

High and Volatile Oil Prices:
A Study of 2012

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Introduction

In 2012 the leading benchmark for world oil prices, Brent, was both high and volatile. Volatility was exhibited day-to-day, and over the year there was an extraordinary \$35 spread between the highest and lowest points.

This is despite the fact that demand and supply were largely in balance. Demand for oil rose to over 90 million barrels per day (m b/d) – but, according to the International Energy Agency (IEA), was met by increased supply, principally from North America and some countries in the Middle East.



Brent price volatility 2012¹



A typical month of price volatility: Brent Crude, November 2012²

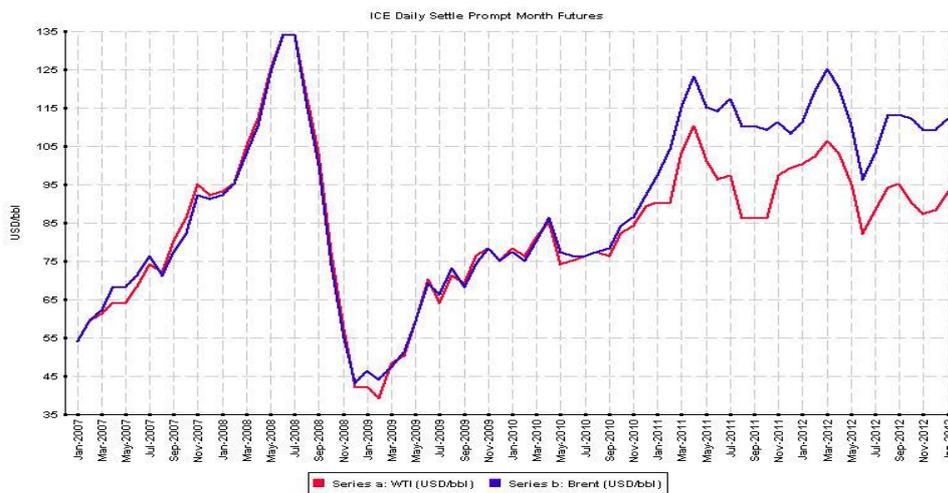
Oil is the most traded commodity by volume and by value, it is easily transported and stored, shipping lanes are patrolled, and there are well established markets - which begs the question 'Why are prices so unstable?'

There was a further paradox in the global market in 2012 in that, for the second year running, Brent diverged from the US benchmark, Western Texas Intermediate. A similar divergence existed between the US and non-US gas markets.

¹ Moneyweek (2013), available at <http://www.moneyweek.com/news-and-charts/market-data/oil>, accessed 7 Jan 2013.

² Moneyweek (2013), available at <http://www.moneyweek.com/news-and-charts/market-data/oil>, accessed 7 Jan 2013.

A second year of divergence between the Brent and WTI benchmarks³



This paper sets out to explain the components of oil and gas pricing as revealed in news reports, principally the Financial Times, over 2012. Several factors are identified:

- The market is 'tight', with little spare capacity to meet demand surges or supply short-falls. Markets retain great faith in Saudi Arabia's ability to play its traditional role of 'swing producer', and apparently still believe that the Kingdom is able and willing to increase or cut supply to keep prices in balance. However, they remain highly focused on the possibility of market disruption. The 'tightness' and 'jitteriness' of the market has been further wound by the vastly increased number of market players who are not interested in the underlying physical asset of oil or gas but who simply want to trade in the 'paper market' of derivatives. This has led to too much money chasing too few products, bidding prices up and causing volatility as participants act as a 'herd'. Although the end of the commodities 'super-cycle' was often discussed in 2012, there was little sign of a market exodus;
- Local factors have significantly distorted the two dominant benchmarks, in opposite directions, reducing their accuracy in price discovery for world oil contracts. Brent, now most widely used as a reference for trades around the world, has been distorted upwards, Western Texas Intermediate (WTI) downwards;
- Benchmarks rely on price reporting by traders and in 2012, the lack of transparency around methodologies has brought into question the possibility of deliberate price manipulation. The fact that this lack of transparency has been aggressively defended by the super-majors and commodity houses is noteworthy.

A second paper, '**The Impact of High and Volatile Oil Prices on the Super-majors: A Study of 2012**', will look more specifically on the 2012 investment decisions of the six industry behemoths and some of the paradoxical implications inherent in high and volatile prices.

³ Manhas, Mahinder (2013) 'WTI versus Brent 2007 – 2013', *ZE Perspective*, available at <http://blog.ze.com/2013/02/pipeline-expansion-in-americas-mid-west-and-its-impact-on-wti-oil-trading/wti-vs-brent-2007-2013/>, accessed May 2013.

The 'super-majors'

In the late 1990s, when oil prices were low, several oil 'majors' merged to form the current six 'super-majors', sometimes known as 'Big Oil'.

BP acquired Amoco in 1998 and ARCO in 2000; Exxon merged with Mobil in 1999, forming ExxonMobil; Total merged with Petrofina in 1999 and with Elf Aquitaine in 2000, becoming Total S.A.; and Chevron acquired Texaco in 2001. Conoco Inc merged with Phillips Petroleum Company in 2002, forming ConocoPhillips, but in April 2012 the corporation abandoned the 'super-major' model and split into two smaller energy companies, ConocoPhillips and Phillips 66.

Although the 'super majors' control only a few per cent of the world's reserves they are amongst the world's largest global corporations, with massive market capitalisations and profits.

1. A Tight Market

Since demand and supply have been roughly in balance, in theory prices should have been stable. However, Brent – the most significant benchmark for trades around the world – has been extremely volatile. This is the result of many factors but fundamentally it indicates a 'tight market', ie one that has little spare capacity to meet demand surges or supply crises, and limited ability to reduce production quickly in times of over-supply. Because the world is heavily dependent upon the less industrialised and often undemocratic countries, and particularly the 'life-blood' of Middle Eastern oil, markets are highly focused on the possibility of supply crises.

The price of Brent 2008 – 2012⁴



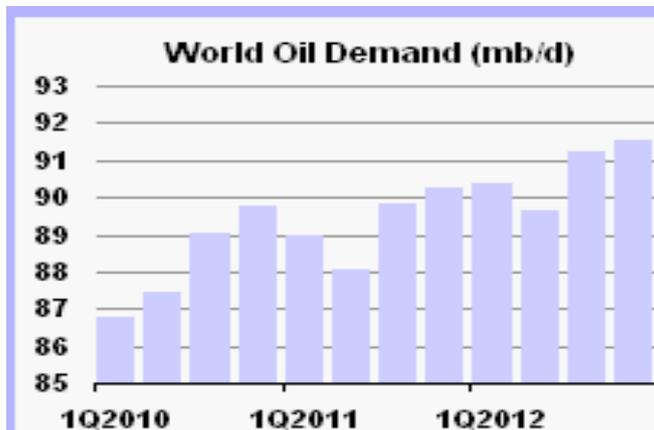
1.1 Relentless demand

The tightness of the market has been wound by rising demand as well as stagnating supply. Consumption is now universal although highly unequal. Unlike previous decades, *all* countries, including the least developed, are now directly or indirectly dependent upon oil. In the early 2000s, the world was 'caught out' by the demand surge from the two major emerging economies, China

⁴ Moneyweek (2013), available at <http://www.moneyweek.com/news-and-charts/market-data/oil>, accessed 7 Jan 2013.

and India. The surge has continued, becoming a commodity 'super cycle', ie a prolonged phase of high demand. In 2012, non-OECD countries out-demanded the West for the first time.

World Oil Demand (million barrels per day) ⁵

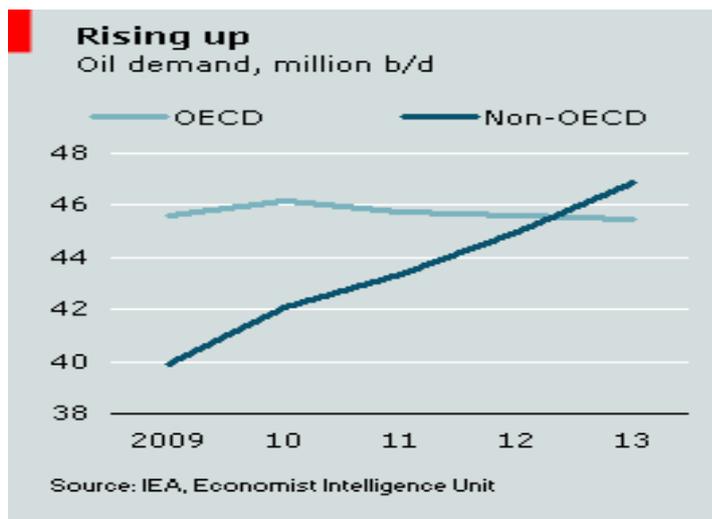


Markets well supplied says IEA, Nov 2012

Despite several supply glitches around the world, global supply rose to almost 91m b/d in October

Chazan, Guy (2012) 'IEA trims oil demand forecast', *Financial Times*, 13 November.

1.1.1 Non-OECD countries out-demanded OECD in 2012 ⁶

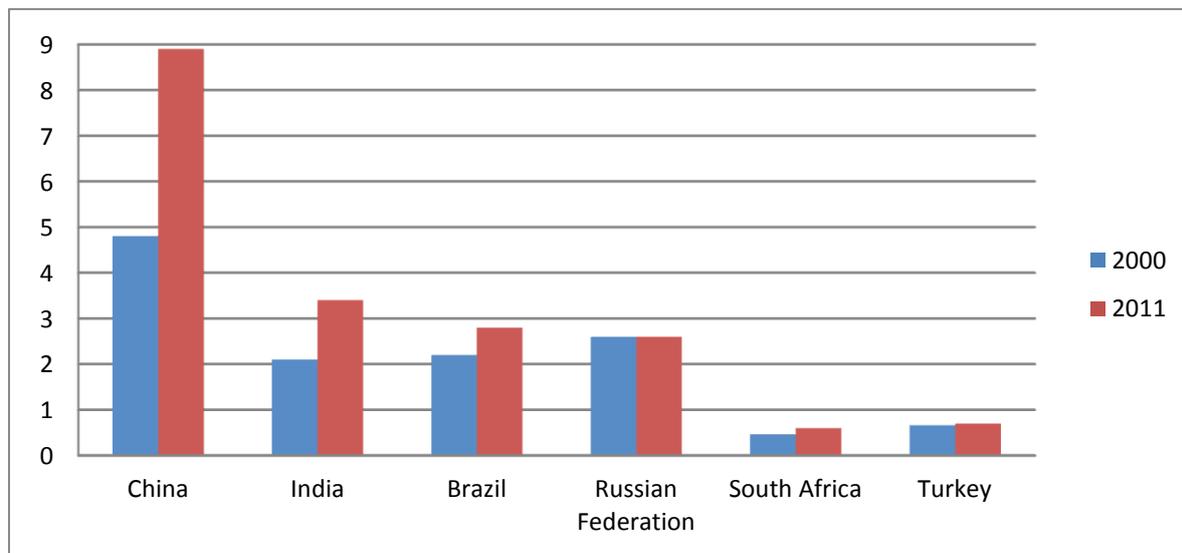


⁵ Market Oracle (2013), available at www.marketoracle.co.uk, accessed 9 January.

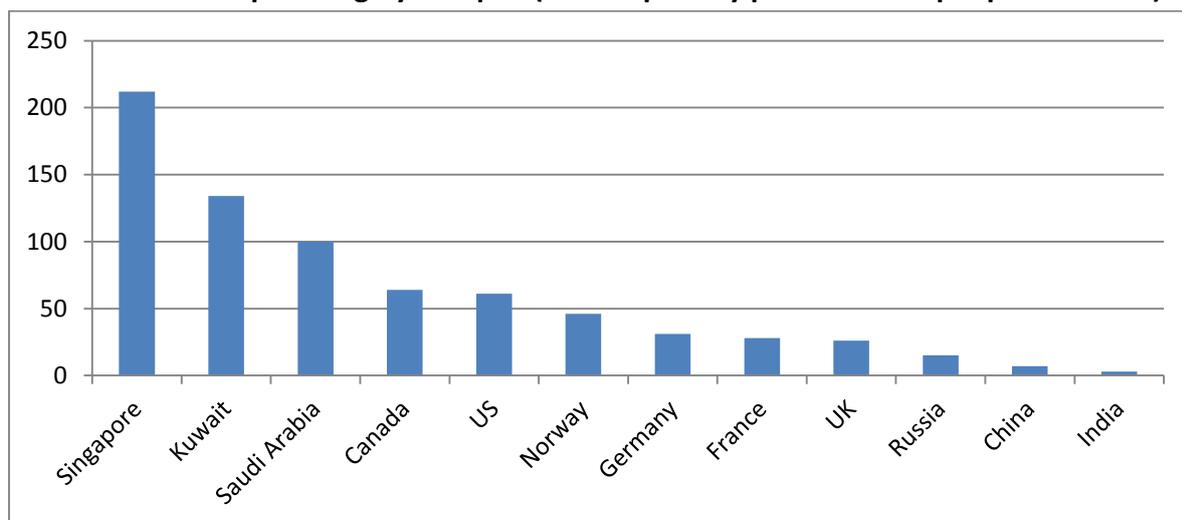
⁶ Economist Intelligence Unit (2013), available at www.eiu.com, accessed 15 May.

1.1.2 Emerging economies demand more oil

Oil consumption rises in the emerging economies (millions of barrels per day⁷)



1.1.3 Oil consumption highly unequal (barrels per day per thousand people in 2012⁸)



1.1.4 Inelasticity of demand: transport fuel remains largely non-substitutable

Although there are signs that the industrialised countries' demand has been in a long-term structural decline since the mid-2000s, the global slump has not delivered the 'demand shock' that many predicted. Approximately two thirds of oil is used in transportation, road vehicles and aviation, and remains largely 'non-substitutable'. This has led to consumption becoming remarkably 'inelastic' – the key determinant is now income rather than price, an elasticity that declines as countries get richer.⁹

⁷ Index Mundi (2013), available at <http://www.indexmundi.com/energy.aspx>, accessed 7 January.

⁸ Index Mundi (2013), available at <http://www.indexmundi.com/map/?v=91000>, accessed 8 January.

⁹ Hamilton, James D. (2009) 'Causes and Consequences of the Oil Shock of 2007 – 2008', *National Bureau of Economic Research Working Paper 15002*, pp. 1 – 69.

The world fails to wean itself off petrol

In the late 2000s OECD countries took positive steps to reduce their consumption of oil by introducing ethanol fuel targets. In 2008 the EU set mandatory targets for 10% biofuel use by 2020 and in the US, the world's largest producer of ethanol, a 2007 Act required production of 36 billion gallons of renewable fuel by 2022.

However, in 2012 the worst drought in 50 years, rocketing food prices and continued rainforest destruction led to broad political agreement on the need to either water targets down or phase them out. Undeterred, several companies have begun developing 'second generation' capacity from vegetable matter that does not compete with food production. However, the future of ethanol in vehicle fuel appears less certain.

A mixed picture for car sales

In 2012 there was a mixed picture for global vehicle sales. Europe saw sales fall for the fifth year, and there were significant demand slumps in China and India. Exceptionally weak demand in the US bounced back but the prospect of a resurgence in gasoline consumption was partly balanced by new fuel efficiency rules introduced in 2012. It is believed that, by 2025, these measures should reduce US oil consumption by 2m b/d.

In many 'emerging' countries where vehicle demand is relatively strong governments are supporting 'eco-cars' through subsidies. Brazil, Thailand, Russia, and Indonesia were all areas of vehicle sales growth in 2012 but governments have encouraged the use of compressed natural gas and hybrid electric vehicles. Japan has also been subsidising 'eco cars' and in 2012, the Chinese and Iranian governments agreed to cooperate on the production of electric vehicles.

Chaffin, Joshua (2012) 'EU biofuels plan triggers spat', *Financial Times*, 17 October.

Zhang, Moran (2012) 'Global Auto Industry Outlook: Sales Grow 6% in 2012', *International Business Times*, 14 September, available at <http://www.ibtimes.com/global-auto-industry-outlook-auto-sales-grow-6-2012-790902>, accessed 13 December 13.

Dinmore, Guy (2012) 'The race for second-generation bioethanol in Brazil', *Financial Times*, 22 May.

PressTV (2012) 'Iran to cooperate with China in producing electric vehicles', available at www.presstv.com/detail/239831, accessed 10 January 2013.

As demand has increased over the last ten years, oil supply has struggled to keep pace, with less than 1% increase over the last decade¹⁰. This is largely – but not only - because of the surge in 'resource nationalism', a phenomenon that the IEA defines as the drive of producer-governments to assert their sovereignty and 'make the most of their endowment'. It is the most striking recent development in the industry, spurred on by rising prices.

1.2.1 Resource nationalism: getting oil to market is not the only priority

Resource nationalism can be revolutionary, leading governments to nationalise assets (as in early 2000s Russia and Venezuela), or more economic in nature, with governments giving more restrictive contracts, taking greater percentages of profits and requiring higher 'local content' inputs¹¹.

National oil companies (NOCs) now control approximately eighty per cent of the world's reserves and account for three quarters of the world's production. A notable development in the last few years has been the willingness and ability of NOCs to compete outside their own borders, in some cases sourcing bilateral 'equity oil' deals that secure the country's energy supply but prevent millions of barrels from reaching the spot markets.

¹⁰ Wolf, Martin (2012) 'Prepare for a new era of oil shocks', *Financial Times*, 27 March.

¹¹ Bremmer, Ian and Johnston, Robert (2009) 'The Rise and Fall of Resource Nationalism', *Survival*, 51:2, pp. 149-158.

NOCs are perceived as responsible for stagnating oil production because they operate alongside national governments according to state objectives which are often geopolitical or strategic, rather than the principles of economic liberalism. Typically, they are required to fulfil social and domestic economic functions, such as providing employment and subsidised fuel to the home market, and critically, profits are returned to central government leaving companies to compete with other national priorities for investment capital.

Resource nationalism in Latin America: a mixed picture in 2012

Ten year declines in production for Latin America's two mega-producers Venezuela and Mexico are affecting world crude prices, according to industry analysts.

The state owned companies of both countries are believed to need massive investment. The 2012 election of Mr Peña in Mexico may bring the private partnerships that champions of the industry believe are necessary for Pemex to boost production. However, the re-election of 'Bolivarian revolutionary' Hugo Chávez in October was a disappointment for liberal economists. By not fully exploiting its reserves, including considerable tar sands, the Venezuelan national oil company PDVSA is believed to be producing only half of its full capability.

Resource nationalism has also affected the prospects for Brazilian production. With its estimated 60bn barrels of ultra-deep water reserves, the country had been exciting the majors. However, in 2012 this enthusiasm appeared to cool because of government 'interference' in the industry. Once considered 'hot property', restrictive contracts requiring high 'local content', plus lawsuits over oil spills against Chevron, Transocean and even the state controlled Petrobras, have reduced oil company interest. In July, the sale of some blocks was cancelled. However, a new auction of blocks is planned for May 2013, if the government can agree the distribution of profits.

Pearson, Samantha (2012) 'Petrobras faces charges over sea pollution', *Financial Times*, 7 September.
Sakoui, Anousha and Chazan, Guy (2012) 'Anadarko shelve Brazilian sale', *Financial Times*, 19 July.
Pearson, Samantha (2012) 'Brazil approves auction of oil blocks', *Financial Times*, 19 September.

The stagnating production of the last few years has led to increased tightening of the market. The oil super-majors are considered to be a third more efficient at turning oil reserves into output but since they control only an approximate 4.2% of world reserves, their ability to significantly increase world supplies is limited¹². Resource nationalism has effectively barred the super-majors from the areas of the world where oil is easy and cheap to access.

1.2.2 Oil may have more value in the ground

Poor supplies are likely to have been exacerbated further by some oil-rich governments having decided that their resource has more value left in the ground. The revenues generated from the sale of assets have become high and sustained, but emerging economies find it difficult to absorb such large flows of capital without fuelling inflation, corruption and conflict. Consequently, these 'scarcity rents' have been travelling 'uphill' into the economies of the industrialised countries, as countries attempt to invest their wealth for the long-term. However, since the 2007-2008 financial crisis, investments have been delivering inadequate or high risk returns and therefore it appears that some governments have made the rational decision not to fully exploit some reserves. In 2008 King Abdullah of Saudi Arabia announced publically that the Kingdom would be leaving some new oil

¹² Victor, Nadejda Makerova (2007) 'On Measuring the Performance of National Oil Companies (NOCs)', *Stanford University Program on Energy and Sustainable Development Working Paper 64*, pp. 1 – 41.

discoveries untapped in the ground to benefit future generations, and countries such as Kazakhstan¹³, Algeria, Kuwait and Qatar¹⁴ are believed to have held back production for similar reasons.

Resource nationalism alive and well in 2012

Argentina expropriated 51% of shares in Spanish company YPF in May.

Nigeria's new regulatory and tax framework held up Shell, Total & ExxonMobil investments.

Mozambique's demand for a capital gains tax delayed negotiations on the take-over of Cove.

1.2.3 Won't increase or can't increase?

Resource nationalism is not the only cause of supply stagnation. Although the extent of oil reserves remains vast, 'easy-access' oil is now limited and with rising industry costs, it is not clear that much of the remaining reserves are genuinely recoverable. As oil analyst Matthew Simmons wrote in 2005, the term 'peak oil' excites the 'most biting scorn' from economists specialising in energy, while oil company executives continue to pay close attention¹⁵. In 2012 there were several examples of the super-majors withdrawing from the huge reserves of the Arctic and ultra-deepwater as costs and risks appeared to out-weigh possible returns.

1.2.4 Super-major culture is also responsible for poor supply growth

It appears that corporate priorities may also be responsible for the failure of the super-majors to concentrate on exploration and production over the last decade. Their upstream returns have been disappointing since 2007 – 2008. In October 2012 Total's CEO Christophe de Margerie admitted that his company and other super-majors had been too focused on 'legacy' areas such as the Gulf of Mexico and Angola following their round of late 1990s mergers¹⁶. The impact on global supply is unquantifiable, since smaller independents and aggressive NOCs have filled many of the gaps, but it is possible that with their vast resources and technological expertise, a greater focus on exploration might have improved the current state of stagnating supply.

1.3 All eyes on the swing producer

Markets have long relied on the one country perceived able and willing to act as a stabilising 'swing producer' – Saudi Arabia. With its declared 265 billion barrels of reserves, believed to be relatively easy and cheap to access, the Kingdom has been relied upon to increase or decrease production according to global demands.

¹³ Ahrend, Rudiger and Tompson, William (2007) 'Caspian Oil in a Global Context', *Transition Studies Review*, 14:1, pp. 163 – 187 (174).

¹⁴ Stevens, Paul (2008) 'National Oil Companies and International Oil Companies in the Middle East: Under the Shadow of Government and the Resource Nationalism Cycle', *Journal of World Energy Law and Business*, 1:15, pp. 5 - 30 (24).

¹⁵ Simmons, Matthew R. (2005) *Twilight in the Desert*, New Jersey: John Wiley and Sons, pp. Xvi.

¹⁶ Chazan, Guy (2012) 'Big oil must rediscover exploration mojo', *Financial Times*, 14 October.

However in 2012, its commitment to calming markets was tested. Throughout early 2012 Saudi Arabia was under pressure to counter high prices with increased production. Although protesting that demand and supply were in balance, Saudi did increase to a 30 year high of 10m b/d in the second quarter¹⁷. In early September when the G7 called for further help to bring down prices, the Kingdom initially refused but relented later in the month¹⁸. Such is the power of the swing producer that this had an immediate calming effect on the markets, even though figures regarding actual increases were unavailable¹⁹. Saudi arguments that the market was in balance appear to have been borne out in early December when there were calls for Saudi to urgently cut production to prevent a price slump. This was partly because of increased US production.

Saudi oil minister says high prices unjustified

In March 2012 Ali Naimi, Saudi Arabia's oil minister, argued that high prices were unjustified on a supply-demand basis and that, although the kingdom stood ready to increase exports, there were no ready buyers.

Chazan, Guy (2012) 'Naimi calls high prices ,unjustified', *Financial Times*, 20 March.

The reasons why Saudi Arabia would act to reduce the sale price of its own asset are mixed, but certainly include its desire to see the economy of its regional rival, Iran, undermined, as well as the protection of its own reserves which are largely invested in the West and are therefore dependent upon the health of the Western economies.

For many, Saudi's 2012 reluctance to increase production raises the more fundamental question of whether the Kingdom still has the ability to rapidly lift production. Market analysts note that Saudi Arabia is

now having to stockpile as a precaution against a supply crisis²⁰, which may corroborate the WikiLeaks cables of 2007-9 in which a senior Saudi Aramco geologist warned that some of the higher estimates of Saudi reserves may have been over-estimated by as much 40%, and that Saudi might be unable to keep a lid on world prices after 2012²¹. As a National Oil Company, Saudi Aramco is not subject to the same scrutiny of 'proven' oil reserves as the multinationals. The Kingdom's willingness to bring prices down may also be constrained by the fact that, following the Arab Spring and the need to increase domestic expenditure, Saudi's own economy is reliant on a high sale price to balance its domestic budget. This figure is estimated to be between \$95 and \$110/barrel²².

Oil price leaps on rumours of Saudi pipeline blast

A frenzy of buying caused the Brent price to rocket by almost \$6 when rumours of a Saudi pipeline blast circulated in early March. The kingdom quickly dismissed the report, claiming that it was a hoax to move oil markets.

Meyer, Gregory and Chazan, Guy (2012) 'Oil leaps to highest level since mid-2008', *Financial Times*, 2 March.

¹⁷ Blas, Javier (2012) 'Saudi Arabia keeps on pumping crude', *Financial Times*, 3 July.

¹⁸ Blas, Javier (2012) 'Saudis cool on G7 call for oil output rise', *Financial Times*, 10 September.

¹⁹ Blas, Javier (2012) 'Saudis offer extra oil to offset price rises', *Financial Times*, 18 September.

²⁰ Blas, Javier (2012) 'Saudi's weapon against oil supply threat', *Financial Times*, 14 March.

²¹ Vidal, John (2011) 'WikiLeaks cables: 'Saudi Arabia cannot pump enough oil to keep a lid on prices'', *The Guardian*, 8 February.

²² Smith, Grant and Shenk, Mark (2012) 'Oil prices may collapse if OPEC delays production cuts', *Bloomberg News*, 6 December.

Supply information confuses oil markets

How do we know how much oil is supplied? A change in methodology in 2012 revealed the rather bizarre practicalities involved in getting such crucial information to the market. However, the information ended up confusing traders.

Up until April 2012 the market relied on 'secondary sources', a network of individuals with binoculars monitoring the movement of tankers in and out of the world's terminals. But in March, in an attempt to calm the markets, Saudi Arabia announced that OPEC would give its own figures. These were almost 1m b/d higher than the secondary sources', a discrepancy that was almost entirely accounted for by Iran and Venezuela's high output claims.

Blas, Javier (2012) 'Opec clouds the issue of oil production', *Financial Times*, 13 April.

2. Demand and Supply 'Noise' in a 'Jittery' Market

Although the market has, in fact, stayed in balance, underlying trends and potential demand/supply crises have transfixed both physical and derivative traders.

QE may be behind high oil prices

Lax monetary policy is lowering interest rates and the value of the dollar, the currency in which almost all oil is traded. Many analysts believe this is increasing demand and pushing up the price of oil.

Blas, Javier (2012) 'The Fed, quantitative easing and oil prices', *Financial Times*, 28 September.

IMF predicts global growth down

Sudan Supply a trickle

Oil supply from both Sudans was reduced to a trickle in 2012 as the newly independent South Sudan shut down its oil production and refused to export through its neighbour's pipeline.

As a landlocked country, South Sudan is dependent upon Sudan's infrastructure to get its oil to the coast. However, a dispute over fees led to a shutdown in January. An agreement on restarting production was signed in September 2012, but output is not expected to regain its pre-crisis level of almost half a million barrels per day for several years.

Blas, Javier (2012) 'Sudan's lasting impact on oil market', *The Financial Times*, 17 October.

Government stockpiling increases demand and market jitters

Worldwide government stockpiling greatly boosted demand in early 2012, but rumours that the G7 might release its reserves and puncture prices contributed to market nerves.

The biggest stockpile growth was in China, which is believed to have added 650,000 barrels per day in the first quarter, tapering down to just 100,000 in summer, a massive demand of around 106m barrels over seven months. The buying spree ended in September.

Blas, Javier (2012) 'Fears over conflict fuelling oil hoarding', *The Financial Times*, 22 March.

Blas, Javier (2012) 'The IEA – deterrent or political weapon', *The Financial Times*, 12 September.

Blas, Javier (2012) 'China stops filling strategic oil reserve', *The Financial Times*, 12 September.

Impressive growth in renewable energy

2012 saw a remarkable expansion of renewables as the most developed economies reaped the benefit of the previous few years of investment.

The EU, which plans to get a fifth of its energy from renewables by 2020, became the world leader in wind output, passing the 100 gigawatt (GW) mark in September, the equivalent of 39 nuclear power plants, enough to power 57 million homes. Investment in solar has been particularly strong in Germany and Italy, with German capacity close to 29GW.

Investment in the West slowed, however, as governments began to withdraw subsidies. This encouraged China, the world's biggest producer of wind turbines and solar panels, to target countries such as India, South Africa, Brazil and Thailand. Over-investment in the industry in China has caused the price of panels to tumble, bringing trade wars with the West but allowing countries such as Morocco to aim for 40% of electricity production from solar by 2020. In 2012 India opened the world's largest solar energy park by output – 214MW - in Gujarat.

[Clark, Pilita \(2012\) 'Utilities warned of risk from renewables', *Financial Times*, 6 November.](#)

[Wiesmann, Gerrit \(2012\) 'Shadows fall over German solar energy', *Financial Times*, 26 August.](#)

[Hook, Leslie \(2012\) 'Emerging economies in the solar spotlight', *Financial Times*, 17 June.](#)

[Fontanella-Khan, James \(2012\) 'India harnesses solar power to meet demand', *Financial Times*, 27 August.](#)

The North Sea: Unexpected disruptions in an ageing field

A leak of highly flammable and poisonous gas from Total's Elgin platform, and difficulties re-starting production after maintenance at the 220,000 b/d Buzzard field blighted 2012 North Sea oil and gas production. However, not only was there lowered production but Buzzard's stoppage had a particular distorting effect on the calculation of the Brent benchmark. (See page 20.)

Although there is an estimated 20 billion barrels of oil and gas left in the North Sea, it is considered a 'mature' oil basin. Production has fallen an average of 6% in recent years, but this tripled to 18% in 2011. BP, ExxonMobil and Shell have been selling off their ageing assets to smaller companies with lower overheads. However, Statoil, the Norwegian company, announced a large find in 2012.

[Chazan, Guy \(2012\) 'Total plugs North Sea gas leak', *Financial Times*, 16 May.](#)

[Blas, Javier \(2012\) 'Brent's Buzzard problem', *Financial Times*, 12 September.](#)

[Blas, Javier \(2012\) 'Brent suffers from 'North Sea syndrome'', *Financial Times*, 12 July.](#)

[Milne, Richard \(2012\) 'Statoil find new large North Sea field', *Financial Times*, 27 August.](#)

The Fukushima effect

The shutdown of Japan's nuclear reactors following the tsunami of March 2011 has doubled the country's oil imports to an estimated one million barrels/day. This has confirmed Japan as the world's third highest oil consumer, behind the US and China, and has promoted Japan to the position of world's biggest importer of Liquefied Natural Gas (LNG).

Fukushima impacted on other nuclear-reliant economies, affecting oil demand throughout 2012. Germany, China and South Korea shut down reactors, at least temporarily, because of safety concerns. More stringent safety checks postponed the start-up of France's latest reactor from 2012 to 2016.

[Soble, Jonathan and Blas, Javier \(2012\) 'Japan to phase out nuclear power', *Financial Times*, 14 September.](#)

Significant increases in Iraqi production but fears over shipments through the Strait of Hormuz

Strait of Hormuz

World's biggest waterway "chokepoint" for transported oil



In 2012 Iraq's production rose to over 3m b/d, overtaking Iran. Although welcomed by the markets, the news further focused attention on the critical Strait of Hormuz, through which all shipments pass and which is threatened by Iran.

The positive supply news was further complicated by disputes between Baghdad and its Kurdish autonomous region. Baghdad is attempting to assert national control over the oil industry and claims that exports without federal agreement are illegal and amount to smuggling.

Despite threats of exclusion from the southern oil fields, ExxonMobil, Chevron, Total and Gazprom have signed exploration deals with the Kurdish Regional Government (KRG). Some analysts believe that Kurdistan could hold a quarter of the world's easy access oil.

Blas, Javier (2012) 'Iraqi oil output overtakes Iran's', *Financial Times*, 10 August.

Teranzono, Emiko and Farchy, Jack (2012) 'Middle East tensions push oil higher', *Financial Times*, 19 July.

Kavanagh, Michael (2012) 'Iraq: Baghdad eases Kurdistan grip', *Financial Times*, 8 October.

Energy Information Administration (2012), available at <http://www.eia.gov/countries/regions-topics.cfm?fips=WOTC>, accessed 4 January.

Iran: Markets focus on decreased supplies and threats to shipping lanes

Reduced Iranian exports and the possible blocking of the crucial Strait of Hormuz, the seaway that connects the Persian Gulf to the world's oceans, held markets' attention throughout 2012.

Declining exports from Iran, home to the world's third largest oil reserves and second largest gas, have been a factor in demand/supply balance for several years, as the state has failed to invest in its own resource management. In 2012 this reduced supply was greatly exacerbated by US and European sanctions, aimed at forcing Iran to resume negotiations on its nuclear programme. By targeting bank transactions and shipping insurance, the West has forced most of Iran's buyers – predominantly in Asia, headed by China – to seek other supplies, regardless of whether or not they supported sanctions. Prices were particularly affected in the early months of the year as refiners sought to pre-empt the EU sanctions which came into force on July 1st.

The possibility that Iran might act to block the Strait of Hormuz heightened market tension further. Although such a move appeared unlikely, since it would block both Iran's oil exports and food imports, it became an increasingly important calculation as Israel appeared more inclined towards a unilateral strike and as the Iranian economy nose-dived, pushing the leadership into a no-win position. Asia is particularly dependent on this shipping route. Sixty three per cent of India's imports, 42% of China's and 82% of Japan's travel through this 'choke point'. This compares with only 16% of US imports.

Hook, Leslie (2012) 'Asian nations slash Iran oil imports', *Financial Times*, 22 March.

Blas, Javier (2012) 'Iranian oil output at lowest for 23 years', *Financial Times*, 12 October.

Blas, Javier (2012) 'Energy: Corridor of power', *Financial Times*, 4 October.

Fall in Chinese commodity imports hits oil price

Monthly Chinese economic data is closely watched by the markets for global trends.

Demand estimates were revised down over the year. In June, crude imports that had risen by 11% in the first six months dropped suddenly by 12%. These figures helped precipitate the mid-year price crash.

[Hook, Leslie \(2012\) 'Chinese commodity imports fall in June', *Financial Times*, 10 July.](#)

Venezuela: Two major oil refinery fires within a month

Two late-summer refinery fires focused attention on world-wide 'refinery tightness' and the industry's role in determining global prices.

[Mander, Benedict \(2012\) 'Venezuela oil fire continues for the third day', *Financial Times*, 27 August.](#)

Crashing the gas party

In 2011 the Liquefied Natural Gas (LNG) party was crashed by hydraulic fracturing – fracking. Since the early 2000s technological developments have improved the ability to liquefy, ship and re-gasify, opening up 'stranded' reserves where no pipeline was feasible and connecting them to markets. Gas had achieved a new status, with oil companies searching for it in its own right and stopping flaring. Gas reserves have approached parity with oil in size.

Major investments have been made on the assumption that the US would be the lead market. But the new technique of fracking has opened up unconventional gas reserves in the US, causing a supply glut. The US overtook Russia as the number one gas producer in 2010 and in 2012 fracking supplied 25% of the US market. In consequence, in 2012 the US price collapsed to less than \$2 per million British thermal British unit (mBtu), far below the actual cost of production.

Fracking has spread rapidly to China, but slowly to Europe. The immediate effect of the US price crash has been to encourage producers to concentrate on 'wet' wells that provide a mix of gas, oil and natural gas liquids. The result has been escalating oil production.

US set to export crude

In 2012 US oil production hit 6.5m b/d, an unexpectedly rapid rise from its low point of 1.5m b/d in 2008. Some analysts are predicting that the US will out-produce Saudi Arabia by 2017. The US became a net exporter of petroleum products, mainly petrol and mainly to Latin America, in 2010.

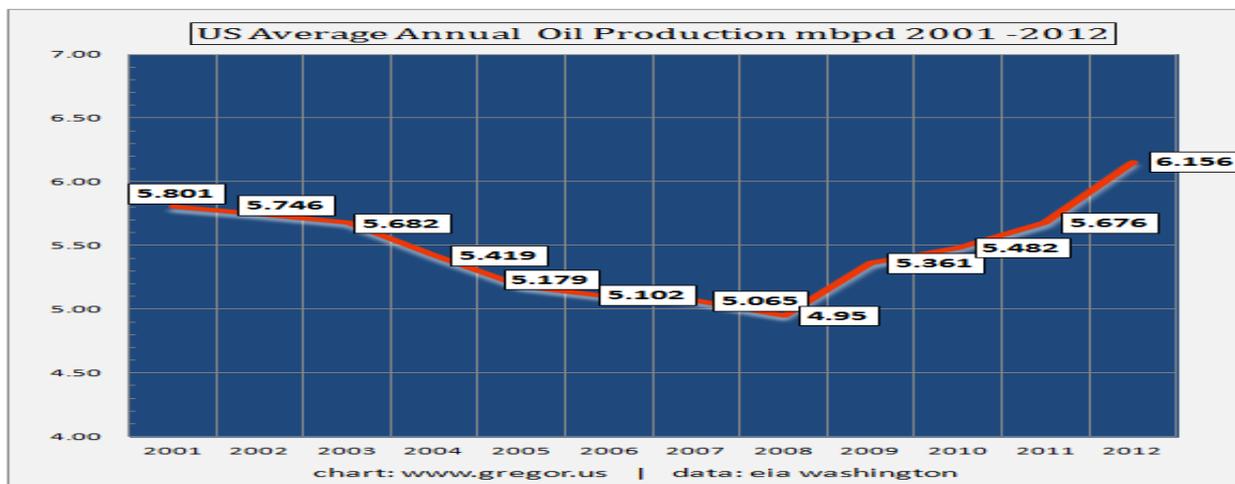
[Sankey, Paul, Clark, David T and Micheloto, Silvio \(2010\) 'The End of the Oil Age', Deutsche Bank, available at \[bioage.typepad.com/files/1223fm-05.pdf\]\(http://bioage.typepad.com/files/1223fm-05.pdf\), accessed 5 May 2012.](#)

[Chazan, Guy and Crooks, Ed \(2012\) 'US to be world's top energy producer', *Financial Times*, 12 November.](#)

[Meyer, Gregory and Crooks, Ed \(2012\) 'Oil groups set to export US crude', *Financial Times*, 11 October.](#)

[Crooks, Ed \(2012\) 'Saudi America' effect unlikely to dent oil prices', *Financial Time*, 2 December.](#)

IEA predicts US will be world's top producer by 2017²³



3. Beyond Demand and Supply: the Rise of Commodity Markets

However, high prices and correlated volatility have become much more than responses to demand and supply crises in a tight market. The last decade has seen a transformation in the size and nature of the market which has profoundly affected price movements. The severe equity bear market of 2000-2002 encouraged a wide range of new players into all commodity markets. In oil, this move was fuelled by rising demand, and supply pessimism.

These new players include institutional investors such as pension funds, sovereign wealth funds, university and charity endowments, hedge funds, investment banks, and individual 'retail investors'. Commodity markets have been transformed by an influx of billions of dollars of investment, causing the market to grow by an average of 30% per year between 2000 and 2010²⁴. It is estimated that institutional investors alone contributed \$300bn during that decade. These investors are not interested in the underlying commodity but regard the futures market as a new 'asset class': as hedge fund manager Michael Masters stated in his 2008 testimony²⁵ to the US Homeland Security Committee, the influx represents the 'financialisation' of commodities. An astonishing 99% of trades of Nymex WTI do not involve a physical exchange of oil²⁶.

²³ International Energy Agency (2013), available at www.iea.org, accessed 6 Jan 2013.

²⁴ Sankey, Paul, Clark, David T and Micheloto, Silvio (2010) 'The End of the Oil Age', Deutsche Bank, available at bioage.typepad.com/files/1223fm-05.pdf, accessed 5 May 2012, p. 129.

²⁵ Masters, Michael (2008) 'Testimony to the Committee on Homeland Security and Government Affairs', *United States Senate*, p.2.

²⁶ Sankey, Paul, Clark, David T and Micheloto, Silvio (2010) 'The End of the Oil Age', Deutsche Bank, available at bioage.typepad.com/files/1223fm-05.pdf, accessed 5 May 2012, p. 129.

Fierce competition amongst investment bank commodity traders

Although commodity trading is a relatively small proportion of the investment banks' fixed income divisions, it has become more attractive since the financial crisis hit other income streams, such as credit derivatives. Oil and oil products are by far the most traded commodity.

Banks generally do not declare their earnings from commodity trading but in 2012 it was reported that Goldman Sachs had earned \$2bn in the preceding year and Morgan Stanley had earned \$1.5bn. JP Morgan Chase claimed to have doubled their revenues to \$1.3 - \$1.5bn. Deutsche Bank is believed to have earned around \$1bn from commodities, but Barclays suffered a sharp fall. Overall the banks are believed to have earned around \$8bn from commodities, up ten per cent from the previous year but far below their peak of approximately \$15bn in 2006.

Blas, Javier and Farchy, Jack (2012) 'BarCap hit in commodities trading jostle', *Financial Times*, 20 March.

Speculation at a far lower level has always existed, bringing liquidity to markets, allowing genuine price discovery and enabling producers to insure themselves against price movements resulting from unforeseeable events. However, the volume and the nature of current trades mean that the market no longer works efficiently. Instead, it has created massive commodity inflation, dislocation between prices and underlying demand and supply, and has exacerbated price volatility with traders acting as a 'herd'. However, in early 2012 the market was described as 'fat tailed': Traders were unusually, deeply split over whether prices would go up or down because of the risk that low-probability events might have an outsize impact on prices²⁷.

Mexican hedging contributed to September \$4 plunge in four minutes

Since the 1990s Mexico, the world's 6th largest producer, has spent large amounts on 'put options' to insure itself against market volatility. Oil income provides a third of government revenue and to safeguard itself, it is reputed to have spent around \$1 billion with banks such as Goldman Sachs, JP Morgan Chase and Deutsche Bank. It is one of the world's largest hedging operations and its deals are eagerly anticipated by markets.

The banks involved offload their risk onto the market, a volume of trading that is known to affect prices. However, the sudden September plunge of \$4 in four minutes was unexpected and otherwise inexplicable. Exchanges confirmed that there was a coordinated sell-off and no technical issues were responsible. It appears that it was simply another example of market nerves and herd behaviour.

Blas, Javier (2012) 'Mexico hedges against oil price slide', *Financial Times*, 25 September.
Meyer, Gregory (2012) 'Crude hit by four-minute plunge', *Financial Times*, 17 September.

²⁷ Blas, Javier (2012) 'Fat-tail fears catch oil traders between \$50 and \$150 bets', *Financial Times*, 12 December.

3.1 Too much money chasing too few goods: passive funds blamed for escalating prices

Throughout 2012 there were calls to ban the relatively new commodity index funds which are both 'massive' and 'passive'. These are investment vehicles that take only 'long' positions, ie they assume that prices will rise and each contract is simply 'rolled' into another so that funds accumulate a position of sustained, perpetual growth. They are considered 'passive' because they do not respond to price changes;

nor do they contribute to liquidity or add productively to the market. Funds tend to speculate across a basket of commodities, with oil being one of the most popular. Their attraction for investors such as pension funds is that they can participate in the commodities markets, which are perceived as a good 'hedge' against inflation, with minimal transaction costs²⁸.

The volume of exchange traded products, approximately 90% of which are passive index trackers, has exploded from just 260 in 2003 to 2400 in 2010²⁹. The number of futures contracts is limitless and they now dwarf the actual amount of oil being traded. With too much money chasing too few goods, passive funds are believed to be one of the fundamental causes of higher prices. This is exacerbated by the fact that they are all betting one way: traders therefore demand a premium to enter a contract on the other side, causing further inflation.

The 'normal' shape of the forward curve for non-perishable goods such as oil is described as 'contango', ie upward, but during 2012 there have been notable periods of the reverse, ie backwardation, indicating that the market expects price falls, either from reduced demand or increased supply.

3.2. Actively managed funds add to 'casino' markets

Since 2008 actively managed exchange traded products have also been available where managers aim to profit from volatility by trading both long and short, ie they attempt to buy in to rising markets and bet against price falls. Some active managers rely on a study of market fundamentals, using charts and complex algorithms to indicate future trends based on previous experience. Others are more alert to investors' psychology, the 'animal spirits' of the market. The 'forward curve' is an essential component in calculations: It is considered a poor predictor of market fundamentals but a good indicator of market sentiment.

However, the combination of an over-crowded global market with a fundamental 'tightness', further complicated by asymmetries of information, results in 'herd' behaviour, with traders attempting to either be the first to react to a piece of market information, often a rumour, or at least 'ride the wave'. Regulators and politicians have likened the markets to casinos, arguing that traders are contributing neither useful demand/supply signals nor liquidity.

Commodity correlation defeats hedge funds

2012 is reported to have been the fourth year of bad returns for some of the trend-following 'quant' hedge funds. In particular, in an industry that attempts to make returns from anticipating changes in one market caused by another, they have suffered from 'RoRo', the risk on, risk off phenomenon caused by the high correlation between commodity markets that critics claim is a side-effect of excessive speculation.

Jones, Sam (2012) 'Dismal year for quantitative hedge funds', *Financial Times*, 28 November.

Jones, Sam (2012) 'Wrong sort of volatility hits trend followers', *Financial Times*, 20 November.

²⁸ Meyer, Gregory (2012) 'US funds fall out of love with commodities', *Financial Times*, 11 September.

²⁹ Sankey, Paul, Clark, David T and Micheloto, Silvio (2010) 'The End of the Oil Age', Deutsche Bank, available at bioage.typepad.com/files/1223fm-05.pdf, accessed 5 May 2012, p. 129.

Hackers target pipeline companies

In May it was discovered that hackers were targeting US natural gas pipeline companies. Although the intent was unclear, there is a real possibility that the fake emails to staff, 'spear fishing' for information, came from commodity traders trying to get market information.

Crooks, Ed (2012) 'Hackers target US natural gas pipelines', *Financial Times*, 8 May.

4. Local Factors Distorting the Two Principle Benchmarks

The commodity indices rely on benchmarks, as do the majority of the world's physical and paper trades. The two major benchmarks for world oil trades are the British North Sea Brent Crude, or 'Brent' for short, which is traded on London's Intercontinental Exchange (ICE), and West Texas Intermediate (WTI) operating out of the New York stock exchange (NYMEX). Brent is made up of a 'basket' of four different streams of crude from the North Sea, and WTI is a light, sweet (ie low in sulphur) grade of crude from Texas. Brent acts as a reference point for the majority of the world's oil trade, having overtaken WTI for the first time in 2012 in volume of trade. Other 'oil markers' sometimes used are Dubai Crude and the OPEC Reference Basket.

However, in 2012 local factors – including the price reporting mechanism for Brent – appeared to be distorting the benchmark figures, raising questions over their ability to represent true price discovery.

Favoured derivative spreads

The gap between WTI and Brent first opened up in 2010 and the 'spread' is now said to be one of the favourite trades of specialist hedge funds and commodities trading houses. Some analysts are predicting that the spread will narrow, others that it will stay wide.

Another favourite bet is on 'crack spreads', ie the difference between refined and unrefined products, so called because oil is 'cracked' to produce gasoline and heating oil. Although it is often assumed that the price of oil drives the price of products, the reverse is usually the case, ie if inventories of oil products are high, this can lead to a decrease in the price of crude. Indeed, this was part of the cause of the US glut at the beginning of 2012. US refineries bought as much as possible in order to benefit from relatively high gasoline prices, before their annual shut-down for maintenance.

Blas, Javier (2012) 'Index change to prompt US crude sell-off', *Financial Times*, 6 November.

4.1 WTI: a glut as infrastructure adapts to new physical market

In the US, the infrastructure of pipelines and refineries has not kept pace with the growth in supply of tar sands oil from Canada or shale oil from areas such as North Dakota. This has resulted in several regional bottle-necks causing gluts, principally around the pipeline hub of Cushing, a town in Oklahoma which acts as the delivery point for contracts. Despite the reversal of flow of one pipeline and the addition of barges, tankers and trains, which have all improved flow to the refineries on the coast, the price gap with Brent was slow to respond, reaching almost \$25 in October. These particular US infrastructure problems and the consequent price dislocation have made WTI less useful as a benchmark for oil trades elsewhere in the world.

Warren Buffet to the rescue

In November, Warren Buffet, the billionaire investor, announced that he would be pumping money into the rail network to increase 'off-take' capacity for North Dakota's shale oil. This, amongst other measures, should help reduce the glut in 2013, allowing the price to increase.

Blas, Javier (2012) 'Buffett's boost to US shale revolution', *Financial Times*, 29 November.

4.2 Local factors raise Brent benchmark

However, Brent's reliability has also been brought into question. The 'basket' is made up of four different crude streams – Brent proper, Forties, Oseberg and Ekofisk. The benchmark is not an average of the four but is based upon the cheapest, which is usually Forties. More than a third of this stream comes from the Buzzard platform, owned by the Canadian company, Nexen. The Brent price was inflated in the latter part of the year when the company had difficulties re-starting production after a scheduled maintenance shut-down in summer. This has focused attention on the fact that the North Sea fields are ageing and therefore yielding less, a long term problem for the benchmark³⁰.

South Koreans fundamentally alter the Brent benchmark

A free trade agreement signed with South Korea helped distort the price of Brent in 2012. The agreement, signed in 2011, waives the import tax on oil. This makes it economically viable to ship North Sea oil the extraordinary 45 days journey from the North Sea to refineries in the republic, via the Atlantic, Indian and Pacific oceans, even though each shipment is estimated to cost \$4 - \$6 million.

However, of the estimated 44 million barrels bought during 2012, 29 million were for Forties, the stream key to setting the benchmark. This unexpected high demand for Forties has become an important feature in price setting, raising oil prices and adding to volatility.

Blas, Javier (2012) 'Korean buying spree boosts Brent price', *Financial Times*, 7 June.

³⁰ Blas, Javier (2012) 'Brent's Buzzard problem', *Financial Times*, 31 October.

5. Possible Manipulation of the Benchmark Could Be Distorting Prices

The single daily figure that the commodity indices, derivatives and physical traders rely upon is produced by the Price Reporting Agencies (PRAs). Three privately owned agencies dominate the market – Platts (owned by McGraw Hill which also owns credit rating agency Standard and Poor's), Argus Media and ICIS. They operate by asking traders for details of offers and bids as well as actual trades, information that is then processed according to non-transparent and unregulated 'proprietary' methodologies. Agencies receive a fee for producing the benchmark, and these provide the basis for the majority of physical oil contracts and an estimated 60 – 70% of 'Over the Counter (OTC)' swaps and options³¹.

Traders are alleged to have manipulated prices to gain from derivatives

In an echo of the summer revelations of inter-bank lending rate (LIBOR) manipulation, UK regulators are investigating the possibility that traders have been willing to make a loss on physical gas trades and push benchmark prices down in order to 'win' from derivative positions.

The investigation began just weeks after it was announced that US authorities are pursuing a record claim against Barclays for alleged market rigging in 2006 – 2008. As with the LIBOR investigation, traders' emails and instant messages have been scrutinised and clearly reveal the intention to manipulate the market. The court case is likely to take years and the outcome will depend on prosecutors being able to prove financial gain from the trades.

[Blas, Javier \(2012\) 'Barclays feels force of energy regulator', *Financial Times*, 31 October.](#)

[Blas, Javier \(2012\) 'Barclays case shocks the energy market', *Financial Times*, 1 November.](#)

The lack of transparency in the way they sample trade information and thereby set the benchmark has been questioned ever since the \$150 oil price spike in 2008. Parallels have been drawn to the setting of LIBOR, the inter-bank lending rate, which has been under investigation since summer 2012 and has sparked a rash of staff dismissals and legal proceedings around the world³². The PRAs, however, claim that their work is 'journalism', matters of opinion protected by 'freedom of speech', which traders choose to use. Similarly, in the interest of 'protecting their sources', calculations are not open to scrutiny. They are based on reports from as few as five market players on occasions. The question for regulators is whether traders are manipulating benchmarks by selective reporting or by using tactics such as 'wash trades', where one trade cancels out another, leaving the price unaffected but impacting on the index, and whether the PRAs are effectively manipulating prices by excluding some price-reporting groups. The fact that Platts has its own e-trading arm, linked to the InterContinental Exchange, appears to be a further conflict of interest.

³¹ Braithwaite, Tom (2012) 'Reporting agencies should accept oversight', *Financial Times*, 9 July.

³² Tett, Gillian (2012) 'Oil markets should heed Libor lessons', *Financial Times*, 12 April.

Total breaks ranks

In August 2012 it was reported that the trading arm of Total had broken ranks, stating in a letter to the International Organisation of Securities Commission (IOSCo) that 'several times a year, estimates of market prices in key [energy] indices... are out of line with our experience of the day' and that inaccurate pricing affects not only trade and derivative pricing but also prices paid by consumers.

Blas, Javier (2012) 'Total warns over 'inaccurate' benchmarks, *Financial Times*, 8 October.

5.1 The price reporting agencies defy the G20

In 2011 the G20 asked the International Organisation of Securities Commission, the body that regulates the world's futures and securities markets, to come up with recommendations. A report was produced in March 2012, suggesting that all market participants should submit price information to the PRAs, but only of completed trades. In response, the PRAs themselves announced a new 'code of conduct', which would include an independent review of compliance³³. However, in September 2012 IOSCo revealed that the PRAs were threatening to withdraw their services altogether if regulation became a reality, a situation that would have made the physical market totally impenetrable to all but the most powerful participants. The PRAs are backed by the majority of oil super-majors and OPEC who do not wish to see mandatory reporting of trades, and also, perhaps surprisingly, by the IEA. Despite citing several actual cases of market manipulation and concluding that the 'potential for such misconduct is not mere conjecture', regulators lack the ability to enforce oversight and have so far been forced to climb down.

5.2 The industry resists further calls for market transparency

The industry is particularly secretive around trades involving National Oil Companies, ie regarding quantities purchased and amounts paid by refiners and trading companies. Organisations such as Revenue Watch suspect that the lack of transparency hides a level of corruption and they have been pushing for the Extractive Industries Transparency Initiative (EITI) to be extended to reveal details of such trades. Similar initiatives have come from the EU and via the Dodd Frank Act in the US but have been strongly resisted by corporations such as BP and Shell as well as commodity houses, such as Vitol, Trafigura and Glencore³⁴.

The effect of greater transparency on actual prices and volatility is unclear since currently the whole process is so secretive. It can only be assumed, however, that more clarity would lead to less 'jitteriness' in the market and less speculation, and therefore more accurate price discovery. The fact that this is so actively opposed by the oil majors and trading houses is noteworthy.

³³ Blas, Javier (2012) 'Commodities price agencies propose rules', *Financial Times*, 30 April.

³⁴ Blas, Javier (2012) 'Oil traders face heat over disclosure', *Financial Times*, 22 April.

Conclusion

This paper has set out to explain some of the factors contributing to Brent oil prices being both high and volatile in 2012 while the North American benchmark, WTI, has been relatively depressed. Increased demand coupled with supply stagnation over the last decade has 'wound' the tightness of the market, causing it to attract billions more dollars from both passive and active speculators. This is now a crowded, 'jittery' market where many participants are fixated on the possibility of supply and demand disruptions, keen to react ahead of other participants, or at least 'ride the wave' of market sentiment.

Physical and derivative trading is led by the two dominant benchmarks. However, in 2012, both were distorted by local factors that meant they did not represent accurate price discovery and were less relevant to contracts world-wide. The fact that Brent continues to be used appears to be the result of a dearth of rivals and the well-entrenched nature of the system.

The value of the derivative market also means that it is likely that some trader-led manipulation of the benchmarks exists. Fierce resistance to regulation, however, led by the super-majors and large trading houses – even to the point of refusing to cooperate with the G20-appointed IOSCo – is likely to only increase suspicions of what the industry is concealing. Regulators and investors are likely to be asking, given the oil majors poor upstream record over recent years, to what extent their market dominance relies on their trading activities and the maintenance of an artificially high Brent benchmark, rather than genuine growth.

A second paper, **'The impact of high and volatile oil prices on the super-majors: A study of 2012'** will discuss the surprisingly contradictory effect of current pricing, raising the question of the long-term viability of the super-majors.