

The U.S. Dollar Exchange Rate and the Demand for Oil

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Executive summary

The analysis of the driving factors of the oil price surge in 2007-08 and the subsequent dramatic collapse of oil prices and, more general, the results of structural vector autoregressive models that disentangle different sources of oil price shocks suggest a dominant role for demand side evolutions in the global crude oil market. In fact, there is a growing consensus that global crude oil price fluctuations are mainly driven by changes in the demand for oil. Notwithstanding this consensus, the US dollar exchange rate has so far been ignored as an independent driver of oil demand in the empirical literature on global oil market dynamics. A similar argument holds for several empirical studies that exclusively focus on the analysis of the determinants of oil demand. This is surprising since global oil prices are predominantly expressed in US dollars.

In this study, we analyze the drivers of oil demand and explicitly recognize and quantify the role of the US dollar exchange rate as an economic driver of oil consumption. In addition, we explore the possible consequences of the US dollar exchange rate effect on the dynamics in the global crude oil market. We employ cross-country panel data to formally examine the effects of shifts in the US dollar exchange rate on oil consumption for a panel of 65 oil-importing countries. The explicit focus on the role of the US dollar exchange rate as a possible driver of oil consumption is a first contribution of the paper. A second contribution of the paper to the literature is methodological as we take into account the distinctive features of macro panel data sets. In particular, we (i) take the long-run relationship between the variables into account by estimating a panel error correction oil demand model, (ii) allow for cross-country heterogeneity of the coefficients

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which is present in the data, and (iii) consider cross-sectional dependence in the error terms.

We find that an appreciation of the US dollar real effective exchange rate leads to a decline in oil consumption in non-US dollar regions. Strikingly, the short-run US dollar exchange rate elasticity of oil demand turns out to be substantially larger than the elasticity of oil demand with respect to fluctuations in the global price of crude oil expressed in US dollar, i.e. more than double. A more detailed analysis of the effects of changes in the global crude oil price and the US dollar exchange rate on country-specific end-user prices of oil products suggests that the difference in the magnitudes of both elasticities is the result of a significant stronger pass-through of exchange rate fluctuations to end-user prices. A back-of-the-envelope calculation furthermore suggests that the US dollar exchange rate is an economically important contributor to the volatility of the global price of crude oil expressed in US dollar, due to its influence on oil demand. These findings underline that the US dollar exchange rate should be taken into account in the analysis of global oil market dynamics and sources of oil price fluctuations.