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ON THE INFLUENCE OF OIL PRICES ON ECONOMIC ACTIVITY AND OTHER MACROECONOMIC AND FINANCIAL VARIABLES

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Non technical summary

Various transmission channels exist through which oil prices may have an impact on economic activity. In this paper, our aim is to investigate the links between oil prices and various macroeconomic and financial variables for three groups of countries: OPEC, oil-exporting countries and oil-importing countries. We consider the following variables, representative of economic activity: gross domestic product (GDP), consumer price index (CPI), household consumption, unemployment rate and share prices.

Most of the previous studies focus on short term interactions between oil prices and economic activity in the US and consider mainly output, inflation and unemployment. Since the seminal works of Hamilton (1983) and Burbidge and Harrison (1984), a causal relationship has been identified between oil price changes and variations in macroeconomic indicators such as GNP and the unemployment rate in the US, with causality running from the former to the latter.

As to the other countries, far fewer studies have been produced. Mork *et al.* (1994) and Jimenez-Rodriguez and Sanchez (2005) confirmed that the results obtained for the US were valid for Japan, Germany, France, Canada, the United Kingdom and Norway. As to Papapetrou (2001), she analyzed the impact of the consumer price index of petroleum products on the Greek economy and obtained causal relationships from oil prices to industrial production, employment and share prices.

Considering the long term interactions between oil prices and economic activity, very few studies have been realized. Rasche and Tatom (1977b, 1981) have estimated Cobb-Douglas production functions to evaluate the impact of energy prices on potential output for Canada, France, Germany, Japan, the UK and the US. Other authors like Carruth, Hooker and Oswald (1998) and Hooker (2002) have estimated a long-term (cointegrating) relationship between unemployment, real interest rate and real oil prices. More recently, Lardic and Mignon (2006) have shown that asymmetric cointegration can be found between oil prices and GDP in the US and European countries.

In this paper, both short-run and long-run interactions between oil prices and the various macroeconomic and financial variables are analyzed. Concerning the short run, we implement causality tests and evaluate cross-correlations between the cyclical components of the series in order to identify lead/lag relationships. Turning to the long run, cointegration analysis is used, both in a time series and in a panel framework. Considering a panel data context allows to highlight common behaviors for groups of countries. Finally, focusing on the US case, a multivariate model is estimated to put forward the mechanisms of propagation of an oil price change through the economy.

Concerning the short term analysis, our results indicate that when causality exists, it generally runs from oil prices to the other considered variables. One of the most interesting results is relating to stock markets since we show that there exists a strong causality running from oil to share prices, especially for oil-exporting countries. This result is confirmed by the calculation of cyclical correlations where oil prices are found to lead countercyclically share prices for almost every country: an oil price increase leads to a reduction of profits of non-oil exporting firms leading to a decrease in share prices. Turning to the long term analysis, the majority of long-run relationships concerns GDP, unemployment rate and share prices. Indeed, GDP and oil prices countercyclically in the long run for twelve countries. The relationships relating to unemployment rates and share prices only concern non-OPEC members. Concerning share prices, the causality is negative and always runs from oil prices to stock markets, putting forward the key role played by the oil market.

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