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FOCAL POINT CONCEPTS: Going Green with Pollution Futures

By Mack Frankfurter, Chief Investment Strategist

As we head off into election season one of the more fascinating developments is the offshore prediction market called Intrade, and the “event contracts” they offer which puts a price on who is going to win the race for president—McCain or Obama.

The prediction market is not the only interesting derivatives market to be developed in recent years. Believe it or not, there are now futures contracts which trade atmospheric pollution linked to carbon dioxide (CO₂) and sulfur dioxide (SO₂) emissions. This concept was first introduced by the senior Bush presidency in the early 1990s, but really didn’t start gathering steam among environmental groups and corporations until recently. Question is: what are they and how do they work?

Most people have heard of the Kyoto Protocol, which is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for thirty-seven industrialized countries and the European community for reducing greenhouse gas emissions. Under the Treaty, countries must meet targets primarily through national measures. However, the Kyoto Protocol offers them an additional means of meeting their targets by way of three market-based mechanisms, including emissions trading.

The Kyoto Protocol is not the only initiative, however. In 2005 the European Union Emissions Trading Scheme commenced operation as the largest multi-country, multi-sector Greenhouse Gas emission trading scheme world-wide. It covers over 11,500 energy-intensive installations across the EU, which represent close to half of Europe’s emissions of CO₂. These are known as the European Union Allowances.

Then there are the Seasonal NOX emissions allowances which are tradable permits to emit one ton of nitrogen oxide under the U.S. Environmental Protection Agency’s Allowance Management System. There is also the Regional Greenhouse Gas Initiative (RGGI) CO₂ allowances which is a regional cap-and-trade program by Northeast and Mid-Atlantic states to limit carbon dioxide emissions from regional power plants. The NYMEX recently started trading RGGI allowances.

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“The foundation for today’s pollution futures market was laid by policy makers who believed in extending property rights to the environment...”



“Still, some environmentalists criticize that pollution trading systems do not actually reduce pollution.”

Imagine a world when countries trade the value of the carbon locked up in healthy rain forests as easily as a barrel of crude oil. By not cutting down rain forests, the carbon value locked up in the trees could provide national income for countries in the global commodities markets. Some countries have already taken steps toward such a system by evaluating their forests, in anticipation of a global carbon trading market that is already being established. This vision of economic empowerment based on atmospheric pollution trading may be the next chapter in environmental history.

The foundation for today’s pollution futures market was laid by policy makers who believed that by extending property rights to environmental goods and making them sellable, new markets would be created. Air and water are simply no longer free goods and must be redefined as property rights so they can be efficiently allocated.

So how does this market work?

Under the previous “command and control” system of regulations, all polluters had ambient air quality standards imposed on them. Failure to comply brought fines and legal penalties. Environmentalists complained that this system made it cheaper for polluters to pay the fines and keep polluting, rather than invest in cleaner technologies.

With the new “cap and trade” system, firms are allocated annual pollution allowances with the total number capped. Allowances are allocated by the regulatory agency in charge typically on a per-plant basis based on emissions rates and previous levels of fuel use. As a result, polluting companies may either purchase more allowances on the open market from less polluting companies or reduce their own emissions. At year’s end, total emissions for any one polluter must be accounted for by all their allowances, either unused or purchased on the open market. Unused allowances may be sold on the open market for a profit or “banked” for future use.

Still, some environmentalists criticize that pollution trading systems do not actually reduce pollution. Since pollution levels are set by regulatory mandate and not by the trading itself, that analysis may have some truth to it.

In the current system, markets do not encourage industry to reduce emissions. The role of the market is to provide an efficient and cost-effective mechanism for trading to occur. In the U.S., the government mandates limits and reductions on emissions. The market is one tool to help industry meet those goals, and if the market price of emission allowances rise in value, there an increased economic incentive to invest in technology that reduces pollution. The higher the price, the more the incentive.

A market not without problems...

In 2006 the global carbon market tumbled into chaos. After the price of emission allowances rose higher than expected and stayed that way for almost a year, but then went to zero in a matter of weeks. A market worth tens of billions of euros annually, and the centerpiece of European climate change policy, seemed to melt away.

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The tumble started when the first countries reported that actual verified emissions during 2005 were 10% or more below the allocations they had granted to their industries. Suddenly, participants realized that there were going to be far more spare allowances out to 2007 than anticipated.

After the European Commission released its data, it became obvious that the supposedly “tight” carbon market was swimming in far more spare emission allowances than the market expected only a month prior. This was because most governments allocated more than what industries actually needed.

Three basic factors explain the debacle. First, business, like the rest of humanity, tends towards optimism. No business starts up based upon pessimism, contraction, or projected failure: it is competition that sifts out the over-confident and the over-extended. Second, linking allocations to projected needs created a massive incentive for businesses to inflate forecasts. And third, business assumptions that cutting emissions would take time and capital underestimated the scope for some basic housekeeping measures.

STATISTICAL INSIGHT: Sterling and Sortino Ratios

Last month’s issue of Intelligent Trading discussed the MAR and Calmar ratios, two ratios which statistically describe risk-adjusted returns. In addition, there are a couple of other ratios which give insight to risk-adjusted returns: the Sterling ratio which is similar to the MAR and Calmar ratios, and the Sortino ratio which is similar to the Sharpe ratio.

The Sterling ratio is a risk-reward measure which helps determine which CTAs have the highest returns while enduring the amount of volatility. The formula is compounded annual return divided by the average maximum drawdown minus 10%. Increasing the maximum drawdown by 10% produces a more conservative analysis.

The Sortino ratio was first presented in the September 1981 issue of *The Journal of Risk Management*, and according to its developer, “was an improvement at that time in that it measured risk as deviations below the investor’s MAR.”

In Frank Sortino’s own words, “The numerator measured return in excess of the MAR. Thus, it is goal oriented, in that it measures performance relative to the goal the investor is trying to achieve rather than measuring performance relative to the market. For that reason I believe it is better than the Sharpe ratio or the information ratio which measure how well one is doing relative to the t-bill rate and market index respectively.”

The formula subtracts the risk free rate of return from the expected return of the investment, and then divides that by the standard deviation of negative asset returns. Accordingly, the Sortino ratio is similar to the Sharpe ratio, except it uses downside deviation instead of standard deviation, which doesn’t discriminate between up and down volatility.

Effectively, the first-phase allocations gave 100% of projected needs for free, leading to an absurd and unsustainable situation. Governments should do their best to get projections right, but for future phases the free allocations should amount to only 90% of those projections; the rest must be auctioned.

The future looks brighter...

In December 2007, the “Emission Allowance Market Transparency Act,” was introduced which establishes federal oversight for carbon emissions trading markets. This legislation is designed to prevent fraud and manipulation in the greenhouse gas credit markets that are expected to develop once Congress approves comprehensive climate change legislation with a cap-and-trade system for the trading of emissions credits.

At the same time, Managed Account Research is hearing more and more about CTAs either trading or interested in trading these markets. Truly, great things can happen when the government and free enterprise team up to solve problems facing our world!





CONTRACT SPOTLIGHT:

CME Hurricane Futures (Symbol: HG, HF, HS, HN, HX)

Following the devastating 2005 hurricane season that caused an estimated \$79 billion in damage, it became apparent there is not unlimited capacity in the insurance industry to insure customer claims. In recognition, CME Group has developed three types of contracts for hurricane futures and options in six U.S. defined areas – the Gulf Coast, Florida, the Southern Atlantic Coast, the Northern Atlantic Coast, the Eastern U.S., and CHI-Cat-In-A-Box Galveston-Mobile. The underlying indexes for Hurricane futures and options on futures are calculated by Carvill, a leading independent reinsurance intermediary in specialty reinsurance that tracks and calculates hurricane activity.

Using publicly available data from the National Hurricane Center of the National Weather Service, the

Carvill Hurricane Indexes (CHI™) use the maximum wind velocity and size (radius) of each official storm to calculate the potential for damage. The front contract expires when a hurricane makes landfall with the expiration pegged to the CHI. The contract tick size is 0.1 CHI point, which is equivalent to \$100.

For each of the 5 regions listed, Hurricane Index contracts will be listed initially for the first hurricane to make landfall and second hurricane to make landfall. Thereafter, new Hurricane Index futures and options contracts are created only in the case where an event (landfall in one of the designated regions) occurs. When a hurricane hits in a region (e.g., first hurricane to make landfall), the next eligible contract (e.g., third hurricane to make landfall) for that region will be listed for trading.

Contract Specifications

Trading Unit	\$1000 times the respective Carvill Hurricane Index (CHI)	Price Quotation	1 point equals 1.00 CHI Index Point which equals \$1000
Trading Hours (US Eastern Time)	Mon/Thurs 5:00 p.m.- 3:15 p.m. Sun & Hol 5:00 p.m.-3:15 p.m. 9:00 a.m.	Trading Months	See below.
Last Trading Day	All futures contracts remaining open at the termination of trading shall be settled using the respective CHI seasonal final value reported by Carvill America, using the methodology in effect on that date.	Deliverable Grades	Contracts reflect region and event of the season. Events beginning with 1 and ending with 10. The following regions are supported: HG1-HG0=Gulf Coast HF1-HF0=Florida HS1-HS0=Southern Atlantic Coast HN1-HN0=Northern Atlantic Coast HX1-HX0=Eastern US
Settlement Type	Clearing members holding open positions in a CHI seasonal futures contract at the termination of trading in that contract shall make payment to or receive payment from the Clearing House in accordance with normal variation performance bond procedures based on a settlement price equal to the final settlement price.	More Information	http://www.rulebook.cme.com/Rulebook/Chapters/pdffiles/427.pdf http://www.cme.com/trading/prd/weather/hurricane_FCS.html

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