The Impact of Carbon Regulation on Power Generation

Description:

EU-ETS intended to create a continental market for emissions by attaching an economic value to the carbon externality thereby encouraging power utilities to shift their power generation mix towards less carbon intensive alternatives at the least cost. In practice however, the current EU regulatory framework poses little threat or incentive for utilities to switch away from dirty generation.

Scope

- Sixty-day rolling correlation data and trends for day ahead gas / EUA spot returns and Brent spot / EUA spot returns for the 2005 to 2008 period.
- Three long-term oil, gas, coal, carbon and power pricing scenarios plus estimations of the most likely long-term scenario.
- Analysis of power generation supply and demand dynamics for fossil fuels and alternative energies, both with and without carbon pricing.
- Insight into reasons why the current EU regulatory framework poses little threat or incentive for utilities to switch away from dirty generation.

Highlights

To date, European utilities have gained more than they have pained from European carbon regulation. This is a trend which is likely to continue until and unless auctioning is introduced in the new EU climate package. Until then, and at current prices, a large scale switch from coal to gas appears unlikely, regardless of the pricing rule adopted.

The increasingly positive correlation between gas and carbon prices has been destabilized, in part, by the seasonality of gas. Oil, however, is acting as a positively correlated non-seasonal gas proxy for carbon prices. The dynamics shaping the interrelationship between gas, oil, coal and carbon suggest that carbon prices will rise long-term.

Fossil fuel commercial breakeven without carbon pricing is a function of total energy demand, not fossil fuel switch-off and will increasingly be impacted by the rapid scaling of green energy sources, particularly as carbon policies and peak oil dynamics steepen the fossil fuels supply curve, making clean energy more attractive.

Reasons to Purchase

- Assess the current and likely future degree of correlation between oil, gas and carbon prices and what it means for long term carbon and energy prices
- Identify how very different carbon prices can trigger the power switching threshold under different decision rules and pricing scenarios
- Understand why long-term substitutions between coal-fired units and CCGT plants will only take place under very restrictive conditions

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In the long term, carbon prices and energy prices are likely to increase. Going forward, three likely scenarios will dictate the future correlation between fossil fuel prices and carbon prices. Utilities are unlikely to decommission viable power plants unless the variable costs of continued operation exceed revenues. Commercial breakeven without carbon pricing or incentives is caused by an inflexion in energy use, not fossil fuel switch-off. The rapid scaling of green energy sources will impact the commercial breakeven of all power generation technologies. Carbon policies and peak oil dynamics are designed to steepen the fossil fuels supply curve, making clean energy more attractive. To date, European utilities have gained more than they have pained from European carbon regulation. Power generators have three means of switching to less polluting thermal generation to hedge against the carbon externality. An incumbent power utility’s decision to switch is generally made on the basis of different decision rules. At current prices, a technological switch from coal to gas appears unlikely, regardless of the pricing rule adopted. Under the EU ETS, long-term substitutions between coal-fired units and CCGT plants will take place under very restrictive conditions.

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