



Price Volatility and Demand for Oil: A Comparative Analysis of Developed and Developing Countries

EPRG Working Paper 1507

Cambridge Working Paper in Economics 1512

Andrew Jobling and Tooraj Jamasb

During the past three decades the global oil market has seen significant price volatility. However, literature to date has not analysed the cross-country effect of the recent episode of price instability. Previous studies have either not considered this period or have not utilised panel data techniques and therefore have not provided a comparative analysis of developed and developing countries.

Oil price shocks have previously been considered to be caused primarily by supply disruption. Historical shocks are strongly correlated with major geopolitical disturbances. However, an emerging hypothesis is that the elasticities for income and price vary significantly between developed and developing countries.

This paper analyses the varying oil consumption patterns of developed and developing countries during the period of an oil price shock. The use of asymmetric price and income decomposition will allow a greater understanding of the impact of not only the price shock but also the global financial crisis. In developing countries demand is expected to be fuelled by economic expansion (income effect), whereas, in developed economies, the substitution effect plays a larger role. Price elasticity of demand for oil should vary between the two panels of developing and developed economies.

We explore the income and price elasticities between these two country groups and discusses the economic implication of the results. A particular focus is on the income and substitution effects.

We use a panel data analysis accounting for income and price asymmetry and apply the dynamic fixed-effects methodology to separate panels for developed and developing countries for the period 1980-2012. Sixteen countries are included in this analysis which account for over 65% of total global oil consumption.

Developing countries have an income effect which is 6.3 times larger than in developed countries. Thus, in a period of significant economic growth for developing countries it is evident as to why oil consumption increased so dramatically. Moreover, the substitution effect in developed economies was 2.1 stronger than in developing countries. This explains the more responsive adjustment of consumption of developed countries in reaction to the price shock of 2007/08.

The results obtained are explainable in relation to the difference in economic structure between the two panels. Developing countries are assumed to have not yet reached relative energy maturity in relation to fossil fuels. Consumers are increasingly using oil as a transportation fuel as new found disposable income is being expended on car ownership. This explains the relative strength of the income effect in developing countries. The paper also recognises economic development has been at the expense of lower energy efficiency, again reinforcing the size of the income effect in developing countries.

Policy recommendations include the pursuing of oil-efficiency improving technology, and ensuring that regional consumption pattern variations are considered in policy formation.

Contact
Publication

tooraj.jamasb@durham.ac.uk
March 2015