Price Formation Mechanism in the European Gas Market : A Case study of Germany and the United Kingdom.

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Introduction

Europe (EU-28) must count on third countries to supply 60% of the natural gas it consumes. The role of gas in the primary energy mix is projected to increase (Fig1).

The instability of the energy market raises questions about the risks that this lack of independence can cause on commercial and domestic users who already suffer from a 90% increase in gas bill (between 2004 and 2010) (Fig2).

Knowledge of the components that affect retail price, as well as the degree of their impacts, is likely to suffice objectives relevant from both a macro, firm-specific and consumer perspective.
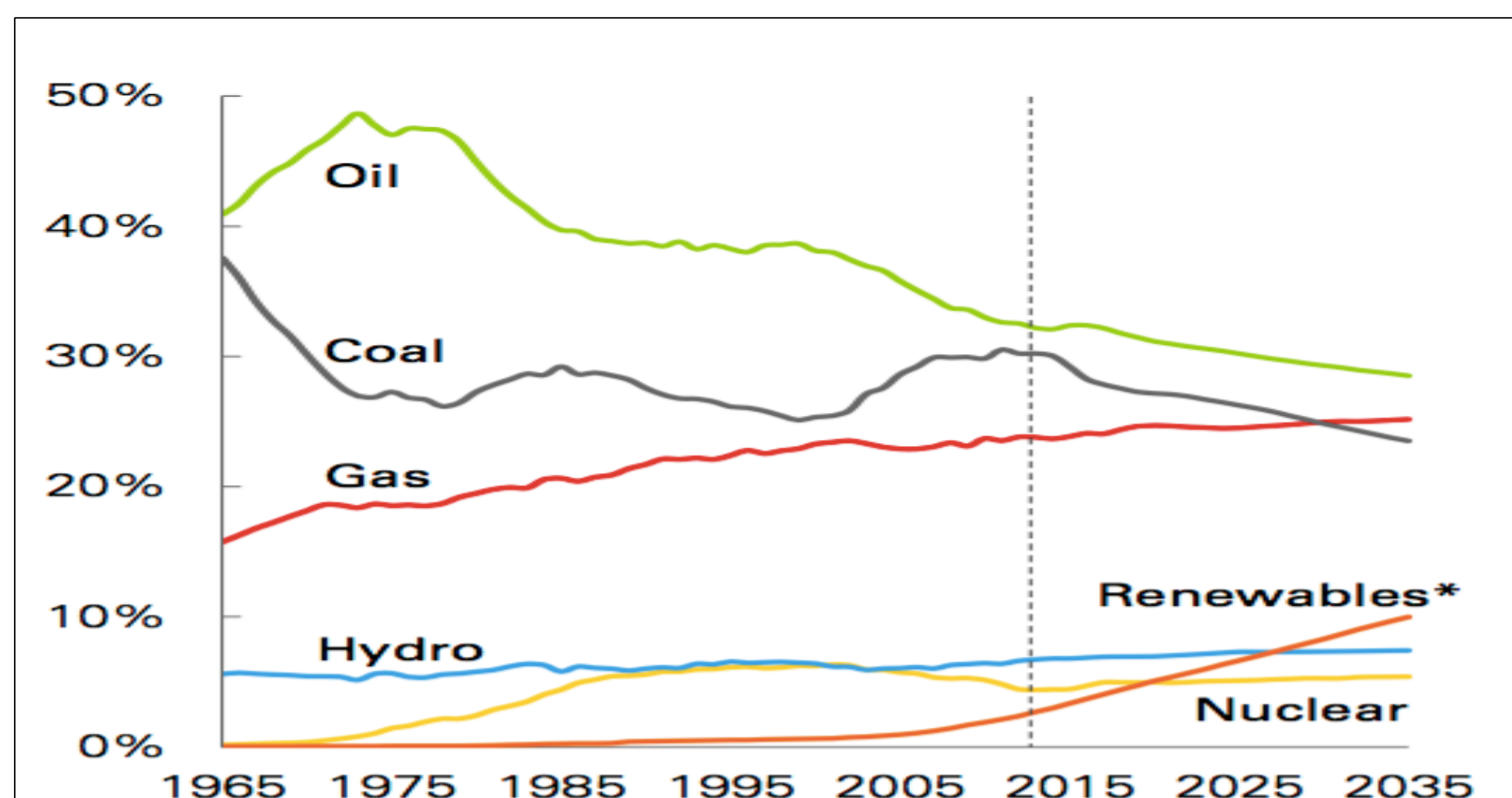
Fig1: BP Projection of Share of Energy Mix.
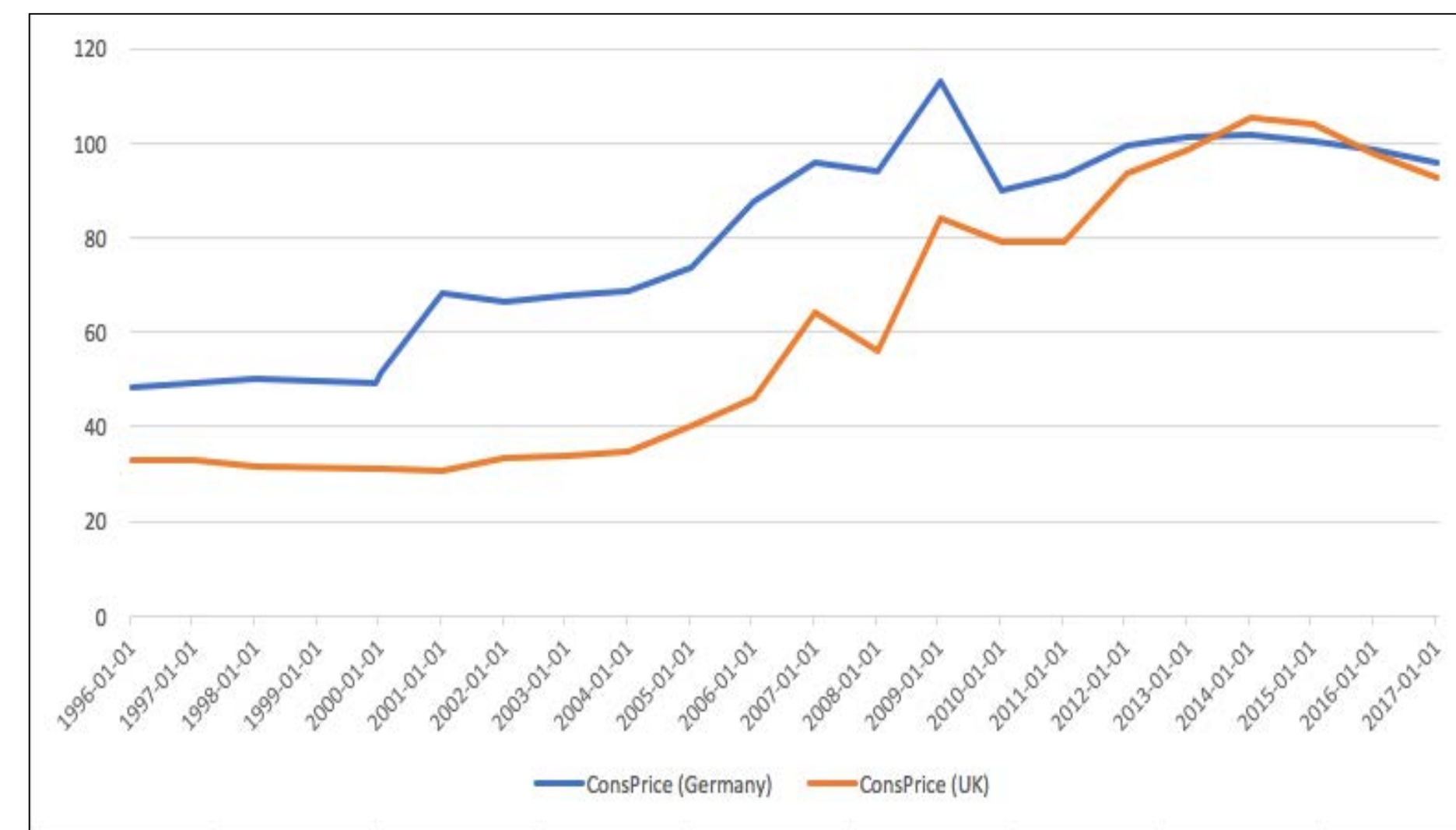
Fig2: Evolution of retail price index of natural gas.

Methodology

- Vector Autoregression (VAR(3)) model builds on two case studies: UK and Germany
    - Optimal lag length of 3 (AIC)

- Granger Causality test

- Data (monthly - 110 observations)
    - (i) Retail gas price (ii) Crude oil price (iii) Coal price (iv) Natural gas price (v) Demand indicator
    - (vi) Natural gas price

Main Results

- Bi-directional Granger causality between natural gas import and retail price
- Bi-directional Granger causality between demand indicator and retail price
- Crude oil price Granger cause retail price (UK)
- Coal price Granger cause retail price (Germany)

Conclusion

The results show that:

- An unexpected rise in natural gas demand raises the retail price of natural gas;
- An unexpected shortfall/increase in import raises/decreases the price of natural gas;
- An unexpected increase in coal price decreases the retail price of natural gas if coal is nearest substitute to gas (Germany);
- An unexpected increase in crude oil price decreases the retail price of gas if crude oil is the nearest substitute to gas (UK).

Increasing energy efficiency, imposing storage requirement and energy production flexibility are possible policy tools that makers can use to reduce the impacts of shock in the identified macroeconomic variables.

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