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Oil Shocks Around the World: Are They Really That Bad?

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This is a guest post by Tobias Rasmussen, Senior Economist, Middle East and Central Asia Department, IMF, and Agustin Roitman, Economist, IMF. This post originally appeared on the VoxEU.org website here.

Recent developments in oil markets and the global economy have, once again, triggered concerns about the impact of oil price shocks around the world. This column wonders whether the fuss is really necessary. It presents evidence of relatively small negative effects of oil price increases.

Increases in international oil prices over the past couple years, explained partly by strong growth in large emerging and developing economies, have raised concerns that high oil prices could endanger the shaky recovery in advanced economies and small oil-importing countries.

The notion that oil prices can have a macroeconomic impact is well accepted; the debate has centred mainly on magnitude and transmission channels. Most studies have focused on the US and other OECD economies. And much of the discussion has related to the role of monetary policy, labour markets, and the intensity of oil in production (Hamilton 1983, 1996, 2005, 2009, Barsky and Kilian 2004, Bernanke *et al* 1997, Blanchard and Gali 2007).

The manner in which oil prices affect emerging and developing economies has received surprisingly little attention compared with the large body of evidence for advanced economies. In an attempt to provide a broader and more encompassing view on the impact of oil price shocks, we document in recent research (Rasmussen and Roitman 2011) key stylised facts that characterise the relationship between oil prices and macroeconomic aggregates across the world.

The big picture

It is no surprise that import bills go up when oil prices increase. It is more surprising that GDP often goes up too. Figure 1 depicts the correlation between oil prices and GDP for 144 countries from 1970 to 2010. More precisely, it shows the cyclical components of oil prices and GDP, with long-term trends excluded. The set includes 19 oil-exporting countries, represented by red bars, and 125 oil-importing countries, represented by blue bars. A positive correlation indicates that when oil prices go up, GDP goes up, and when oil prices go down, GDP goes down.

The message is clear. In more than 80% of the countries, the correlation between oil prices and GDP is positive, and in only two advanced economies – the US and Japan – it is negative. One of the contributing factors to this pattern is that in 90% of the countries, exports tend to move in the same direction as oil prices.

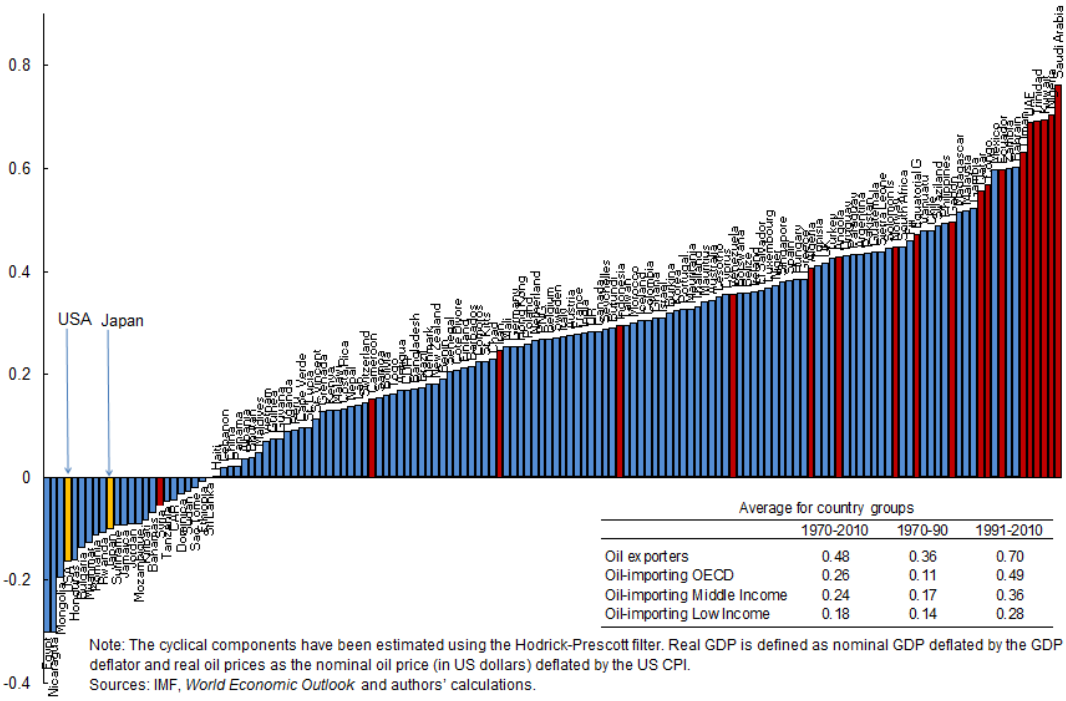

Figure 1. *Correlation between the cyclical component of real GDP and the cyclical component of real oil prices (1970-2010)*

Anatomy of oil shock episodes

Given that periods of high oil prices have generally coincided with good times for the world economy, especially in recent years, it is important to disentangle the impact of oil price increases on economic activity during episodes of markedly high oil prices. Following Hamilton (2003), we identify 12 episodes since 1970 in which oil prices have reached three-year highs. The median increase in oil prices in these years was 27%.

We study the behaviour of macroeconomic aggregates during these episodes by comparing the median annual change in a particular variable during oil shock years to the median annual change over the entire sample period. This tells us of any unusual observed changes (Figure 2).

We find no evidence of a widespread contemporaneous negative effect on economic output across oil-importing countries, but rather value and volume increases in both imports and exports. It is only in the year after the shock that we find a negative impact on output for a small majority of countries.

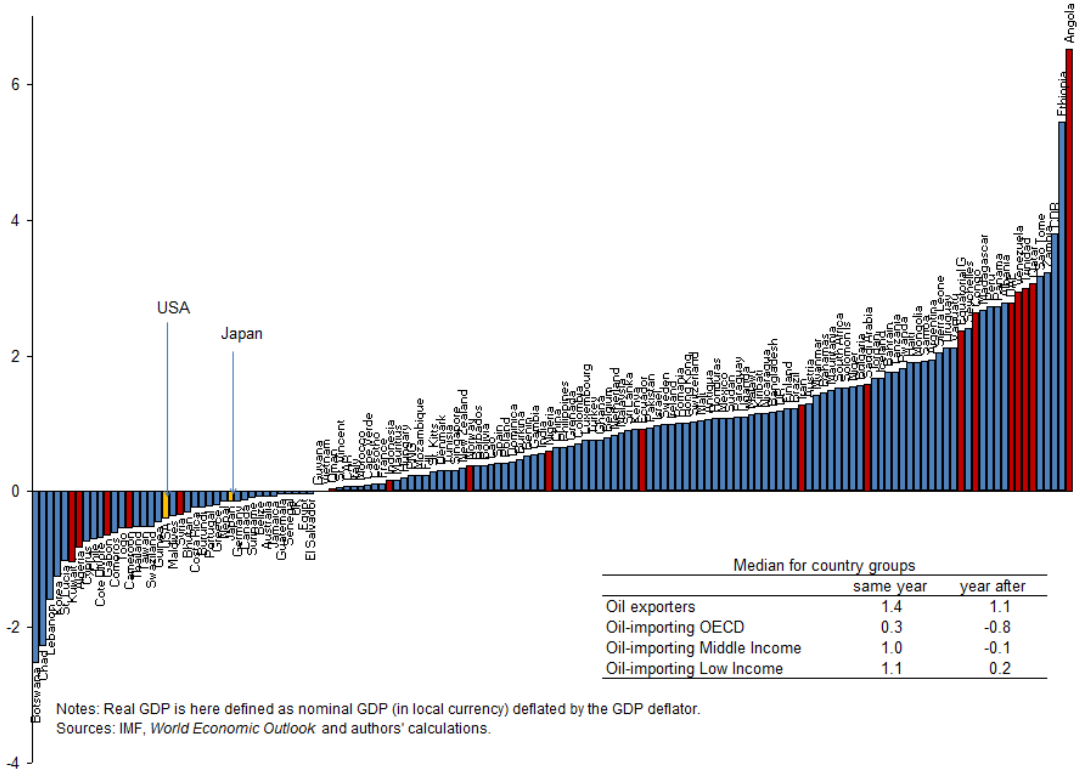

Figure 2. *Real GDP growth in oil shock episodes less median growth (1970-2010, in percent)*

Small effects for oil importers

To analyse multiple countries and control for global conditions, we adapt the basic autoregressive model of Hamilton (2003, 2005).

Our main interest is in the effect of an oil price shock on the economy of a typical oil-importing country. Taking into account the fact that higher oil prices are generally positively associated with good global conditions, we find that the effect becomes larger and more significant as the ratio of oil imports to GDP increases (Figure 3).

To trace out the full impact of an oil shock, we calculate impulse responses for a 25% increase in oil prices (Figure 4). The results indicate that the typical oil importer can expect a cumulative GDP loss of about 0.3% over the first two years, with little subsequent impact. For countries with oil imports of more than 4% of GDP (*ie* at or above the average for middle- and low-income oil importers), however, the loss increases to about 0.8% – and this loss increases further for those with oil imports above 5% of GDP. In contrast to the oil importers, oil exporters show little impact on GDP in the first two years but then a substantial increase consistent with the positive income effect, with real GDP 0.6% higher three years after the initial shock.

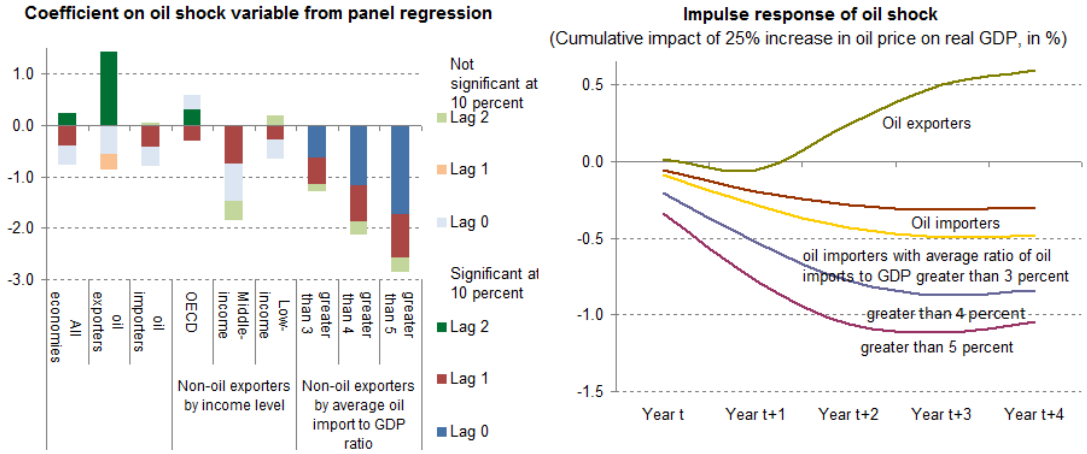

Figure 3.

To put these numbers in perspective, it is useful to think of an economy where oil accounts for 4% of total expenditure and where aggregate spending is determined entirely by demand. If the quantity of oil consumption remains unchanged, then a 25% increase in the price of oil will cause spending on other items to decrease and, hence, real GDP to contract by 1% of the total. From this reference point, one would expect the possibility of substituting away from oil to reduce the overall impact on GDP. At the same time, there could also be factors working in the opposite direction, via, for example, confidence effects, market frictions, or changes in monetary policy. With our estimates of the GDP loss at only about half the level implied by the direct price effect on the import bill, the results presented here suggest the size of any such magnifying effects, if present, is not substantial across countries.

Are oil price increases really that bad?

Conventional wisdom has it that oil shocks are bad for oil-importing countries. This is grounded in the experience of slumps in many advanced economies during the 1970s. It is also consistent with the large body of research on the impact of higher oil prices on the US economy, although the magnitude and channels of the effect are still being debated.

Our recent research indicates that oil prices tend to be surprisingly closely associated with good times for the global economy. Indeed, we find that the US has been somewhat of an outlier in the way that it has been negatively affected by oil price increases. Across the world, oil price shock episodes have generally not been associated with a contemporaneous decline in output but, rather, with increases in both imports and exports. There is evidence of lagged negative effects on output, particularly for OECD economies, but the magnitude has typically been small.

Controlling for global economic conditions, and thus abstracting from our finding that oil price increases generally appear to be demand-driven, makes the impact of higher oil prices stand out more clearly. For a given level of world GDP, we do find that oil prices have a negative effect on oil-importing countries and also that cross-country differences in the magnitude of the impact depend to a large extent on the relative magnitude of oil imports. The effect is still not particularly large, however, with our estimates suggesting that a 25% increase in oil prices will typically cause a loss of real GDP in oil-importing countries of less than half of 1%, spread over 2 to 3 years.

These findings suggest that the higher import demand in oil-exporting countries resulting from oil price increases has an important contemporaneous offsetting effect on economic activity in the rest of the world, and that the adverse consequences are mostly relatively mild and occur with a lag.

The fact that the negative impact of higher oil prices has generally been quite small does not mean that the effect can be ignored. Some countries have clearly been negatively affected by high oil prices. Moreover, our results do not rule out more adverse effects from a future shock that is driven more by lower oil supply than the more demand-driven increases in oil prices that have been the norm over the past two decades. In terms of policy lessons, our findings suggest that efforts to reduce dependence on oil could help reduce the exposure to oil price shocks and hence costs associated with macroeconomic volatility. At the same time, given a certain level of oil imports, strengthening economic linkages to oil exporters could also work as a natural shock absorber.

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