IS THERE AN INERTIA EFFECT OF OIL PRICE ON INFLATION LEVELS— A MACROECONOMIC ANALYSIS FOR SOME DEVELOPING COUNTRIES

Sovik Mukherjee

Assistant Professor in Economics, Department of Commerce and
Management Studies, St. Xavier's University, Kolkata, India.

One thing led To another and, Before we knew it,
We were dead.

— Michael O' Donoghue

ABSTRACT

The recent rounds of recession have renewed the fears of consumer price inflation. Theoretically, as oil is used as a direct input for many consumer items it will lead to higher prices for some goods and services. Historically, the "pass through" effect of oil price shocks was very evident during the seventies but disappeared somehow in the eighties. Interestingly, empirical research, however, has not always predicted that oil price shocks leads to a general rise in the price level. In this backdrop, the research question is how variations in global oil prices impacts domestic inflation in a panel data set-up of thirty emerging and developing countries including, India, Pakistan and China during the period 2000 to 2016. The results show that a rise in the global oil prices creates an impact on domestic price inflation. Interestingly, the findings highlight some asymmetric impact of the oil price shocks for Asian and non-Asian countries. The impact of monetary policy has been significant and as a result the oil price shock has declined over the years in the post-globalization era which is something momentous given the current situation.

Keywords: oil price, structural shocks, inflation, monetary policy, fiscal policy

Jel Classification: E58, O11, N15

1. INTRODUCTION

OPEC was formed on September 14, 1960 with five founding members: Saudi Arabia, Kuwait, Iran, Iraq and Venezuela. The current membership of 14 nations also includes Qatar, Indonesia, Libya, the UAE, Algeria, Nigeria and Ecuador. Its original purpose was to try and obtain higher prices for oil sold to the "seven sisters": ESSO, Royal Dutch Shell, Anglo-Persian Oil Company, SoCal, Gulf Oil and Texaco, which were the major oil companies that dominated production, refining, and distribution at that time. By 1970, oil had begun to exert considerable control over production by its members and this in turn, had a significant influence on the market price for crude oil.

On October 17, 1973 OPEC announced that it would no longer ship oil to nations that were supporting Israel in the Yom Kippur War. These nations included the USA and its allies in Europe and Japan. The OPEC oil embargo set off a sequence of price increases that were subsequently exacerbated by the Iranian Revolution (1979) and the Iran-Iraq war (1980-88). In January 1981, the nominal price of oil in the USA reached $38.85 per barrel. In real terms (using the April 2008, adjusted consumer price index) this was equivalent to a price of $95.08 per barrel; more than seven times the real price of oil in 1973.

The price increases in crude oil between 1973 and 1981 resulted in the greatest "peaceful" transfer of wealth from the industrialized economies of North America, Europe and Asia to OPEC members. By the early 1980s, however a combination of energy conservation, new (non-OPEC) sources of crude oil, and worldwide economic recessions resulted in a reduced demand for oil. Saudi Arabia finally grew tired of what is regarded as greedy undisciplined production and decided that it would produce at its full quota and let the price find a new lower market equilibrium. By July 1986, the nominal price of oil had fallen to $10.91 per barrel. From August 1986 to August of 1990, the real price of crude oil was relatively stable, fluctuated between $22 and $36 per barrel. Real prices increased with Iraq invasion of Kuwait and the start of the first Gulf War (August 1990-1991). In October 1990, the real price spiked to $52.69 per barrel but by February 1991, the real price had again fallen below $30 per barrel. Real prices rose between $21 and $32 per barrel from February 1991 to December 1997. Following the September attack, US invasion of Iraq in 2003, in all likelihood contributed to the continued increase in the price of crude oil at that point of time. On April 2008, the real price for crude oil reached a record high of $112.21 per barrel. On April 23, the spot price finished at $118.30 per barrel. Since June 1999, the price path for crude oil exhibited an increasing trend but with severe fluctuations (Refer to Figure 1).
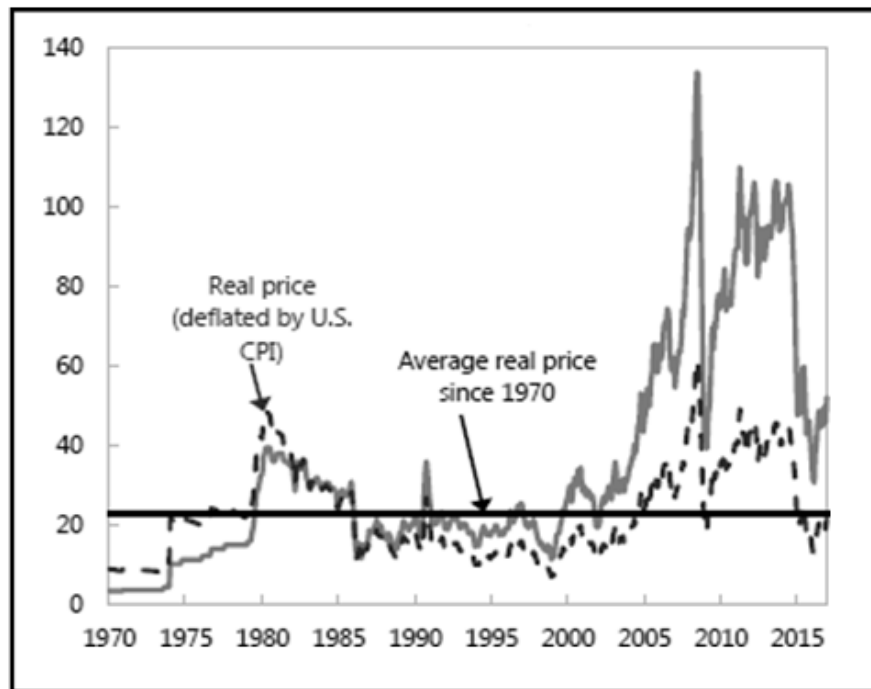
Fig. 1: Real oil price trends

Source: Grigoli et al. (2014)

Table 1: Total value of export ($ billion) trend in OPEC Countries

	2011	2012	2013	2014	2015	Diff. over 2014
Algeria	77.7	77.1	69.7	62.9	37.8	-25.1
Angola	67.3	71.1	68.2	59.2	32.6	-26.5
Ecuador	22.3	23.8	24.8	25.7	18.4	-7.4
Indonesia	203.5	190.0	182.6	176.0	150.3	-25.7
IR Iran	144.9	107.4	91.8	85.2	78.0	-7.3
Iraq	83.2	94.4	89.7	84.0	54.7	-29.3
Kuwait	102.1	118.9	115.1	103.9	55.0	-48.9
Libya	19.1	61.0	46.0	13.8	10.9	-2.9
Nigeria	99.9	96.9	97.8	82.6	45.4	-37.2
Qatar	112.9	133.0	136.8	126.7	77.3	-49.4
Saudi Arabia	364.7	388.4	375.9	342.3	205.4	-136.9
United Arab Emirates	302.0	359.7	371.0	367.6	333.4	-34.2
Venezuela	93.7	97.9	88.8	74.7	38.0	-36.7
Total	1693.3	1819.7	1758.2	1604.6	1137.0	-467.6

Source: Compiled by the author based on data retrieved from *www.opec.org*

Table 1 above reports the export trends by OPEC countries. UAE is largest exporter but the level of exports for all the OPEC members have been on the decline if one compares the level of exports between 2014 and 2015. Now the question this paper is trying to answer is can we make a comment on how this increase in oil prices affects domestic inflation across some developing countries under consideration.

The rest of the paper is organized as follows. Section 2 reviews the related literature. Section 3 decodes the Indian story in this context. Section 4 discusses the methodology applied and brings out the empirical evidence of the impact of oil prices on inflation. Section 5 concludes.

2. REVIEW OF SELECT LITERATURE

There is a very rich body of literature which talks about the oil price shock and inflation nexus. This study does not makes an attempt to give a detailed survey of oil price shocks on inflation across different countries in the world but rather briefly sums up the recent related literature on the impact of oil price shocks on inflation using international data with a particular focus on India. It is important to contextualize this issue in the recent past because results two decades ago are grossly dissimilar to what we get to see in the present context. To begin with, we have a category where theoretical mechanisms via which oil-price increase may create an impact on inflation, GDP growth and other macro parameters have been discussed (Bruno & Sachs, 1982; Hamilton, 1996; Brown & Yucel, 2002). The second category relates to the formulation of an oil price-inflation empirical model either in linear or non-linear form. This mathematical liaison was verified mostly for developed countries between 1990-2000. These include the likes Cunado and Gracia (2003); Lee et al. (2001); Lee and Ni (2002); Lardic and Mignon (2006) to name a few.

Recent studies by De Gregorio et al. (2007) provide evidence of a decreased pass-through from oil prices to domestic inflation from estimating augmented Phillips curves using data from both sets of advanced and developing economies. In another study, Habermeier et al. (2009) using panel data for a combination of 50 countries (comprising of some developing and developed countries) estimate the magnitude of pass-through of oil price shocks and derive a conclusion that greater central bank independence will help in exercising inflation targeting monetary policy which will for that reason reduce the size of pass through on domestic inflation. For the Eurozone area, Álvarez et al. (2011) estimates the direct effects of oil price increase on inflation and opines that the effects have increased over time; mostly attributed to higher expenditure on refined oil products.

In a time series set-up, Zoli (2009), Caceres et al. (2012) study the impact of commodity price shocks on inflation in Emerging Europe and Central Africa, respectively. One of the earliest studies dates back to using non-linear specifications in a vector autoregression set-up (Lee et al.,

2001 and Hamilton, 1996). Recent estimates by Gelos and Ustyugova (2017) using panel data set-up estimate augmented Phillips curves in the time span between 2000-2010. However, they come to a conclusion that inflation targeting monetary policy is not significant in determining the extent of pass of rise in oil price on domestic inflation. Another school of thought prophesizes that there can be different effects of inflation on real GDP depending on whether negative supply shock is the pushing factor or positive demand shock (Kilian, 2009; Peersman & Van Robays, 2012; Baumeister & Peersman, 2013). Here, in this paper, we will not try to comment on what the nature of the monetary policy should be to cope up with any sort of oil price shock but rather look at the dynamic impacts of past year inflation values on current period inflation, — i.e. an inertia effect of sorts.

3. DECODING THE RECENT MOVEMENTS IN OIL PRICES IN THE INDIAN CONTEXT

The recent fall in crude oil prices is plausibly beneficial for oil importing countries like India having 70 per cent to 80 per cent of oil dependence. The benefits can be witnessed from the fact that India's GDP reached $2000 billion in 2015. Due to falling oil prices the macro-economic indicators such as inflation, current account deficit (CAD), and trade balance improved. On the back of contraction in the trade deficit, the CAD came down to $22.1 billion or 1.1 per cent of GDP from $26.8 billion, or 1.3 per cent of GDP, in 2014-15. In this backdrop, there has been a significant reduction in India's oil import bill and hence the current account deficit. This fall in the recent oil prices has made the government to lower subsidies on petroleum and its related products (Bundhun, 2013). The crude oil prices were on the fall in the period between 2012-2015. Figure 2 validates that. As already mentioned, in a situation of fall in crude oil prices, the government can cut down on its subsidies in fuel use. Going by the trends, if diesel prices can also be market linked assuming fluctuations in the rupee are taken care of, then, it will in a way make resources available in the hands of the government. This will thereby pave the way to set in motion growth augmenting reforms cutting across the various sectors of the Indian economy.
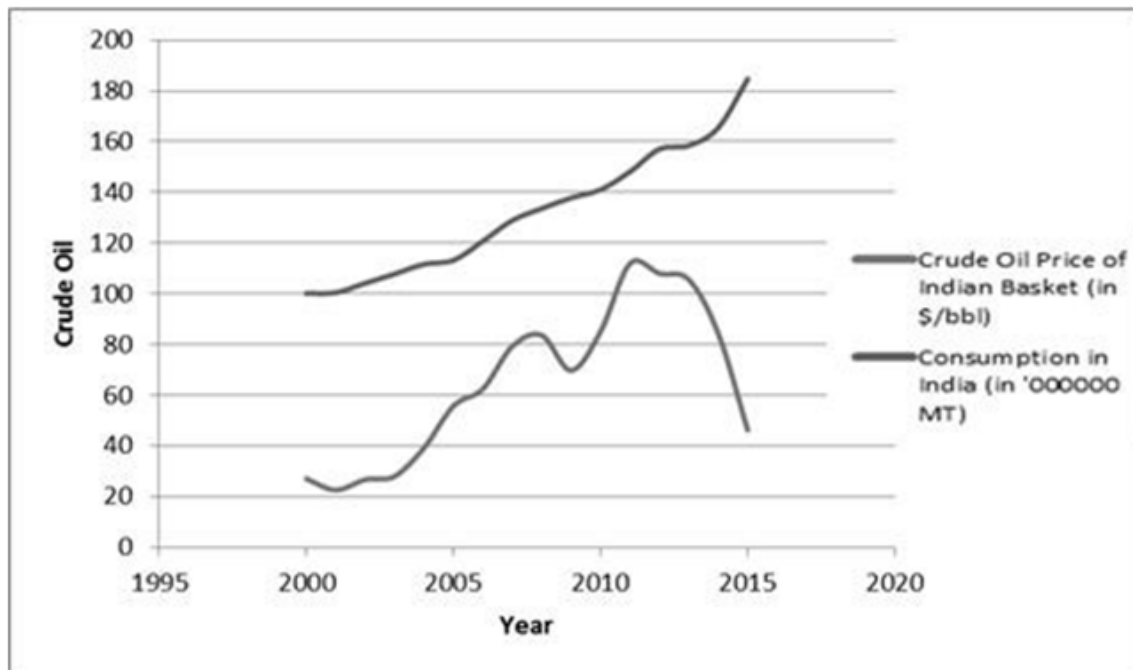
Fig. 2: Crude oil price and consumption trend in India from 2000 to 2016

Source: Author's compilation

However, this fall in crude oil prices was short lived. It started reversing around mid 2016 and has gathered pace in the past few months. With an average price of $46.2/barrel for the Indian basket of crude oil in financial year 2016-17, it went upto nearly $56.4/barrel in 2017-18 and averaged somewhere around $65/barrel in the fourth quarter of 2017-18. Moreover, with USA walking away from the Iran nuclear deal, upside risks to crude oil prices cannot be possibly ruled out. It is then worth understanding the impact of higher crude oil prices on the Indian economy. The way things are going, roughly, an increase of $10 per barrel in crude oil prices in every financial year will lead to an increase of about Rs. 17,000 crore (or $2.5 billion at an assumed average exchange rate of 67/$) in fuel subsidies. Similar calculations have been made by the Government of India when it proposed a petroleum subsidy of Rs. 25,000 crore in the Union Budget of 2018-19, similar to that in 2017-18 — i.e. 0.09 per cent of GDP.

4. METHODOLOGY AND RESULTS

4.1 Data and Methodology Related Issues

In trying to find an answer to the inflation-oil price nexus, the author has collated data from 2000

onwards for 30 developing economies[1] (with an Asian vs. non-Asian segregation specification). The issue of data availability and credibility is something that had to be taken into account. In such a setting, the problem is that for most of the developing countries CPI inflation data does not extend back in time i.e. over a higher frequency of years and the quality aspects fail to meet the specifications. In view of this, we stick to the World Bank database and use the data (from the year 2000 just to ensure that there is parity in the availability of annual data for each of the countries) on CPI.

The paper seeks to answer the following questions — i) How has the volatility in global oil price movements affected domestic inflation since 2000; and, ii) Is there any significant variation in the inflation-oil price nexus across the Asian and non-Asian economies. To estimate the impact of global oil prices on domestic inflation, we develop a model following Choi (2017),

$$P_t = \left(P_t^O\right)^{\mu} \left(P_t^N\right)^{\vartheta} \left(P_{t-1}^O\right)^{1-\mu-\vartheta}$$

where, the first component is the oil price CPI, the second component is the non-oil price CPI and finally we have the oil price CPI for the previous year. First taking logs on both sides and then taking the derivative of the model above with respect to time yields,

$$\pi_t = \mu\pi_t^0 + (1-\mu-\vartheta)\pi_{t-1}^0 + \vartheta\pi_t^N$$

π has its conventional meaning of rate of growth in prices over time broken up into two parts. The first part is the impact of oil price inflation in the current year on current year CPI whereas the second part is the impact of oil price inflation of the previous year on the current year CPI and finally we have the component of non-oil price inflation in the current year and its influence on current year CPI. Based on this we formulate our empirical model.

Therefore, the empirical model for period *i* and at time *t*,

$$Inf_{it} = \alpha_i + \sum_{j=1}^{l} \kappa_{ij} Inf_{it-j} + \beta_{it}\left(\delta_{it-1} Inf\_oil_t\right) + \phi_{it}\left(\{1-\delta_{it-1}\} Inf\_non-oil_t\right) + \varepsilon_{it} \dots\dots(1)$$

where, *i* = 1,2…….30 and *t* = 2000, 2003 …… 2016 and the variables are as mentioned above.

---

[1]The countries are — India, China, Malaysia, Pakistan, Kenya, Indonesia, Singapore, Nigeria, Philippines, Thailand, Vietnam, Kazakhstan, Albania, Bosnia & Herzegovina, Bulgaria, Croatia, Hungary, Lithuania, Macedonia, Poland, Romania, Turkey, Serbia, Argentina, Brazil, Chile, Colombia, Uruguay, Mexico and South Korea.

α_i represents the country specific effects. *Inf$_{-j}$* represents the lagged values of CPI, *Inf_oil* represents the global oil price inflation (in US\$ per barrel) and *Inf_non-oil* is the global price inflation (excluding oil). δ can be interpreted as the share of oil in the CPI basket proxied by the share of transport (energy) in our case for the countries concerned whereas $(1-\delta)$ stands for share of all forms of components except transport share. Such data on energy shares have been compiled from *OECD. Stat* database, the concerned countries' statistical database. Assumptions about the error term determine whether we speak of fixed effects or random effects. In a fixed effects model, ε_{it} is assumed to vary non-stochastically over the units of cross section (*i*) or length of time (*t*) which is analogous to a dummy variable model in one dimension. While in a random effects model, the error term, ε_{it} is assumed to vary stochastically over *i* or *t*. Whether a panel data model follows the feature of fixed effects or random effects can be easily verified by the Hausman Test.

Now coming to the interpretation of α_i in the equation above, there are discussions which focus on the fact that whether it should be treated as a random effect or as a parameter that needs to be estimated from the panel equation. The modern econometric theory as pointed out by Woolridge (2010) states that the question is whether the researcher wishes to estimate a model where the unobserved effect is assumed to be correlated with the regressors (i.e. the case of "fixed effects" estimation) or is considered to be random (i.e. "random effects" estimation). The next question which immediately crops up is that then which method seems applicable? To answer this, the authors will make use of the Hausman Specification test (Hausman, 1978). The null hypothesis under the Hausman Specification test states that the individual unobserved effects are modeled by a random effects model whereas the alternative hypothesis states that the model is a fixed effects one. The test statistic used is,

$$m = q'(\text{var }\beta_{FE} - \text{var }\beta_{RE})^{-1}q \approx \chi^2 \text{ where, } q = \beta_{FE} - \beta_{RE}$$

The β matrix is a 5×1 vector comprising of the five regressors including the constant country specific effect term. The degrees of freedom for the statistic are the rank of the difference in the variance matrices. If the difference is positive definite, this is the number of common coefficients in the models that is being compared with significant differences in the estimated coefficients. Moving away from the normal panel data structure, the authors presents a case where the lagged values of the dependent variable may be correlated with the unobserved effect and the strict exogeneity assumption might not work out. Given the literature on inflation and the impact of the lagged values of inflation i.e. past year CPI values have an influence on the current year levels of inflation, so the model specification used is,

$$(Inf_{it} - Inf_{it-1}) = \sum_{j=1}^{2} \psi_{ij}(Inf_{it-j} - Inf_{it-j-1}) + \beta_{it}\left(\{\delta_{it-1}Inf\_oil_t\} - \{\delta_{it-2}Inf\_oil_{t-1}\}\right)$$

$$+ \phi_{it}\left(\{[1-\delta_{it-1}]Inf\_non-oil_t\} - \{[1-\delta_{it-2}]Inf\_non-oil_{t-1}\}\right) + (\varepsilon_{it} - \varepsilon_{it-1})...(2)$$

where, i = 1, 2, ,30 and t = 2000, 2003 …… 2016 and **x** is the matrix of all the 4 regressors and *β* is a vector of the coefficients. It needs to be mentioned at the outset that a central problem in dynamic panel is the problem of "Nickell bias". This problem occurs when the fixed effects maximum likelihood (ML) estimator is inconsistent for a fixed number of time periods, as the number of cross-sectional units tends to infinity. But in this model there cannot be a problem of "Nickell bias" as both the cross-sections and time periods do not tend to infinity and are finite (Gaibulloev et al., 2014).

Having no unit root in the dependent variable made us to go for Arellano-Bond difference GMM estimator. If $T > 10$ then also the use of a fixed effect model can be good since the Nickell bias is an inverse function of T. Before moving to the definition of Arellano-Bond estimator, a short technical note on the issues needs to be understood first. Lags of $\mathbf{x}_{it}$ or Δx_{it} can additionally be used as instruments, and for moderate or large T (i.e. $T > 10$), an unrestricted number of lags will introduce a huge number of instruments and result in a loss of efficiency so following Cameron and Trivedi (2005), there can be a maximum of four lags. However, coming to the decision of considering two period lags has been determined by the test of over-identifying restrictions i.e. Hansen's test of over indentifying restrictions. The results of which are reported in the next section and are consistent with the statements made by Cameron and Trivedi (2005). Hansen's (1982) J test corrects the well known Sargan's test of over identifying restrictions in the presence of heteroskedasticity. The statistical confirmation of the null hypothesis means the instruments fit the data well but the acceptance of the alternative hypothesis rejects the validity of the instruments (Sargan (1958); Hansen (1982)).

The set of assumptions are, $E(\varepsilon_{it}) = 0$ and $E(x_{is}\varepsilon_{it}) = 0 \forall t \neq s$

Coming to the general definition of the Arellano-Bond estimator,

$$\hat{\beta} = \left[\left(\sum_{i=1}^{N} Z_i'Z_i\right)W_N\left(\sum_{i=1}^{N} Z_i'Z_i\right)\right]^{-1}\left(\sum_{i=1}^{N} Z_i'Z_i\right)W_N\left(\sum_{i=1}^{N} Z_i'y_i\right) \text{ and } W_N = S^{-1} \text{ where,}$$

$$S = \frac{1}{N}\sum_{i=1}^{N} Z_i'\varepsilon_i\varepsilon_i'Z_i, where, \varepsilon : NT \times 1$$

i.e. a set of 4 regressors over 16 time periods.

The **X** matrix is the set of transformed explanatory variables (4 regressors) and **y** is the set of transformed dependent variable. The authors are also including instruments for the explanatory variables and the general instrumental variable matrix with lagged values looks like,

$$
Z = \begin{pmatrix}
y_{i1} & x_{i1} & 0 & 0 & 0\ldots 0 & 0 & 0 & 0 & 0\ldots 0 & 0 & 0 & 0 & 0\ldots \\
0 & 0 & y_{i2} & x_{i2} & 0\ldots 0 & 0 & 0 & 0 & 0\ldots 0 & 0 & 0 & 0 & 0\ldots \\
\ldots & \ldots & \ldots & \ldots & \ldots\ldots\ldots & \ldots & \ldots & \ldots & \ldots\ldots & \ldots & \ldots & \ldots & 0\ldots \\
\ldots & \ldots & \ldots & \ldots & \ldots\ldots\ldots & \ldots & \ldots & \ldots & \ldots\ldots & \ldots & \ldots & \ldots & 0\ldots \\
\ldots & \ldots & \ldots & \ldots & \ldots\ldots\ldots & \ldots & \ldots & \ldots & \ldots\ldots & \ldots & \ldots & x_{iT-1} & 0\ldots
\end{pmatrix}
$$

It needs to be mentioned that while the y_i's are scalars the x_i's are 1×4 vectors comprising of the regressor variables and their difference levels as given in equation 2. As the number of columns in Z_i becomes very large, computational considerations may not require the comprehensive use of all possible instruments (see Alvarez & Arellano, 1998). In case of a given cross-sectional sample size (N), the use of too many instruments may result in overfitting biases. Given this consideration and following the result of Hansen (1982) test the authors have stuck to two period lags and have ignored the least informative instruments. Following the model specifications of Chambers and Guo (2009), equation 2 has been developed and the results are reported in the next section.

4.2 Results

At the outset, before going into the details of the results the stationarity of the panel data needs to be examined. Levin, Lin and Chu (LLC) panel unit root tests have been used in this study (Levin et al., 2002). We carried out this test depending on the conventional specification of the test-statistic performs well when N lies between 10 and 250 and when T lies between 5 and 250 which suits our specification. This is followed by the Hausman specification test (refer to Table 2) of finding out whether random effects or fixed effects suits best in our case. Going by the Hausman specification results, fixed effects model is what we have in this case. The results have been reported in Table 3 below where we have compared the results across the Asian and non-Asian economies.

Table 2: Hausman Specification Test Results

Test Summary	Chi-Square Statistic	Chi-Square d.f.	Probability value
	21.654	4	0.000*

Source: Results as obtained by the author in Eviews 7

Note: * denotes significance at 5 per cent level

Going by the Hausman specification results, fixed effects model is what we have in this case. The results have been reported in Table 3 below where we have compared the results across the Asian and non-Asian economies.

Table 3: Fixed Effects Estimation Result

Variable	Coefficient	t-Statistic	Probability value
ASIAN ECONOMIES			
Inf_{-1}	-0.225	-3.04	0.00*
Inf_{-2}	-0.051	-0.42	0.35
Inf_oil	0.496	2.48	0.04*
Inf_non-oil	0.425	2.40	0.04*
constant	0.992	6.57	0.00*
NON_ASIAN ECONOMIES			
Inf_{-1}	-0.165	-1.98	0.07
Inf_{-2}	-0.041	-0.29	0.39
Inf_oil	0.376	2.56	0.04*
Inf_non-oil	0.310	2.44	0.04*
constant	1.112	7.22	0.00*

Source: Results as obtained by the author in Eviews 7

Note: * denotes significance at 5 per cent level

But the results of the standard formulation of fixed effects might not always yield consistent results as seen in Table 3. The insignificance of past year inflation values made the author to rework the model with Arellano-Bond specification (refer to Table 4) as it is believed that there must be some endogeneity issue with past year inflation values. The basic objective of going for this dynamic panel estimation is to examine whether oil price inflation from the past year leaves behind any kind of inertia effect on the current year inflation levels.

Table 4: Results with Arellano-Bond Specification

Variable	Coefficient	t-Statistic	Probability value
ASIAN ECONOMIES			
Inf_{-1}	0.305	3.02	0.00*
Inf_{-2}	-0.005	-0.32	0.38
Inf_oil	0.556	2.66	0.03*
Inf_non-oil	0.510	2.55	0.04*
constant	1.243	8.33	0.00*
NON_ASIAN ECONOMIES			
Inf_{-1}	0.211	2.11	0.05*
Inf_{-2}	-0.001	-0.15	0.44
Inf_oil	0.441	2.47	0.04*
Inf_non-oil	0.373	2.45	0.04*
constant	1.023	6.81	0.00*

Note: * denotes significance at 5 per cent level
Source: Results as obtained by the author in Eviews 7

A country with a higher share of transport in the CPI basket is likely to have a higher inflationary impact from global oil price shocks not only by a direct effect of current year but also due to indirect lagged values representing the second-round effects which are theoretically consistent. As shown in Table 4, the inertia effects are strong for the Asian economies (including India and China) as compared to the non-Asian economies. We find that transport share in the CPI basket is the most robust determinant of the response of inflation across countries. Interestingly, fizzling out of the inertia effect of past period inflation values on current inflation (i.e. the insignificance of the second period lag) can be somewhat attributed to better conduct of monetary policy as argued by Choi (2017). The results also indicate that a country with a high level of energy subsidy is likely to have a lower inflationary impact from the global oil price shocks. These subsidies, in fact, distort the price signals from oil price shocks and prevent the pass-through of oil price increase on to the CPI of the country concerned.

5. CONCLUDING REMARKS

Studies have been made to examine the impact of an increase in oil prices on prices of other commodities and output in India. In this concluding section, the author tries to pen down his thoughts in the Indian context. A slight increase in the price of petroleum products, typically administered, sparks up a debate among the public. In general, the postponement of adjustment in administered prices may delay the build up of inflationary pressure in the short run, but eventually translates into an even bigger shock. A sustained rise of US$ 5 per barrel in the price of oil leads to a 1.2 percentage point increase in inflation after a year which is very consistent with what the IMF predicts. It also reduces the annual GDP growth by 0.2 percentage point as per IMF projections.

In this paper, through panel estimation (both static and dynamic), I have analyzed the impact of oil price changes on domestic inflation across 30 Asian and non-Asian developing countries including India from a macroeconomic standpoint with a specific examination of whether our results corroborate with the theoretical underpinning made so far in the literature. We find that a rise in the global oil prices leads to a positive impact on domestic price inflation. Specifically, oil price inflation from the past year leaves behind inertia effect on the current year inflation levels but among other things, what can be concluded is that monetary tightening effects can bring down the inflationary effects. Second, the transport share in the CPI basket is the most robust determinant of the response of inflation across countries. Also, for import dependent countries like India, the rise in world oil prices worsens the trade balance position, leading to a higher current account deficit and deteriorates the net foreign asset position. At the same time, higher oil prices tend to decrease private disposable income and hence, corporate profitability, reducing domestic demand; along with a depreciation of the exchange rate, this acts to bring the current

account back into equilibrium over time.

Author's Information

Sovik Mukherjee is at present Assistant Professor in Economics, Department of Commerce & Management Studies, St. Xavier's University, Kolkata, India. Formerly, a Senior Lecturer in Economics, Department of Commerce (Evening) at Shri Shikshayatan College, Kolkata, India. A research fellow in the Department of Economics, Jadavpur University, Kolkata, India. He has been awarded with the MOTHER TERESA GOLD MEDAL AWARD_ 2017 for contributions in the field of Economic Growth Research by the Global Economic Progress and Research Association, New Delhi, India. His current research interests lie in the areas of — applied game theory in industrial organization, economics of criminology and growth econometrics.

REFERENCES

Alvarez, J., & Arellano, M. (1998). *The time series and cross-section asymptotic of dynamic panel data estimators*, Centro de Estudios Monetarios y Financieros.

Álvarez, L. J., Hurtado, S., Sánchez, I., & Thomas, C. (2011). The impact of oil price changes on Spanish and euro area consumer price inflation. *Economic Modelling*, *28*(1), 422-431.

Baumeister, C., & Peersman, G. (2013). The role of time-varying price elasticities in accounting for volatility changes in the crude oil market. *Journal of Applied Econometrics*, *28*(7), 1087-1109.

Brown, S. P., & Yücel, M. K. (2002). Energy prices and aggregate economic activity: an interpretative survey. *The Quarterly Review of Economics and Finance*, *42*(2), 193-208.

Bruno, M., & Sachs, J. (1982). Input price shocks and the slowdown in economic growth: the case of UK manufacturing. *The Review of Economic Studies*, *49*(5), 679-705.

Bundhun, R. (2013). India Expected to Further Cut Iran Crude Oil Imports. In *The National*. Retrieved from http://www.thenational.ae/industryinsights/energy/india-expected-to-further-cut-iran-crude-oil-imports [Accessed 19 Jan. 2018].

Caceres, C., Poplawski-Ribeiro, M., & Tartari, D. (2012). Inflation dynamics in the CEMAC region. *Journal of African Economies*, *22*(2), 239-275.

Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. Cambridge University Press.

Chambers, D., & Guo, J. T. (2009). Natural Resources and Economic Growth : Some Theory and Evidence. *Annals of Economics & Finance*, *10*(2), 367–389.

Choi, S. (2017). Variability in the effects of uncertainty shocks: New stylized facts from OECD countries. *Journal of Macroeconomics*, *53*, 127-144.

Cuñado, J., & de Gracia, F. P. (2003). Do oil price shocks matter? Evidence for some European countries. *Energy Economics*, *25*(2), 137-154.

De Gregorio, J., Landerretche, O., Neilson, C., Broda, C., & Rigobon, R. (2007). Another pass-through bites the dust? Oil prices and inflation. *Economia*, *7*(2), 155-208.

Gaibulloev, K., Sandler, T., & Sul, D. (2014). Of Nickell Bias, cross-sectional dependence, and their cures: reply. *Political Analysis*, *22*(2), 279-280.

Gelos, G., & Ustyugova, Y. (2017). Inflation responses to commodity price shocks–How and why do countries differ?. *Journal of International Money and Finance*, *72*, 28-47.

Grigoli, F., Herman, A., & Swiston, A. (2017). *A Crude Shock : Explaining the Impact of the 2014-16 Oil Price Decline Across Exporters*. (IMF Working Paper — WP/17/160). Retrieved from https://www.imf.org/~/media/Files/Publications/WP/2017/wp17160.ashx [Accessed 19 Jan. 2018].

Habermeier, K., Inci, Ö., Luis, J., Alessandrom, G., Kotaro, I., David, V., Turgut, K., & Francisco, V.(2009). *Inflation Pressures and Monetary Policy Options in Emerging and Developing Countries: A Cross Regional Perspective.* (IMF Working Paper 09/01).

Hamilton, J. D. (1996). This is what happened to the oil price-macroeconomy relationship. *Journal of Monetary Economics*, *38*(2), 215-220.

Hansen, L. (1982). Large Sample Properties of Generalized Method of Moments Estimators. *Econometrica*, *50*(4), 1029-54.

Kilian, L. (2009). Not all oil price shocks are alike : Disentangling demand and supply shocks in the crude oil market. *American Economic Review*, *99*(3), 1053-69.

Lardic, S., & Mignon, V. (2006). The impact of oil prices on GDP in European countries: An empirical investigation based on asymmetric cointegration. *Energy Policy*, *34*(18), 3910-3915.

Lee, B. R., Lee, K., & Ratti, R. A. (2001). Monetary policy, oil price shocks, and the Japanese economy. *Japan and the World Economy*, *13*(3), 321-349.

Lee, K., & Ni, S. (2002). On the dynamic effects of oil price shocks: a study using industry level data. *Journal of Monetary Economics*, *49*(4), 823-852.

Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit root tests in panel data : asymptotic and finite-sample properties. *Journal of Econometrics*, *108*(1), 1-24.

Peersman, G., & Van Robays, I. (2012). Cross-country differences in the effects of oil shocks. *Energy Economics*, *34*(5), 1532-1547.

SARGAN, J. (1958). The Estimation of Economic Relationships Using Instrumental Variables. *Econometrica*, *26*(3), 393-415.

Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. Cambridge, USA: MIT press.

Zoli, E. (2009). *Commodity Price Volatility, Cyclical Fluctuations, and Convergence: What is Ahead for Inflation in Emerging Europe*?. Washington D.C., USA: International Monetary Fund.