EUROPEAN LIBERALISATION

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European liberalisation

- Traditional structure
  - National, regional or local monopolies/franchises
  - Simple but potentially inefficient, monopoly rents, lack of choice
- Liberalisation agenda
  - to reduce prices and make European industry competitive
  - Increase efficient use of infrastructure
- Initial driver of liberalisation was the EU Electricity Directive

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EU Directive 1996

- Directive 96/92/EC of the European Council
  - Effective Feb97
  - Greater competition in generation and supply
  - Unbundling of various aspects of ESI

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Supply competition

- Aim: to create a single internal market in electricity
- UK and Scandinavia supply competition developed from 1990
  - UK full domestic electricity supply competition from 1999
- Rest of EU supply competition required by EU Electricity Directive 1996
- Barcelona Summit
  - Full Industrial & Commercial market opening planned by 2004:
    - Market opening
    - Third party access to transport, distribution and other infrastructure
    - Unbundling
    - Regulation
    - Rights to construct generation
    - Harmonisation

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Cross-border transportation

- Cross-border flows are comparatively small: 7-8%
  - Driven by system security concerns rather than need to import supply
- Most European states remain national electricity markets
  - Scandinavia major exception
  - EU proposals for further interconnection

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Spark spread

- Given the existence of natural gas and electricity futures contracts it is possible to trade the cross commodity spread
- Need to establish a "heat rate" which represents an efficiency factor of converting gas into electricity
- Need to manage risk using spreads may add pressure to the market for deregulation of gas and electricity markets

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Measurement.
Profitability of running a power
Differential of cost & revenues.
Helps deciding which plant should run

- gas spark spread
- coal dark
- oil slick

Clean spark spread includes emission

Development of electricity markets

Nordic Pool:
- Jan '91 Norway de-regulation
- 2nd half 90's Sweden & Finland de-regulate
- Scandinavian Market (SKM)
- Gross turnover

2006	1790 TWh
2007	1857 TWh
2008	1397 TWh
2009	1123 TWh

European de-regulation:
- EU Electricity Directive leading to free markets (began Feb 99)
- New futures markets – Frankfurt/Leipzig(EEX); UK (UKPX/APX)

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Nordpool

- Initially Norway, followed by Sweden, Finland then Denmark
- All fully deregulated with national ISO's (Independent System Operators)
- Transmission tariffs & commercial congestion charges since 1992
- Zonal price differentials
- Physical, Forwards & Futures
- 33% Hydro based – many small suppliers in Norway
- 200+ Members

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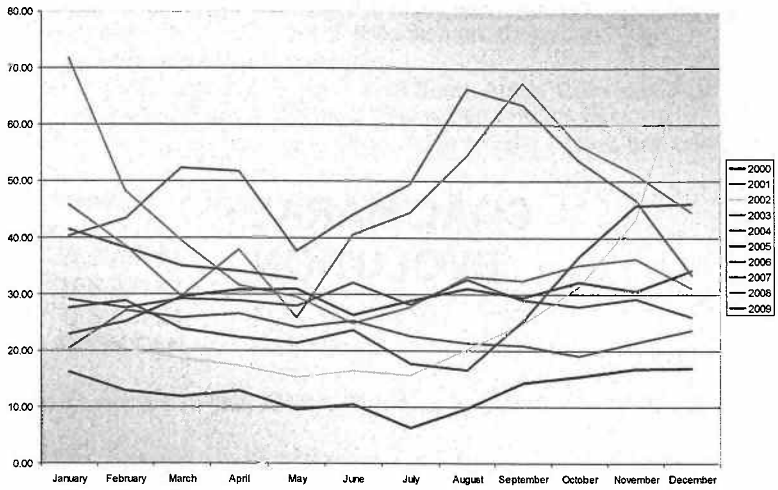
Nordpool System electricity prices, Euros per MWh



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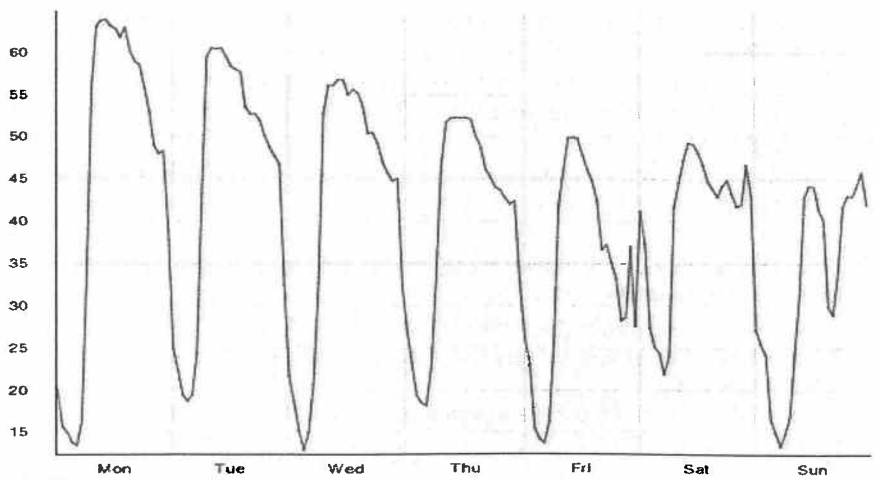
Elspot system price, week 23, 2008, Euros per MWh



Source: Nordpool

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COAL MARKET EVOLUTION

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Coal

- Deregulation in the electricity sector has increased competition between power utilities
- The need to cover all the risks has extended to the coal market
- Price volatility in coal increased with rising Oil and Gas prices
- Coal is cheap
- Clean coal technology makes coal more acceptable as a power generation fuel and attractive as a source of energy

- Traditionally the EU coal market trade around long term supply contracts with fixed prices lasting 1 to 10 years
- Since 2000 there has been a transition towards spot market trading
- Price volatility has increased and risk management strategies are increasingly used
- Imports into ARA and stockpile in this area make ARA a focus for price setting

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Trading

- Coal trade is growing – international flows exceeded 600mln mt in 2008, an increase of 2% over 2007, some reduction anticipated in 2009
- Main growth is in Far East and India
- Imports into Europe mainly come from South Africa, Colombia, Australia and Indonesia; Poland and Russia also export into the EU
- Volumes are broken down and delivered in smaller barges and coasters

- Risk management is mainly through swaps
  Index

TFS API #1	FOB ARA	
TFS API #2	CIF ARA	
TFS API #4	FOB Richards Bay	(SA)
Global Coal	FOB Newcastle	(Australia)

ICE coal futures are API#2, API#4, FOB Newcastle

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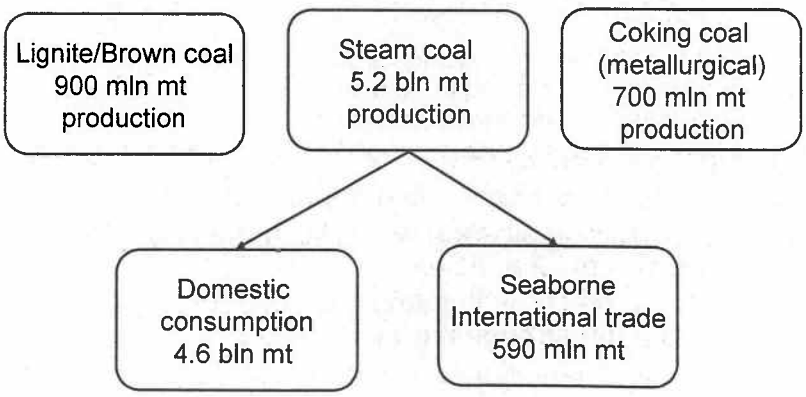
Types of coal, annual production



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Steam coal

- Coal is not a homogenous product
  - Caloric value
  - Humidity content (handicap for freight transportation)
  - Volatile matter (combustion characteristics for each coal. Each boiler cannot burn any coal)
  - Sulphur content
  - Hardgrove (grindability index)
  - Ash content
  - Size

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Growth of spot market

- Before 2000, most physical trade was on long term annual contracts
- In 2008 spot market trading accounted for 70% to 80% of activity in Europe while Asia Pacific remained mostly with traditional long term contracts
- Growing annually by 5%
- Asia Pacific consumption and imports are growing
- Execution can be bilateral, via OTC brokers or via trading platform GlobalCoal
- In the West the UK is the strongest growing importer and Russia the strongest growing exporter

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The re-emergence of coal

- Large available reserves: 200-250 years
- Reserves geographically evenly spread
- Political stability of major coal exporters
- No other alternative today to match the increased energy demand
- Development of clean coal technologies will enable a cleaner and more efficient usage of coal

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A cheap energy source

- CO_2 cost a new reality for the coal market in the EU
- Coal power stations have a low efficiency:
  - 30% world average
  - 38% Europe
- Coal naturally contains more carbon than gas emitting 2.5 times more CO_2 per MWh than gas
- Emission cost for gas is only 35-40% of the emission cost for coal
- Despite the CO_2 disadvantage for coal, dark-spreads are often cheaper than spark-spreads because coal is cheap
- No carbon tax yet in rest of world, coal is even more advantageous

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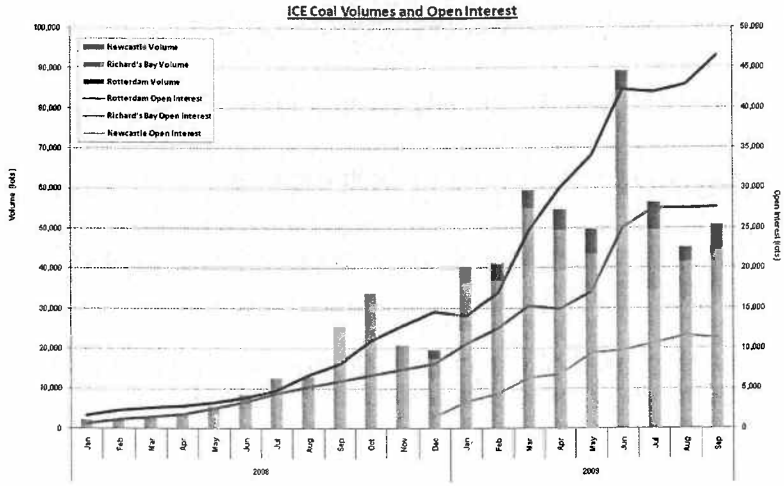
ICE Coal futures, volume & open interest



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EMISSIONS MARKET EVOLUTION

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Emissions

- Cap and trade system provides more flexibility than a 'command and control' approach
- Control pollution by providing economic incentives for achieving reductions in the emissions of pollutants
- Central authority sets a limit or cap on the amount of pollutant that can be emitted
- Credits or allowances are granted that allow a company to emit a specific amount
- The total amount of credits cannot exceed the Cap

Companies have choices:
- Reduce output
- Invest
- Trade

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Penalty 100€/t

Emissions allowances in the EU

- The EU Directive set a target for an 8% reduction on 1990 Green House Gas emissions by the period 2008-2012

- National Allocation Plans (NAPS) are created by national governments to distribute emissions allowances

First phase	2005 - 2007
Second phase	2008 - 2012

Potential third case 2013 - ...

Three mechanisms were created following the Kyoto Protocol to help organisations in the scheme to meet targets
- Clean Development Mechanism (CDM)
- Joint Implementation (JI)
- International Emissions Trading (IET)

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Emission allowances in the EU

- A tradable allowance equals 1 tonne CO2e

- 2005 – 2007 allowances, free for 95% of output, penalties €40/mt
- 2008 – 2012 allowances, free for 90% of output, penalties €100/mt

Companies in the scheme
- Energy companies, combustion installations, oil refineries, coke ovens
- Production and processing of ferrous metals
- Mineral industry
- Other activities, pulp from timber, paper and board production

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Trading in emissions

- Spot deals immediate transfer of physical (EU Allowance)

- Forwards terms agreed now for delivery some time in the futures

- Futures traded on a regulated exchange

- Options the right but not the obligation to buy or sell allowances at a fixed price for an agreed premium

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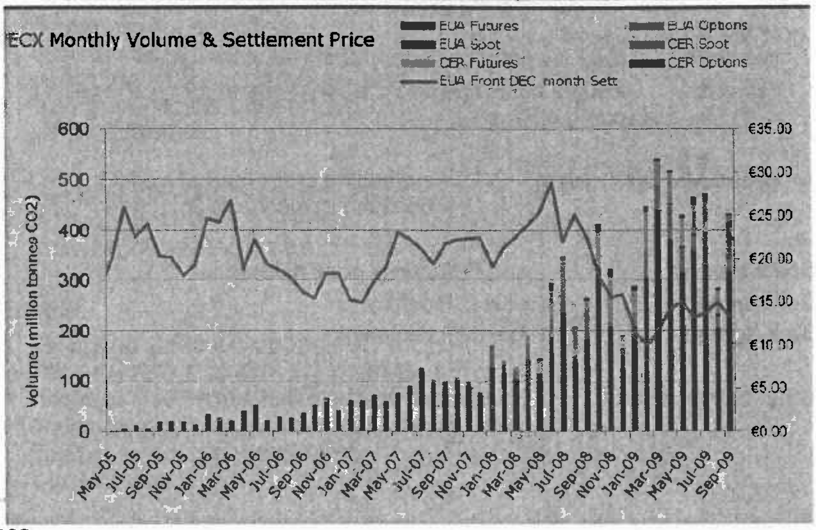
ICE/ECX EUA & CER futures



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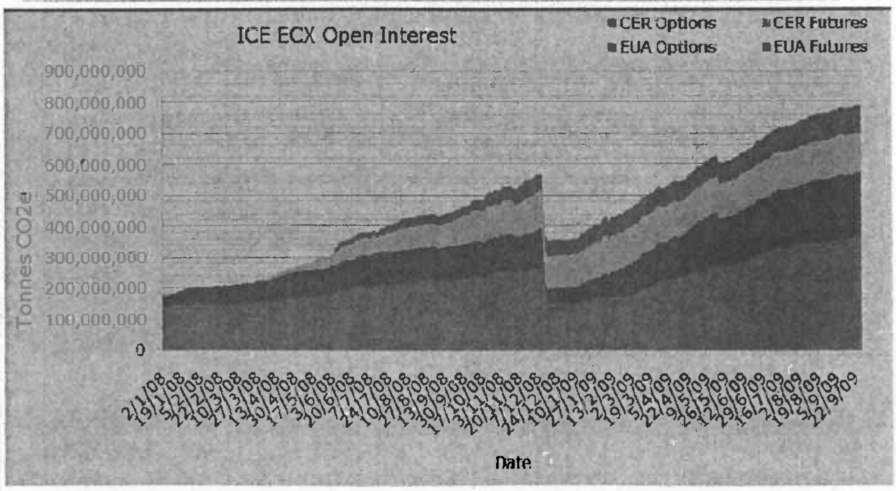
ICE ECX historical open interest



ice Source ECX www.theice.com

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Other markets

- **Weather** Markets developing for trading weather risk
- **Freight** Freight costs rise on increase demand for oil and other commodities

- **Cross-Market Trading:** increasing cross market trading because of electricity linkage

Spark Spread	gas / electricity price differential
Dark Spread	coal / electricity
Slick Spread	fuel oil / electricity
Other commodities	smelters of metal ore fix energy costs against metal prices, Aluminium vs electricity

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TRADING & RISK MANAGEMENT

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Benchmarks

- Benchmarks provide a **standard industry reference point** that is fair, market related, transparent and understood by all participants
- Facilitate business by providing a focal point for **differential pricing** of related commodities

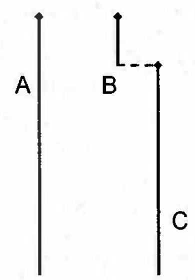
Enable :

- **Hedging** (take an opposing paper position to protect against a price change in the physical)
- **Price transparency** (discovery/dissemination of prices instantly)

A - Forcados (Dated Brent plus $2.65)

B - Dated/Forcados diff $2.65

C - Dated Brent $64.54



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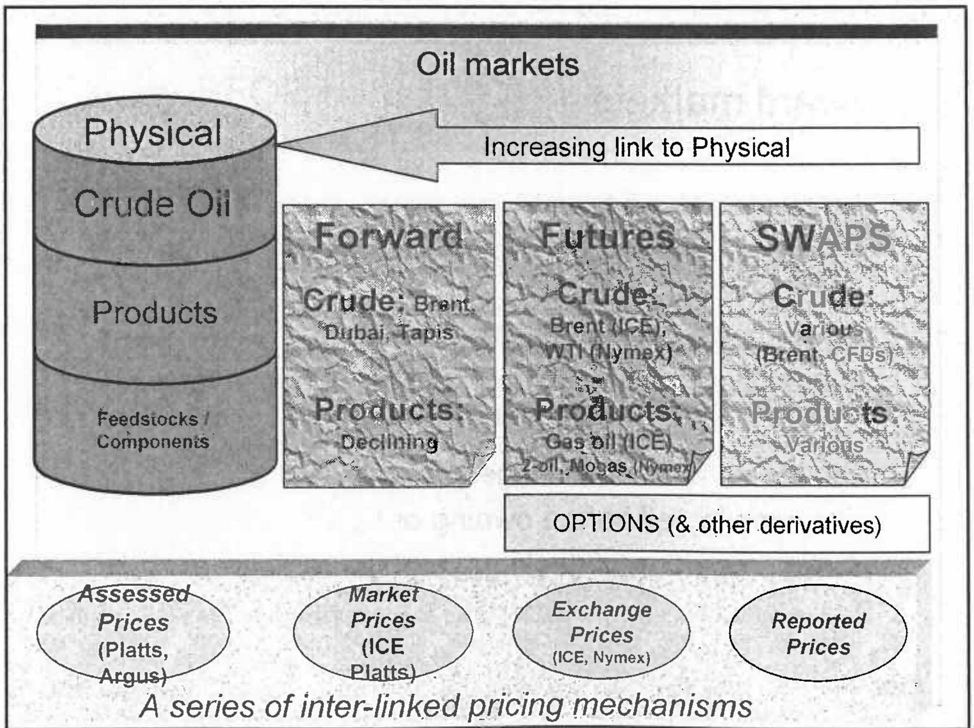


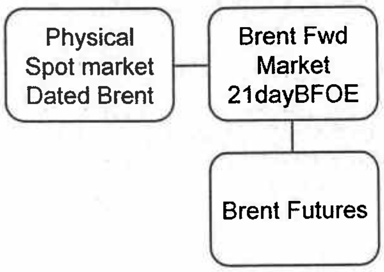
Spot

Where the liquidity is and reaction to external events

Derivatives: Forward Market, Futures, Swaps

- Fixed price physical deals are rare
  Prices on physical deals go up and down with the spot market
  The spot market is linked to major benchmarks which in turn are linked to the futures prices

Fix a price or a margin using forwards, futures or swaps



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Forward markets – oil

- Developed by trade
  Standard contract for purchase & sale of a standard quantity & quality of a oil
  Price known only to buyer and seller → Private deal
  Quantities: cargo size subject to volume tolerances

- Oil traded for months in the future
  Common to sell before owning or buying
  Small proportion of deals go to physical delivery<10%

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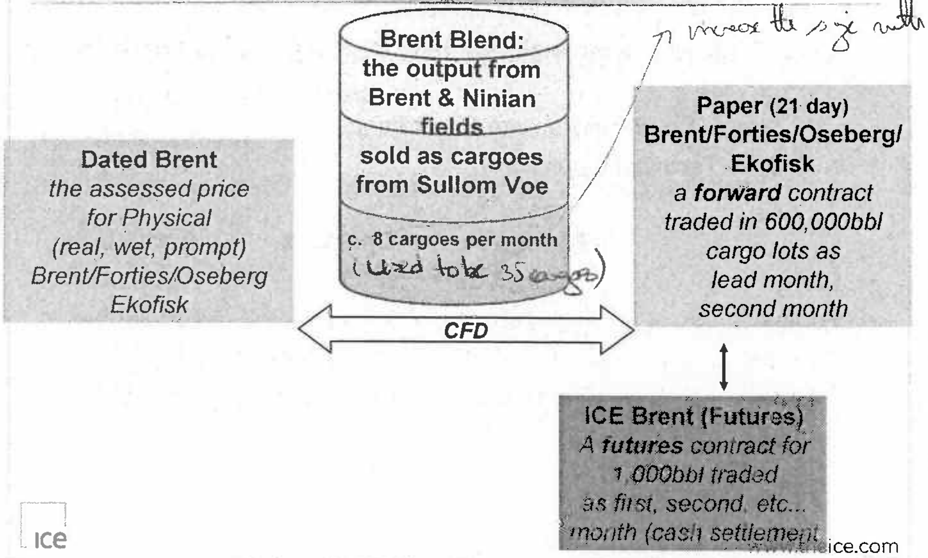

↗ increase the size with FOE

Contract For Difference (SWAP)

Dated Front Line
DFL (Avg of month)

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21 day BFOE contract

• Volume	600,000 bbls +/- 1% *
• Period	Calendar Month
• Delivery	Nominated N Sea terminal according to grade
• Price	Fixed and Flat
• Payment	30 days from b/l
• Nomination	**21 days** notice by seller of 3 day window

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Brent and BFOE

- Brent and Ninian commingled in 1989 (production 550,000b/d)

  Shell – Load Programme Co-ordinator
  BP – Terminal Operator

	Terminal	Operator	Production
• Brent	Sullom Voe	BP	160,000b/d
• Forties	Hound Point	BP	700,000b/d
• Oseberg	Sture	StatoilHydro	225,000b/d
• Ekofisk	Teesside	ConocoPhillips	189,000b/d

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21 day forward BFOE market

- An off exchange futures contract
  Traded as undated for delivery in specific future month
  BP's terms for 21-Day Brent, deferring to Shell's 15-Day GTC's

- Price based on physical delivery of cargoes at Sullom Voe or delivery point for other grades
  No clearing house

- Price known only to buyer and seller; there is some disclosure - Platts MOC (replaced the 'window')
  Chains created, settlement by book-outs and offsets
  The underlying market for ICE Brent crude futures contract

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Goldman Sachs.
Morgan Stanley

Forward markets: problems

Barrier to entry as risk of default

- Only large companies participate due to high risks and potential large losses
- Inflexibility for risk management
- Chains created which are only as strong as their weakest link
- Dubious operational practises
- Wall Street preference for futures
- Only Brent has really survived: Forward Products replaced by Swaps

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Dated Brent

- Assessed price of physical crude oil scheduled for delivery in the next 10-21 days forward
- Cheapest of 4 grades (BFOE) – pressure valve
- Matured forward cargo
- Equivalent value = ICE futures/Forward Brent = +/- differential

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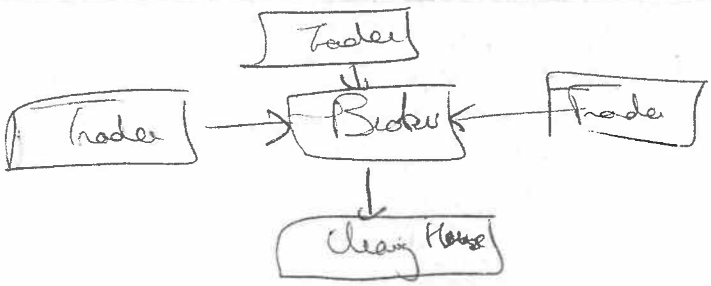

Relative prices – crude oil

- Brent and WTI are the key benchmark grades
- Other crudes are bought or sold as a differential to the benchmarks
- Differentials vary because crudes have different qualities, are exported from different locations and are available at different times

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EXCHANGE TRADED FUTURES & OPTIONS

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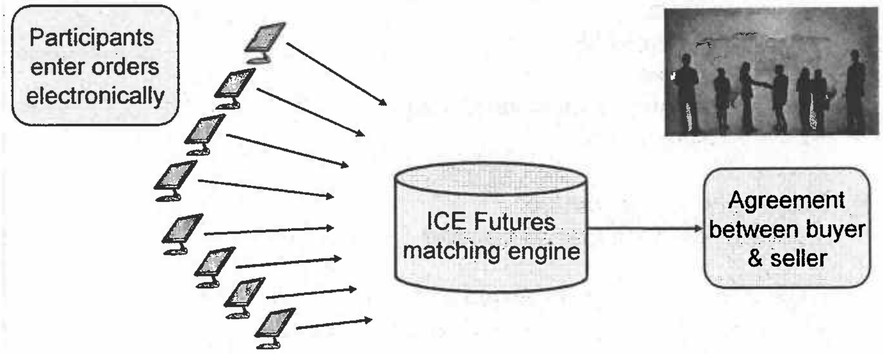
Futures Exchange



A market place where:

Securities or commodities are bought and sold in an open, regulated environment

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Exchange function

- **Risk Management**
  Providing a facility for managing price risk through a secure and regulated market
- **Price Transparency**
  The ability to know the price of oil now and in the future (to Dec 2017 on ICE)
- **Supply/Pricing Flexibility**
  The ability to separate price function from supply function (EFP)

Exchange Future Physical

- **Investment Opportunity**
  Provides additional liquidity

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Main features

- Paper contracts
  - Forward purchase
  - Forward sale

  Standard quantity & specified quality
  Maturity/delivery date
- Clearing house guarantee
  Initial and variation margin payable
- Price relationship with underlying
  Based on physical delivery or cash settlement
- Long and short
  Ability to 'sell short'
  Anonymous

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ICE: Diverse markets and technology expertise

ICE FUTURES		ICE OTC	ICE DATA & SERVICES
Europe Oil and refined products Natural gas ECX Emissions Electricity Coal	**U.S. & Canada** *Agricultural*: Cocoa, Coffee, Cotton, Sugar, Orange Juice, Barley, Canola Oil, Feed Wheat *Financial*: Currency Pairs, Euro Index, US Dollar Index, Reuters Jeffries CRB, Russell Equity Indexes	**OTC** Oil and refined products Financial gas Physical gas Financial power Physical power Natural gas liquids Hundreds of Swaps, Spreads and Options contracts	**MARKET DATA** Historical and real-time prices Indices and end of day reports Tick-data, time and sales Market price validations **SERVICES** ICE Education - training ICE eConfirm - trade confirms
ICE Clear Europe	ICE Clear U.S.	ICE Clear Europe	

TECHNOLOGY

- Connect via exchange telecommunication hubs in US, Europe and Asia, via the Internet or through dedicated lines
- Fastest matching engine for commodity markets and most sophisticated spread implication functionality
- Leading electronic OTC marketplace for commodities, including credit filter and cleared/bilateral functionality
- ICE engineers develop and maintain proprietary exchange software and matching engine , front-end GUI and global technology infrastructure

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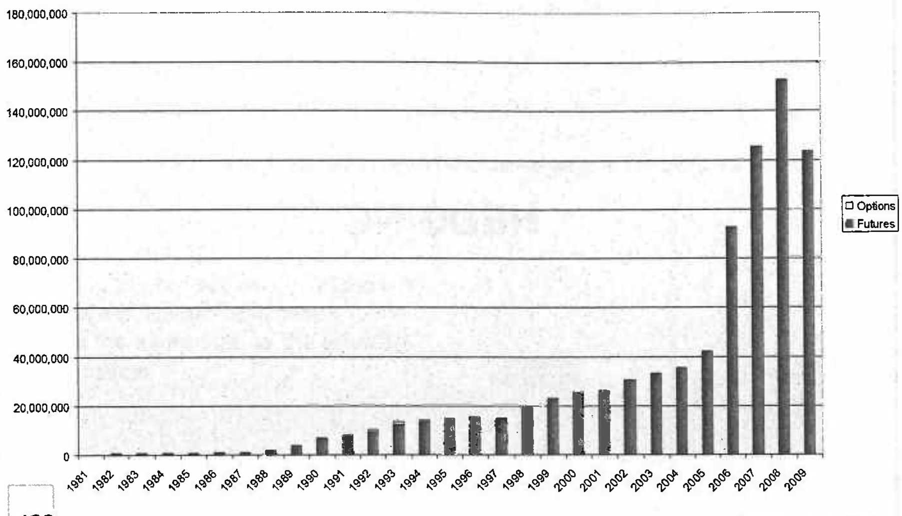
ICE Historic Volume



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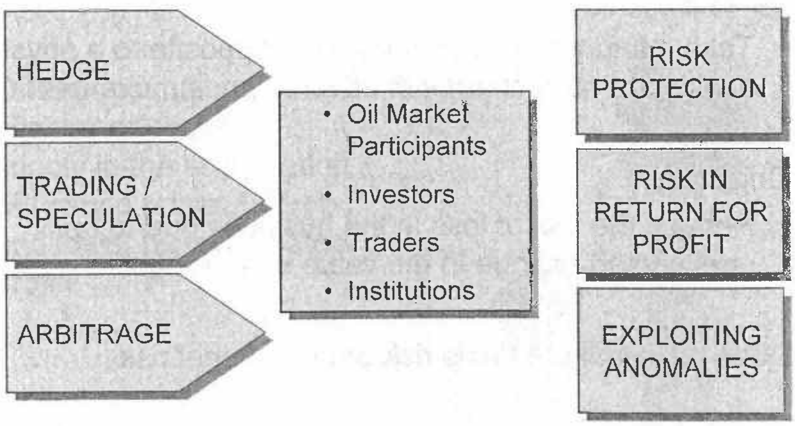
Uses of futures



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HEDGING

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Hedging

Definition

- Take a futures position equal and opposite to a physical position to protect against adverse price movement

Objective

- Reduce the risk of loss in the business due to an unexpected change in the value of a product

Does not eliminate basis risk or operational risk

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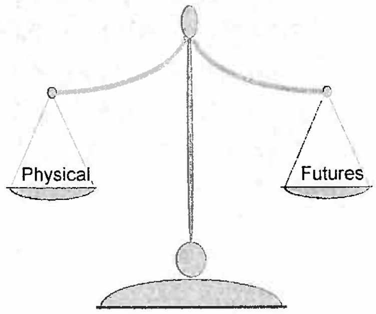
Hedging with futures

Long Physical	-	Short Futures
Short Physical	-	Long Futures

The futures position is referred to as the "hedge" and needs to be of the same size as the physical position



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Hedging example

Oil Producer is concerned that over supply in the spot market will cause prices to drop and lower his anticipated profits

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Basic hedging example

Refiner has fixed his forward sales of products based on current market prices; he is concerned that Crude prices could rise and that his margins will be eroded

- Price in crude spot market today = $66.42 per bbl
- Price in crude futures market = $66.42 per bbl

- The producer sells crude futures $66.42 per bbl
- The refiner buys crude futures $66.42 per bbl

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Result

Crude price moves:

a) $75

b) $55

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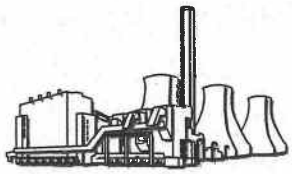
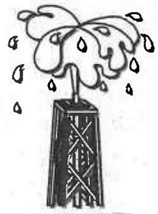
$75

- Refiner will buy his crude in the cash market at $75
- The above loss is off-set by the long futures hedge



$75 - $66.42 = $8.58 Futures Profit
Locked in purchase price of $66.42

- Producer will sell oil in the cash market at $75
- The above gain is off-set by the loss on the futures market



$66.42 - $75.00 = $8.58 Futures Loss
Locked in sale price of $66.42

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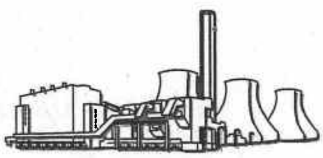
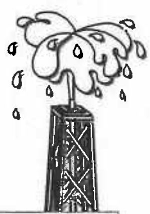
$55

- Refiner will buy crude at lower price but make a loss on futures hedge
- Products are delivered at price based on crude price of $66.42



$55.00 - $66.42 = $11.42
Futures Loss
Offset by lower price of crude, net purchase $66.42

- Producer will sell his crude in the cash market at a lower price
- The loss is off-set by the short futures hedge



$66.42 - $55 = $11.42 Futures Profit
Locked in sale price of $66.42

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Hedge imperfections

Quality risk - the hedge is on another product

Geographical risk - the hedge is on another market

Time risk - physical commodity and hedging tool trade for different dates

Structural risk - the futures contract price and underlying asset price diverge

Basis risk

The risk associated with the relative price movement of the hedging instrument and the underlying asset

The futures price (ICE Brent) does not move in parallel with the spot price (Dated Brent)

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Hedge imperfections

- Quality risk - the hedge is on another product
- Geographical risk - the hedge is on another market
- Time risk - physical commodity and hedging tool trade for different dates
- Structural risk - the futures contract price and underlying asset price diverge

Basis risk

The risk associated with the relative price movement of the hedging instrument and the underlying asset

The futures price (ICE Brent) does not move in parallel with the spot price (Dated Brent)

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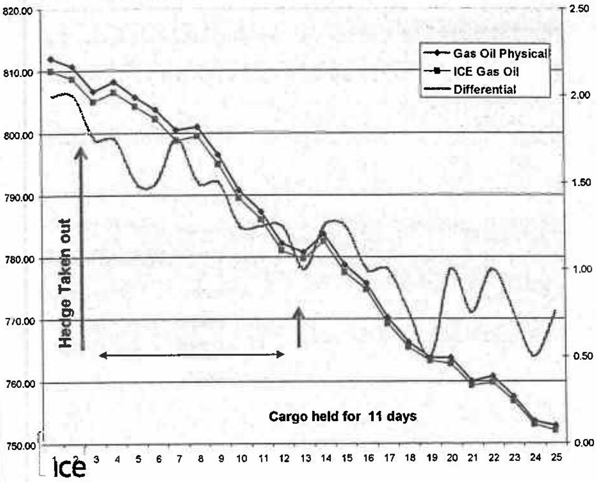
Basis Risk & Gas Oil futures hedging

The basis changed resulting in the loss of $1/mt



Original Cargo Purchase
Buy 20kt Gasoil 811.00
Sell 20kT Futures 809.00

Subsequent Sale (and buy-back of futures)
Sell 20kT Gasoil 781.00
Buy 20kT Futures 780.00

Loss on Physical:	$30mt
Gain on Futures:	$29mt
Loss:	$ 1/t

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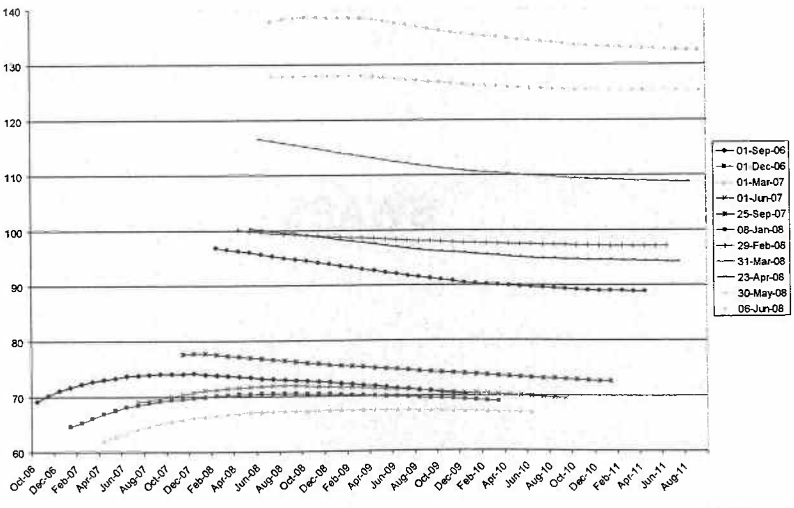
ICE Brent forward curves



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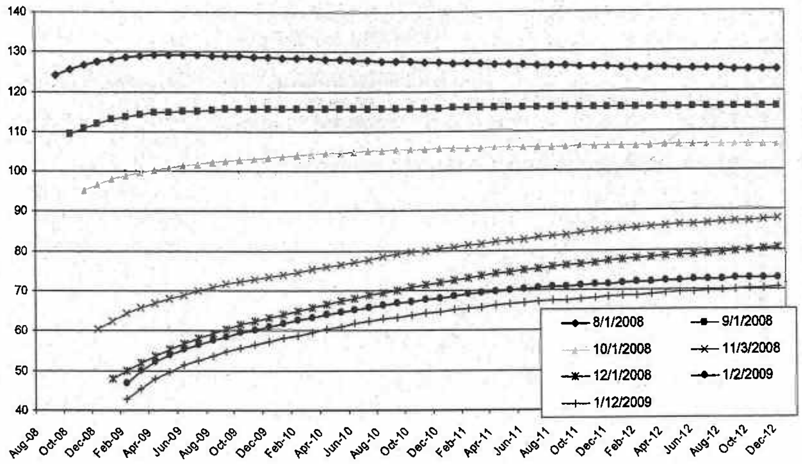
WTI and Brent forward curves



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SWAPS

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Exchange futures

- Liquid
- Competitive & transparent

Secure but

- Only exist for Major products
- Basis risk in time and grade
- Require hands on management

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Swaps are similar to futures

- Exchange fixed price now for a floating price at a pre-determined time in the future

- A custom made off-exchange futures contract taken out with an acceptable counterparty

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Swaps

- Swaps can fix a price to sell or buy just like futures They are agreed over the counter (OTC)
- Swaps offer more flexibility
  - Grade
  - Time
  - Size
  - Price formula
- Relatively simple to manage

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Comparison: futures and swaps

• Futures	• Swaps
Liquidity	
Transparency	
Strong counterparty	Counterparty risk
Trades reported	Private transaction
Physical delivery / cash settlement	Financial settlement
Regulation	Regulation limited
Limited choice	Wide range of indices
Basis exposure	Exact hedge

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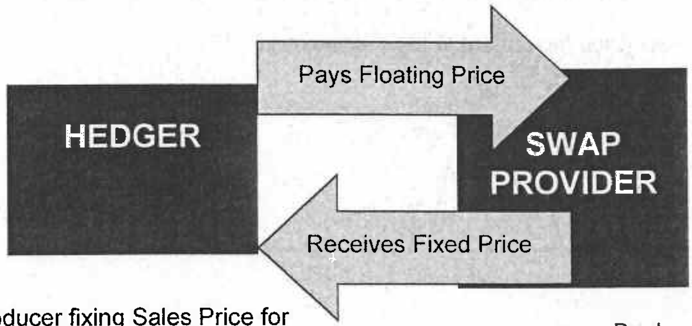
Swap: exchange fixed price for floating price

The Hedger fixes a price to sell



Producer fixing Sales Price for output at $65bbl

Bank

Oil Company

Trader

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Swap example: producer sells fixed price Brent

- Index: Dated Brent
  Platts Crude Oil Marketwire
- Volume: 600,000 bbls
- Period: 1 to 31 October 2009
- Price: $65bbl
- Contract: Oil Producer sells a swap to Swap Provider and buys back the floating price, average of Platts mean quotes

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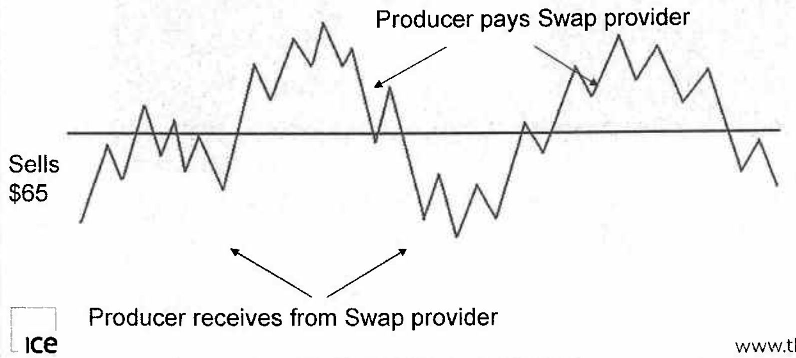
Cash flow: Producer sells fixed price Brent swap to provider

Producer is compensated by swap provider when floating price is below fixed price, but pays swap provider when floating price exceeds fixed price

Swap offsets price movement in the cash market price



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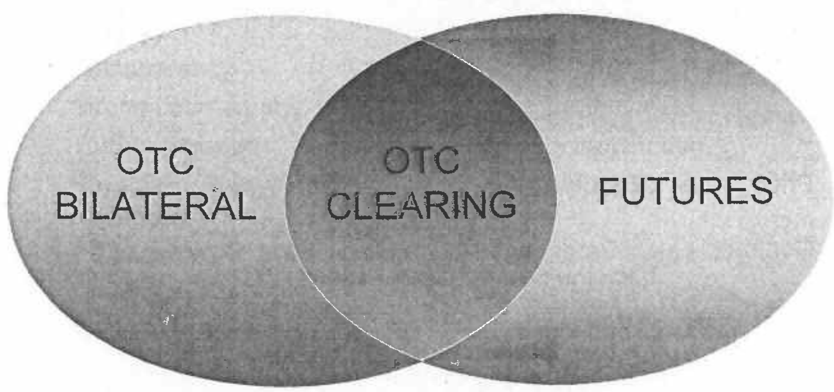
Clearing of OTC products



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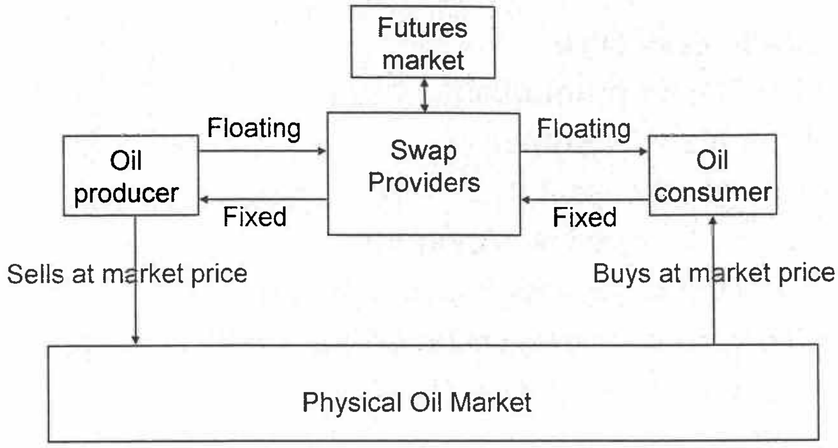
Structure of the swaps market



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TECHNICAL ANALYSIS

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Fundamental news, bullish or bearish?

- Collapse in Dow
- OPEC cuts production/quotas
- Bitterly cold weather in ...
- New government in....
- Colombia pipeline blown up
- IEA reports very high crude stocks
- Obama introduces crude import quotas
- Fuel cells will replace gasoline....

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Technical analysis

The study of market action, primarily through the use of charts, for the purpose of forecasting future price trends

John J. Murphy

Principles

- All market information is discounted in the price
- Prices trend
- History repeats itself

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Interpreting charts

- Support and resistance
- Trend
- Reversals
- Continuation patterns
- Indicators

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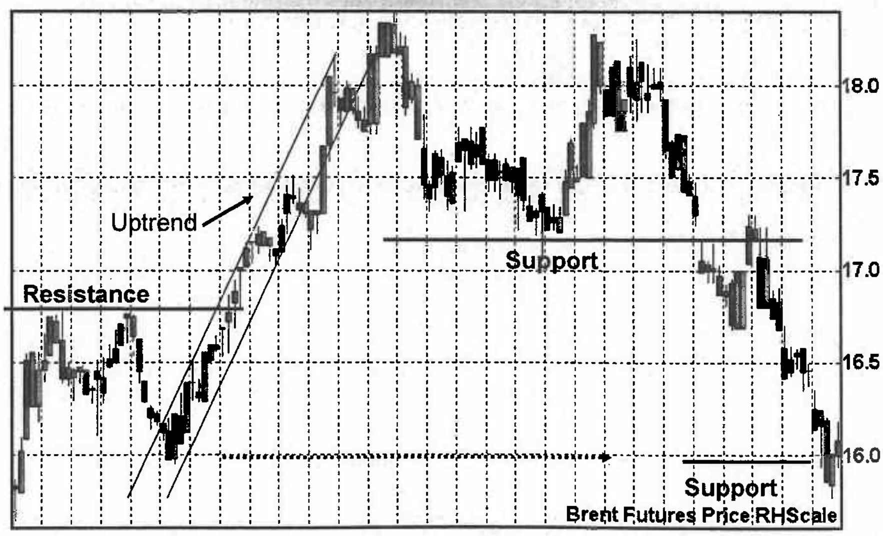

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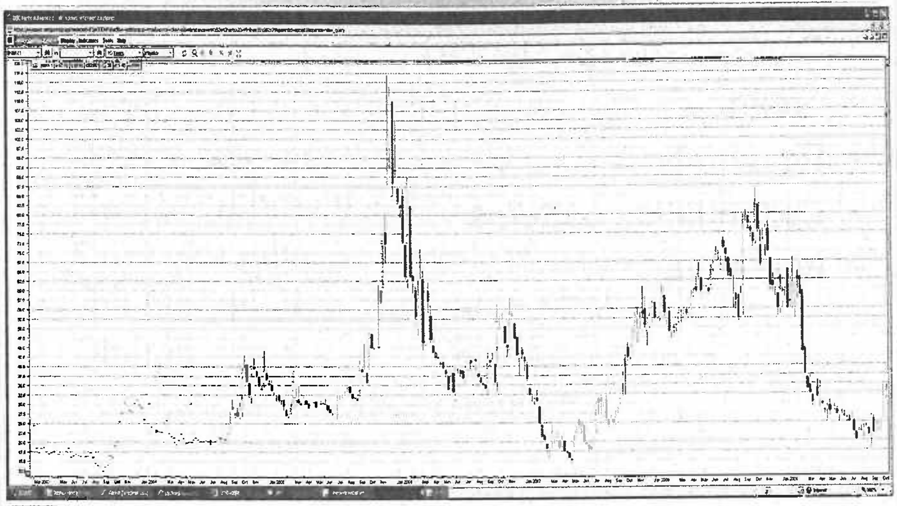
ICE NBP Natural Gas Weekly 1st Month, Mar 2003 – October 2009



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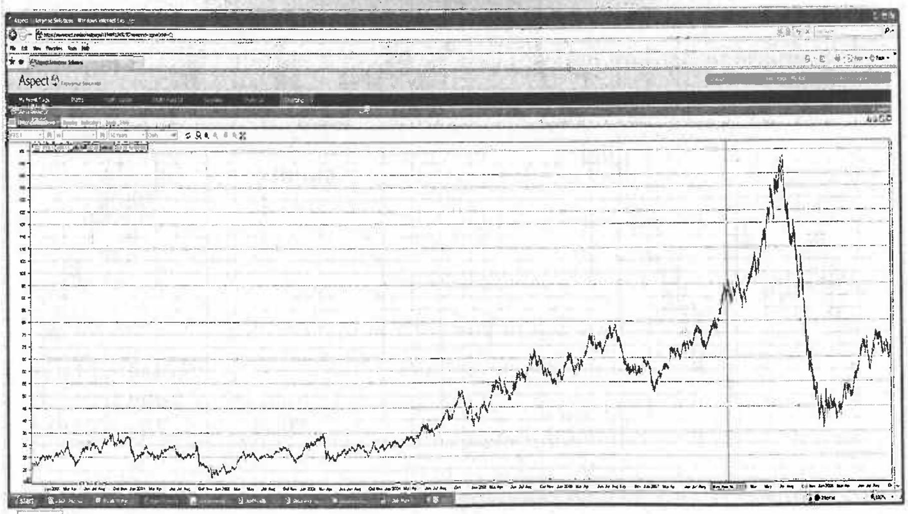
ICE Brent futures Weekly 1st Month, Oct 1999 – Oct 2009



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Glossary

ABANDON - To allow an option to expire worthless.

ACCEPTANCE - Agreement of intention to carry out a transaction.

ACTUALS - The physical commodity.

AMERICAN STYLE - An option which can be exercised by the buyer (holder) at anytime during its life.

ARA - Antwerp, Rotterdam, Amsterdam.

ARBITRAGE - The simultaneous purchase of an instrument in one market and the sale of the same, or similar, instrument in another market in order to exploit price differentials.

ASK - An indication of willingness, to sell a specified amount of a commodity at a specific price (also known as offer).

ASK PRICE - The price at which a seller is prepared to trade.

AT-THE-MONEY - An option whose exercise price is equal, or close to, the current price in the underlying market.

BACKWARDATION - A market where the price of near delivery months is at a premium to more distant months.

BASIS - The difference between the futures price for a given commodity and the comparable cash or spot price for a commodity. Normally quoted as cash price minus futures price. i.e. a positive number indicates a futures discount; a negative number indicates a futures premium.

BBL - Barrel; also, less frequently, BL

BEARISH - The belief that the market price will fall.

BID - A proposal at a given time on the trading floor to buy a specific amount of a commodity at a specified price.

BID PRICE - The price at which a buyer is prepared to trade.

BULLISH - The belief that a market price is going to rise.

CALL OPTION - An option that gives the buyer (holder) the right but not the obligation to buy a specified quantity of the underlying instrument at a fixed price, on or before a specified date. The seller (writer) of the option has the obligation to deliver the underlying instrument if the holder exercises the option.

CARRYING CHARGES - The costs incurred in warehousing the physical commodity generally including interest, insurance and storage.

CASH MARKET - The physical market underlying a futures or options contract.

CASH & CARRY - An arbitrage transaction involving the simultaneous purchase of a cash commodity with borrowed money and the sale of the appropriate futures contract.

CASH SETTLEMENT - When the physical delivery of futures or options is cumbersome then contracts are settled by attaching a monetary value.

CLASS - All options of the same type pertaining to the same underlying commodity. Calls and puts form two separate classes.

CLEARING - The process of trade match, registration, settlement and provision of a guarantee of exchange traded contracts.

CLEARING FEE - A sum charged by the clearing house for clearing trades through its facilities.

CLEARING MEMBER - A member of a clearing house.

CLIENT ACCOUNT - Any individual or entity being serviced by an agent (broker) for a commission. Servicing generally includes advice, accounting, and order execution. A customer's business must be distinguished from the brokers principal in-house business and may be in a physically segregated account at the clients option.

Glossary

CLOSE OUT - A finalising transaction by which an equal and opposite trade closes an open position.

CLOSING RANGE - A range of closely related prices at which transactions took place at the close of a market.

CODE OF CONDUCT - The trading procedures and etiquette of a market.

COMMISSION - The basic fee charged to a customer by a broker for a purchase or sale transaction. Commissions are negotiable.

COMPLIANCE - (1) Action to comply with rules and regulations.
(2) A department responsible for ensuring the maintenance and adherence by Members to the rules and regulations of an exchange.

CONFIRMATION - The process immediately following a transaction whereby the traders confirm the details of the trade.

CONTANGO - Where the cash price of nearby future delivery months is at a discount to more distant months.

CONTRACT - A binding agreement between a buyer and a seller in a transaction or the expression used to relate to particular futures products i.e. Brent Crude futures contract.

CONTRA - A contra is a facility available on the TRS that is used to enable a trade or trades in any contract to be moved from one clearer to another subject to certain criteria. In certain circumstances the contra facility will also be used to delete ("bust") a trade.

CRACK SPREAD - The buying of crude oil whilst taking the reverse position in refined products (for example Brent Crude and Gas Oil). Any combination of energy futures can be used, provided that the number of crude contracts equals the number of product contracts.

CROSS/SELF TRADE - The simultaneous purchase and sale by the same broker in the pit for equal amounts of the **same** month of a contract at a single price.

DELIVERY - Settlement of a futures contract by delivery of the underlying physical product.

DELIVERY MONTH - The month specified in a given futures contract for delivery of the actual physical spot or cash commodity.

DISCOUNT - The amount by which a future or option is priced below its theoretical or "fair value" or below the price of the underlying instrument. This term is applied to both fair value and crude basis.

DISTANT MONTHS - The far dated delivery months in a futures or option contract.

EDSP - Exchange Delivery Settlement Price. The settlement price for physical delivery.

EFP/EFS - An EFP (EFS) is the exchange of a futures position for a physical (swap) position. With EFP (EFS) two agreeing parties switch cash (swap) and futures position through the Exchange.

EXECUTION - Refers to the transaction of an order.

EXERCISE - The procedure by which the option buyer (holder) takes up the rights to the contract and is delivered a long (call) or short (put) futures position by the seller (writer).

EXERCISE PRICE - The price at which an option buyer (holder) has the right to buy or sell the underlying commodity.

EXPIRY MONTH - Options terminology for delivery month.

FILL - Refers to the completed execution of an order.

FUTURES CONTRACT - A legally binding agreement on a recognised exchange e.g. IPE, to make or take delivery of a specified instrument, at a fixed date in the future, at a price agreed upon at the time of dealing.

Glossary

HEDGE - The establishment of a position in one market which is equal and opposite to that held in another market. The reduction of risk.

HIGH - The highest price traded that day.

HOLDER - The person who buys an option contract to open a position.

HOUSE ORDER - An order for a Member's proprietary account.

IN-THE-MONEY - An option which has intrinsic value.

INITIAL MARGIN - The returnable collateral required to establish an options position.

INTRINSIC VALUE - The value to an option buyer (holder) if he were to exercise an option today.

LONG - The position established by the opening purchase of a contract.

LOW - The lowest price traded that day.

MARK-TO-MARKET - The process whereby positions are revalued daily using current prices to determine profit/loss and therefore variation margin.

MINIMUM PRICE FLUCTUATION - The minimum movement that a futures price can move. Otherwise known as a tick.

MNEMONIC - The abbreviation of a Member's company name or individual trader used on a trading badge.

OFFER - see ask price

OPEN INTEREST - The number of contracts left open in the market which need to be closed out or taken through to delivery.

OPEN POSITION - A long or short position that has not been offset by an equal and opposite position e.g. closed out.

OPENING PROCEDURE - The market procedure to establish the opening level of a particular contract.

ORDER - A buy or sell instruction, or combination thereof.

OUT-THE-MONEY - A call (put) option where the exercise price is above (below) the current price of the underlying.

PHYSICAL DELIVERY - The transfer of ownership of an underlying commodity between a buyer and seller party to a futures contract following expiry.

PREARRANGEMENT - The arrangement of a trade to be executed non-competitively in the pit. A pre-arranged trade represents a breach of the Rules (except in the case of cross trade).

PREMIUM - The price paid by the option holder (buyer) to the option writer (seller).

PUT OPTION - An option that gives the holder the right (but not the obligation) to sell a specified quantity of the underlying instrument at a fixed price, on or before a specified date. The writer of the option has the obligation to take delivery of the underlying instrument if the option is exercised by the holder.

QUOTATION - The method used to express the price of a contract for trading purposes.

RALLY - The rapid rise in a price following a fall.

ROLL OVER - The transfer of a position from one expiry month to another - always involving the purchase (sale) or the nearby month and simultaneous corresponding sale (purchase) of a longer dated expiry month.

ROUND TRIP - The opening purchase (sale) of a contract and the subsequent opposite and closing transaction in the same contract. Transaction costs are usually quoted on a "round trip" basis.

RISK MANAGEMENT - The application of financial analysis and diverse financial instruments to the control and the reduction of selected types of risk.

Glossary

RULE BOOK - The Regulations of the Exchange.

SERIES - All options of the same class which have the same exercise price and expiry date.

SETTLEMENT PRICE - The official price established by the Exchange at the close of each trading day. This figure is used to calculate variation margin.

SHORT - A sale of a contract to open a position.

SPREAD - A trade in which two or more open positions are established in order to trade the differentials and offset risk. Option spreads may use different exercise prices and/or expiry dates.

STANDARD ORDER - The order form used as an official receipt of all incoming orders onto the market floor. These forms must be immediately completed and time-stamped before communication to the trading pit for execution.

STRIKE PRICE - See "exercise price".

TICK -The standardised minimum price movement of a contract's quotation.

TIME STAMP -The time logging machine which records the exact time an order is received and when executed.

TIME VALUE - That part of an options premium not accounted for by intrinsic value.

TIDYING UP PERIOD - Refers to the period of time at the clearing up process on the futures contracts.

TIME AND SALES - The bids, offers, traded prices and estimated volume as observed by Exchange Pit Observer and then recorded in the sequence in which they occurred.

TRADE DISPUTE - Where two traders or more disagree about a particular trade.

TRADE EXECUTION - The process by which orders are traded on the market floor via open outcry (except EFPs/EFSs).

TRADE PRICE - The price agreed between buyer and seller at which the transaction is executed.

TRADING HOURS - Refers to the hours when a particular contract is open for trading.

TRADING RANGE - The range of prices that have been traded over a particular period of time.

TRS - The Trade Registration System is a real-time dual sided matching and account assignment system which allows traders to actively confirm trades.

UNCOVERED / NAKED POSITION - An option position where the writer has no cover against a market move in the holder's favour. The writer of a naked call does not have the underlying commodity to deliver and the writer of a naked put has not sold the commodity short.

VARIATION MARGIN - Profits and losses on open positions which are calculated daily by the mark-to-market process, which are then paid or collected daily.

HISTORICAL VOLATILITY - The measurement given to reflect the degree to which a particular price has fluctuated in the past.

VOLUME - The number of transactions of a particular contract made during a specified period of time.

WRITER - The person who sells an option contract to open a position.