Do changes in crude oil price affect economic growth in China and India?

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MOTIVATION

❖ It is a well established fact that oil-importing developing countries suffer even more through the adverse economic impacts of higher oil prices than developed OECD countries:

- Their economies are more energy intensive
- They use energy less efficiently
- They are more dependent on imported oil

❖ Sharp increase in the world liquid fuels demand:

2010 → 87 MMbbl/d
2040 → 199 MMbbl/d

The potential for rise in liquid fuels demand is focused on the emerging economies of China, India, and the Middle East.

❖ Therefore, changes in crude oil prices must be of critical importance to the economy of developing countries.

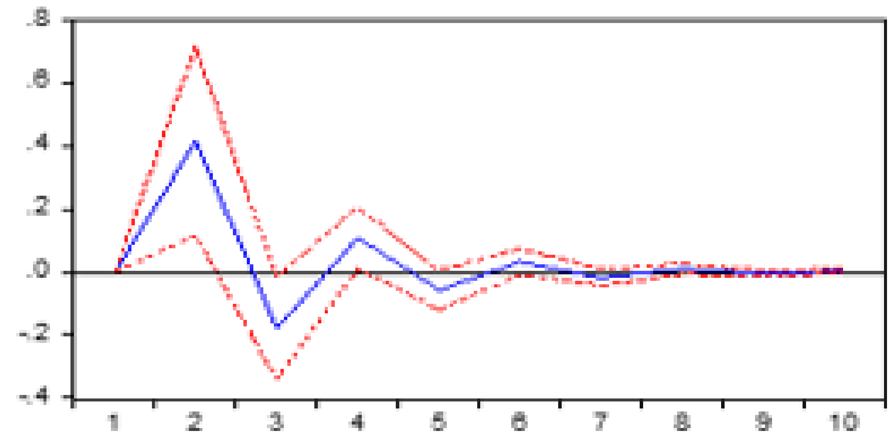
METHODOLOGY

❖ 5 – variable VAR model is constructed using both linear and non-linear specifications, based on monthly times series from 1997:06 to 2011:12.
❖ Variables considered for the model are: real GDP, money supply, inflation, interest rates, and real oil price.
❖ Granger – causality tests are undertaken to examine whether changes in crude oil prices Granger cause GDP in China and India.
❖ Impulse response functions and variance decomposition analyses are carried out.

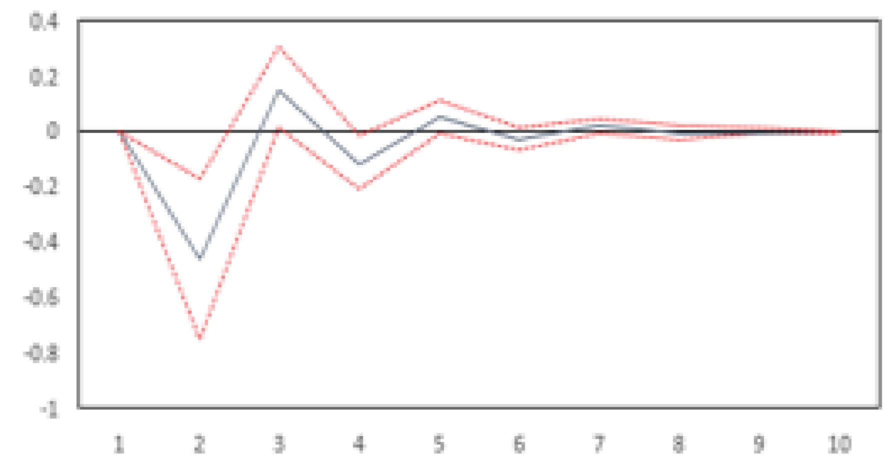
MAIN RESULTS

Granger causality test results for China and India VAR(1) models	CHINA		INDIA	
LINEAR CASE				
Null Hypothesis	**Chi-sq**	**Prob**	**Chi-sq**	**Prob**
OIL does not Granger cause output	7.878572	0.0050***	2.269988	0.1319
Output does not Granger cause OIL	0.009171	0.9237	0.331946	0.5645
NON - LINEAR CASE – $ROIL^+$				
$ROIL^+$ does not Granger cause output	2.096688	0.1476	0.005681	0.9399
Output does not Granger cause $ROIL^+$	0.292324	0.5887	0.026999	0.8695
NON – LINEAR CASE – $ROIL^-$				
$ROIL^-$ does not Granger cause output	10.30186	0.0013***	6.517678	0.0107**
Output does not Granger cause $ROIL^-$	0.011047	0.9163	0.513627	0.4736

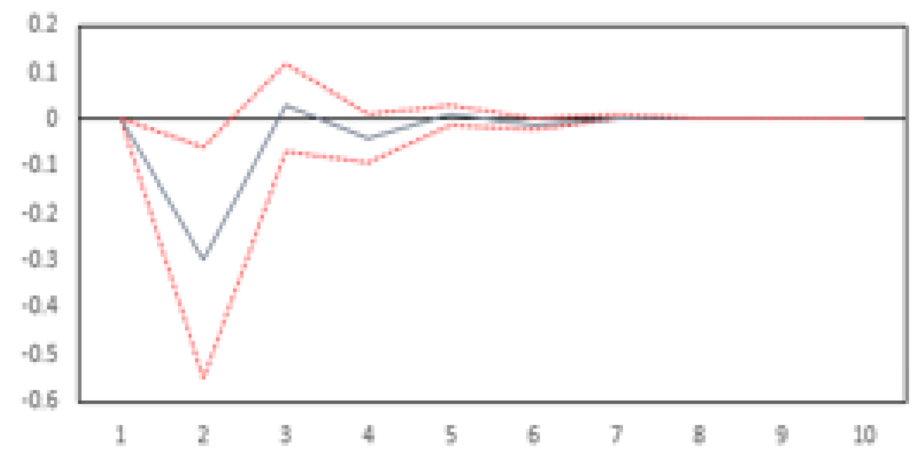
Response of China's GDP to OIL



Response of China's GDP to $ROIL^-$



Response of India's GDP to $ROIL^-$



CONCLUSION

❖ Linear model indicates that the world oil price and China's GDP are significantly positively correlated. However, oil price does not exhibit any significant effect on India's GDP.

❖ Neither China's nor India's economic growth has a power to influence the world oil price neither in symmetric nor in asymmetric VAR models.

❖ Asymmetric impact of oil price shocks on China and India's economic growth – while real oil price decreases significantly negatively affect China and India's economic growth, real oil price increases are found to be insignificant.

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