Declaration

I hereby certify that this thesis is entirely the work of the author and has not been submitted to any other institution. Furthermore, all sources used in the preparation of the thesis have been acknowledged in the usual manner.

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Abstract

We provide the first evidence on the catalysts for price discovery in the European Union Emissions Trading System. Short-run return dynamics are analysed using a regression approach similar to Fleming, Ostdiek and Whaley (1996), while the permanent contribution of securities to long-run price equilibrium is examined by calculating Hasbrouck’s (1995) information shares. By employing high frequency data across a wide range of securities, we find that trading costs are a more important determinant of price discovery than the implicit provision of leverage in securities such as futures and options. Securities with low trading costs display greater price discovery than those with high trading costs.

We also examine price discovery within the European markets for coal, natural gas and crude oil. Results show that Brent crude oil futures display greater price discovery than a proxy for the physical Brent market, while there is evidence that West Texas Intermediate futures still dominate price discovery globally. In natural gas markets, UK natural gas futures display greater price discovery than physical trading at North-West Europe’s main natural gas hubs, though weak links to the crude oil market remain. Due to a lack of liquidity and transparency, it remains difficult to distinguish between coal securities. Overall, our results support the importance of futures contracts as a source of price discovery in contrast with opaque over-the-counter physical trading.

Having established where price discovery is taking place in the European emission allowance and energy markets, we examine volatility and information linkages between them by employing a rational expectations framework similar to Fleming, Kirby and Ostdiek (1998). The model specifies volatility linkages operating through common information and information spillover channels. We estimate a representation of this model using GMM for bivariate pairings of emission allowances with coal, natural gas and crude oil. We find that emission allowances are most strongly linked to the crude oil market, in spite of more direct economic relationships with coal and natural gas.
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