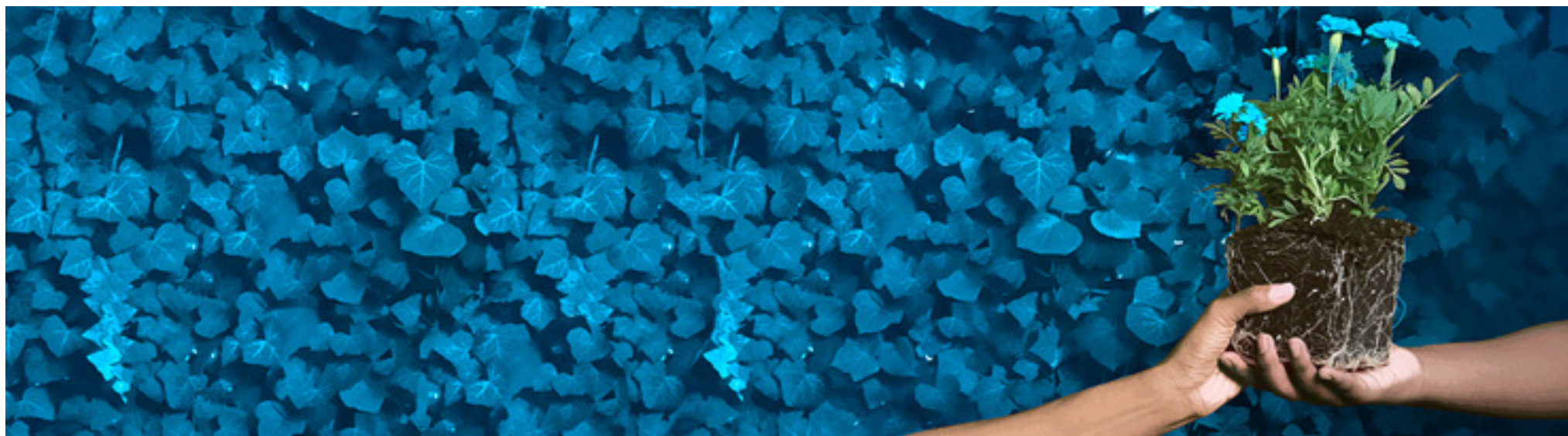


Carbon market: Products and trading developments

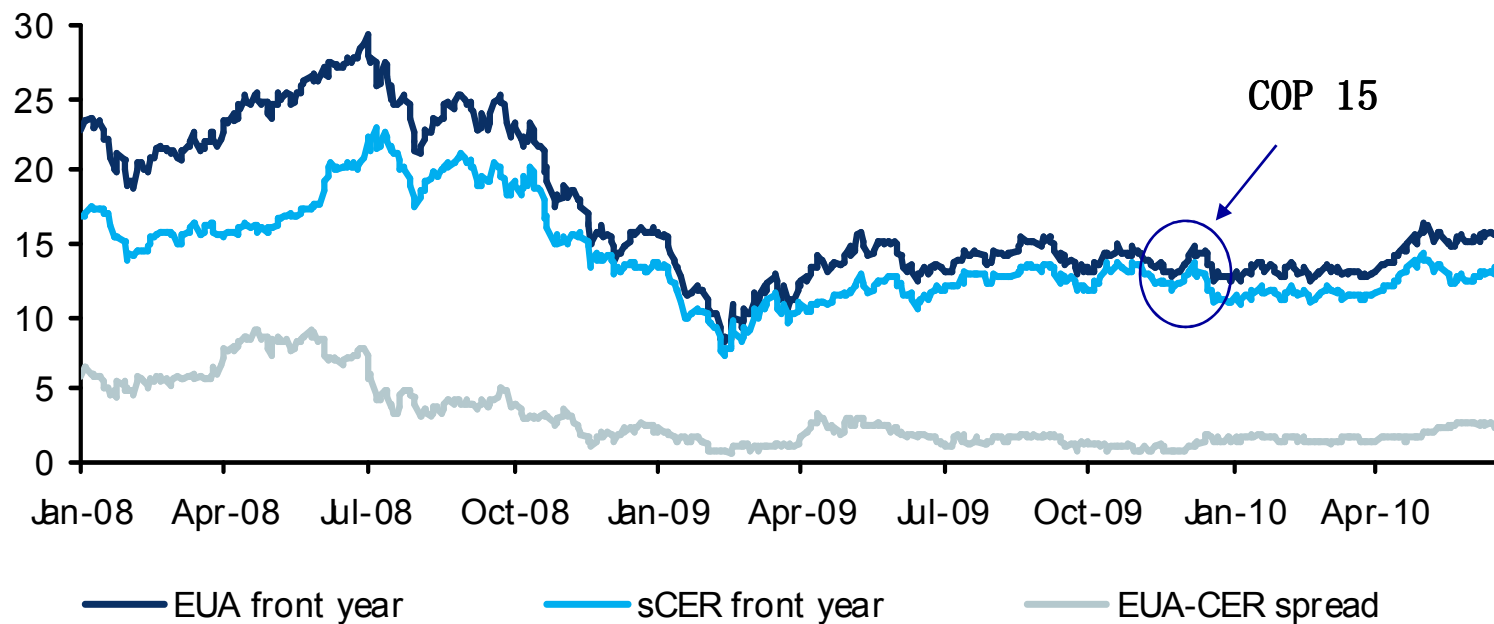
Trevor Sikorski

June 2010



EU ETS price history: phase 2

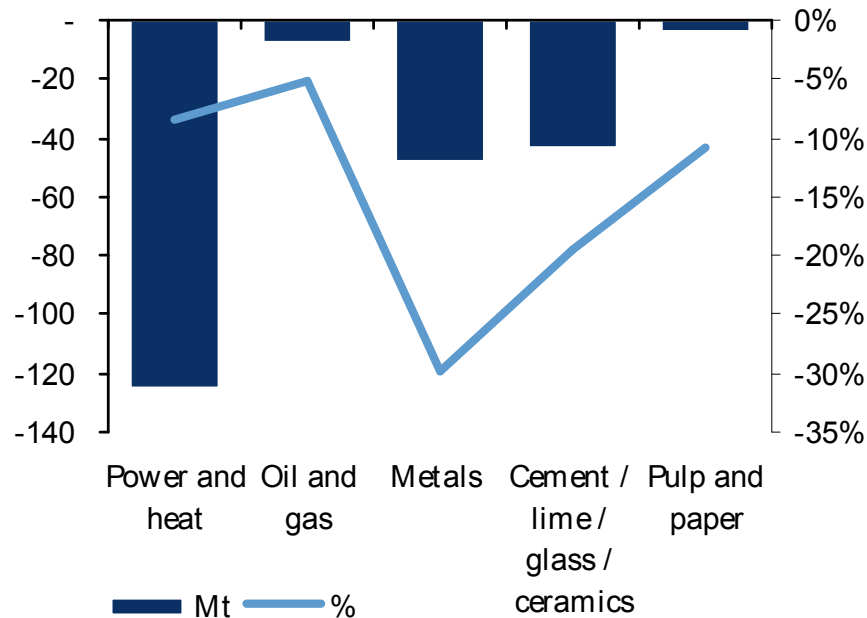
Phase 2: Impact of current recession



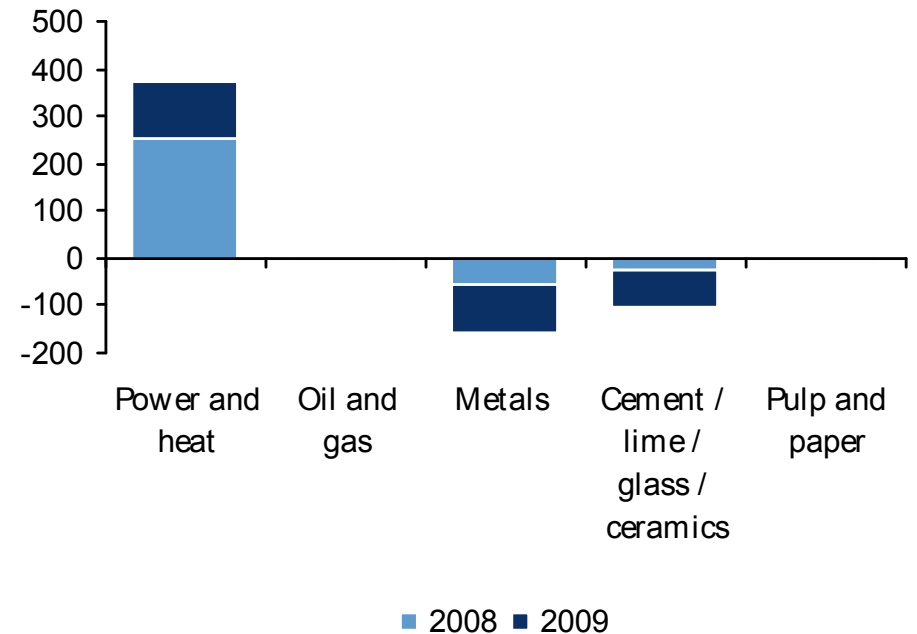
Source: ECX, Barclays Capital

Sector emissions performance

2008 emissions down 6%,
2009 emissions down 11.3%



But power is the only short



Source: CITL, Barclays Capital

Source: CITL, Barclays Capital

Biggest proportional reductions in 2009
is in metals

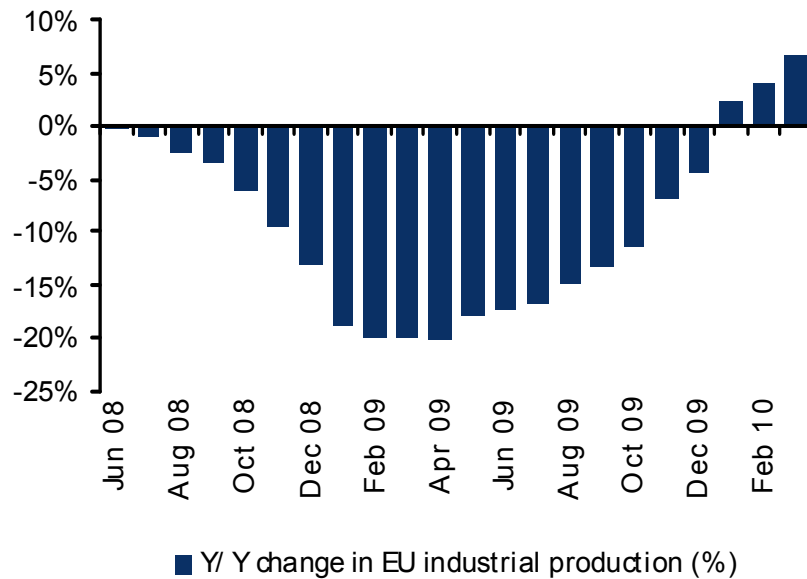
Phase 2 position after 2009 is 49 Mt
long

Looking forward - 2010 economic activity has been slow

GDP: 2009 saw a 3.9% y/y reduction.
Forecast 2010 and 2011 is moderate growth

	2009A	2010	2011
Western Europe	-4%	1.0%	2.1%
EU27	-4%	1.3%	2.4%

Source :Barclays Capital

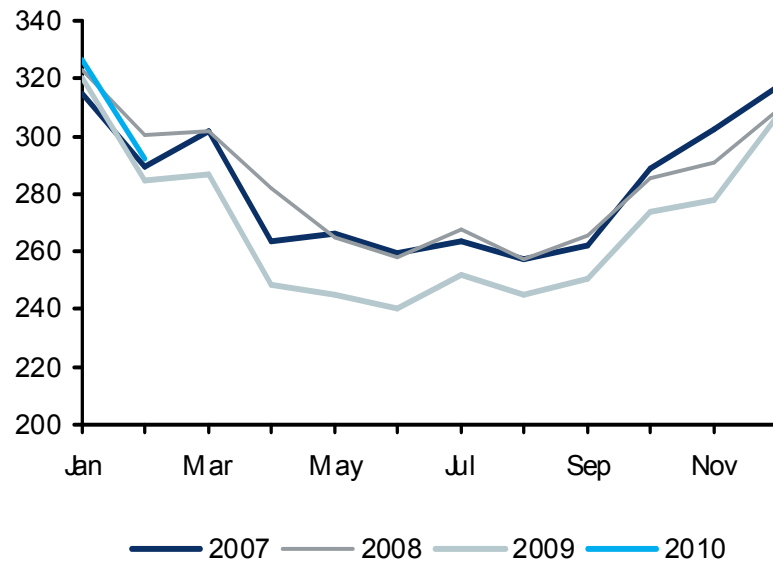


Industrial performance showing signs of improvement
Forecast +4.6% in 2010

Source Eurostat, Barclays Capital

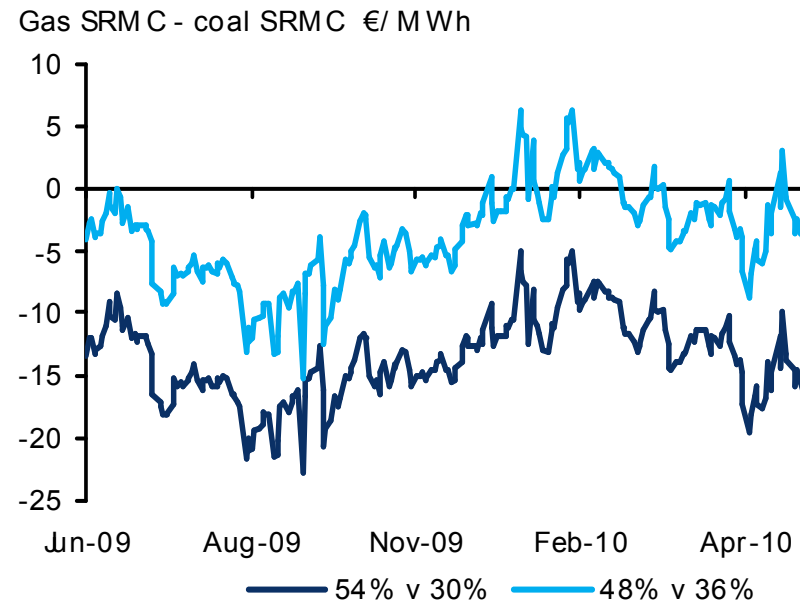
Power sector: the short

Power sector emissions down in 2009



Source :Eurostat Barclays Capital

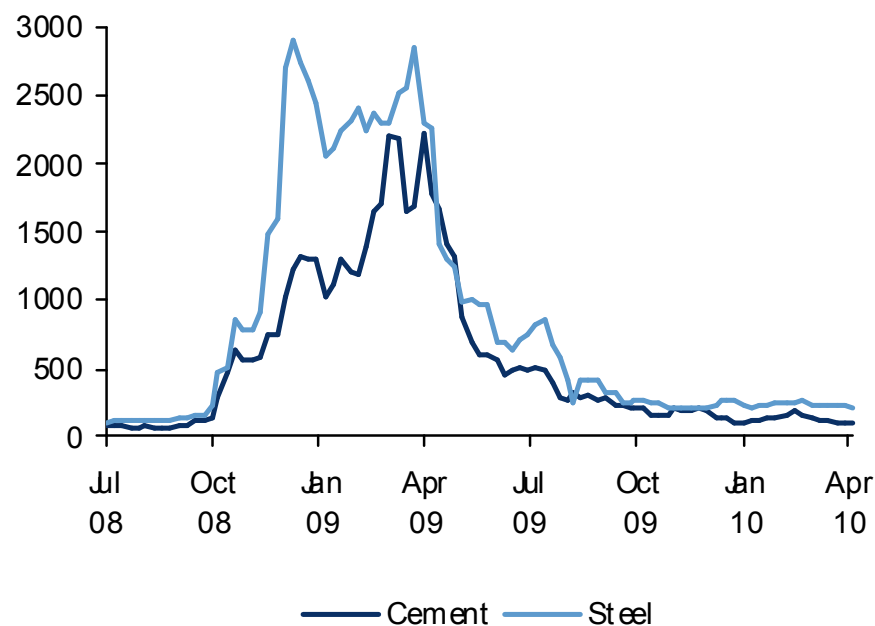
With dispatch favouring gas-fired generation



Source :ECX, Ecwin Barclays Capital

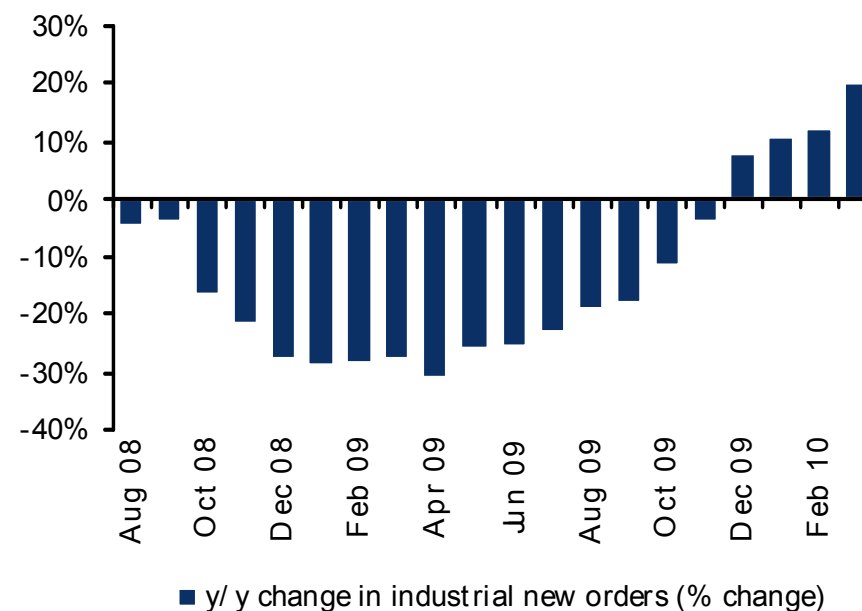
Industrials less need to monetise

CDS points to big improvement in credit market



Source :Bloombergs, Barclays Capital

New orders - getting better

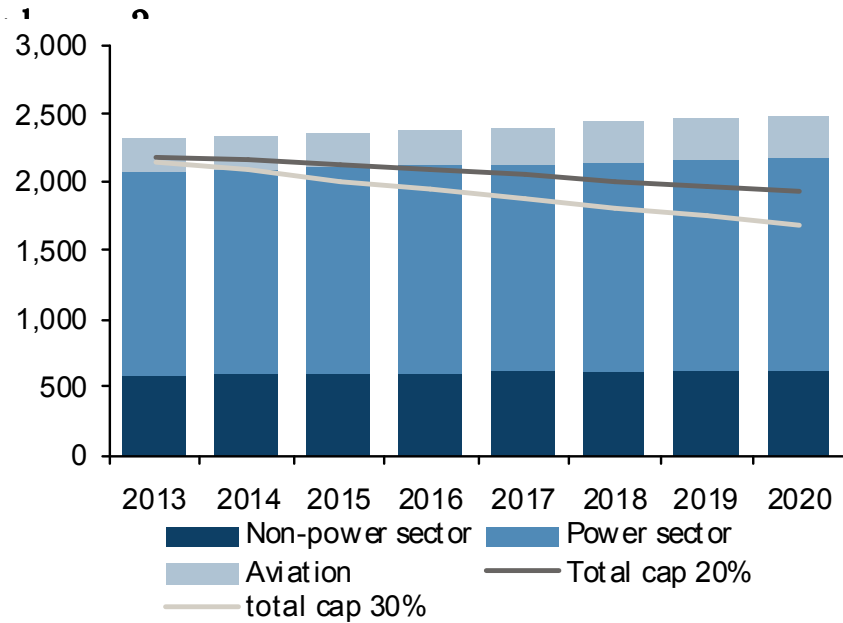


Source :Eurostat, Barclays Capital

Industrials more price sensitive, less cash constrained

Post-2012 shorts supporting the market

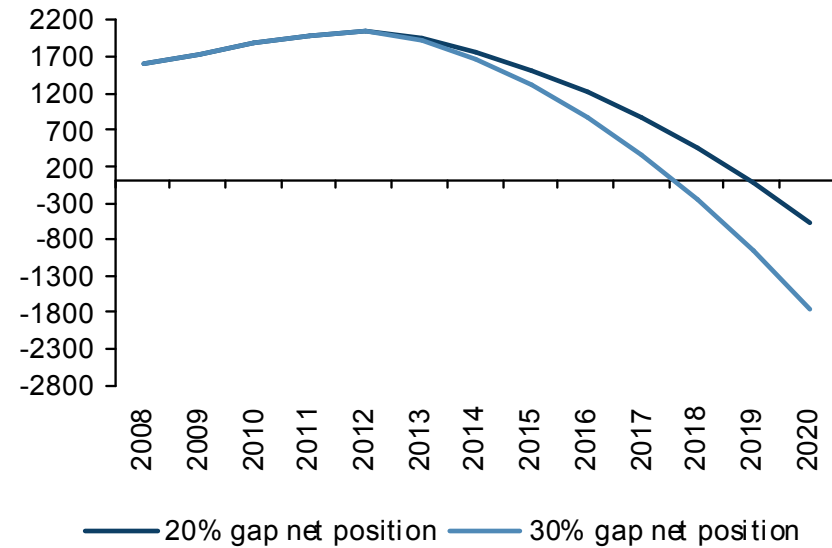
The EU ETS looks increasingly short in



Source :Barclays Capital

Forecasting 537 Mt of abatement required after use of banked EUAs / CER allowance – other policies to contribute up to 500 Mt

With system CER limits being exhausted by 2019



Source :Barclays Capital

Phase 3 now much more important

The EU ETS market balance

The market balance stabilising as macro outlook seems to have hit bottom

	Phase 1	2008	2009	2010	2011	2012	Phase 2
EUA Allocation (cap)	2107	2003	2045	2135	2126	2358	10667
Emissions	2071	2119	1882	1972	2014	2298	10285
Emissions - cap	-36	116	-162	-164	-112	-60	-380

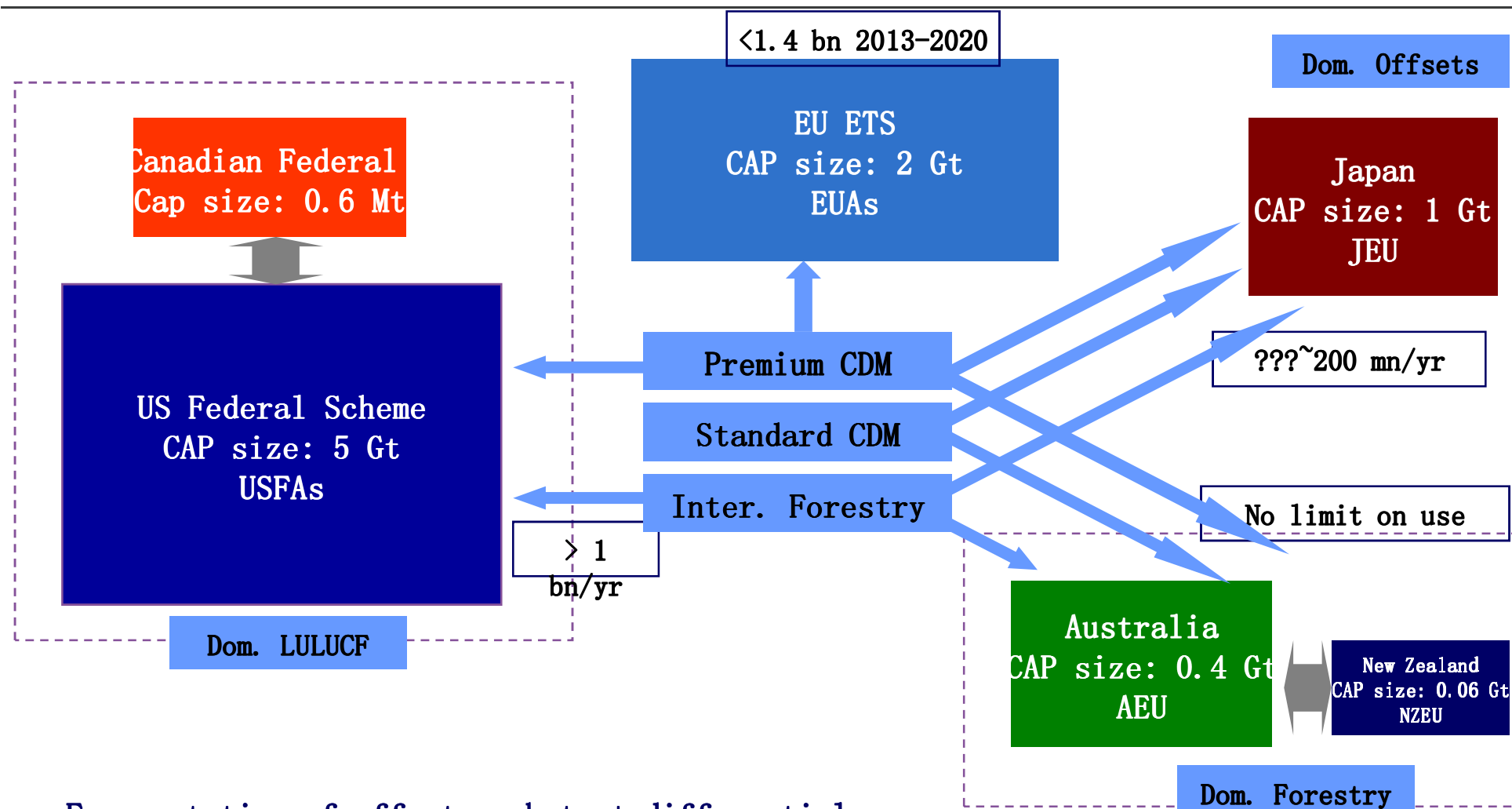
Source :Barclays Capital

And the resulting view on prices

Contract (€/t CO ₂)	2007 A	2008 A	2009A	2010 H1	2010 H2	2011	2012	Phase 3 (13-20)
EUA	19.6	22.6	13.4	13.5	16.0	20	28	35
CER	16.4	17.4	11.8	12.0	13.0	16	18	20
EUA-CER spread	5.8	5.2	1.6	1.5	3	4	10	15

Source :Barclays Capital

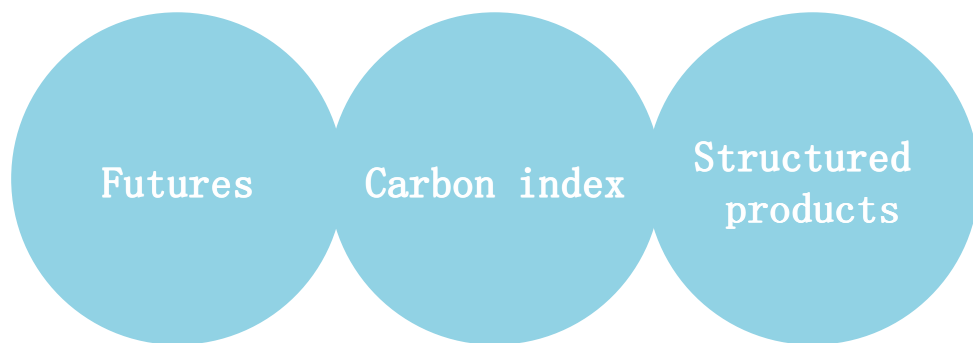
Post 2012: Indirect linkages



Fragmentation of offset markets + differential limits - reduces potential for price convergence

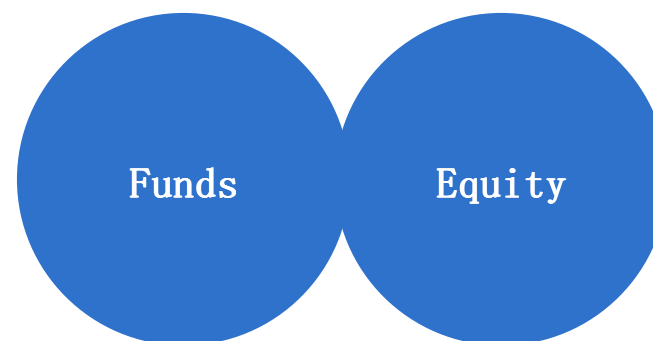
Gaining exposure to carbon

Taking direct commodity exposure



Risk here is commodity price risk = market risk

Taking indirect commodity exposure



Risk here is commodity price risk + performance risk

Futures: direct market exposure (1)

- Direct exposure via a contract traded on exchange
- Good liquidity - entry or exit any time
- To do directly: requires access to exchange
- Indirectly: Need access to broker / intermediary
- Credit - Need access
- Delivery risk - must be managed
- Only for biggest, most sophisticated investors

Index investment: direct market exposure (2)

Key features of an index:

- Structured on futures
- Taken on first nearby contract and rolled
- Only taking price risk on carbon
- Returns:
 - Spot = performance of the contract(s)
 - Excess = spot return + roll yield
 - Total = excess return + return on benchmark security

Investing in an index: benefits

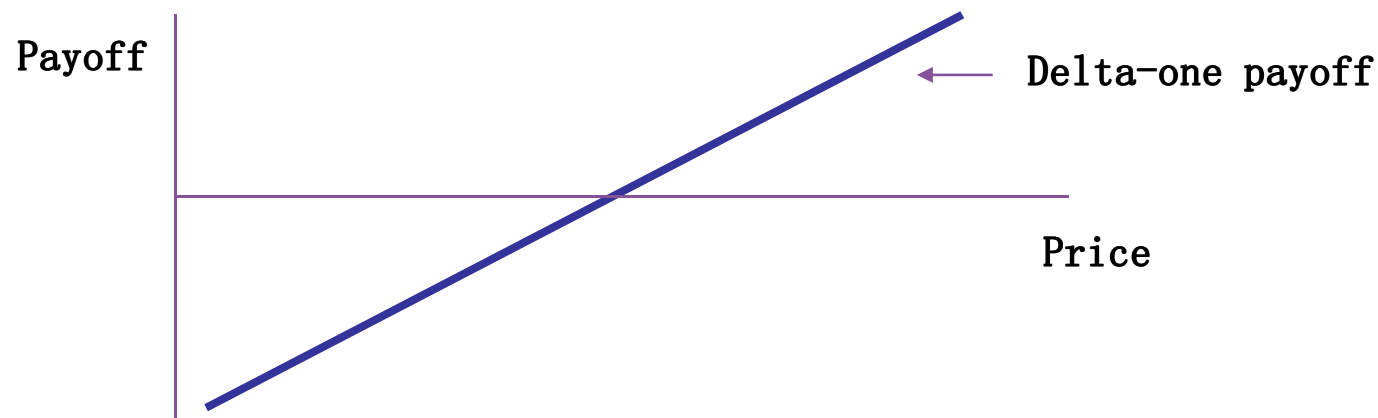
Why an index:

- Composed of many constituent parts - broad exposure
- Only one investment contract
- Roll is automatic
- No delivery concerns
- Can be dynamic - widening / changing exposures

Structured products: ETNs and ETFs

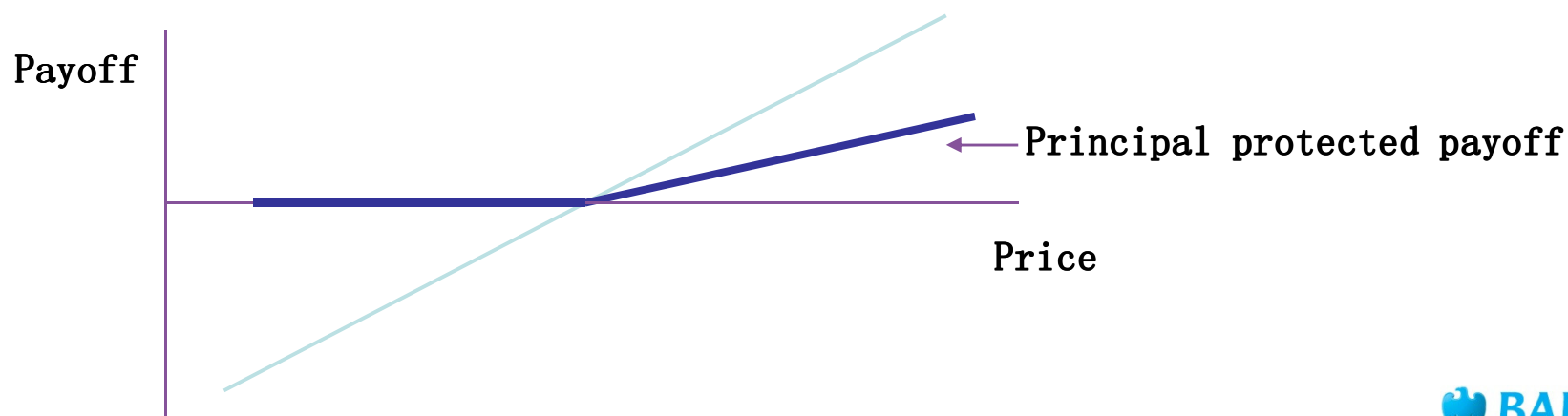
- ETN and ETFs

- Usually delta one products: exposure to index
- Traditionally long-only / short-only but now can be managed
- Idea is to be a divisible product trading like a stock
- Open to smaller investors
- Main difference: ETN recourse is to issuer while ETF is recourse to underlying commodity
- Examples: Barclays iPath Global Carbon ETN / ETF securities ETFS Carbon / Xshares Air shares EU Carbon Allowance fund (an ETF)



Structured products: Many bespoke potentials

- Structure products
 - Delta one products: one for one exposure to the index
 - Principal protected notes
 - Alpha products: Looking for out-turn against the market
 - Many more potential bespoke formulations



Carbon funds - investing in projects

- Take direct exposure to the primary market
- Aimed at investing in projects that will deliver emissions reductions
- Return provided by trading of EUAs/CERs/ERUs/VERs
- Primary exposure means project risk and carbon price risk
- Closed or open ended
- Not-exchange traded
- Generally aimed at large investors - sovereign or corporate

Carbon funds – some examples

- Considerable interest
 - 100+ announced funds (source: Barcap, NCF)
 - Value – \$23+ billion target invested funds (source: Barcap, NCF)

Fund	Planned investment	Focus
Asian Development Bank – Asia Pacific Carbon Fund	US\$200 mn	Clean energy projects in Asia
Man Financial / Abu Dhabi IPIC Carbon Fund	US\$1.2 bn	Gas flaring in Middle East and India
Climate Change Capital	€750 mn closed	Various CDM

- Green bonds also launched:
 - World Bank US\$350 million – maturity in 6 years with initial coupon of 3.15% per annum

Conclusions

- European carbon is increasingly being an investible commodity
- Direct participation open through futures, indices, and structured products
- Carries market price risk - to date returns limited but same with most other investments
- As a portfolio diversifier - can provide this but high exposure to energy complex mean role in this is limited
- Volatility - is broadly consistent with other asset classes, although would be classified on the high side
- Carbon funds and equity are other routes
- Pure carbon equity provides limited opportunities at the moment

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