P.4 AVOIDING "SUBPRIME" CARBON – APPLYING LESSONSLEARNT FROM THE CURRENT FINANCIAL CRISIS TO THE CARBON DERIVATIVES MARKET

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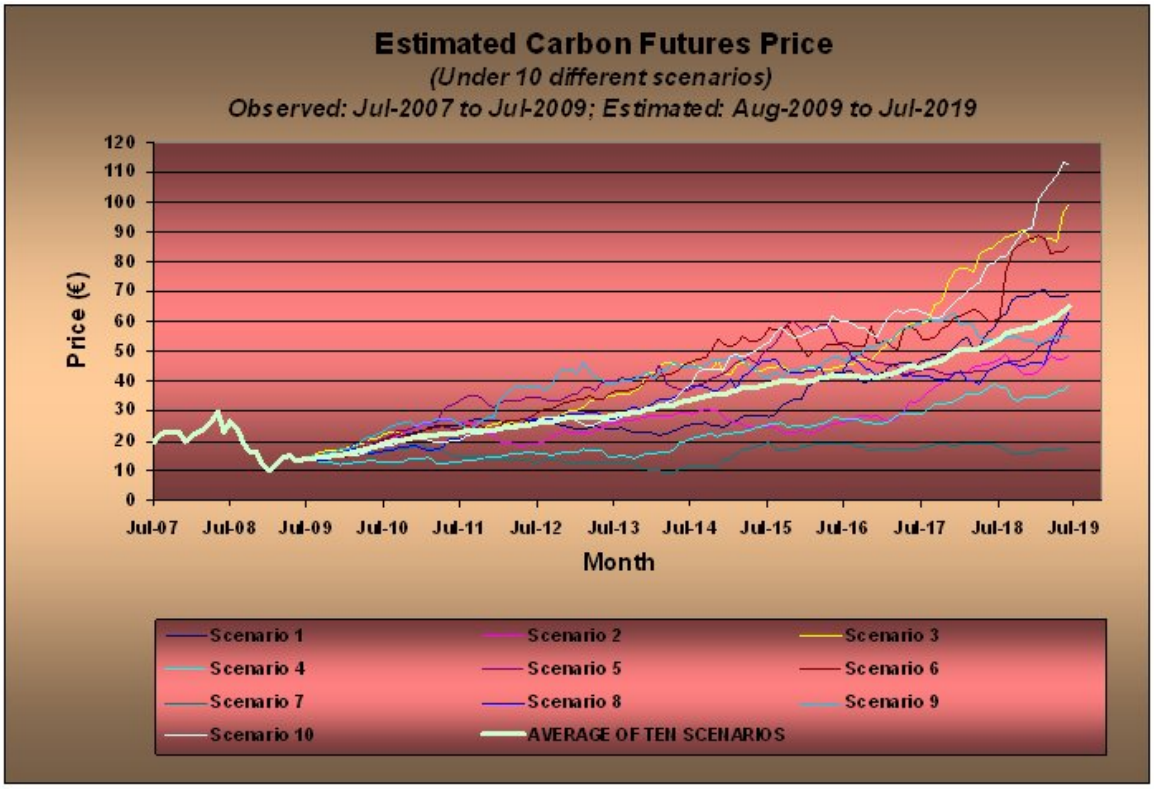

1. INTRODUCTION

In their report, "Subprime carbon? Re-thinking the world's largest new derivatives market", *Friends of the Earth (FOE)* suggest that what we have witnessed during the current financial crisis provides "a cautionary tale for any future carbon trading program", and an attachment to the report documents several bills and proposals that have been floated in an attempt to design carbon markets in ways that set stable prices while maintaining firm caps.

For example, the *Safe Markets Development Act of 2009* would amend the Internal Revenue Code to require an independent board to publish a stable price path for allowances (authorizations to emit one carbon dioxide equivalent of greenhouse gas) and for the Secretary of the Treasury to conduct quarterly auctions of allowances and manage the supply of allowances to hit, on the average, the published price.

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2. PURPOSE

Utilising a similar approach to the lead author's previous work on evaluating the cost of protecting against global climate change by applying financial market mathematics to actual data, the paper describes the derivation and application of a risk management model that might be applied to the carbon derivatives market.

The graphic shows the actual Carbon Futures Price from July 2007 to July 2009, and the likely estimated trend out to 2019, based upon ten different possible Monte-Carlo-generated scenarios.

Only one of these scenarios keeps the price between 2009 and 2019 at approximately the July 2007 level (~ €15), whilst the average of the ten scenarios suggests that an increase to about €65 might be expected by 2019, with a risk that €115 (the top price suggested by these scenarios) is a possibility.

3. FLAWED MODELS FOR MANAGING RISKS

FOE identifies "a potentially flawed model for managing systemic risks" as one of the causes of the current crisis, and it is this aspect, in the context

of the developing carbon derivatives market, that the paper seeks to address.

Black (1992) wrote: "I sometimes wonder why people still use the Black-Scholes formula (to price derivatives) since it is based on such simple assumptions."

Indeed, one of these assumptions is that price movements of the underlying commodity are normally distributed. However, an examination of such price movements reveals quite dramatically how they are NOT normally distributed.

For example, an analysis of monthly movements (January 1875 - May 2009) in the Index measuring the value of stocks on the Australian Stock Exchange reveals that falls of greater than three times the standard deviation of the price change are nine times more likely to occur than that predicted by a model based upon the assumption that the price movements are normally distributed!

4. CONCLUSION

The authors appeal to model developers that they adopt a *behavioural economics* approach and utilise **real** data in developing models to manage financial market risk, rather than developing risk management models that are based upon esoteric theoretical considerations.