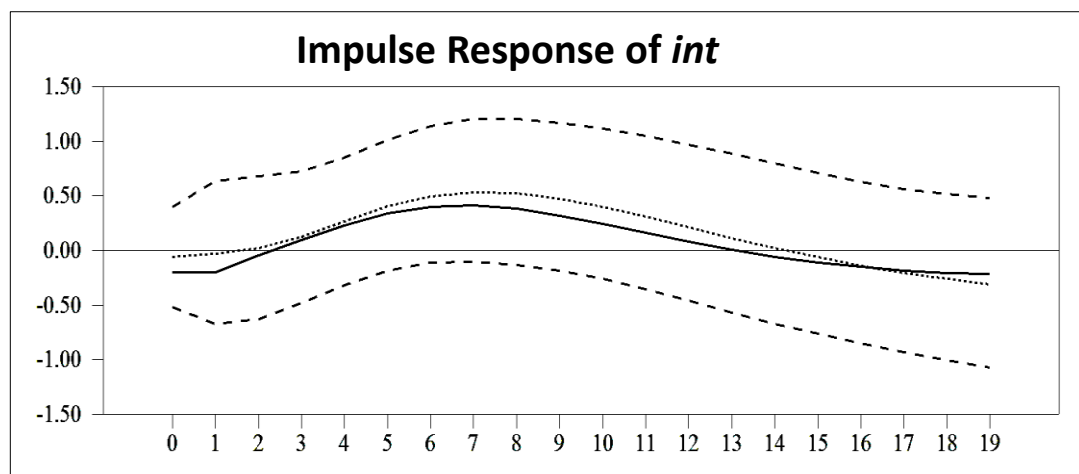
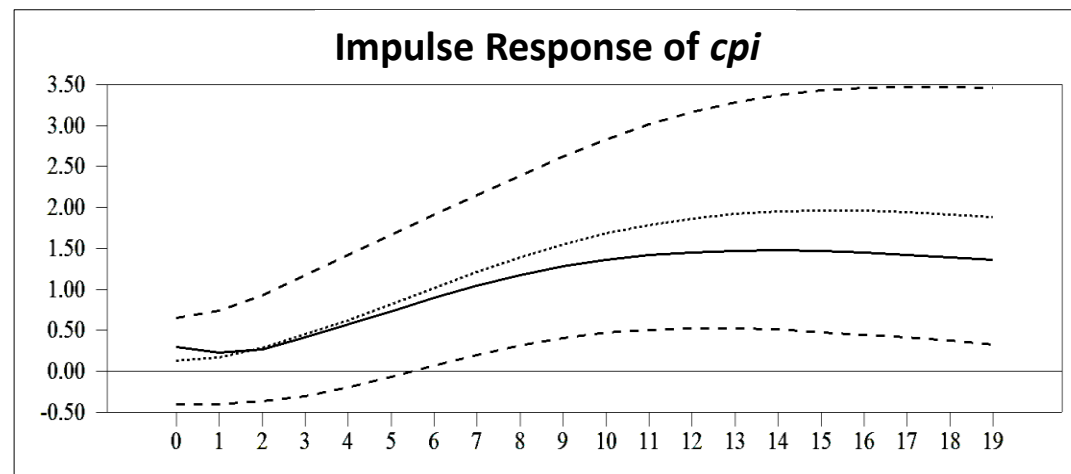
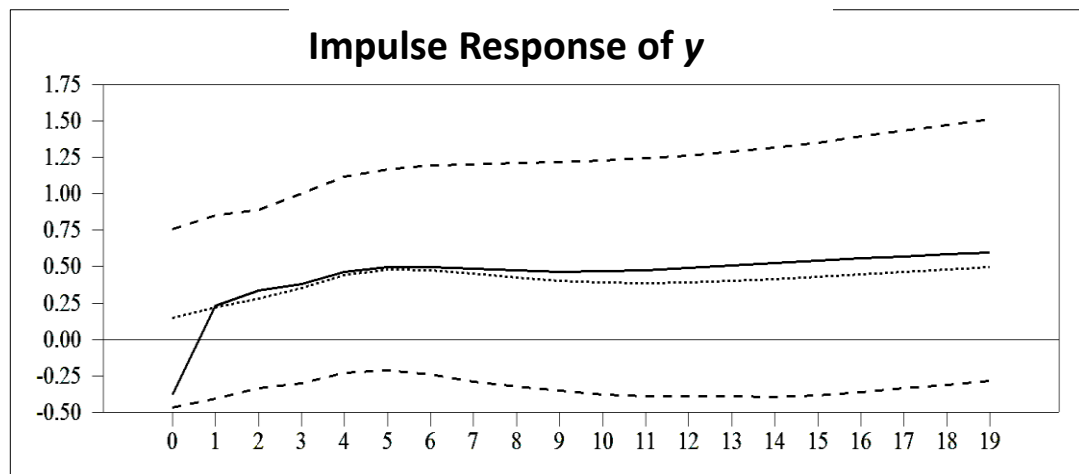


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Globalization Shock

Domestic Variables



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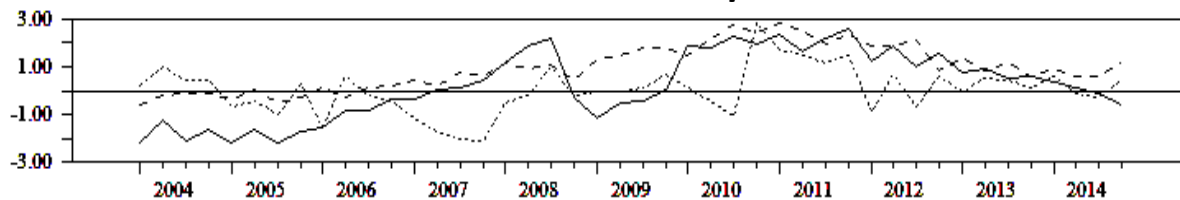
..... Median — 16th and 84th Percentile — Median target

Forecast Error Variance Decomposition

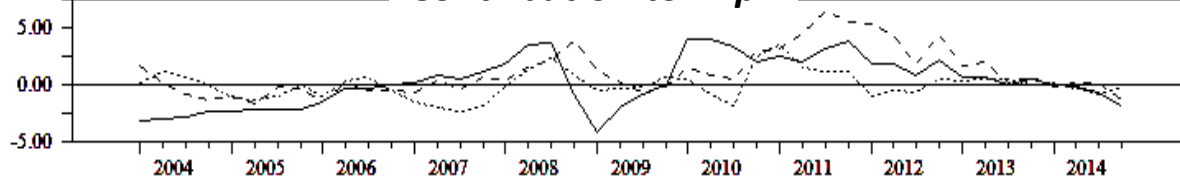
	Error variance explained by the foreign shocks		
	Sri Lanka	Australia (Jääskelä and Smith, 2013)	New Zealand (Karagedikli and Price, 2012)
Domestic output	39	29	20
Exchange rate	40	76	40

Historical Decomposition

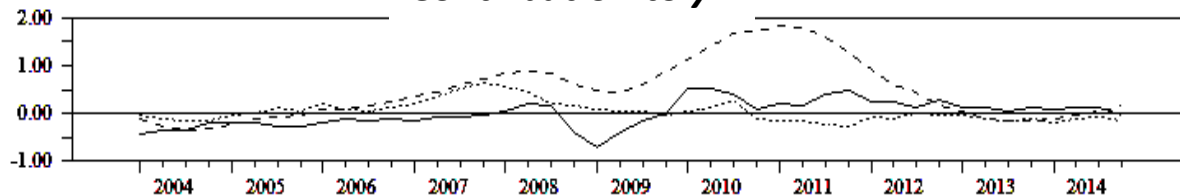
Contribution to *expr*



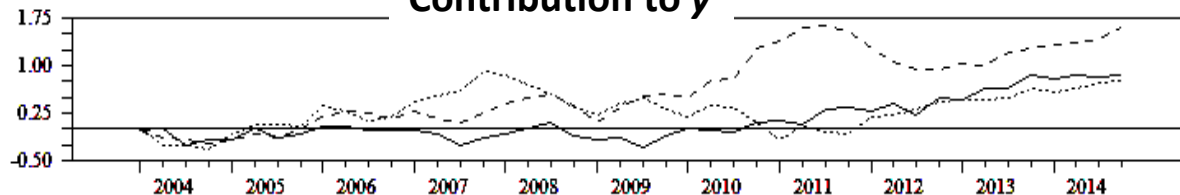
Contribution to *impr*



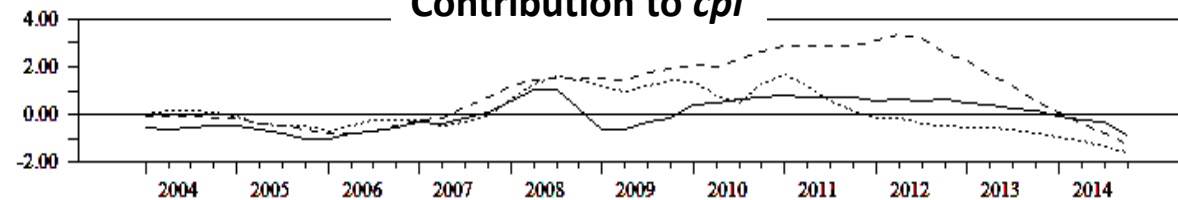
Contribution to y^*



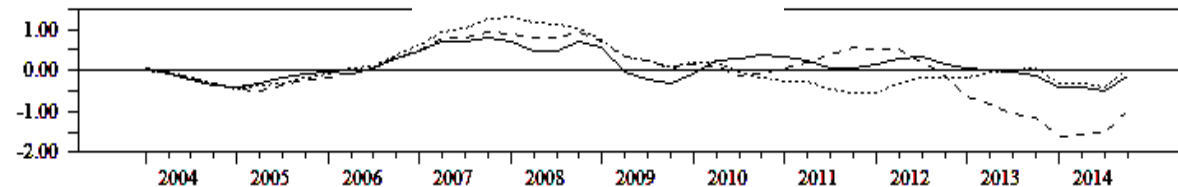
Contribution to y



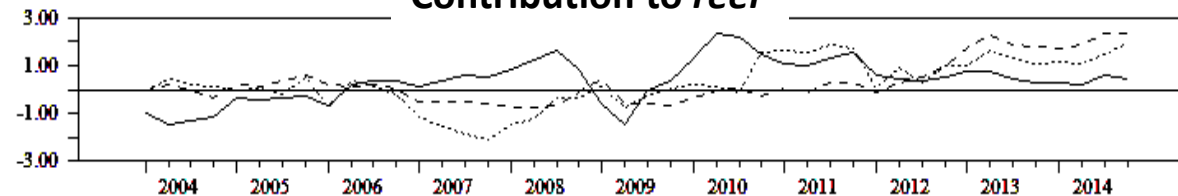
Contribution to *cpi*



Contribution to *int*



Contribution to *reer*



- Contribution from world demand shocks
- Contribution from world supply shocks
- Contribution from globalization shocks

External Shocks and Trade

- Trade balance model

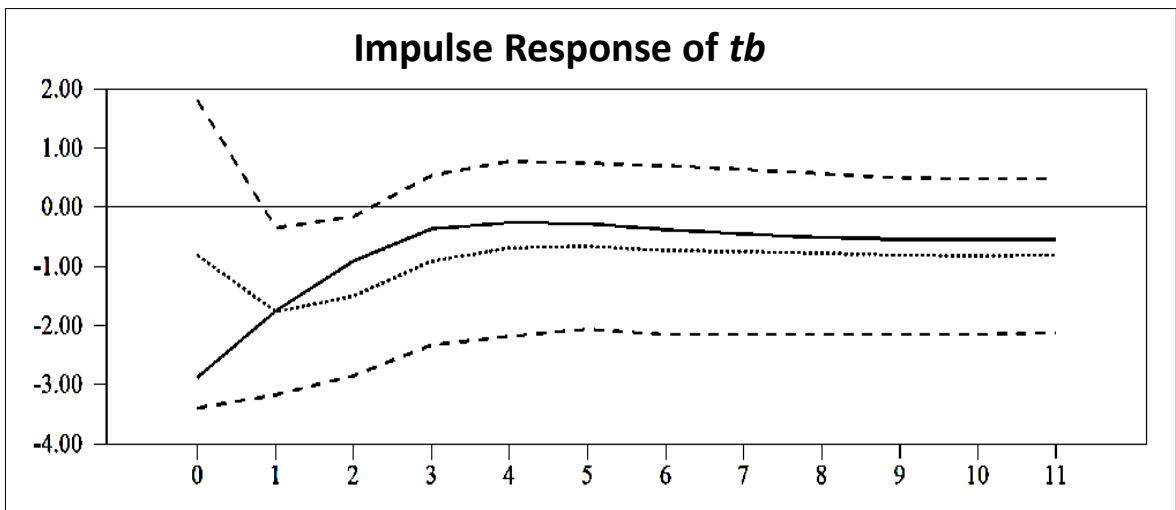
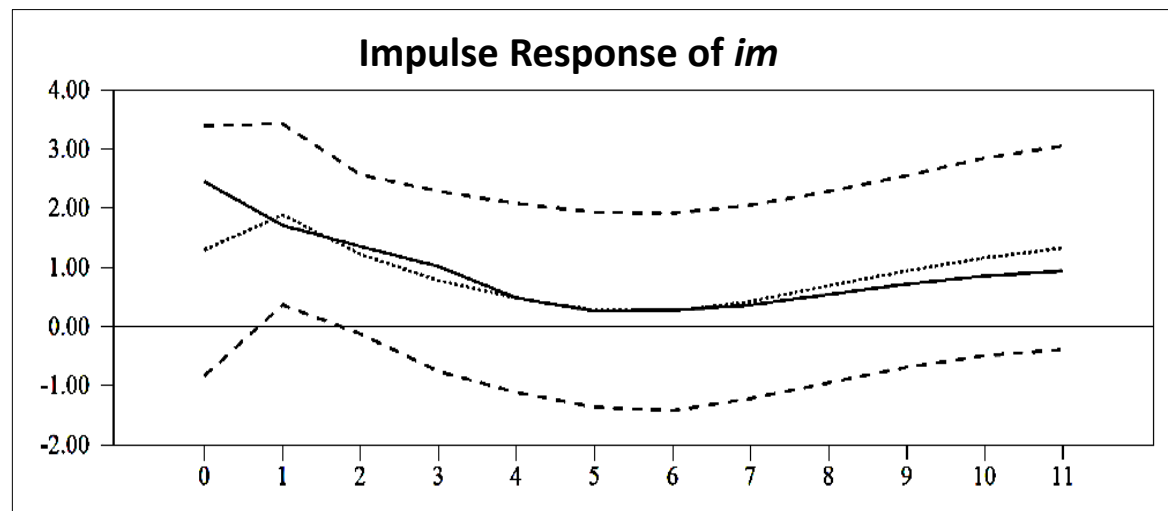
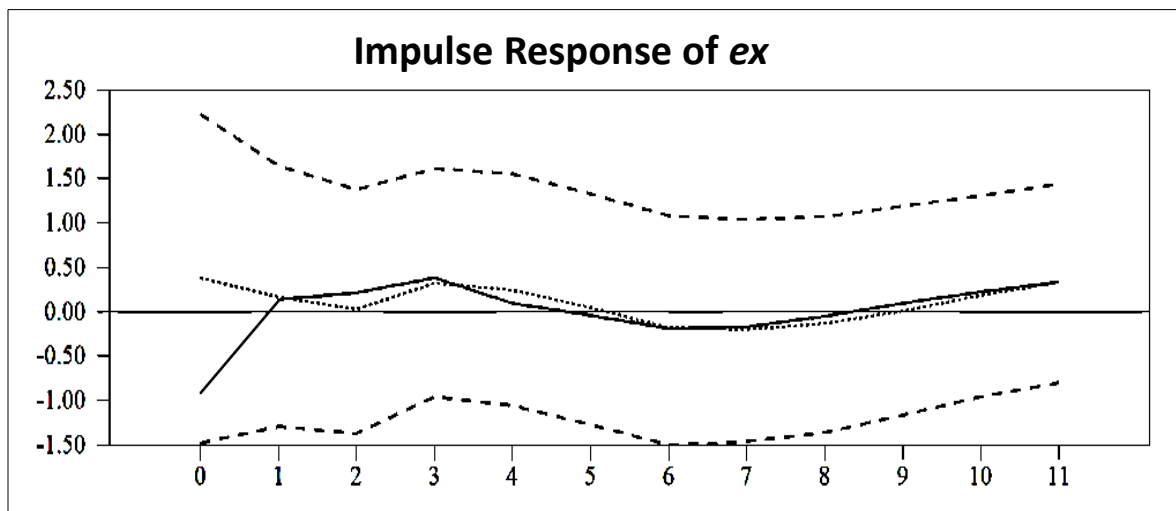
- $w'_t = (expr_t, impr_t, y_t^*)$
- $d'_t = (tb_t, y_t, cpi_t, int_t, reer_t)$
- tb - exports to imports ratio

- Exports-Imports model

- $w'_t = (expr_t, impr_t, y_t^*)$
- $d'_t = (ex_t, im_t, y_t, cpi_t, int_t, reer_t)$
- ex – exports
- im – imports

External Shocks and Trade

World Demand Shock

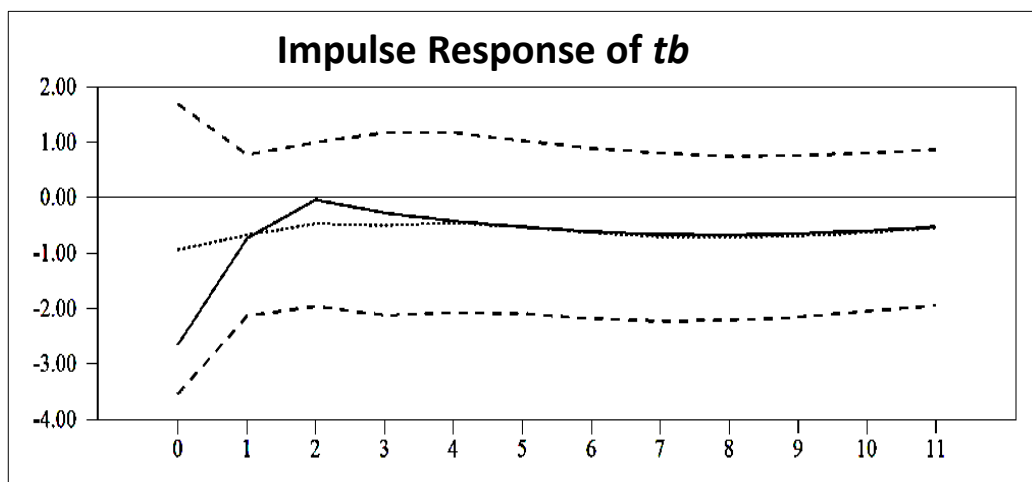
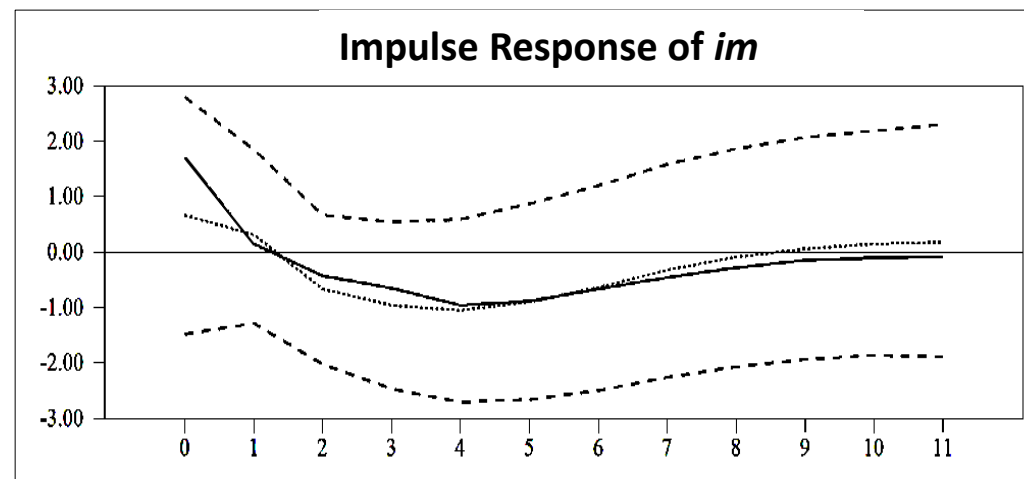
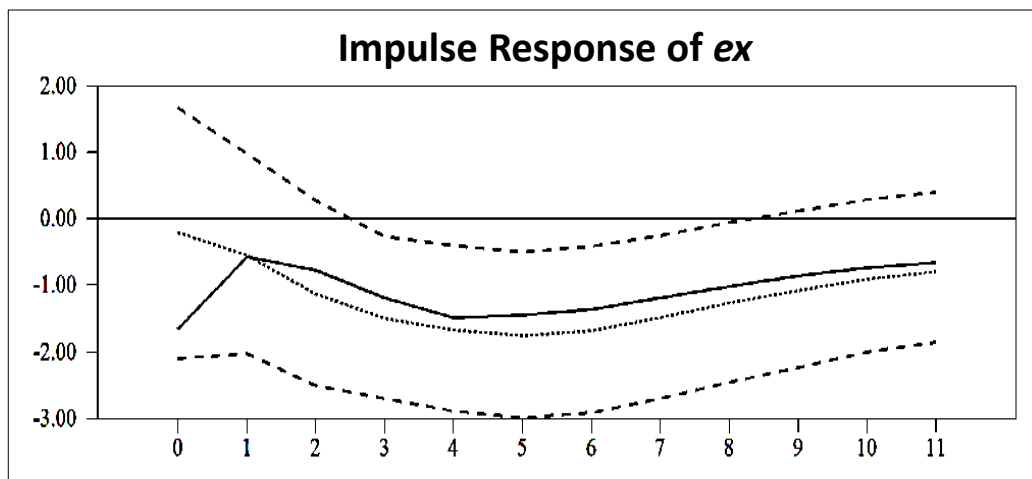


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External shocks and trade

World Supply Shock

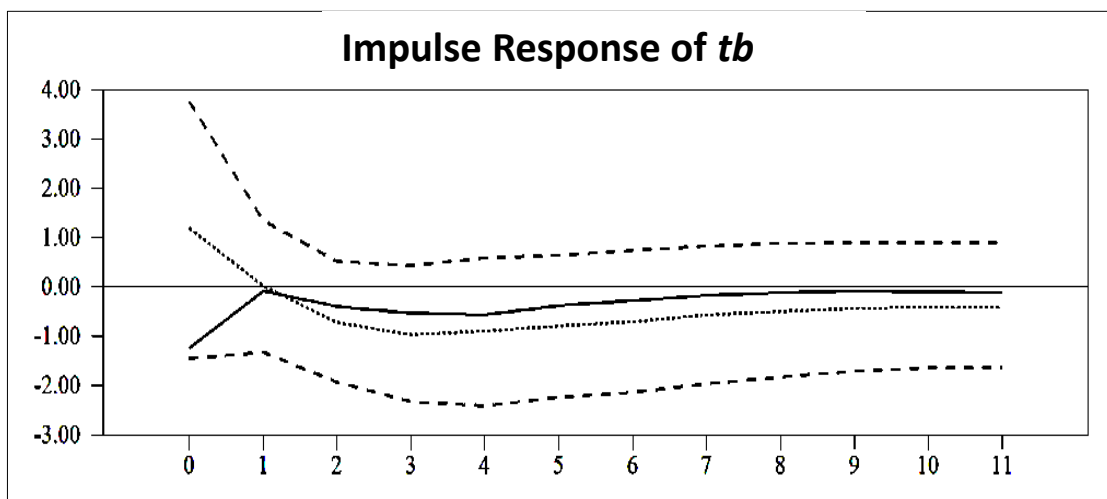
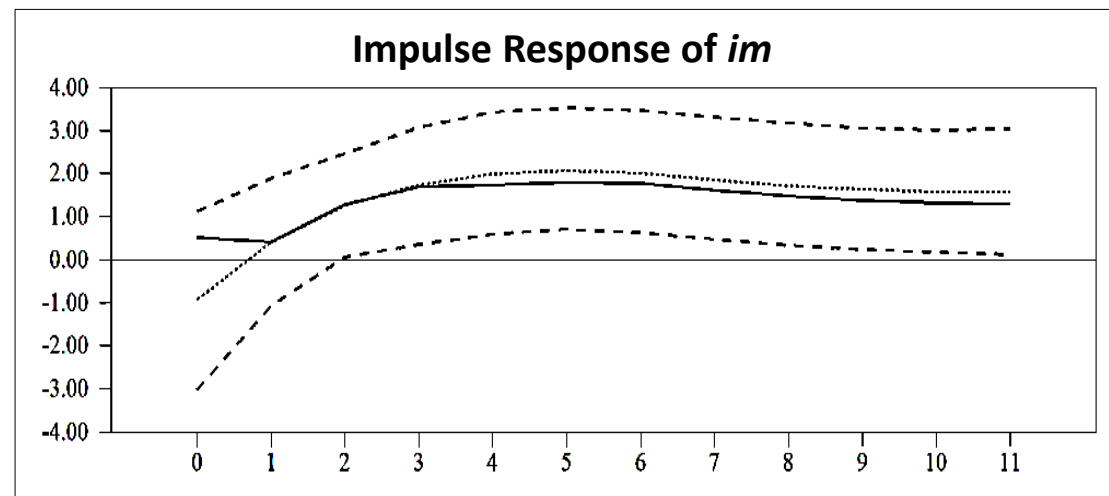
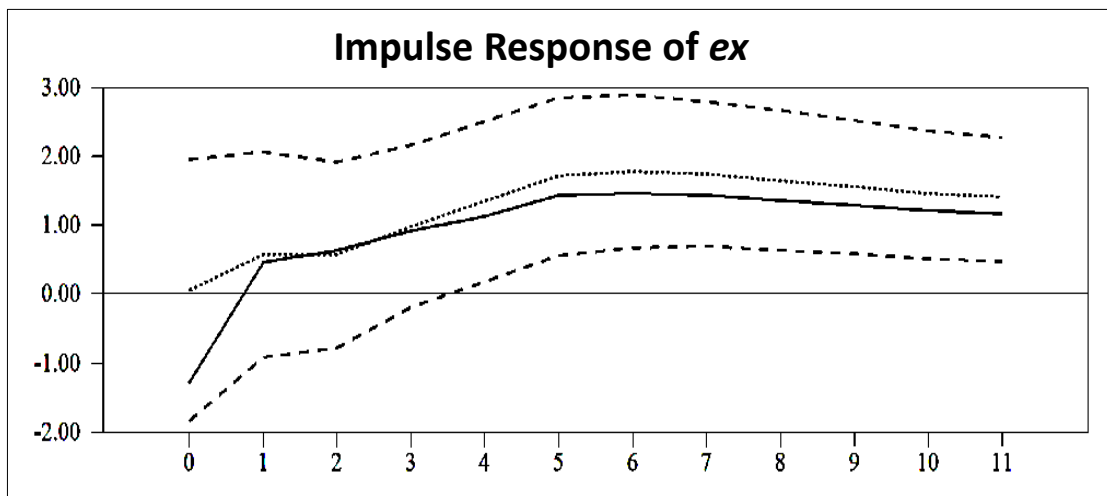


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External shocks and trade

Globalization Shock

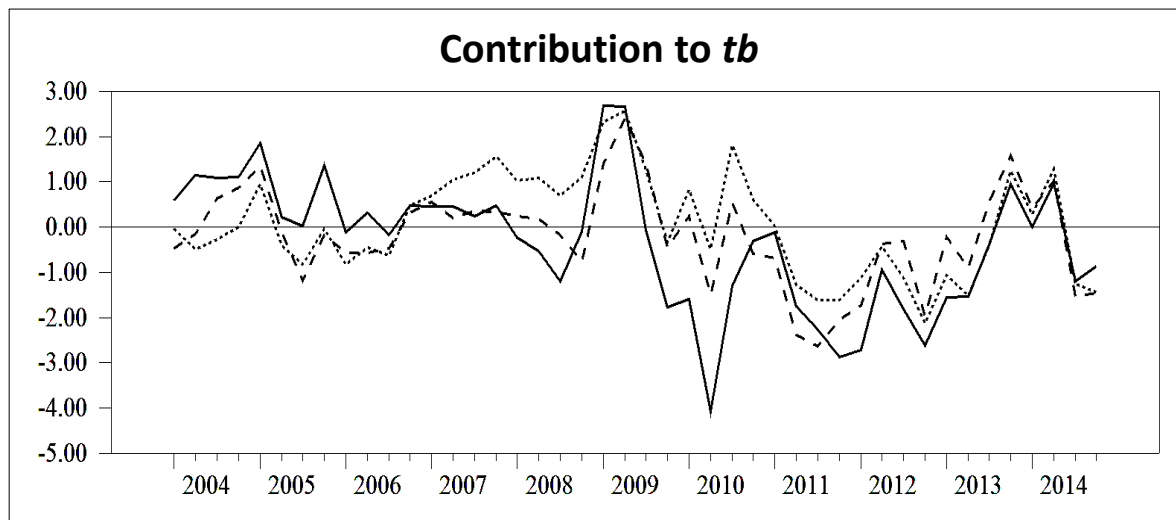
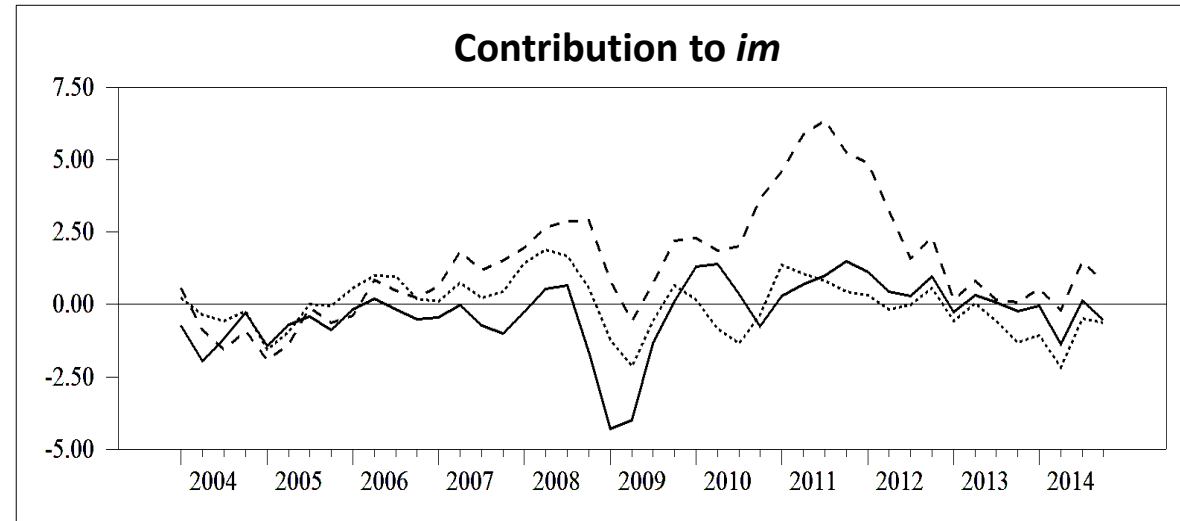
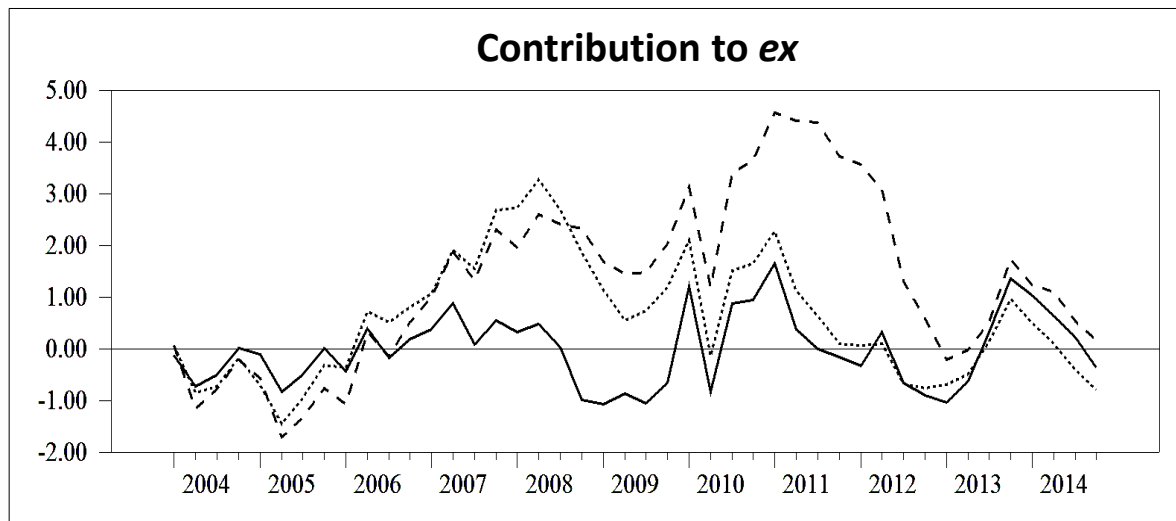


..... Median - - 16th and 84th Percentile — Median target

Note: Impulse responses of all variables are multiplied by 100 to obtain percentage increase.

External shocks and trade

Historical Decomposition



- Contribution from world demand shocks
- - - Contribution from world supply shocks
- . - Contribution from globalization shocks

Conclusion

Conclusion

- Positive world demand shocks and negative world supply shocks deteriorate the terms of trade instantaneously, but terms of trade improve after 2 quarters with a world supply shock. But, positive globalization shocks improve the terms of trade immediately. None of these shocks have a permanent effect on the country's terms of trade.
- The world demand shocks do not have a significant long-term effect on Sri Lanka's real GDP, but negative world supply shocks are contractionary. The globalization shocks increase the domestic output permanently.
- Both positive world demand shocks and globalization shocks are inflationary.
- Foreign shocks have contributed to 39 per cent of the fluctuations in both domestic output and prices.
- Globalization shocks had a prominent impact on domestic price levels and real GDP since 2007. World demand shocks have largely contributed to the fluctuations in trade balance since 2007, whereas the importance of globalization shocks on the imports, exports and trade balance has increased since 2010.
- Lower flexibility in the exchange rate management in the past has been less efficient in insulating the domestic economy from external shocks.

Thank you