



OIL BENCHMARKS: IMPLICATIONS & OPPORTUNITIES

May 2011

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OIL BENCHMARKS: IMPLICATIONS & OPPORTUNITIES

Content:

- Introduction: Contexts, ICE role in crude and benchmarks
- Commodity investment, active & passive, custom indices, long/short
- Importance of oil contracts: Spot performance, roll return, correlations
- So what do ICE oil contracts have to offer?
 - Consistently superior performance, liquidity, global benchmarks & reach
- Current trends, Brent, WTI, Gasoil
- Market issues - benchmark performance, growth and liquidity

Key take-aways:

- Commodity futures benchmarks performance is closely related to their fundamental oil infrastructure
- Water-borne contracts best fulfil the original rationale for oil's key index role
- Oil contracts' contribution to Indices is too important to leave to underperforming, domestically-driven WTI & Heat

ICE OVERVIEW:

DIVERSE MARKETS, PRODUCTS AND TECHNOLOGY

ICE Regulated Futures Exchanges

U.S. & CANADA	
AGRICULTURAL	FINANCIAL
Cocoa	FX
Coffee	US Dollar Index
Cotton	Russell Equity Indexes
Sugar	
Orange Juice	
Barley	
Canola Oil	

EUROPE ENERGY
Brent Crude
WTI Crude
Sour Crude
Gas Oil/Heating oil
Natural gas
Electricity
Coal
Emissions

ICE OTC

OTC ENERGY
Oil and refined products
Physical/Financial gas
Physical/Financial power
Natural gas liquids
OTC Iron Ore
OTC Credit – Creditex
CDS – indexes, single names, structured products

ICE Data & Services

MARKET DATA
Real-time prices/screens
Indices and end of day reports
Tick-data, time and sales
Market price validations
SERVICES
ICE eConfirm
Coffee & cocoa grading facilities

ICE Clear U.S., ICE Clear Canada

ICE Clear Europe

ICE Trust – CDS Clearing

Integrated Markets, Clearing and Technology



BACKGROUND: GLOBALLY RELEVANT OIL MARKETS

ICE BRENT & GASOIL

ICE Brent and Gasoil are the respective largest physical markers globally

- Crude oil is world's largest commodity market
- Critical strategic raw material, liquid fossil hydrocarbon
- Represents significant part of global GDP, geopolitical influences
- Physical Brent drawn from North sea, shipped via tanker
- Crude Oil reserves mostly in Mid-East, mostly consumed in OECD, but increasingly marginal demand coming from Asia

Oil market drivers:

Storage

- Only 50-55 days of S/T commercial supply
- So highly news-reactive

Correlation

- Negative with Dollar
- Cyclical/macro issues
- Inflation

BENCHMARK BASICS: FUNDAMENTALS & PRICE MECHANISM

WHAT IS A BENCHMARK, THEIR FUNCTION, WHY THEY MATTER

WHAT MAKES A PRICE BENCHMARK?

- Oil and Steel comparisons - not single commodities
- Benchmarking a pricing solution to lack of homogeneity
- 550 crude grades - how many can be benchmarks?
- Largest? - Arab Light, Urals, Iranian Heavy? No
- Begs question - Why Brent (1200 kb/day) and WTI (350 kb/day) pricing more than 60mil b/day of 85 mil b/day – what is special about these two grades?

WHAT FUNCTION DO THEY SERVE?

- Benchmarks provide a standard industry reference point which is fair, market related, transparent and understood by all participants
- Benchmarks facilitate business by providing a focal point for differential pricing of related commodities
- Benchmarks enable :

Hedging

Price transparency (Pref. real-time)

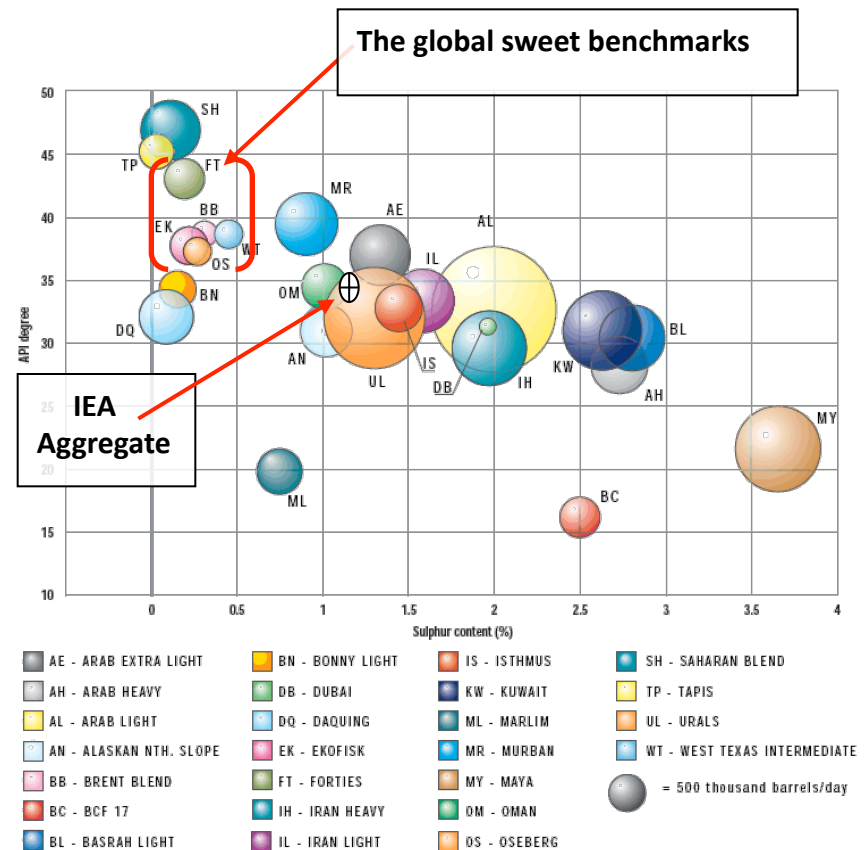


Figure 1: Global Crudes and their physical characteristics - density and sulphur.
Source: ENI World Oil & Gas Review 2008

COMMODITY INDICES AND OIL FUTURES

WHAT DO INVESTORS WANT & NEED ?

Importance of oil contracts, central to indices

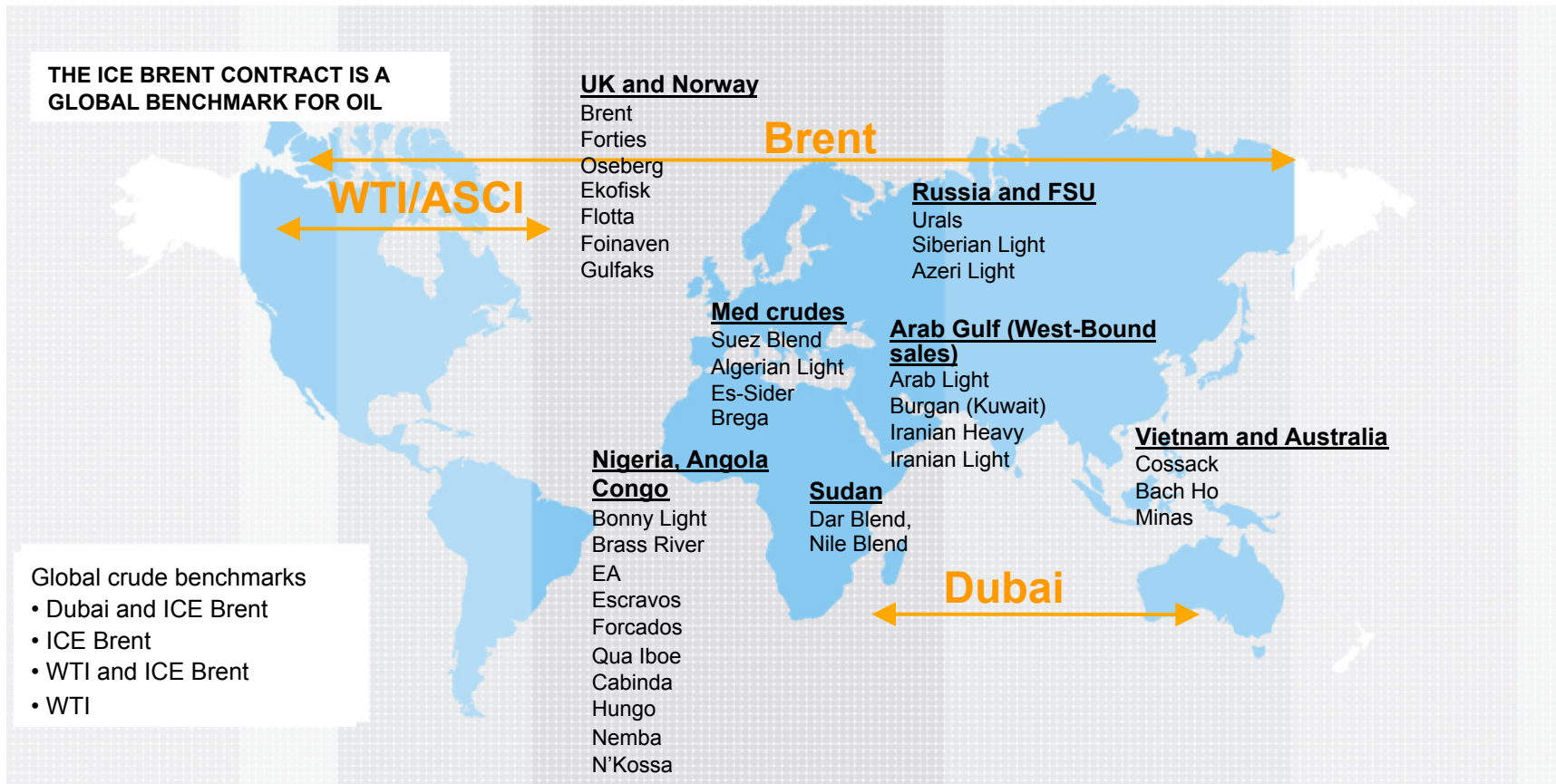
- Investors, hedgers, trader want exposure to ‘the’ (global?) oil price
- Global macro supply and demand, hopefully non-local physical factors prevailing
- Oil’s roll return a key index swing performance component
- Waterborne contracts deliver:
 - a globally-relevant ‘equilibrium’ price
 - and simultaneously deliver superior (rolling) performance
 - oil industry concentrates on diffs to crudes, not flat price
- Oil is an arbitrated equilibrium price, *when no infrastructure bottlenecks*

So what do ICE waterborne oil contracts have to offer?

- Superior performance – Consistently higher roll return, less volatile returns overall
- Deep liquidity for passive and active strategies, fast growth rates also
- Global benchmarks & longevity, less volatile pricing inter-relationships
- Expanding physical bases underscore longevity, align **appropriate** correlations
- Geographical reach, global footprints

ICE FUTURES EUROPE:

THE BRENT CRUDE FUTURES CONTRACT: Brent-related pricing worldwide



- As much as 70% of the world's internationally traded oil prices directly or indirectly off the Brent complex
- Our contract is the key component of that complex
- Financially-settled against Brent Index, ultimately deliverable via EFP mechanism

GLOBAL CONTRACTS, GLOBAL OIL FLOWS

MAJOR OIL TRADE MOVEMENTS

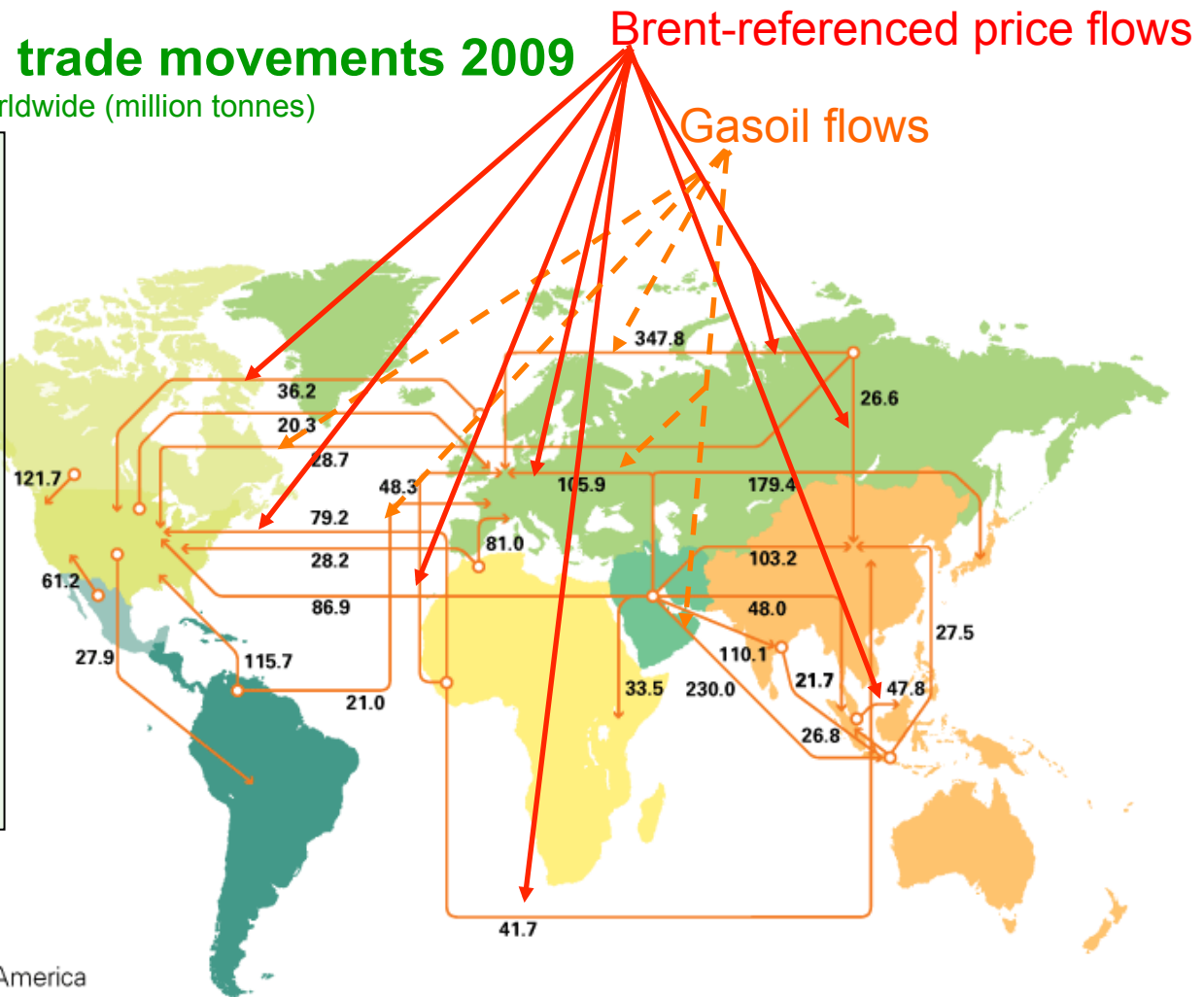
Major oil trade movements 2009

Trade flows worldwide (million tonnes)

Some Criteria for Global benchmarks:

- Globally representative grade with substantial production/consumption volume
- Reflective of underlying global oil economics
- Relative stability to other less economically or more economically-valuable crudes
- Wide acceptance by the oil industry as representative

- US
- Canada
- Mexico
- S. & Cent. America
- Europe & Eurasia
- Middle East
- Africa
- Asia Pacific



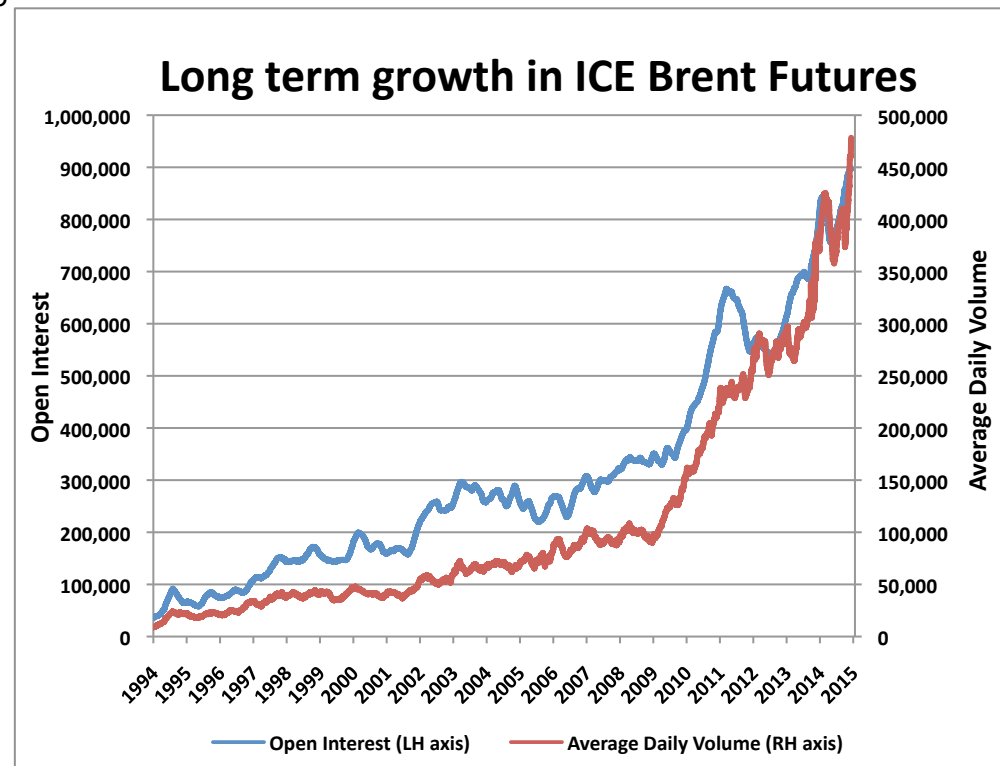
Source: BP Statistical Review of World Energy June 2010

SWEET CRUDES

LONG-TERM TRENDS

What trends can we identify?

- Brent the global physical standard, growing in Asia. Up to 70% of global physical pricing references Brent. Brent is the ONLY benchmark used in **all** global continents, for domestic and international pricing
- Liquidity growth of existing sweet futures benchmarks, benchmark longevity/inertia
- Brent is used by the widest range of users, from producers to end-users, traders, refiners, as well as financials to aid liquidity and price discovery
- Pricing relevance moving West to East, new complex refining/upgrading capacity favours seaborne, not pipeline US domestic landlocked grades
- European distillates now major price driver of refining margins, keeping sweets in Europe
- Relative decline of gasoline and FO destruction on upgrades
- WTI still important US (financial) benchmark
- But price dislocation issues continuing through 2011 – Canadian flows, pipeline/storage
- ASCI now physical pricing, growth of US Gulf's significance, fwd significance



ICE Brent 2011 YTD Average Daily Volume 530,000 (530 Million barrels per day of Brent futures alone to 24/3/11)

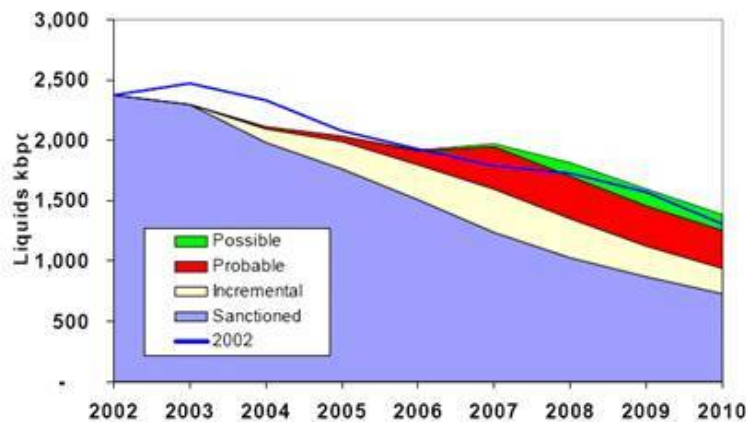
SWEET CRUDES

NORTH SEA SUPPLY LONGEVITY THROUGH TECHNOLOGY ENHANCEMENTS

Spot the difference?

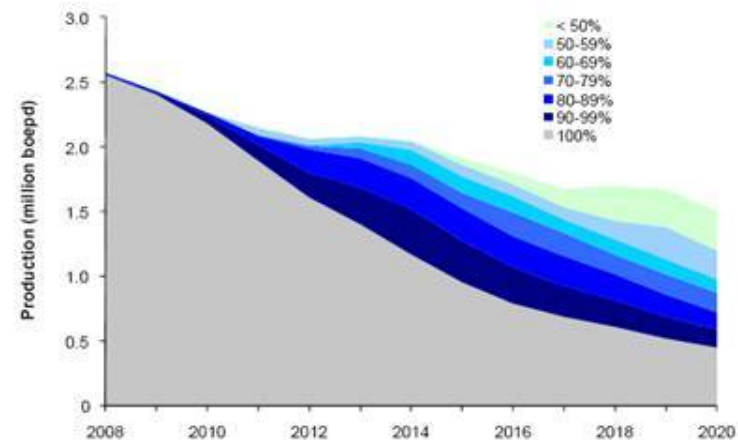
2003 North Sea Survey

Total Liquids Forecast - 2003 Survey



2010 North Sea Survey

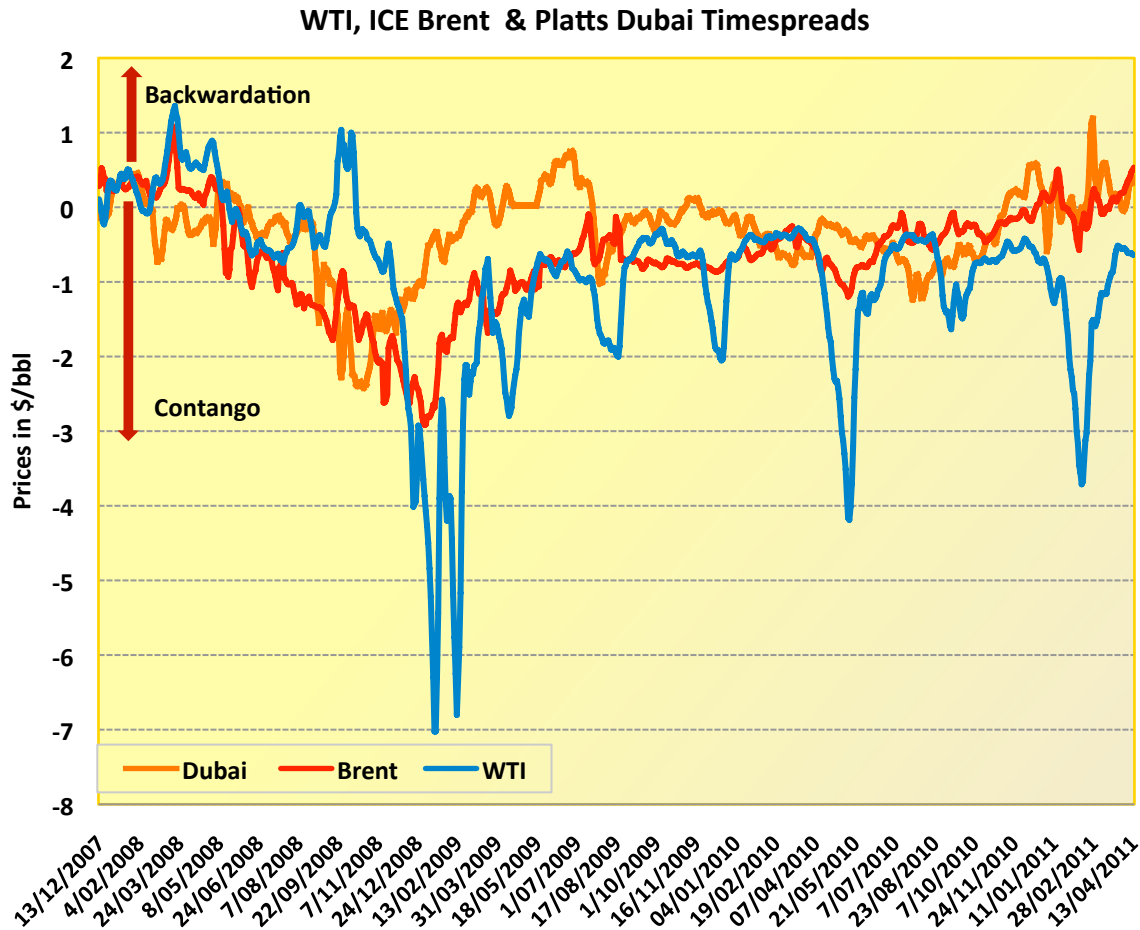
Figure 7: UKCS Oil and Gas Production 2008 – 2020 (reflecting the probability of new developments)



- It's 7 years of enhanced recovery....
- 2003 Survey suggested production might be below 1-mil b/day by 2010
- Now may be 1.5-mil b/day in 2020
- Note current 2010 production level is above even 2003 most optimistic 'possible' level
- 2011 survey forecasts decline rate halved in 2010-2016 to 3% from previous decade
- BFOE is 3-4 times the production of WTI, 15 times that of Dubai, before extra grades bolted on
- Largest benchmark by production, 60 cargoes in total, never been more cargoes in system in total

GLOBAL SWEET & SOUR CRUDE BENCHMARKS IN 2008-2011

BENCHMARK BEHAVIOURS



Some 2009/11 Touchpoints In Sweet & Sour Pricing

International Benchmarks

- WTI record \$16/bbl below Brent in Feb 11 (Mar/Mar), \$11.56/bbl below in Jan'09, \$5.71 below in May'10, yield norm \$1.50/bbl above

Sweet/Sour differentials

- MARS sour \$14.58 over WTI in Feb '11, \$5 May 2010, \$3 over in '09, instead of the usual -\$4-5

American Benchmarks

- LLS, a gulf sweet crude \$20.41 over WTI in Feb '11, \$9.90 over in '09, \$8.40 over May '10, when transport only 1.30/bbl
- Mexican Maya, Heavy Sour was \$20 below WTI mid '08, over WTI in Feb '09
- Dubai, global sour record \$15 below Feb 2011
- Put simply, recently more frequent, more extreme, lasting longer, extended down forward curves
- Extreme front-spread volatility
- Likely contribution to Saudi, Kuwaiti, Iraqi migration to ASCI
- 'Good benchmark for Cushing, not even for whole US'

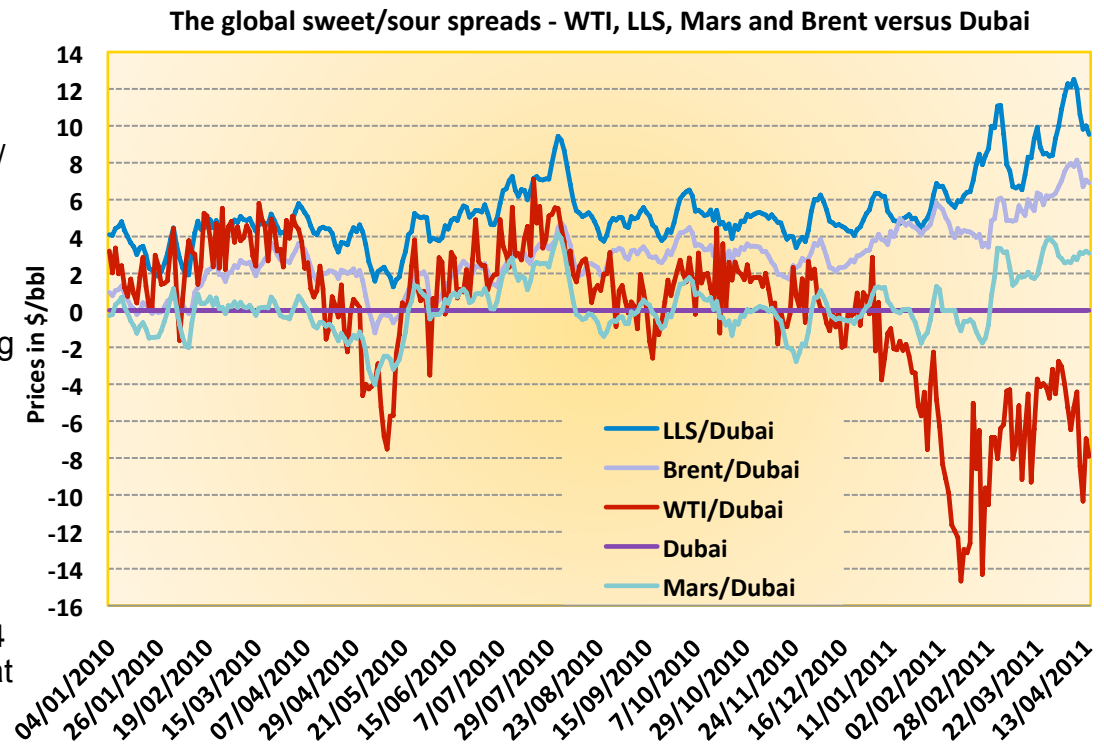
CRUDE BENCHMARK PRICING IN 2008-2011

BENCHMARK BEHAVIOURS

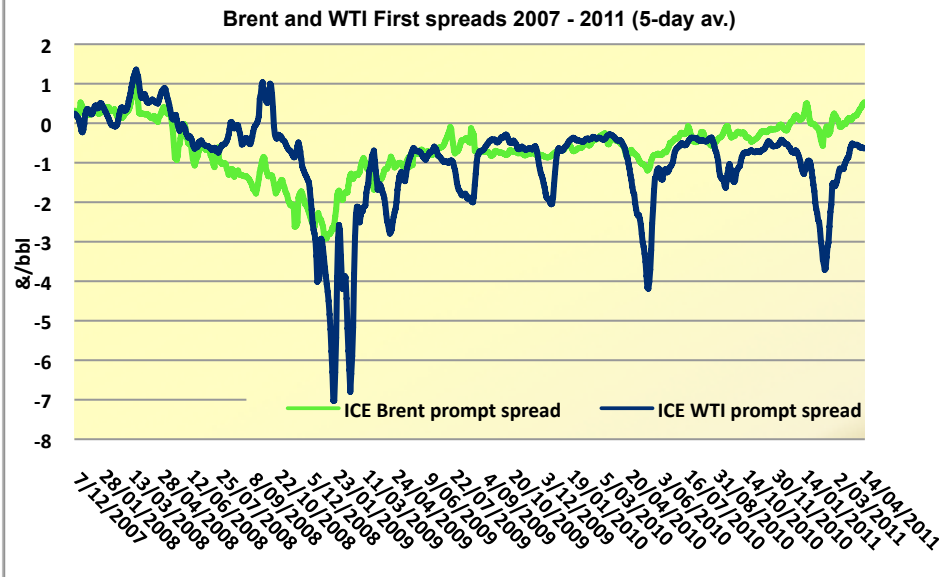
WTI issues raised by commentators:

- Cushing delivery location primarily a pipeline nexus, no proximity to US Gulf refiners, added Keystone pipeline capacity Feb 2011 @160k b/day
- Self-feeding 'Reinforcing feedback' of local inventory, growing to record 38-mil/ bbl to capture contango arbitrage
- One-way 'lock-in' effect of pipelines inward flow N. - Cash & carry arbitrage supply loop
- Extreme volatility of front spreads, pulling front flat prices down
- Depth of contango overall and instability of term structure problematic for all but nimblest traders or those with ample storage
- All this led to WTI decoupling from US & Int'l grades, MARS \$14.58 above WTI, LLS \$20.41/bbl above, WTI up to \$15.94 (Mar/Mar) below Brent – where does that leave differentials and cracks?

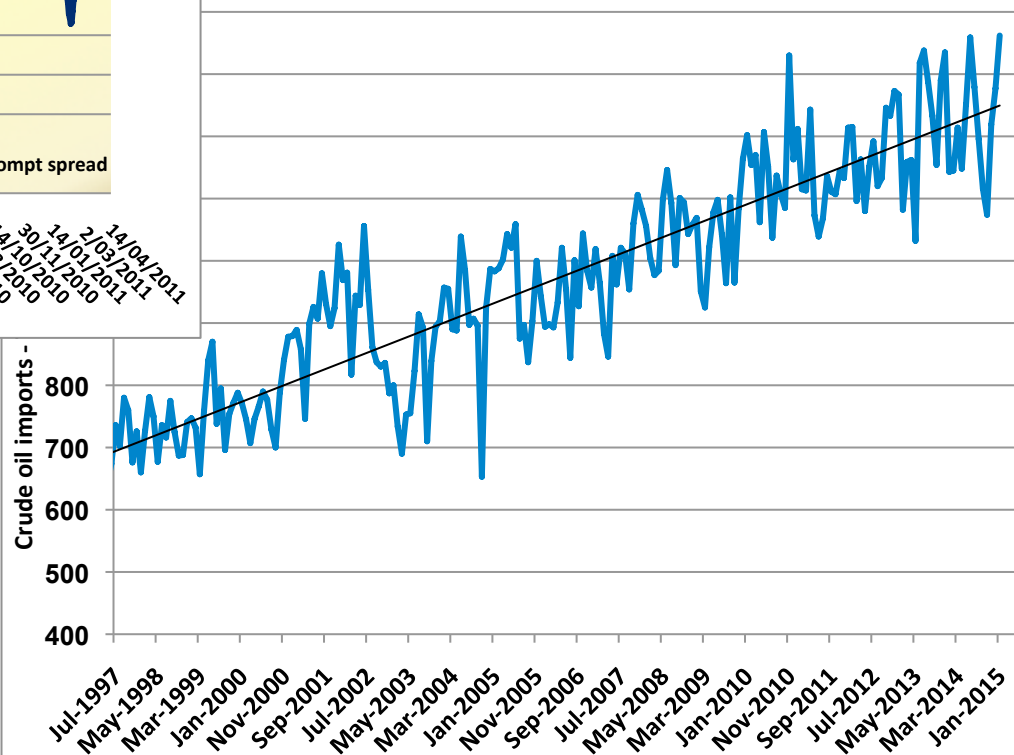
Global sweet/sour spreads 2010-2011



US CRUDE FUNDAMENTALS: CANADIAN IMPORTS INCREASING



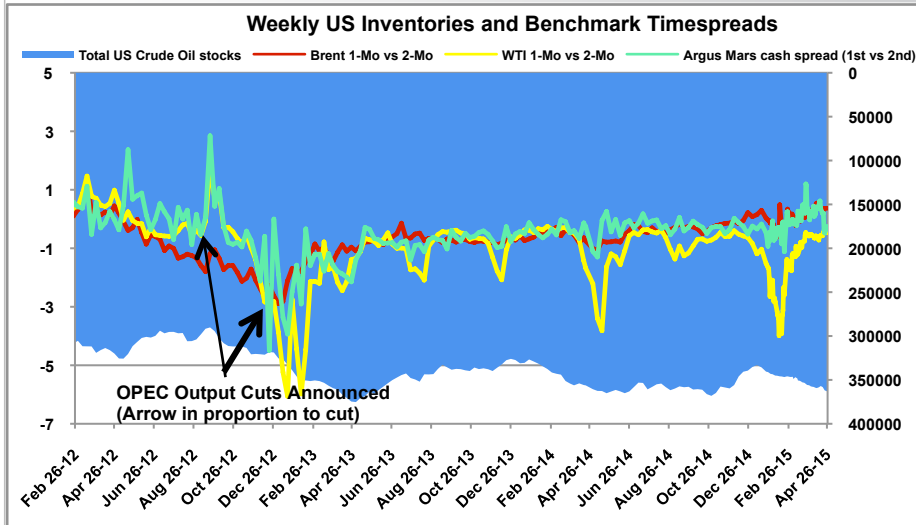
Canadian Crude Imports into Padd II (Kbd)



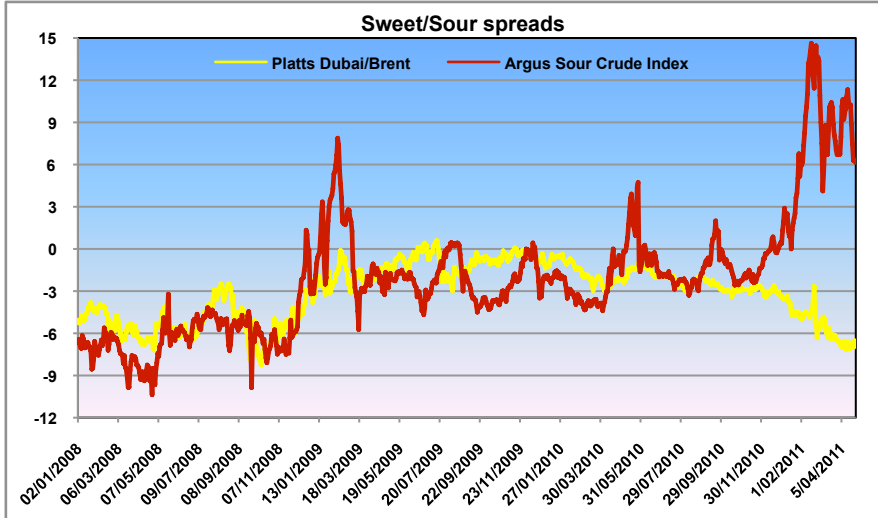
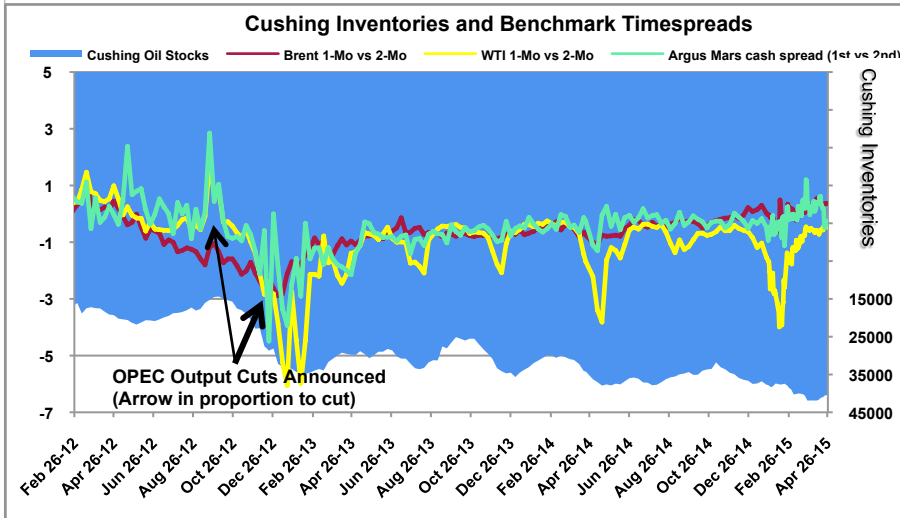
- Increasing Canadian supplies and a lack of export pipelines to the Gulf coast leading to inventory build up in the mid-west and around Cushing
- Localised refinery issues in PADD II can change the structure in WTI
- Pipelines unlikely to be reversed anytime soon?

SWEET AND SOUR CRUDE PRICE TRENDS 2008/11

SPREADS, CORRELATIONS AND MARKERS

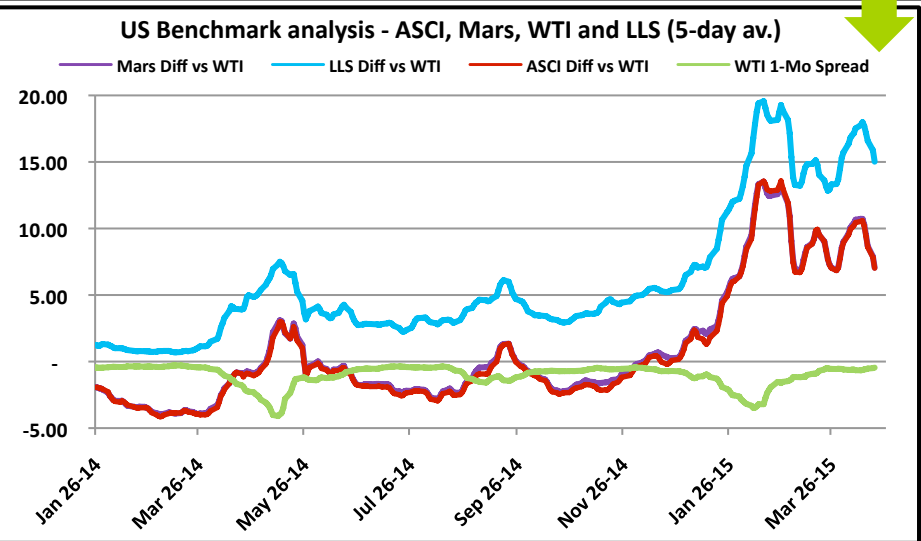
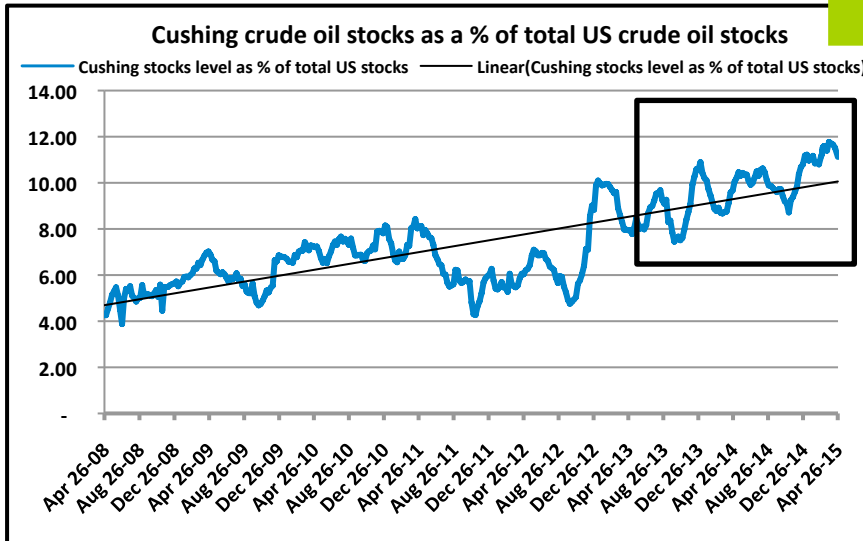
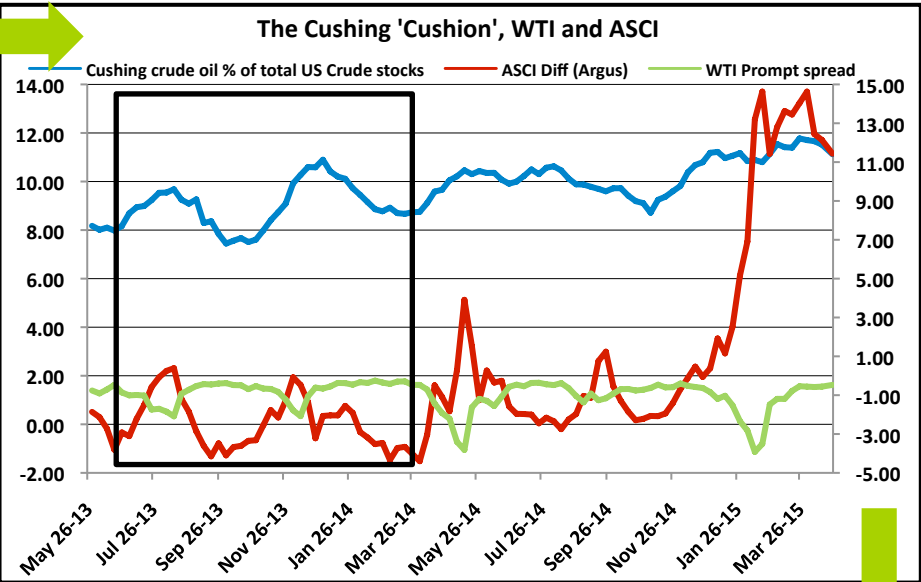
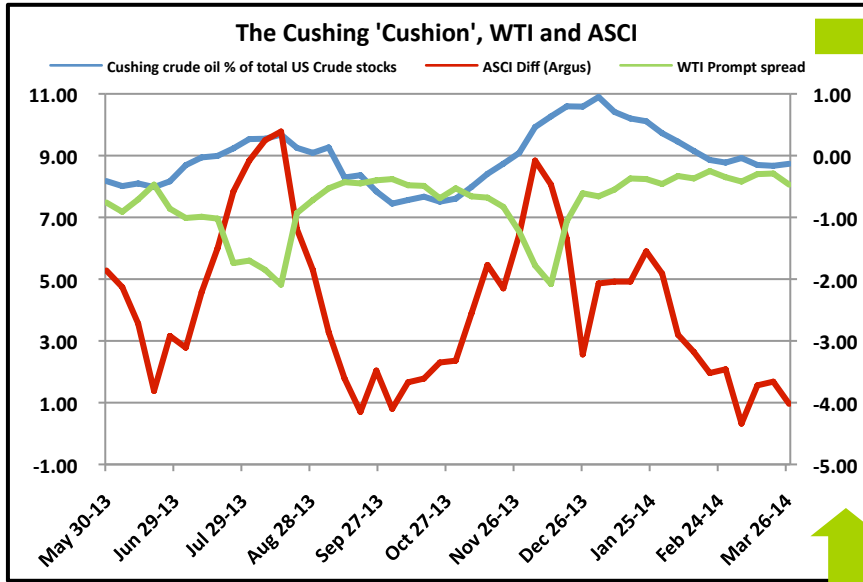


- The US debate over the WTI benchmark
- US Mid-cont'l pricing versus US Gulf (sour) physical
- Land-locked pricing issues not gone away
- Logic behind Argus Sour Crude Index
- The 'pull' of WTI is clear, so should US Gulf sour differentials, spreads and cracks be driven by inventory at Cushing?
- Is Cushing an efficient proxy for even US conditions?



CUSHING, WTI AND ASCI

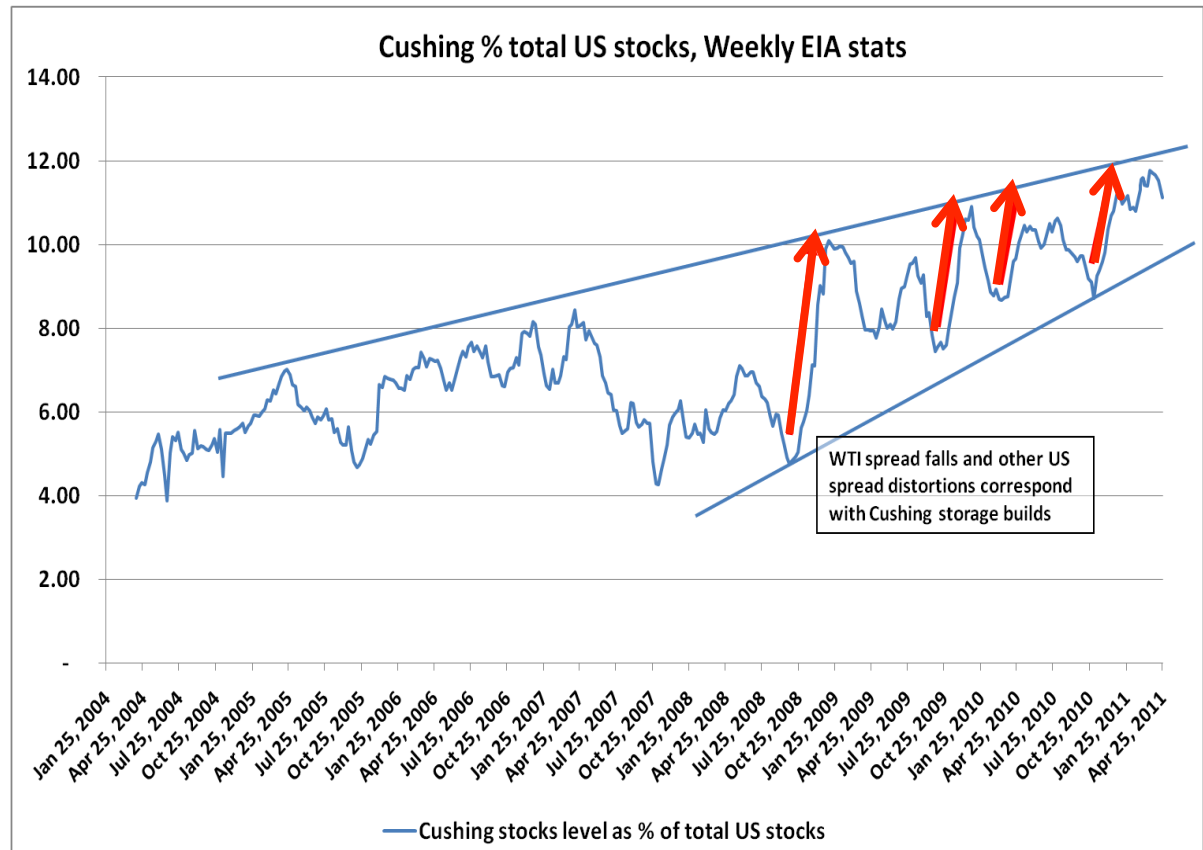
SPREADS DIVE, CUSHING INVENTORY BALLOONS, WTI DISLOCATES AGAIN JAN / FEB 2011



CRUDE BENCHMARK PRICING IN 2008-11

BENCHMARK CRUDE BEHAVIOURS

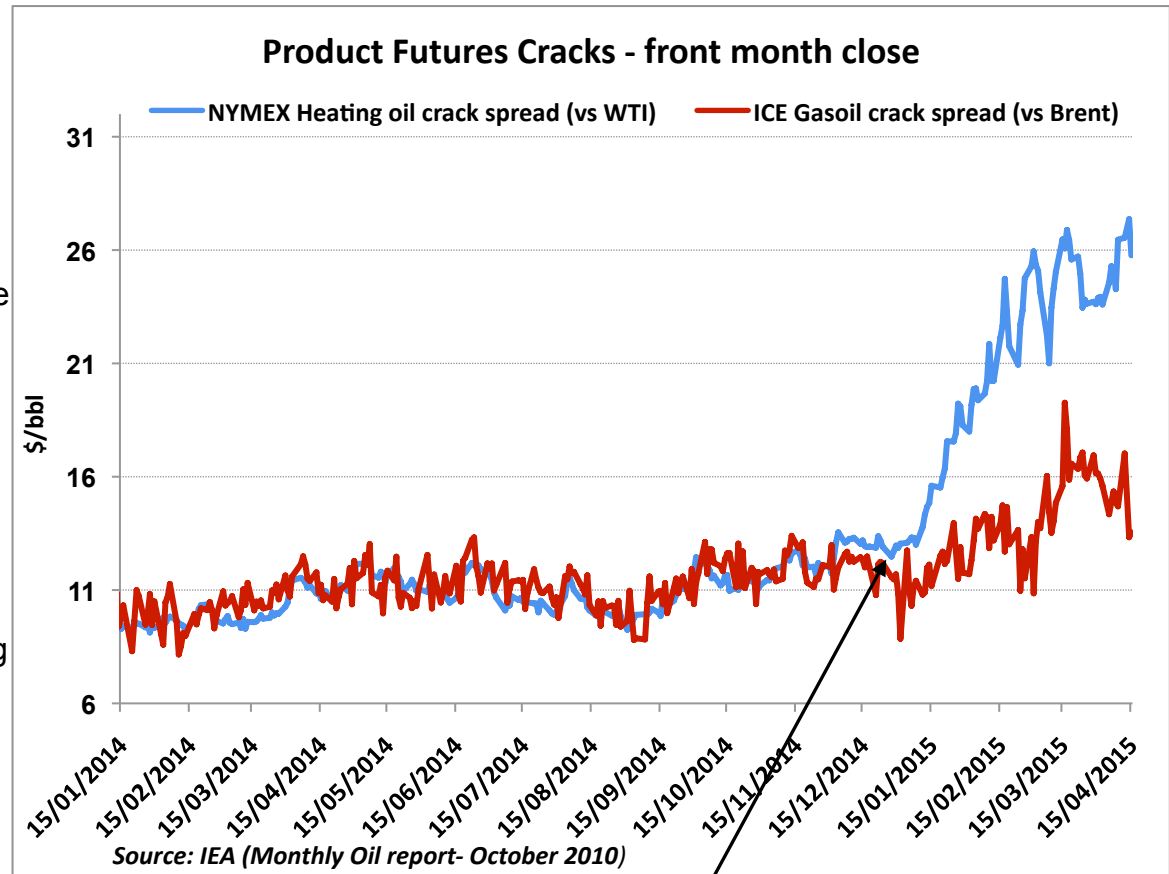
- Interesting ratio to watch – if Cushing storage begins to grow again on US economic weakness, \$ strength
- WTI much more of a financial counter than Brent - other crudes correlate more closely to refined products
- Who is biggest oil importer to the US? Saudi Arabia no longer main importer, behind Canada, Venezuela, Mexico...
- More crude going East now
- Signs of strength in Europe, will dislocation in WTI price mean-revert or continue at extreme levels?
- Increasingly will be divergence between the markets - idea of Atlantic basin market for crude breaking down on distillate, crude arbitrage and East/West to pipeline vs. seaborne schism – LT structural shifts - commentators



CRUDE BENCHMARK PRICING IN 2008-11

BENCHMARK CRUDE BEHAVIOURS, IMPACT MATRIX OF OTHER PRICES

- Did US refining margins/demand suddenly improve relative to Europe in Dec 2010/Jan 2011?
- Generally, no - reliance on WTI for relative price signals like product cracks can also be impacted by its relative price dislocation; price mechanism signals important for investment & refining decisions, putting oil on the water etc, storage
- Transatlantic sweet arb. may be structurally defunct for now
- Look at the relative volatility in the US distillate crack relationship – contributing to more interest in forward trading of sweet LLS and sour Mars grades in the US Gulf
- Keystone XL extension (Cushing to USGC, now delayed to 2013) won't reverse trend, 'magnetic' pull of storage still there..?



Did US distillate refining margins/demand suddenly improve relative to Europe in Dec/Jan 2011?

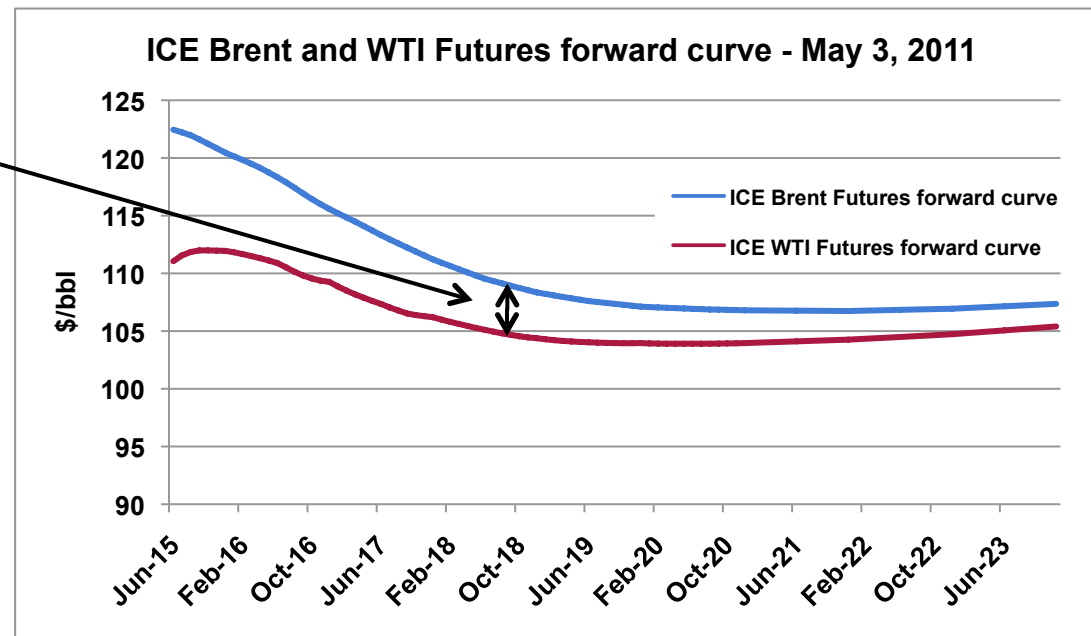
DISTILLATES TRENDS

BRENT & GASOIL FLOWS & THE FUTURE

Trends – where are we going?

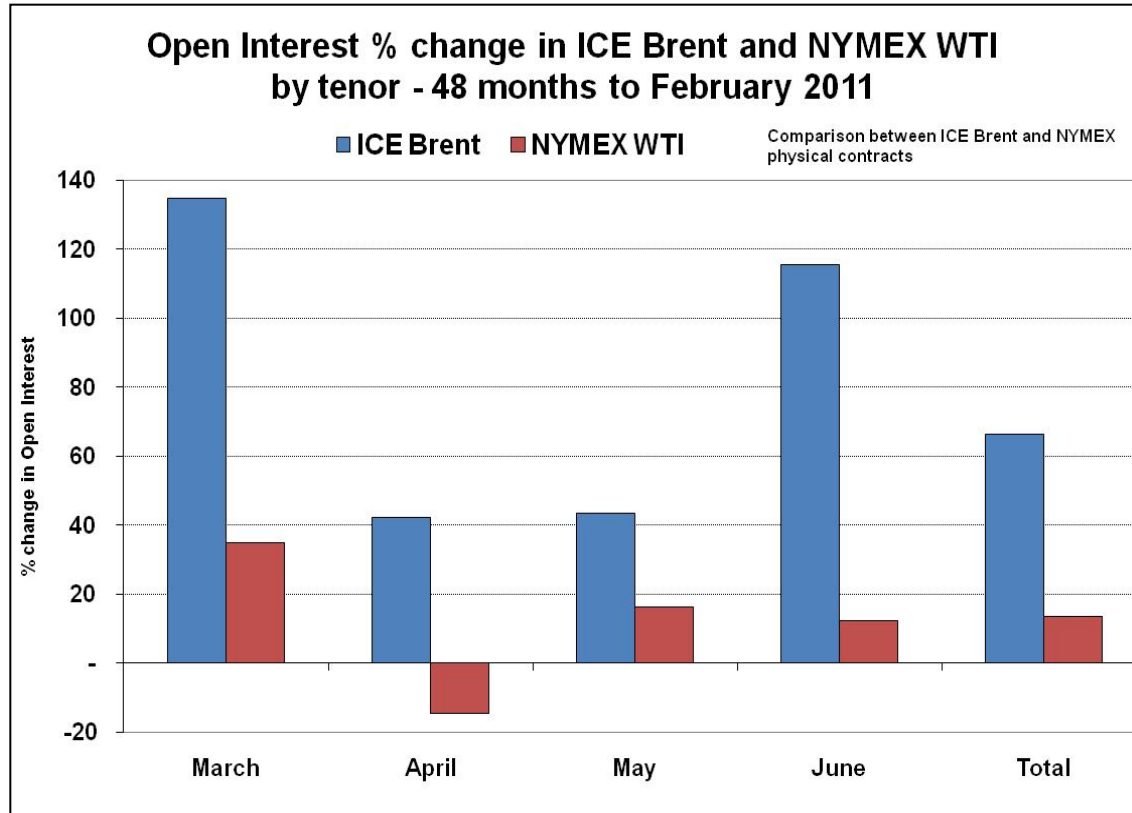
- Brent increasing in importance - OTC and futures, Asia trading, indices also, to 70%
- Brent/Gasoil crack the most important aggregator of refining margin globally
- Europe now the marginal pricing point globally. EU short diesel - increasing inward flows from east and west
- Distillates will be crucial cut for barrel - growing in transport fuels as NatGas grows vs. gasoil for heating
- OTC-futures gap narrowed- clearing, capital efficiencies critical, more on-screen hedging
- WTI/Brent increasingly a screen-based futures arbitrage, but reverting?

ICE WTI/Brent:
structural
premium for Brent
in place all the
way to 2019



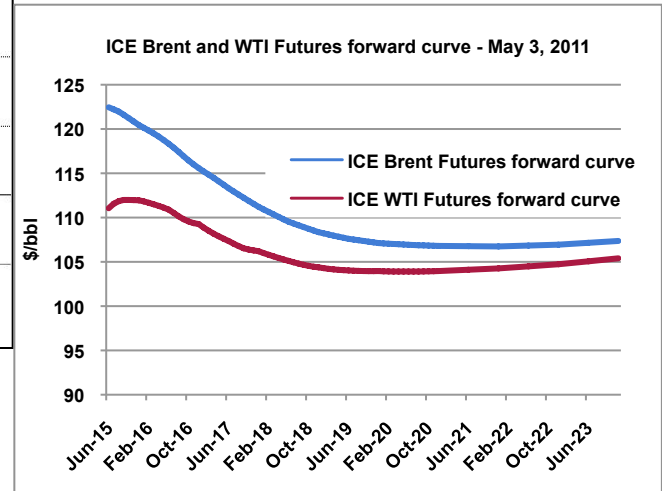
SPREAD TRADING & INDEX REPLICATION: ICE BRENT FUTURES

GROWTH IN FORWARD CURVE LIQUIDITY



Brent: The global crude benchmark

- Arbitrages east and west
- Positive roll returns
- Shows longer term spread consistency- returns consistently higher/less volatile than WTI
- Draw downs smaller
- ICE Brent Overall OI growth 66% vs. 13%

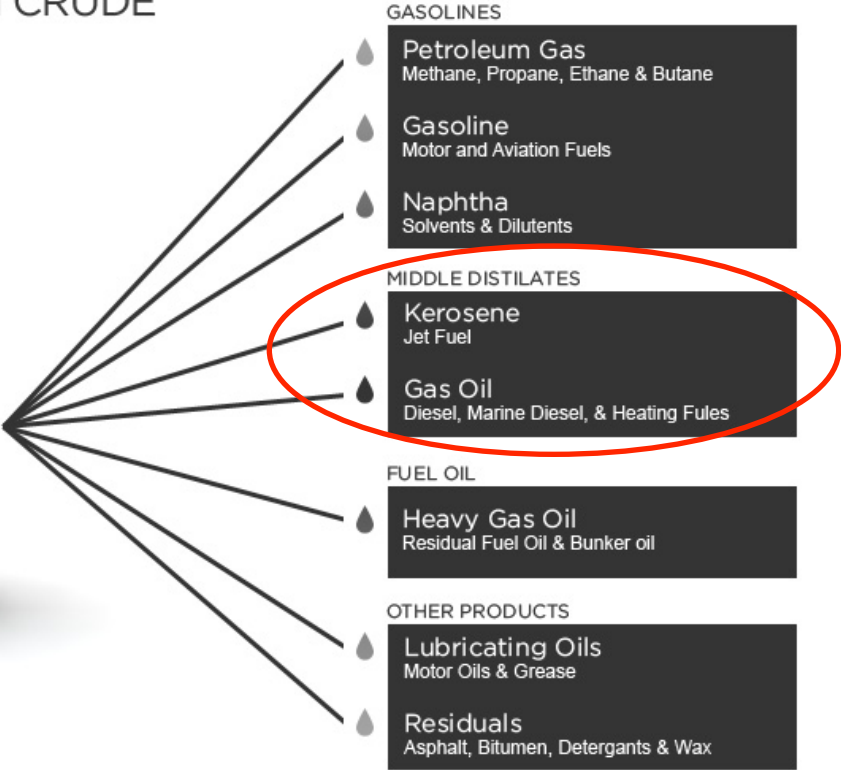


BACKGROUND:ICE GASOIL

- ICE Gasoil is world's largest refined petroleum future
- ICE Gasoil and heating oil same thing
- ICE Gasoil a proxy to the whole global heating oil market & all European middle distillates
- Middle distillates are a range of refined oil products
- Includes Diesel, heating oil, and Jet Kerosene
- < 40% of the crude barrel

THE REFINED BARREL: CRACKS TO CRUDE

PRODUCTS FROM CRUDE OIL AND USES



ICE FUTURES EUROPE:

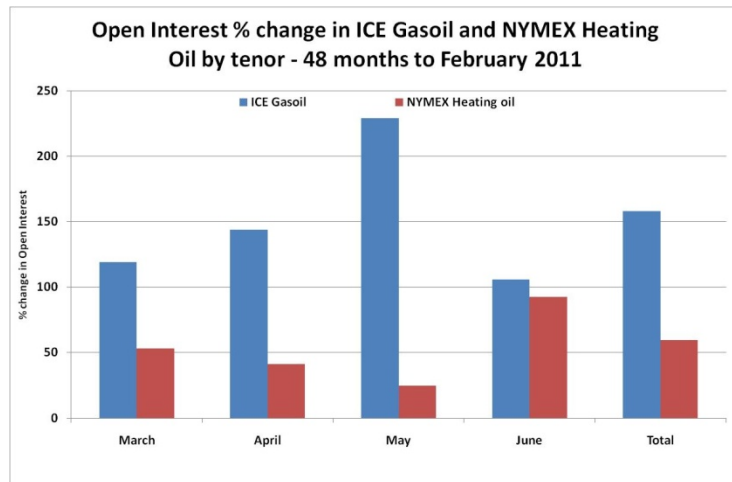
THE GAS OIL FUTURES CONTRACT

- The ICE Gasoil contract is the key European oil products benchmark
- Gasoil is now a global benchmark for all heating oil, flowing east and west
- All European middle distillates products are priced at a differential to Gas Oil



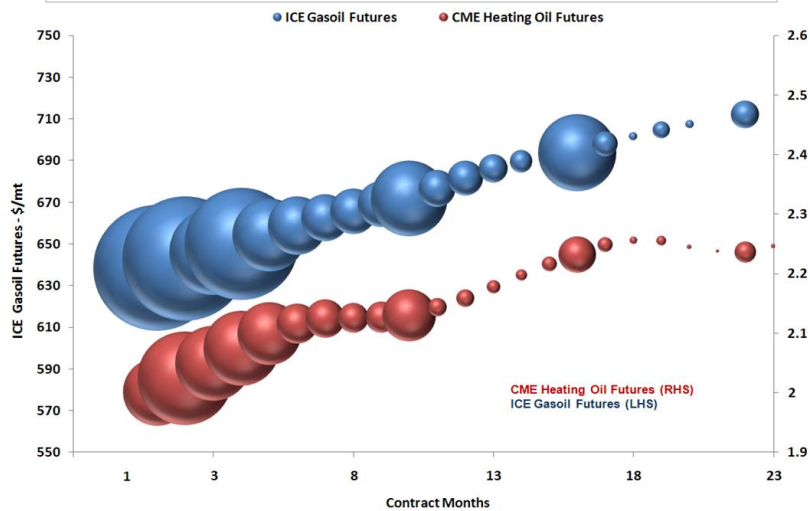
SPREAD TRADING & INDEX REPLICATION: ICE GASOIL FUTURES

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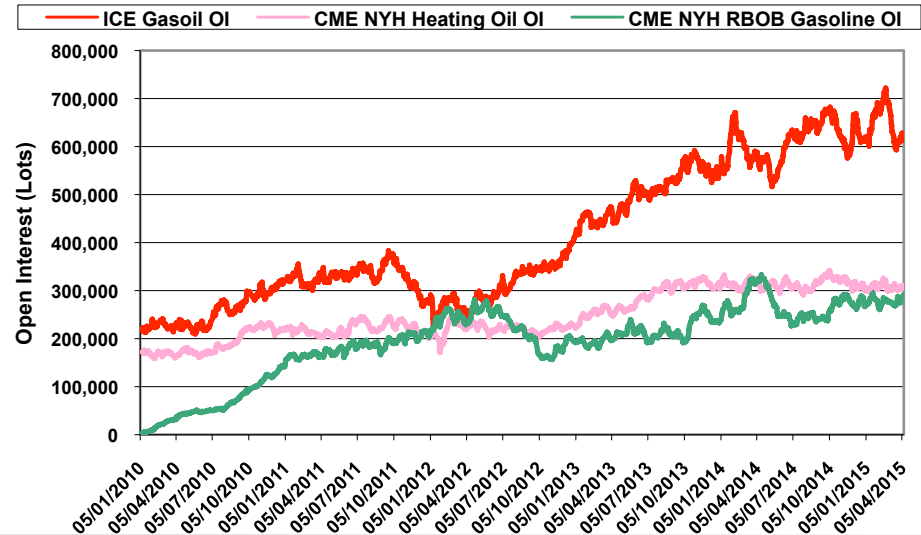


ICE Gasoil - a global refined product leader

- Pricing flows east & west
- Larger than Gasoline and Heat put together
- Open Interest has doubled in 2 years
- Superior roll returns
- Global status growing following move to 0.1% sulphur
- Liquidity extending faster down curve: crude- equivalent spread liquidity @ 500 lots
- Fastest growing major oil contract, underlies global distillate market



Gasoil Global Refined Products leader - Open Interest



INDICES & ENERGIES – PERFORMANCE-CRITICAL

WHAT INDICES TELL US ABOUT BENCHMARKS AND THEIR PHYSICAL INFRASTRUCTURE

- Why oil is critical to most indices performance
- Brent and Gasoil lead energy sub-indices (S&P GSCI & others)
- Our contracts complement performance-oriented active indices for new vehicles and instruments - better performers on roll return, new or emerging contract areas
- ICE Contracts sub-index relative performance (S&P GSCI) 10yrs to Jan 2010
 - (Source: Standard & Poor's)

1/2000 - 1/2010	ICE Brent	Crude Oil	ICE Gasoil	Heat
Spot Return	+210.73	+211.02	+185.94	+206.94
Total Return (TR)	+262.39	+132.48	+280.89	+189.9
TR-Spot (Roll Return)	+51.66	-78.54	+94.95	-17.94

- High relative contributions - First & second generation indices show similar traits
- Over a 10 year period, to a DJ UBS index investor, Brent crude is worth an extra 8.58% p.a compared to WTI, over 3 years an extra 13.04% p.a and over the last year an extra 24.05% for DJ UBS Index investors. In 2011 so far the outperformance is 18.39% (as of April 29th)
- For the S&P GSCI, in April 2011 the YTD return of ICE Brent sub index rose 15.06% whilst WTI fell 0.51%, in January the figures were 7.02% and -0.02% respectively

INDEX PERFORMANCE

GLOBAL SEABORNE CONTRACTS CONSISTENTLY OUTPERFORM



Arbitrage ensures globally-relevant valuation (East & West), not local infrastructure conditions

ICE Contracts sub-index recent relative performance (S&P GSCI, data as of 29/04/11*):

Date/Period	ICE Brent TR	Crude Oil TR	ICE Contract Out-performance	ICE Gasoil TR	Heat TR	ICE Contract Out-performance
May 2011 YTD	15.06	-0.51	15.57	20.05	10.93	9.12
Mar 2011 1-yr	35.74	10.07	25.67	33.59	29.82	3.77
Mar 2011 3-yr	-9.48	-22.91	13.43	-11.01	-10.1	-0.91
Mar 2011 5-yr	1.37	-9.26	10.63	3.06	-0.46	3.52
Jan 2010 10-yr*	262.39	132.48	129.91	280.89	189.9	90.99

May 2011 figures as of April 29, 2011, March figures as of 31-Mar 2011 *10-year data as of January 2010

(Source: Standard & Poor's)

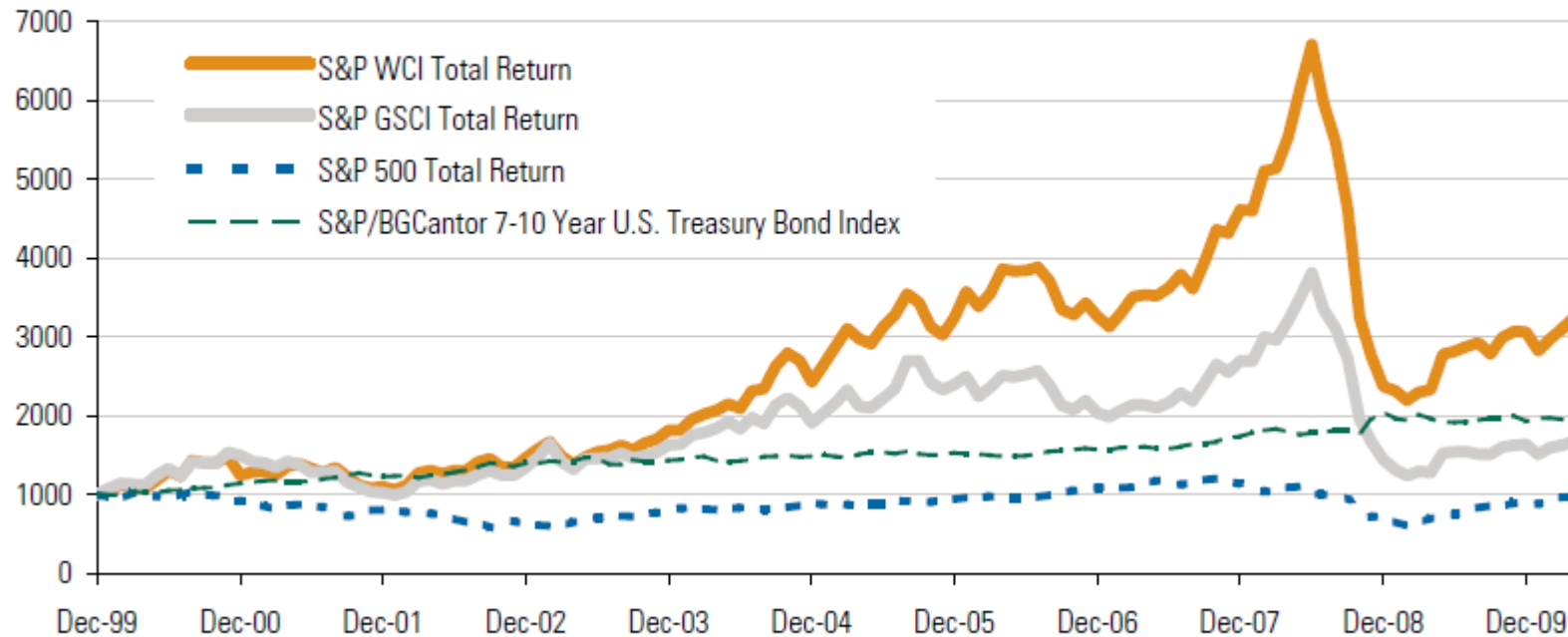
INDEX PERFORMANCE – THE S&P WCI (WORLD COMMODITY INDEX)

INDEX INNOVATION TO HARNESS GLOBAL WATERBORNE PERFORMANCE

S&P World Commodity Index

Historical Performance - [December 30, 1999 - April 30, 2010]

(Source: Standard & Poor's)



Recent innovations include non-US contract core indices, custom indices with alternative sub-index components (global seaborne contracts) or weightings, and active roll mechanisms to address contango-based negative roll returns

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2011)

02/05/2011: Chevron CFO Patricia Yarrington, HOUSTON (Dow Jones) - Brent to Replace WTI In Way Co. Gauges Foreign Production Contracts' Effect:

“Chevron will start using European Brent crude benchmark prices, instead of Nymex-traded West Texas Intermediate oil prices, when it calculates the effects of production-sharing contracts signed with foreign governments. These contracts reduce the amount of output received by companies when oil prices rise. In order to gauge the impact of production due to oil-price variation, Chevron and other oil companies have traditionally used WTI prices. But given the sharp price disparity between the two benchmarks, Chevron is switching to Brent, which is used in most international contracts.” Yarrington said.’

29/04/2011: S&P Commodities Market Attributes May 2011 – Brent, Beta and Backwardation:

‘Petroleum continued to drive S&P GSCI gains in April, as evidenced by the 6.54% increase in the S&P GSCI Petroleum Index, bringing the YTD gain to 23.89%. Better reflecting strong global demand and supply disruptions in the Middle East and North Africa (MENA), Brent has asserted itself in 2011 as the best performing major petroleum benchmark. The S&P GSCI Brent Index ended April with a YTD gain of 32.79% on the back of a MTD increase of 7.56%. The anticipation of strong global demand has recently accelerated due to the need for generating electricity in Japan in the aftermath of the March earthquake and the potential for reduced longer-term global use of nuclear power.’

YTD, the S&P GSCI Gasoil Index was the best performing S&P GSCI Energy commodity with a gain of 33.48% on the back of a 4.75% increase in April. Helping to boost S&P Gasoil 2011 total returns has been its relatively flat futures term structure as measured by a slightly higher YTD S&P GSCI Gasoil spot return of 34.93%, for a difference of 1.45% above the total return.’

12/04/2011: FT (Lex) - WTI v Brent: Cushing disease:

‘Airlines, truckers and utilities are reeling from a sharp gap in the price between refined products and the West Texas Intermediate (WTI) crude futures, which are based on the price at the physical delivery point in Cushing, Oklahoma. Crude is used as a hedge because the market is liquid and the price is usually a good proxy for jet fuel, diesel and the like. But a physical glut around Cushing has skewed prices into what one airline boss calls a “silent killer.” Oil for delivery at Cushing plunged nearly \$20 a barrel below ostensibly less valuable Brent crude early this year. May futures remain more than \$12 lower.’

Hedgers’ loss is others’ gain, giving a temporary windfall to Midwestern refiners. JPMorgan estimates that the Cushing surplus, and demand from power-starved Japan could widen the crack spread (the gap between crude and refined product prices) to a juicy \$50 a barrel on diesel this summer.’

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2011)

11/04/2011: Greg Meyer - CME-linked index looks at tracking Brent:

'A leading commodity index is to look into tracking benchmark European crude, potentially draining billions of dollars from the exchange operator's flagship energy contract. Supervisors of the Dow Jones-UBS Commodity Index will consider adding Brent crude to the basket of 19 futures contracts tracked by about \$77bn in assets.

Crude oil makes up 16.5 per cent of the index. The proposal would likely shift more oil trading volume, and investor money, to Brent, the main rival to CME's own benchmark oil futures contract. The only crude type now in the index is West Texas Intermediate, the blend that has lagged behind Brent by \$10 or more this year as a glut has grown at the contract's US delivery point. "If they do a reshuffling in January 2012, they are going to have to buy Brent and sell WTI," said Olivier Jakob of Petromatrix, a consultant in Switzerland.

Traders from the Saudi state oil company to Delta Air Lines have lost faith in WTI as a pricing tool. The index handbook this month said a supervisory committee "intends to consider whether storage and delivery characteristics of crude oil" would make an "allocation to Brent crude oil in the index appropriate" in 2012. The handbook cited a research note by the International Energy Agency titled: US WTI Price Structure Collapsing Under Weight of Surplus Inventories.'

06/04/2011: Aaron Clark, Bloomberg - Nymex May Tighten WTI Rules as Refiners Question Crude Quality:

'The New York Mercantile Exchange may tighten specifications on the West Texas Intermediate oil contract, the U.S. benchmark, because refiners say existing rules fail to eliminate variability that can cut product yields. The exchange supports a proposal from an industry group called the Crude Oil Quality Association to control the makeup of the light, sweet contract through added standards.

As new Canadian and U.S. production floods trading hubs, characteristics that have defined domestic blended grades for decades are changing. Blenders capturing a profit by mixing cheaper grades into more expensive oils, along with an increase in storage tanks and pipeline links, are adding to deviations in WTI-tied blends, members of the quality group said.

"What people have seen in WTI is the variations have started to grow more than they are comfortable with," said Randy Segato, a crude quality specialist for Calgary-based Suncor Energy Inc. (SU) and an adviser to the industry group. "As more pipelines grow and as more refiners grow, there is a tendency towards more variability. There are many marketers who have taken advantage of blending behind the scenes."

Tighter Testing – Some terminal operators have started more stringent testing. Plains All American Pipeline LP (PAA) has implemented additional standards for crude batches at its Cushing terminal, the company said. Enbridge Energy Partners LP (EEP) said it plans to "increase the scope" of testing at its Cushing storage tanks. The yield on some common stream blends erases the economic incentive to process them," said Paige Kester, vice president of refinery supply at Houston-based Frontier Oil Corp. (FTO), and a member of the quality association. "Blenders are hurting our economics, yet they are within the current specifications for domestic sweet crude."

Physical Settlement – "Right now refineries have to discount WTI in their systems compared to other available grades because there is a lot of variability," said Houston-based Anita Koval, a senior crude trader for Lion Oil Co., which operates an 80,000-barrel-a-day refinery in El Dorado, AK"

Western Select – "If you get back to the point where you are buying a specific barrel from a specific lease it's going to be much more consistent," said Frontier's Kester. "We don't want people to blend for us, that's what we do right at the mouth of our crude units."

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2011)

29/3/11: Greg Meyer, Financial Times - Delta Air Lines shifts fuel hedges out of US benchmark:

'Delta Air Lines, one of the world's largest carriers, has shifted almost all its jet fuel hedges away from US crude in the latest sign that the benchmark has run into trouble as a tool to manage energy costs. Delta and other US airlines have traditionally purchased contracts for US benchmark crude oil to hedge volatile jet fuel costs. Jet fuel is refined from crude oil and usually tracks its price.

But this year the US crude benchmark, known as West Texas Intermediate, has lagged behind the 27 per cent rise in jet fuel, creating difficulties for US airlines. The rise in Brent, a European benchmark, has been more in line with the jet fuel trend.

"We've needed to restructure our hedge position," Ed Bastian, Delta president, told a conference last week. The airline spent \$7.6bn on fuel and related taxes in 2010.

"WTI, which is the instrument that many of us hedge in this market, has dislocated from Brent in terms of pricing."

Mr Bastian said Delta had "converted, over the course of the last 45 days, nearly all of our WTI positions" to Brent or heating oil. JetBlue Airways, Southwest Airlines and Virgin America have also raised concerns about the discrepancy between WTI and jet fuel."

24/3/2011: Florence Tan for Reuters Singapore: Petronas opts for Brent pricing:

'SINGAPORE, March 24 (Reuters) - Malaysian state oil firm Petronas is expected to announce a new pricing formula soon for its crude based primarily on European bellwether Brent, dropping a decade-old marker once commonly used to price Asia-Pacific crude, industry sources said on Thursday. The move would homogenise and simplify a fragmented pricing structure in Asia, user of a third of global crude, extending Brent's influence as a cross-continent price marker beyond the 70 percent of world supplies that now use it as a reference.

A Reuters survey in August last year showed traders expected Brent to replace regional benchmarks such as the Asia Petroleum Price Index (APPI) and Indonesia Crude Price (ICP) by 2012. Local markers suffer from low liquidity due to production decline at mature fields, with prices frequently diverging from global benchmarks, traders and analysts say.

Australian crude and condensates are now sold on dated Brent after gradually moving away from APPI in 2009.'



ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2011)

14/2/2011: Dennis Gartman, 'Market Wizard' interviewed on CNBC's 'Fast Money:

'It all has to do with Cushing – there's an awful lot of oil moving downhill (from Canada) – a huge inflow not flowing out of Cushing. There is up to 52 million barrels bidding for storage which is filling up fast. We are going to have to stop quoting WTI, it has lost all of its moorings as a marker crude. Brent is much better as a marker crude and that is what we should be looking at. (Presenter) Its not just Brent today that has this premium is it? – It's Bonny Light, Dubai, Urals- is this all a structural thing? Gartman: Yes, The infrastructure is not in place in Cushing, that's why refiners, truckers and so on are doing so well – it's not going away next week, next month, next year. Pick a number for what Brent-WTI can go to...3 months from now it's (Brent) going to be demonstrably more liquid than WTI. WTI is sending a bad signal to the American public about what oil prices are doing'

14/2/2011: Dr. Philip Verleger, from Notes at the Margin - Has Cushing become the Roach Motel?

'Cushing has become the roach motel for crude –"Roaches check in..but they don't check out!. "Oil flows south from Canada to Cushing but can go no further. The WTI cash spread to Brent widens...and traded for a time above \$16. The squeeze will occur repeatedly until new pipeline capacity is completed in 2012 [Recently delayed to 2013] to move additional volumes from Cushing to the Gulf *unless Canadian or North Dakota oil producers cut output*. A WTI cash price of \$50 per barrel might just bring about such cuts....Things could get even worse. If producers with high costs have hedged aggressively, prices could fall further – even if Brent stays at \$90 per barrel. This is a classic example of a serious, prolonged structural constraint that could reshape the oil market. The problem in Cushing results from North America being short of alternative means for moving crude oil. Every rail tank car is in use, including some that should have been retired in 1950'

3/2/2011 – David Shepherd, Reuters Analysis - London wrenches oil trade crown from New York – Reuters:

"Rising volume and open interest on Brent is a clear signal from the managed risk segment of the market that it's becoming 'the barrel of choice", says Michael Guido, director of hedge fund energy sales at Macquarie bank in New York. He expects more clients to favour it in the coming years.

Its key attractions are its physical peg and a direct link to Asian demand. And while ICE has benefited from the well publicized attraction to Brent crude as a better global benchmark than U.S. WTI contract, it has also gained from a huge rise in trade of its gas oil contract used for hedging (and speculating on) distillates such as diesel and jet fuel.

Soaring demand in Asia for industrial fuels helped boost gas oil trade by 45 percent on ICE in 2010 alone. ICE trade of Brent was also up 35 percent while its WTI contract volume rose 13 percent.'

BENCHMARKS AND OIL PRICING

CONCLUSION

Summary/conclusion: What do we expect and need from oil benchmarks?

- Market views - Analysts, traders, policymakers, investors want global benchmarks which respond to macro influences, liquidity and longevity, with consistency in relational/matrix pricing
 - Normal benchmark requirements - liquidity, longevity, relevance
 - Looking for liquid and robust relative pricing relationships
 - Correlations that follow economic logic
 - Consumption and production emphasis shifting from West to East
 - Q: Is WTI serving markets well?

What does ICE Brent (and ICE Gasoil) have to offer?

- Progressive price evolution, for investors this means consistently higher roll return, less volatile returns, and for spread and relational pricing this means less risk
- Deep liquidity for passive and active strategies
- Water-borne contracts which respond to global, non-local fundamental conditions
- Side-step localised land-based choke points avoiding price vacuums

ICE Oil contracts performance drivers:

- ICE Brent Futures Open Interest growing faster than competitor, 66% in last 48 months vs. 13%
- Brent prices 65-70% of global international physical crude trade, and is growing, especially in Asia
- ICE Brent and Gasoil better reflect global macro conditions, more representative term structure – thus outperform WTI and Heat over 1 month through 10 years for indices
- ICE Gasoil Open Interest is larger than Heat and RBOB Gasoline combined, doubling in 2yrs

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APPENDIX: ADDITIONAL QUOTATIONS

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2011)

08/04/2011: Alejandro Barbajosa and Florence Tan, Thomson Reuters - Brent gains ground in oil's benchmark battle:

'From Kuala Lumpur to Atlanta, Brent crude is gaining momentum as the global oil pricing reference of choice for producers and consumers, bolstering the Intercontinental Exchange in a battle of benchmarks for the world's most widely traded commodity. Three months after a blowout in the premium for ICE's European Brent crude futures over the New York Mercantile Exchange's West Texas Intermediate (WTI) contract stoked speculation about a shift in liquidity, changes in the way companies hedge have emerged in both the East and the West.

Malaysia's Petronas this week dropped national crude Tapis as the benchmark for its exports in favour of ICE-related dated Brent. The move dealt a blow to the Dubai Mercantile Exchange (DME), part owned by NYMEX, which has pushed its Oman crude contract as a replacement.

Two weeks earlier, Atlanta-based Delta Air Lines announced it had swapped out its previous jet fuel hedges based on the WTI contract in favour of Brent, which has more closely reflected global gasoline and jet fuel price moves than the U.S. marker.

Trading volume -- a measure of a contract's health and liquidity -- tilted toward Brent, although the trend was masked by a slowdown in activity at the end of the first quarter. In the past 20 days, daily turnover in NYMEX crude futures exceeded that of ICE Brent futures by about 165,000 lots, the lowest figure since 2006. On Tuesday, ICE Brent traded more than NYMEX for only the ninth time since 2004, according to Reuters data from the exchanges.

If more Asian producers opt to swap the region's current benchmarks -- mostly viewed as dysfunctional -- for Brent, the balance in the war for benchmark supremacy could swing more in ICE's favour.

"It seems to be part of a trend," said Mike Wittner, Americas head of commodities research at Societe Generale.

More and more physical oil market participants, whether they are producers, consumers or refiners, are looking at Brent as perhaps more appropriate to manage their risk.'

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2011)

Two-tiered Market – 't is too early to say whether volumes have been permanently sapped from WTI. In January and February, as global traders hit the panic button over unrest and war in Libya, WTI had some of its best days ever, several times exceeding Brent volume by more than 500,000 lots. But that changed dramatically as the quarter wound down.

"We have seen Brent volumes surge in the past and even exceed WTI from time to time, only to slip back again," said Olivier Jakob, managing director of consultants Petromatrix in Zug, Switzerland.

There has been a lot of debate about which contract is more representative of the international oil market and that will continue. WTI has sunk to record discounts against Brent, fuelling a discussion on whether Brent better reflects global fundamentals and the turmoil in the Middle East and North Africa. Brent was trading around a 32-month high above \$124 on Friday, with WTI around \$112.

Some say the strategic glut in landlocked U.S. crude has caused the NYMEX market to lose its link with global fundamentals. The disruption in Libyan exports as the country fights a civil war has clearly affected Brent most heavily. But the long-term cause for Brent's ascent is perhaps further east, where soaring demand from Asia is lifting requirements of Middle East, Mediterranean and West African crude, mostly priced in relation to the European market.

Investors are helping Brent consolidate as a cross-continent marker for at least 70 percent of internationally traded crude because the structure of the ICE forward curve yields positive returns when rolling over positions every month, while for WTI the roll-over comes at a loss. Recently, one of the smartest ideas to enhance index return was to switch WTI for Brent," Goldman Sachs managing director for fixed income, currency and commodities Arun Assumall told Reuters in Singapore. "Many investors would prefer to be exposed to a more global oil price, such as Brent.'

The Asian Game – 'Malaysia's move to Brent may prompt other Asian producers to follow, including Vietnam and Indonesia, entrenching Brent's influence in the region and dampening efforts by the DME to draw Middle Eastern producers towards its Oman futures and away from Platts' Dubai/Oman assessments.

Still, Malaysia's crude is light and sweet, while much of the exports from the Middle East which the DME is eyeing are heavier and more sour. That may mean there is enough space for different markers to gain ground for the different grades. Brent is gaining favour as a benchmark for sweet crude in Southeast Asia, but how attractive it would be to price sour Middle East grades is another matter, said John Vautrain, director at Purvin & Gertz energy consultants in Singapore. Malaysia's move to Brent "illustrates the need and importance of reviewing pricing mechanisms used in East of Suez markets," the DME said in response to e-mailed questions.

"The current Dubai price assessment used for the majority of Middle Eastern crude exports into Asia suffers from a number of similar problems as Tapis as a benchmark," the DME said. The Dubai-based exchange said its Oman contract was the "most appropriate" marker.

The wave of unrest sweeping the Middle East this year also raises new challenges for Oman as concerns grow the country's oil output may be disrupted. Pricing agency Platts is accelerating talks with customers to find alternative crudes for delivery against its Oman benchmark, used to price more than 10 million barrels per day.

"Any event that adds urgency may play against the efforts of Oman proponents by providing them less time and a more stressful environment in which to make their case," said Vautrain.'

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2011)

10/2/2011: Dennis Gartman, 'Market Wizard', in the Gartman Letter:

'Those who've refused to acknowledge that something material has changed in the crude oil market... those who refuse to acknowledge that WTI has ceased being the world's marker crude and that Brent has become so... those who wish to stand in the way of this trade, are being bowled over and are losing vast sums of money. When Brent went to a \$2/barrel premium, we wrote that we'd learned the lessons of markets that move to supposedly impossible, untenable levels many years ago when we saw "muni" bond futures trade at a discount to the long US bond future, a circumstance many said was impossible. The impossible became even more and more and more impossible as munis fell to huge discounts to the long bond, carrying one after another of locals on the CBOT bond trading floor out.'

2/2/2011 Globe and Mail, Canada, Jeff Rubin: Which price is really the world benchmark for oil?

'...But West Texas Intermediate is trading at an all-time discount to other grades of oil. Last week, it was trading at a record \$12 per barrel discount to competing European Brent Crude. Until the Egyptian uprising captured the market's attention, the two prices were actually heading in opposite directions with WTI sinking to a two-month low of \$85 per barrel, while Brent was within a dollar of triple digits. The divergence is no mystery. Unlike Brent crude from the North Sea, which can be shipped to refineries pretty much anywhere in the world, oil in storage at Cushing can only be absorbed by refineries in the U.S. Midwest. With nowhere else to go, WTI is not even an accurate barometer for oil prices in the U.S. market, let alone the global market. For example, the price spread between it and Light Louisiana Sweet on the Gulf coast is as big as its spread with Brent. And by all accounts, the spread between WTI and Brent is going to become even bigger, rendering the former increasingly irrelevant as a global pricing benchmark.

It is largely new crude from the Alberta oil sands piling up at Cushing these days, often coming in much faster than local refineries can process it. And within a couple of months, there is going to be another 150,000 barrels a day of Alberta crude coming down TransCanada Corp.'s newly completed arm of its Keystone Pipeline that will connect Cushing with the flow of oil sand crude from Hardisty, Alberta. Until TransCanada can connect the ever-increasing flow of crude from the oil sands to refineries on the Gulf of Mexico (not likely before 2013), there is going to be a bigger and bigger disconnect between WTI and global crude demand as more oil piles up at Cushing. As that happens, the oil industry and the investment community will look to Brent as the new benchmark for global oil prices. Soaring purchases of Brent crude contracts have already driven the European oil benchmark to the highest level in five months against NYMEX oil futures contracts as more investors bet it is a better indicator of global demand.

So don't be fooled by bloated inventories of Canadian crude held in storage in the middle of nowhere. Check out the Brent March futures contract if you want to know where world oil prices are trading.

And when you do, you may just find you are already in a world of triple digit oil.'

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2010/1)

1/2/11 Joe Gorder, Chief Commercial Officer at Valero, Quoted by Argus Media:

'What we have to do perhaps is stop looking at WTI as the benchmark with which to compare things because it has become irrelevant'

26/1/11 Christian Schmollinger, Bloomberg: Brent Oil's Record Open Interest Threatens WTI:

'Brent crude contracts have driven...to the highest level in five months relative to New York futures as investors bet it's a better gauge of global demand. Open interest for Brent futures rose to a record 968,565 on Jan. 21, data from London-based ICE Futures Europe show. The ratio of the European marker to West Texas Intermediate oil positions on the New York Mercantile Exchange climbed to 65 percent, 15 percentage points above the five-year average and the most since Aug. 2, according to data compiled by Bloomberg. Investors are piling into Brent as new supplies from Canada build up at the U.S. oil hub in Cushing, Oklahoma, skewing its reliability as an indicator of demand because of the lack of pipelines to the sea. TransCanada Corp.'s Keystone link may pump as much as 156,000 barrels of crude to Cushing from next month, according to Vienna-based JBC Energy GmbH. Cushing is the delivery point for Nymex futures. "Nymex is challenged right now and continues to lose market share," said Stephen Schork, president of Villanova, Pennsylvania-based The Schork Group Inc., an energy consultant. The Brent market reflects more of the underlying fundamentals given that it's more indicative of demand." Brent is used to price two-thirds of global oil including North Sea grades such as Forties and Ekofisk and West African exports including Nigeria's Bonny Light and Angolan Nemba, which typically have a lower sulfur content and yield more diesel and gasoline than others.'

Rollover Profit

'Investors have bought Brent because of the discount, or backwardation, on prompt futures relative to later-dated supplies that's given traders a profit as they roll over their holdings from the first-month into later-delivery contracts. Front- and next-month futures were in uninterrupted backwardation from Dec. 20 to Jan. 17, Bloomberg data show. "An interesting thing has happened with new financial money flowing into Brent," said Akira Kamiyama, a derivatives trader at Mitsui & Co. in Tokyo. "The Brent curve is very supportive because of the backwardation. That's why the long positions are getting out of WTI and into Brent." Funds rolling over contracts from first- to second-month Brent would have gained 4 cents a barrel, according to Bloomberg data based on Jan. 24 prices.'

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2010/1)

**13/12/2010 - Kenneth B. Worthington and Funda Akarsu for J.P.Morgan North America Equity Research Note
“ICE Brent Volumes Have Been Great in 2010 – What Gives?”**

‘ICE volume has been very strong over the past two years in part due to an ongoing migration from OTC to listed trading. The transition started soon after the credit crisis in 2008 and our sense is that the shift has moved to the extreme, with OTC Brent oil trading a much smaller part of overall Brent trading volume.’

The Ongoing Secular Trend towards Brent / Gasoil Will Continue to Drive Greater Volumes:

‘There has been meaningful media attention on the dramatic growth in Brent and Gasoil volumes relative to the US grades, WTI and Heating Oil. It is unintuitive that Brent can be gaining mind share as the global benchmark for oil, but that does seem to be happening. However, the challenge that WTI faces is that its delivery point is landlocked in Cushing, OK and that demand driven pricing of WTI is often overshadowed by challenges in delivering WTI via pipeline and the storage issues. While more storage seems to be coming on line for WTI, dissatisfaction over WTI pricing seems to be leading a view among some traders that the price of WTI is really based on a view of a ‘local’ market, while speculation on global oil is best made through Brent.’

WTI Per GPD Falls, While Brent per Capita Rises – Not an Issue of Substitution:

‘Our conversations with energy traders supports the idea that Brent’s and Gasoil’s success is in fact being driven by changes in regional economic growth, rather than a switch by hedgers/traders from WTI to Brent. GDP of developing countries that ultimately use Brent as a benchmark, or use benchmarks that trade at a spread to Brent exceeds that of developed countries benchmarked to WTI, driving greater use of Brent.’ (Continues over)

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2010/1)

Kenneth B. Worthington and Funda Akarsu for J.P.Morgan North America Equity Research Note (Cont):

'Furthermore, there is a multiplier effect, as the use of WTI per GDP is falling as developed countries get more efficient in their use of oil. For example, ethanol has been added to gasoline, which reduces consumption of oil. However, the use of Brent per capita in emerging markets is on the rise as their transportation and other needs increase. As a result of such growth dynamics, there has been a migration of refining capacity east – away from the US and towards Asia. With Asia grades of oil traded at a spread to Brent, there has been increasing use of Brent by hedgers and ultimately by speculators. Gasoil, is the same story, but as a refined product.

...There have been some examples, including Saudi Aramco, which left WTI for a blend of sour crudes and there have been launches of Brent-only commodities funds. .

Therefore, the migration towards Brent as the global benchmark is based on mix rather than a legitimate change in demand.. Furthermore, this seems to be a trend that is likely to continue as Global GDP in Emerging Markets and developed parts of Asia outgrow that of the US.'

Gasoil Shows the Same Trends as Does Brent – The Quest for a Global Benchmark:

'While much of our energy liquids discussion has focused on Brent, Gasoil has been a much bigger part of ICE's growth story in recent quarters. Just as Brent has grown to increasingly become the global benchmark for oil products, so too has Gasoil for refined products.'

ICE FUTURES: MIGRATION TO BRENT

RECENT QUOTATIONS (2010/1)

13/10/10 Olivier Jakob, Petromatrix (as reported by Bristol Voss, Platts 13/10/10):

'In fact, the new normal is that WTI trades below Brent, as a matter of course, and will continue to do so, at least for the near-term future according to analysts. Most of the WTI discount is due to supply issues surrounding WTI itself with fundamentals affecting Brent contributing to a lesser degree, said analysts. "On a fundamental basis we expect WTI to remain in a contango structure and at a discount to Brent into next year," said Olivier Jakob, an analyst with Petromatrix. "WTI is a landlocked oil and has not been delivered to the Gulf Coast in years, but there is little need for any foreign barrels of oil to come anywhere near where WTI has its physical delivery point in Cushing, Oklahoma," Jakob explained. "The US Midwest has received 1 million b/d of additional pipeline capacity this year from Canada and this will contribute to make the delivery hub of the WTI contract an island more and more isolated from the rest of the world," he said.'

13/10/10 Harry Tchilinguirian, analyst BNP Paribas, in a research note to clients, reported by Bristol Voss, Platts:

'Brent, unlike WTI, enjoys geographic "optionality".. It can be drawn "east or west depending on market conditions. Equally, it possesses a greater sphere of influence in establishing physical crude prices than WTI, ranging from the Atlantic Basin into the Far East," he said. Given that oil demand growth relies principally on emerging markets, and refinery runs remain strong in the East, other things equal, the "macro picture currently is more supportive of Brent than WTI,'

September 2010: Dr. Philip Verleger (from The Petroleum Economics Monthly):

'The shift in the marginal market to (price in) Europe should increase the relevance of European commodity futures and swap markets. European markets should benefit from this phenomenon with the directional shift in trade from west ...to east (the US to Europe). In coming years one should see increased use of futures contracts settled with delivery or final prices in European markets. The increase in open interest in the (ICE) gasoil futures contract relative to US heating oil may reflect this development. Open interest in the two contracts was essentially equal in December 2008. In the following 22 months, open interest in the ICE contract rose 150 percent, while open interest in the NYMEX CME New York Harbour contract went up only 50%.'