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Emissions Trading, Carbon Pricing, and the Impact on Carbon Producing Firms: A Study of Phase III of the European Union Emissions Trading Scheme

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ABSTRACT

This thesis examines the firm level impact of the European Union Emissions Trading Scheme (EU ETS), the ability to hedge carbon price, and the determinants of carbon price. The analysis focuses on phase III of the EU ETS. The work of Koch and Bassen (2013) is extended by investigating whether carbon-adjusted expected returns differ post-2013, as the trading scheme shifted to full auctioning. The findings show a lack of significant exposure to carbon price for the majority of carbon producing European firms. For firms where significant exposure to the price of carbon was found, firms' returns required on equity were substantially higher after carbon exposure was considered. Whether carbon could be hedged effectively using conventional techniques was investigated, and a simple ordinary least squares hedge ratio was found to be the most effective. Further, the hedge ratio for carbon was found to be within the normal 0.5-1 range of typically hedged commodities. Finally, the carbon price determinants were investigated to determine whether energy prices and weather explain the carbon price in phase III, and how this relationship changed since full auctioning came into place in 2013. Energy prices were found to impact carbon price in phase III, however, the best model explained only 12% of carbon price variation. Weather variables were not found to impact carbon price except in one case of unanticipated temperature change. The results indicate that it is not the temperatures themselves that impact carbon price, rather unanticipated changes in temperature.

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