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Greasing the Wheel: Oil's Role in the Global Crisis

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Between January 2002 and August 2008, the nominal oil price rose from $19.7 to $133.4 a barrel. This led to a large increase in oil revenues for oil exporters and a deterioration of the current account for oil importers (Figure 1). Between 2002 and 2006, net capital outflows from oil exporters grew by 348%, becoming the largest global source of net capital outflows in 2006 (McKinsey 2007).

Capital outflows from oil exporters therefore played an important role in the global liquidity glut during the build-up to the US subprime crisis. Analysis of direct capital flows is hampered by the lack of reporting transparency and the use of foreign financial intermediaries. Indirect recycling also took place, i.e. direct oil-revenue investment in a given financial market led to corresponding knock-on flows towards the ultimate net borrower. Nonetheless, analysis from the US Federal Reserve suggests that "...most petrodollar investments [found] their way to the United States, indirectly if not directly" (Federal Reserve Bank of New York 2006). In short, the US was the ultimate net borrower, in order to finance its growing current account deficit.

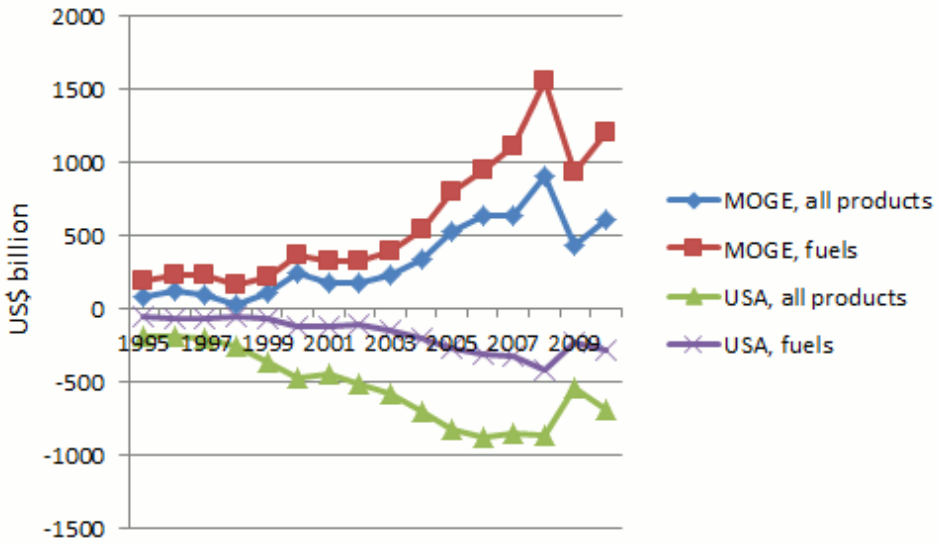

***Figure 1**. Merchandise and fuel current account: US and major oil and gas exporters (MOGE) Source: UNCTAD.*

Such capital flows were invested in US treasuries, corporate bonds, equities, and asset markets. In turn, this placed downward pressure on US interest rates and helped fuel further borrowing.

Quantifying the specific contribution of oil-revenue inflows is difficult. Nonetheless, oil revenues do seem to have reduced US interest rates (see IMF 2006 for a discussion). In sum, the direct and indirect recycling of oil revenues was a factor in the global liquidity glut that helped to fuel the US subprime mortgage crisis.

Bursting the bubble

Oil prices also played a role in eventually bursting the US subprime bubble. As we document in a recent working paper (Spencer et al. 2012), this occurred via a number of channels which are difficult to disentangle. It is also next to impossible to identify the threshold of mortgage delinquencies, which led to the meltdown in the subprime market and then global financial markets. Nonetheless, one can examine the individual channels through which oil prices contributed:

- *Direct impacts on discretionary spending*. Between 2002 and 2008, average household expenditure on gasoline rose 120%, from $1,235 to $2,715, or by 2 percentage points of overall household expenditure (CES 2011). For (poorer) suburban households this effect was even more pronounced. In 2003, the average suburban household spent $1,422 a year on gasoline, which rose to $3,196 in 2008 (Freilich et al. 2010). Kaufman et al. (2010) show, using VAR analysis, that rising household energy prices constrained household budgets and increased mortgage delinquency rates, once other factors are controlled for.
- *Indirect impacts of interest rate increases*. The federal fund rate rose from 1% in May 2005 to 5.26% in March 2007. A quick read of the Fed's Monetary Policy Reports shows the recurring importance of energy price concerns in the Fed's decisions to raise the fund rate. Annual mortgage repayments for an average household increased by 33% between 2004 and 2007 (CES 2011).

A number of contextual factors also interacted with the oil price increase to potentially worsen vulnerabilities:

- *Labour market interactions*. Peersman and Van Robays (2009) show that the inflationary impact of the oil price shock from 2004-8 was reduced in the US due to the structure of the labour market. Producers used a strong bargaining position to pass the cost burden onto consumers through a reduction in real wages. Thus, while second-round inflationary impacts were mitigated, this was at the expense of a decline in real wages. This had negative impacts on aggregate demand (see below), and constrained household budgets.
- *Distributional impact of energy prices*. Energy price shocks have strong distributional effects, mostly impacting energy expenses of suburban households and low-income households spending a greater income share on energy. Subprime mortgage loans were also concentrated on poorer households, leading to a confluence of risk factors.
- *Maladapted urban planning*. Between 1969 and 2001, the annual average distance driven per licensed driver increased 90%, from 5,411 to 10,244 miles per year (NHTS 2009). The heavy reliance on personalised vehicle transport increased oil price risk exposure among US households.
- *Fuel inefficiency of the vehicle fleet*. Sivak and Tsimhoni (2009) show that the fuel efficiency of the US vehicle fleet barely improved from 1991 to 2006, increasing from 16.9 to 17.2 miles per gallon. The figures for Europe are 31.2 in 1991 and 35 in 2006.

Finally, increasing oil prices had an impact on aggregate demand. This operates via a number of channels – reduced discretionary income, increased precautionary savings, and operating cost effects, whereby consumers are deterred from purchasing energy-intensive goods, and reallocation effects. In particular, the auto sector played an important role in transmitting the shock. Between the peak in 2003 and the last pre-crisis year, 2007, household expenditure on vehicle purchases fell 13%. Expenditure on more energy-intensive, domestically produced autos

likely fell further, as indicated by Edelstein and Kilian (2009). The decline of the US auto sector was an important contributing factor in tipping the US into recession in 2007Q4, although there was clearly a mutually reinforcing interaction between the recessionary slide, which began in 2007Q3, and the subsequent further decline of the auto sector in 2008.

Outlook

Taking IEA (2011) projections, we calculate the size and distribution of oil revenues (petrodollars) from net oil trade to 2035 (Figure 2). The US starts the period in 2010 as the largest source of petrodollars, at -$296 billion using the average 2010 price of $79 a barrel. The EU27 is next with -$281 billion. The Middle East gains net oil revenues of $539 billion.

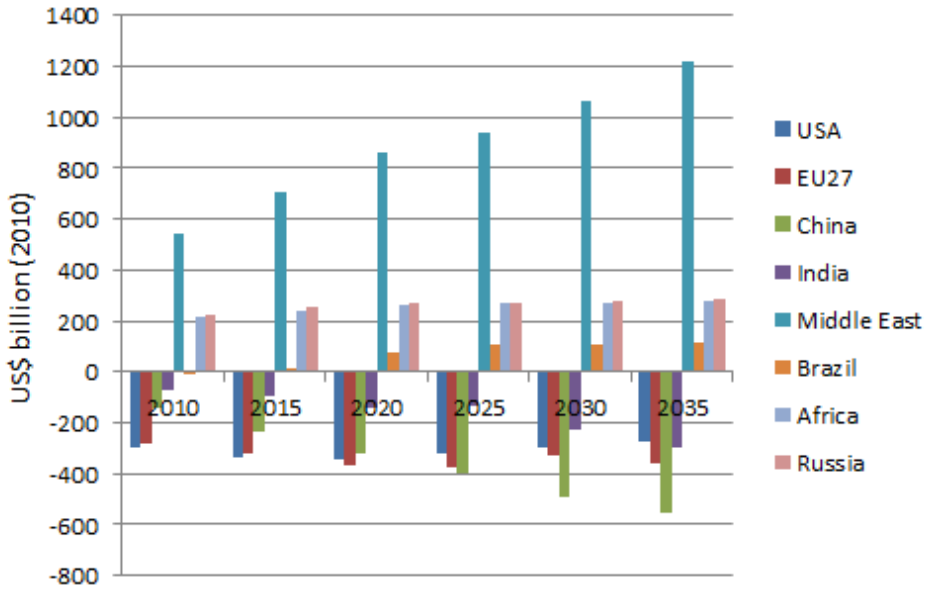

***Figure 2**. Average annual net oil revenues 2010-2035 Source: IEA 2011*

US oil-import dependence declines towards 2035, due to improved energy efficiency particularly in the transport sector and increased domestic production, in particular from shale oil. The EU27 overtakes the US as the largest source of petrodollars by 2020. China and India become the largest and third largest source of petrodollars respectively by 2035; China assumes premier position by 2025. The figures are based on the IEA New Policies Scenario, which assumes further energy efficiency and oil substitution. The Current Policies Scenario sees oil prices 8% and 16% higher in 2020 and 2035 respectively, increasing petrodollar flows correspondingly. A more disaggregated picture, focusing on major oil-exporting countries within the Middle East and African region would show an even stronger concentration of oil revenues.

Conclusion

From this analysis we draw a number of suggestions for further consideration.

- The oil price appears to have played a role in the subprime crisis. Understanding macro impacts of oil prices also requires considering in detail the exposure and interactions of micro channels, such as the housing or auto sector.
- Oil prices played a key role in worsening the balance-of-payment imbalance leading up to the crisis. This will continue to strengthen, and China and India will play an increasing role as net exporters of petrodollars. The efficient intermediation of petrodollars represents a large challenge to the financial sector, and potentially economic stability in general.
- Policies to address oil dependency via substitution, efficiency, and conservation can reduce

micro- and macro-level exposure to oil price risks, and contribute to addressing global imbalances.

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