

## *Discussion*

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### **1. Andrew Filardo<sup>1</sup>**

Lutz Kilian offers a thought-provoking paper that contributes to our evolving understanding of the role of oil prices and the macroeconomy. What is truly remarkable about this paper is Lutz's ability to shed new light on this topic. This latest effort complements his impressive research in this area over the past decade, which has explored the monetary policy challenges that central banks face as oil prices swing high and low.

In this paper, Lutz provides compelling evidence that global demand developments have been the key factor behind the recent behaviour of oil prices. This conclusion is important for at least three reasons. First, since the 1970s, oil price shocks have generally been considered by economists to be a quintessential example of a macroeconomic supply shock. Lutz essentially tells us that such a view has been too simplistic and possibly misleading in current circumstances. Second, this demand-side interpretation suggests that the nature of the macroeconomic stabilisation policies for addressing movements in oil prices should be different from that of policies implemented when oil price movements represent supply shocks. Third, his conclusions run counter to the way many around the globe in the past few years have characterised the oil price developments buffeting their economies, especially in Asia and the Pacific. In this sense, his results should contribute significantly to the ongoing policy debate.

Lutz's paper also provides important insights into one of the questions that the organisers raised in their original call for papers: does the behaviour of relative price changes associated with commodity prices call for a new framework with which to think about policy trade-offs? In my commentary, I would like to draw some implications of his findings for monetary policy frameworks that emphasise the global perspective, rather than the more familiar country-centric one.

Admittedly, Lutz's focus in this paper is quite narrow, looking only at oil prices in the United States. Clearly, the relevance of his results goes well beyond this one commodity and this one country. Indeed, the recent behaviour of oil prices has largely been consistent with that of a wide range of other energy and non-energy commodities. This should not be a surprise; oil and other energy and non-energy commodities are traded globally and the prices are determined by a myriad of global demand and supply factors. Furthermore, the consequences of shocks to oil prices extend well beyond the territorial boundaries of the United States, to other developed and developing economies alike. It is in these two senses that Lutz's conclusions can be reasonably generalised and have implications for a wider range of central banks.

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The role of global supply and demand factors is certainly not new but has received renewed attention in recent years. In part, it reflects the greater appreciation of the forces associated with economic and financial globalisation. Earlier in this decade, surprisingly low import prices underscored the development of more flexible and efficient global production centres, especially in emerging market economies. More recently, as Lutz highlights, the increased demand for, and prices of commodities reflect such factors too.

From a theoretical perspective, Woodford (2007) provides a stronger foundation for the monetary policy importance of global factors by showing how to extend the now canonical new Keynesian Phillips curve policy framework to an open economy setting. Even though his conclusions emphasised the continued effectiveness of country-centric monetary policies, he also showed the potential importance of global output gaps in determining inflation and output dynamics. The evidence in Lutz's paper provides valuable information about how one may calibrate these models and how to think about the evolving policy trade-offs as the nature of the shocks hitting economies has been changing.

Others have explored the empirical record to find evidence of the rising importance of global factors in macroeconomics. Borio and Filardo (2007), for example, find evidence that is consistent with that of Lutz's conclusion that global demand shocks have been playing a more dominant role since the 1970s. Namely, inflation dynamics in the past two decades have been less correlated with the big swings in oil prices once global demand factors are taken into account.

In this light, a key policy question is whether the apparent rise in the significance of global demand shocks calls for a change in the way we think about the monetary policy challenges facing central banks. Some argue that as long as exchange rates send the appropriate signals about nominal and real macroeconomic developments, a country-centric perspective is sufficiently applicable. However, exchange rates do not always behave in a way that is consistent with textbook models (see Engel 2009, for example).

An alternative view would emphasise the greater role of global demand shocks and their far-reaching implications for monetary policy frameworks. In particular, global shocks may require a more global policy perspective. At a minimum, this suggests that central banks need to better understand the evolving nature of the shocks hitting their economies – especially as economic and financial globalisation proceeds apace. Domestic authorities naturally have less detailed information about external shocks and, of course, will have much less ability to influence the underlying sources of the shocks. In the case of oil or other commodities, altering the size of the domestic output gap and influencing the exchange rate will at best only partially offset the forces.

The greater importance of external developments on the domestic macroeconomy also suggests big payoffs from international monitoring efforts. This would be particularly true if pressures were to arise abroad well before the spillovers reach one's national borders. Early policy reactions could naturally reduce the likelihood of policy-makers finding themselves behind the proverbial policy curve. And, it is possible that policy-makers across jurisdictions could forge an appropriate consensus

about the global nature of the potential problems and hence take appropriate actions earlier than otherwise.

Of possible greater concern, the recent commodity price boom raises an issue about whether a country-centric (or, more appropriately, domestic economy-centric) perspective could lead central banks astray. In particular, if a boom in commodity prices for a (net) commodity-importing economy is perceived to be a supply shock rather than a global demand shock, the policy responses may lead to a procyclical policy bias. For example, consider the following thought experiment: a surge in commodity prices is driven by a *shift* in global demand (*along* a more steeply sloped aggregate supply curve). In this case, output would grow robustly even as prices of all types of commodity inputs rise. A hypothetical global monetary authority would therefore tighten monetary policy so as to counteract the shift in aggregate demand. And, if calibrated correctly, non-inflationary sustainable growth would be achieved. This thought experiment highlights a very stylised, and admittedly overly simplistic, policy trade-off and an unambiguous policy prescription.

But this stark prescription stands in sharp contrast to the way in which many central banks appeared to address the run-up in commodity prices in 2006–2008. In many economies, central banks kept nominal policy rates relatively low as real policy rates (based on headline CPI inflation) were close to zero and even negative in some cases. One explanation for the low policy rates could be that the economic prospects were seen to be much worse than what transpired prior to the bankruptcy of Lehman Brothers. Another possible explanation is that the financial headwinds from the global financial crisis were sufficiently worrisome that monetary policy countermeasures were necessary. There are certainly other possible conventional justifications. However, it is plausible in some jurisdictions that the commodity price boom was initially perceived to represent a supply shock, possibly driven by, amongst other things, speculative behaviour (see Dooley, this volume). If Lutz is right that the commodity price boom was primarily a global demand phenomenon rather than a supply phenomenon, it is not surprising that an accommodative policy stance (that is, a procyclicality bias) arose.

In addition, Lutz's focus on the role of global demand in driving oil market developments of late suggests that policy-makers need to be wary about applying the lessons from both the oil crisis in the 1970s and the subsequent conquest of the inflationary potential of oil price swings in the 1980s and 1990s. In a nutshell, the experience of the earlier periods illustrated that a monetary authority with a credible medium-term inflation anchor could follow a strategy consistent with constrained discretion, that is, the monetary authority could 'look through' transitory supply shocks when setting monetary policy. As long as inflation expectations are well anchored, relative price movements would lead to some volatility of headline inflation but underlying inflation would remain on target without unnecessary gyrations in nominal policy rates. While this is a reasonable perspective, the lessons do not necessarily extend to a situation where commodity prices are being driven by global demand shocks. Taken together, the possible misinterpretation of such lessons and the possible misinterpretation of the demand nature of the shock could account for a procyclicality bias that led to a pick-up in inflationary pressures through the middle of 2008 in many jurisdictions.

What does this all mean going forward? Lutz raises the spectre of stagflation. However, in August 2009, the threat of imminent stagflation in the near term seems minimal because the collapse of global demand has led to the marking down of expectations of inflation over the medium term around the world, and even the possibility of short-term deflation in some jurisdictions as lower commodity prices pass through to both headline and core inflation. Moreover, notwithstanding the prospect of a global recovery beginning to take hold, with ample spare productive capacity globally, the threat of an imminent rise in inflation seems low.

This reading of current conditions does not suggest that monetary policy challenges have become much simpler. On the contrary, while central banks around the world are still dealing with the waning forces associated with the global financial crisis, many central banks, especially those in Asia and the Pacific, are facing a different configuration of challenges. Instead of stagflation, the big risks ahead are more likely to be medium-term ones and to come from another round of boom-bust dynamics, in which commodity prices could figure prominently. If the predictions of Asia-Pacific leading the global recovery come true, it is not implausible to expect to see a resurgence of capital inflows (and carry trades) to the region as policy rates begin to normalise later this year and next. The extent of the flows this time around could be much greater in light of the huge amount of macroeconomic stimulus (especially the considerable liquidity expansion) in the pipeline in most jurisdictions. In conjunction with the region's strong inflation-fighting credibility (Filardo and Genberg 2009), these flows could stoke asset prices (including commodities) and raise concerns about the effectiveness of domestic monetary policies in the region, especially if monetary authorities were unconvinced of the wisdom of allowing a significant appreciation of their respective currencies.

In conclusion, the insights of Lutz are quite important. He reminds us that central bankers are best able to address their challenges if they truly understand the changing nature of the policy environment. My discussion has underscored the importance of not only assessing the nature of the shocks hitting the economy but also thinking about the monetary policy trade-offs from a less conventional global perspective when the key shocks are global in nature.

## References

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## 2. General Discussion

There was a lot of debate about Lutz Kilian's conclusion that monetary policy played an important role in contributing to the stagflation of the 1970s. One participant commented that the run-up in inflation appeared to begin in the mid 1960s, rather than the 1970s, but that people took time to learn about both this and the fact that monetary authorities were not tightening policies sufficiently to counter rising inflation. Learning about these developments, however, helped to keep inflation high in the 1970s. Hence, models with gradual learning would imply less of a role for the oil price shock in causing high inflation in the 1970s. Other participants agreed that the policies implemented in the 1970s deviated from sound policy rules, contributing to the observed stagflation. Lutz Kilian concurred with these observations while cautioning that the implications of a model with learning may depend on the nature of the oil price shocks.

A number of participants agreed that the nature of the oil price shock in the 1970s was quite different from that which affected oil prices from 2003 to 2008. Lutz Kilian remarked that the general consensus is that the 1970s oil price rise was due to a supply shock, which has made oil price rises and supply shocks synonymous. However, he noted that if the data of that period are examined closely, there is little evidence that changes in supply led to significant movements in the price of oil. In addition, regarding the potential role of speculation in driving the recent rise in oil prices, he pointed to flat oil inventories over time as evidence against this view.

The rest of the discussion focused on the role of countries other than the United States in oil price shocks. One participant followed up on Andrew Filardo's comment that the paper was too focused on the results of the United States as compared to other areas of the world. It was suggested that any second-round effects of oil demand or supply shocks may be more significant in the euro area countries compared to the United States because of differences in their economic structures; if so, this would have implications for appropriate monetary policy responses. In reply, Lutz Kilian referenced theoretical research on the welfare implications of policy responses to oil price shocks and suggested that optimal monetary policy should not respond to the price of oil by itself, but rather the underlying demand and supply shocks driving the price of oil.

Following on from this comment, there was a suggestion that the paper was too quick to dismiss the results of previous studies. In particular, one participant noted that real wages have become more flexible in the United States since the 1970s and that when inflation expectations are anchored, people respond to shocks through flexible real wages. Lutz Kilian replied by reiterating his findings that there is little evidence for declining real wage rigidity in the United States, and that it does not constitute a first-order issue in problems of this kind.

It was noted that when discussing policy responses to shocks in the price of oil and other commodities, it was important not to ignore the role of positive supply shocks in developing countries, such as in China's manufacturing sector. It was suggested that positive supply shocks in developing countries had led policy-

makers elsewhere to be less concerned about rising commodity prices because low manufacturing prices worked to offset commodity price increases, thereby reducing inflationary pressures. Subsequent discussion touched on the influence of exclusion-based measures of core inflation in guiding monetary policy decisions. It was suggested that exclusion-based measures of core inflation understate true inflationary pressures given that such measures discard rising energy and food prices, but capture the disinflationary effect of positive productivity shocks in developing nations working through the prices of manufactured goods.

On the contribution of loose monetary policy to the run-up in oil and other commodity prices from 2003 to 2008, one participant suggested that this effect may have been more prominent than implied by Lutz Kilian's paper. Over this period, both Japan and the United States had historically low interest rates, which, combined with the loose policy adopted by China by way of their currency peg to the US dollar, may have contributed to rising oil prices through increased global liquidity.

Finally, there was a suggestion that a helpful way to distinguish between oil demand and supply shocks would be to observe the lag between the change in the price of oil and the change in prices of other commodities. If the prices of energy products are observed to move together closely, this implies a general demand shock. On the other hand, a supply shock is more likely if the prices of other energy commodities lag the price rise of oil, reflecting the impact of sluggish substitution effects. Applying this idea to the period from 2003 to 2008, almost all energy products rose in price at the same time, which is consistent with a large demand shock, particularly from China.