

For 2010, ECX will publish a series of research pieces in the field of Emissions Trading and Carbon Markets in Trading Carbon magazine. The second article in this series is written by Dr. Bruce Mizrach at the Department of Economics of Rutgers University in the US.

## Does a Common Trend Exist Between EUA and CER prices?

**E**missions markets have emerged in Europe, North America, and around the globe. The largest is the EU ETS, where the underlying security is the EUA. EUAs are the most commonly traded carbon credit in the world making up more than 80 per cent of the global market volumes.

The Kyoto Protocol created the CDM, which provides incentives for developing countries to lower their carbon emissions. These projects generate CERs, which are substitutable for permits in the EU ETS. As of December 2009, nearly 2,000 projects had been approved by the CDM executive board which is estimated to produce 330 million CERs annually. Installations in the EU ETS surrendered 82.5 million CERs in 2008 to satisfy their emission targets.

A lingering policy question is whether the EUA and CER credits are equivalent. I examine whether CERs, as substitutes for EUAs, trade at similar prices and trend with common factors using formal econometric tests for cointegration.\*

The European Climate Exchange (ECX) has emerged as the major trading venue. In 2008, it handled 70.4 per cent of the screen-based EUA trading and 91.4 per cent of the screen exchanged CER volume. There is an active EUA spot market, dominated currently by the Paris based BlueNext exchange. Futures volume is nearly four times spot volume though, and the ECX plays a leading role in price formation. The figure shows the spread of front December ECX EUA and Nordpool CER futures from June 2007 to September 2009. The average spread from 1 July, 2007 to 30 June, 2008 is €5.88 and this falls to €3.77 during the second half of 2008. Between 25 September and 21 November, 2008, the spread falls from €5.07 to less than €1 a month after the CITL and ITL registries were interconnected.

The Johansen test for cointegration cannot reject the hypothesis of no common factors between the EUA and secondary CER price, implying two independent trends. These tests were repeated for various spot and futures instruments with similar results. Despite the reduction in the spread, there is no pair of EUA and CER prices that suggests a single common trend at the 5 percent significance level. This would suggest that CERs are still driven by CDM specific factors. For example, we observe a spike in spreads following the adoption of EU ETS phase III limits in April 2009. Even in September 2009, the spread between EUA and CER fluctuates between €0.94 and €1.87, a 7.8 per cent range around the September 30th closing price.

It appears climate change policy uncertainties are still important factors in the carbon market. While the EUA spot



SOURCES: ECX, NORDPOOL

and front December futures contracts are cointegrated, the remainder of the futures curve evolves independently. CER credits are also impacted by project certification issues. The type of projects eligible for CDM credits has been challenged, and there are questions whether CERs would have value beyond 2012.

The connection of the UN and EU registries in October 2008 has made the process more transparent, but my analysis indicates that CER and EUA prices are still not cointegrated. Market participants are trading the differential. The ECX introduced a series of expiries for the EUA-CER spread in October 2008, and nearly 11 million tonnes of carbon dioxide was traded in the first three quarters of 2009.

In ongoing work (“Integration of the Global Emissions Trading Markets”), I look at market integration between Europe and North America. I find common factors between EUA and Regional Greenhouse Gas Initiative and voluntary instruments on the Chicago Climate Futures Exchange. My research indicates that policy uncertainties surrounding CERs have, at this juncture, hindered a similar linkage. ●

\*Cointegration is an econometric property of time series variables. If two or more series are themselves non-stationary, but a linear combination of them is stationary, then the series are said to be cointegrate

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