

# Special Report Oil

Too fast, too furious... now time for a break – March 2010

Prices increased too far, too fast – upside potential remains limited

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High inventories represent Achilles heel

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Shale gas is a “game changer” in the energy sector and the most attractive investment opportunity

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Oil price development from the perspective of the Austrian School of Economic

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A Chinese “Black Swan” ahead?

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Our roadmap for 2010: 1st half: target price of max. USD 90 - 100. 2nd half: trend reversal to be expected

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Average price 2010: USD 72 barrel

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# Special Report Oil

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# Special Report Oil

## 1. Introduction

### Risk/return profile currently unattractive

As pointed out in last Special Report of 2009, “The era of cheap oil is coming to an end” the risk/return profile was extremely attractive for oil investors last year at a price of USD 33/barrel. But after the drastic recovery this situation seems to have changed. Due to the rather ambitious economic expectations currently priced in for oil and also to the latently weak demand side (cue peak demand?) in the OECD nations, we expect sluggishness of the price starting in the second half of 2010 at the latest. More specifically, we envisage an oil price in the area of USD 60 by the end of the year. Therefore the downward risk clearly outweighs the upward potential.

### Open liquidity floodgates responsible for high oil price

The global stimulus measures taken by governments and central banks and the almost worldwide near-zero interest rate policy triggered a revival of commodity investments in 2009. According to a report by Barclays<sup>1</sup> the commodity sector recorded an inflow of more than USD 60bn last year. Another reason for the rising oil price was of course the weak US dollar. The five-year correlation of oil prices and the EUR/USD exchange rate is currently 88.2%.

### We are suspicious of the blind trust in the Chinese economy as growth engine

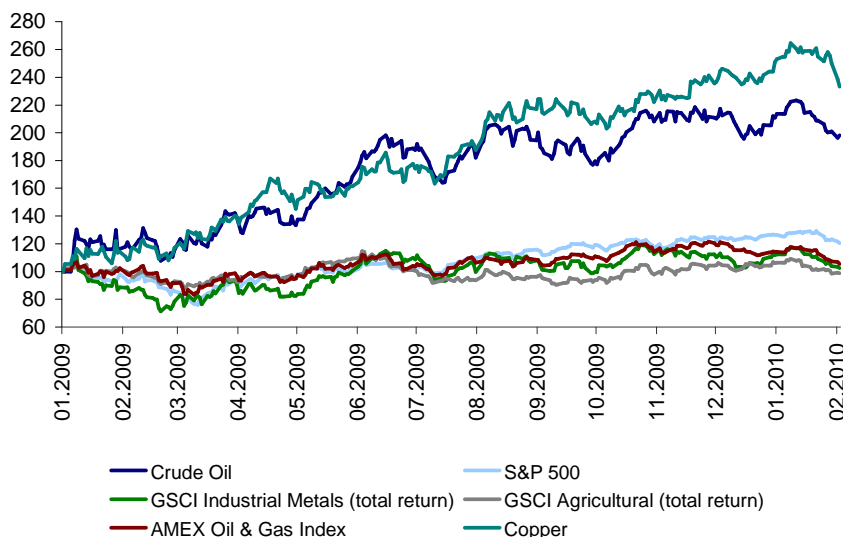
The structural problem of crude oil has clearly subsided and eased off in recent months. The economic recovery is intact, but we think that the oil price has been clearly overshooting. Although demand has picked up considerably – particularly in the emerging countries – it is still clearly below its highs. Additionally, we are critical of the blind trust in the Chinese economy as recovery and growth engine. China cannot and will not be the sole driver of global recovery, nor the sheet anchor and messiah for the global economy, nor the only hope for oil demand.

### OPEC considers USD 70-80 the perfect bandwidth

Demand for mineral oil products remains weak, and we believe that the focus of the oil price discussion should be shifted to the supply side again. The production cuts by OPEC were showing effects last year, albeit with a substantial time lag; the member states were determined to put an end to the price slump and to stabilise the market. OPEC currently considers a bandwidth of USD 70-80/barrel perfect, both for producers and for consumers.

The following chart illustrates the fact that industrial metals and oil were the clear outperformers in 2009. The disappointing development of the GSCI is mainly due to roll-over losses, the spot index increased by more than 60%.

### Market prices 01/2009 – 02/2010



Sources: Datastream, Erste Group Research

<sup>1</sup> “Commodity Investment Expected To Remain Strong in Early 2010“, Wall Street Journal, 4 January 2010

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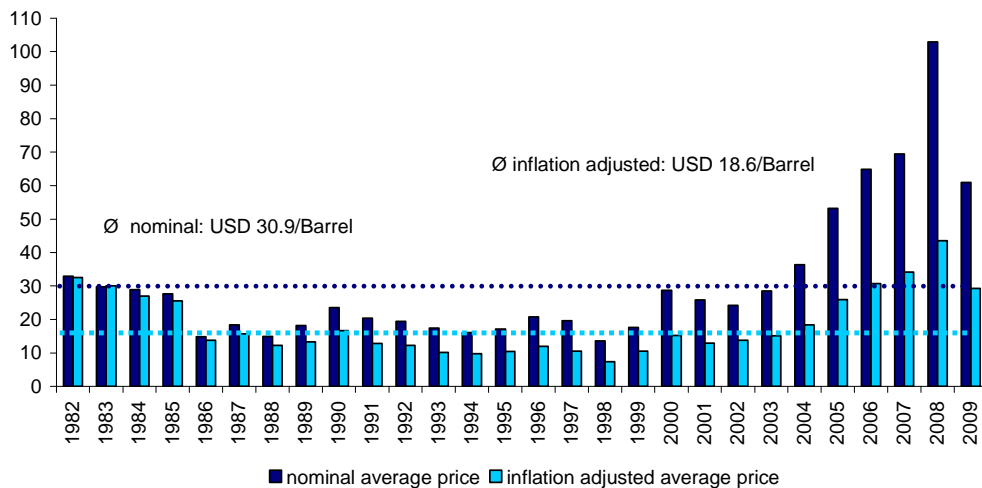
## ***Is oil on its current level a bargain?***

After our previous report (February 2009) we saw an attractive level for taking positions at USD 33/barrel. Since then, the oil price has more than doubled, with the average price of WTI in 2009 amounting to USD 61/barrel. Our forecast of USD 55 was therefore reasonably accurate, although we underestimated the relentless deficit spending and the global stimulus efforts. Is oil now cheap at its current level of almost USD 80?

### **Oil price far above historical average – in nominal and inflation adjusted terms**

The illusion of a “cheap” oil price is probably based on the fact that many market participants regard the all-time-high of close to USD 150 as referential value. On its current level the oil price is more than 100% above its long-term average of USD 30.9 and the median of USD 24. Even during the historic recession of 2008 the oil price dipped only shortly below USD 40/barrel – a price hard to imagine only a decade ago even at the economic peak. And adjusted for inflation the oil price is still expensive. At its current inflation-adjusted price of USD 29.3/barrel it is clearly above its long-term average of USD 18.6/barrel and the median of USD 14.4. This means that oil is currently therefore neither cheap in nominal terms nor on an inflation-adjusted basis in a historical comparison.

### **Real vs. inflation-adjusted average price since 1982**



Sources: Datastream, Erste Group Research, sharelynx.com, Bloomberg

### **ASCI as new benchmark grade?**

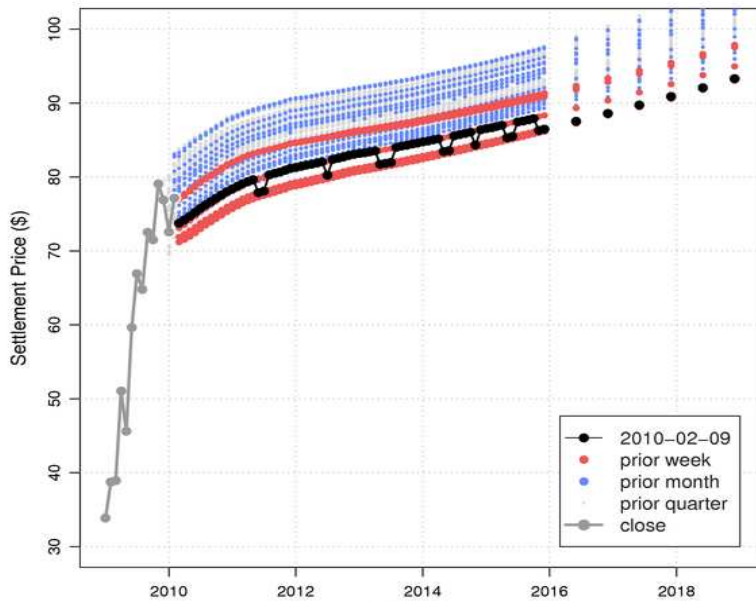
There were times in 2009 when Brent was significantly more expensive than the North American benchmark WTI. Brent is of slightly lower quality, which makes the refining process more costly. Given the persistent storage problems in Cushing, Saudi Arabia wants to establish ASCI (Argus Sour Crude Index) as new benchmark.

### **Situation of extreme contango gradually easing off**

In addition, the contango was more pronounced than ever before. This means that long-term futures were considerably more expensive than short-term ones, i.e. the losses of rolling over were extremely high from an investor perspective. This situation has somewhat improved in the meantime, and the forward curve has flattened. This seems to be due to the massive inventories that have been gradually drawn down.

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**NYMEX Crude Oil Settlement Chain**

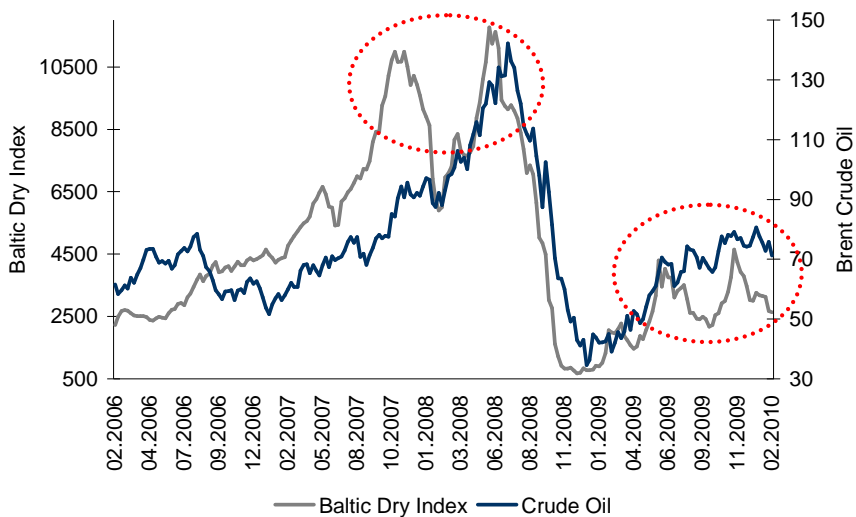


Source: Mazamascience.com

**Baltic Dry index signals lower oil price**

The following chart illustrates the global economic slump. The Baltic Dry index is the most important indicator for global freight rates of bulk goods and thus goes hand in hand with global trade. Therefore it also serves as reliable leading indicator for the oil price. The chart highlights that the index tends to buckle relatively early, mostly before the oil price enters into a short yet impulsive trend. Currently the oil price is still caught in an upswing, whereas the upward momentum of the Baltic Dry index is clearly fading. This would also suggest a falling oil price.

**Baltic Dry index vs. oil price**



Sources: Datastream, Erste Group Research

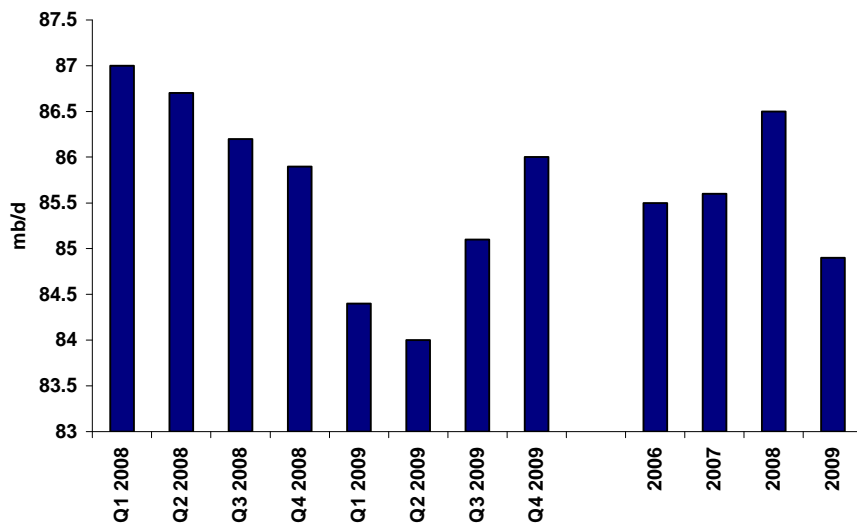
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## 2. Supply

**OPEC could nip any upward momentum in the bud**

At the moment the oil supply is clearly sufficient. We expect the supply side to recover further in 2010, in synch with the demand side. OPEC cut its production in 2009 by almost 4mn barrels/day – the highest reduction since 1982. Since then production has increased, but still remains almost 3mn barrels/day below the highs. In view of the reserve capacities of almost 5mn barrels/day (and the expected increase to 6mn barrels/day) OPEC could quickly nip any upward price momentum in the bud.

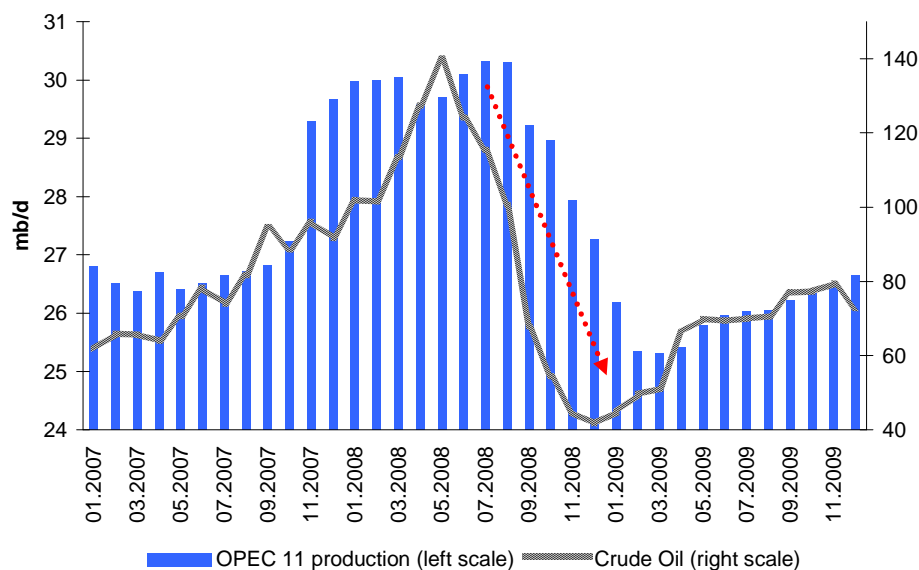
### Global supply



Sources: IEA, oilmarketreport.org, Erste Group Research

In its latest report IEA does not expect OPEC to raise production in 2010 given that demand for oil outside the emerging markets has remained disappointing. The expected increase outside OPEC as well as 800,000 barrels of LNG a day should cover the increase in demand.

### OPEC 11 (excl. Iraq) – production



Sources: Bloomberg, Erste Group Research

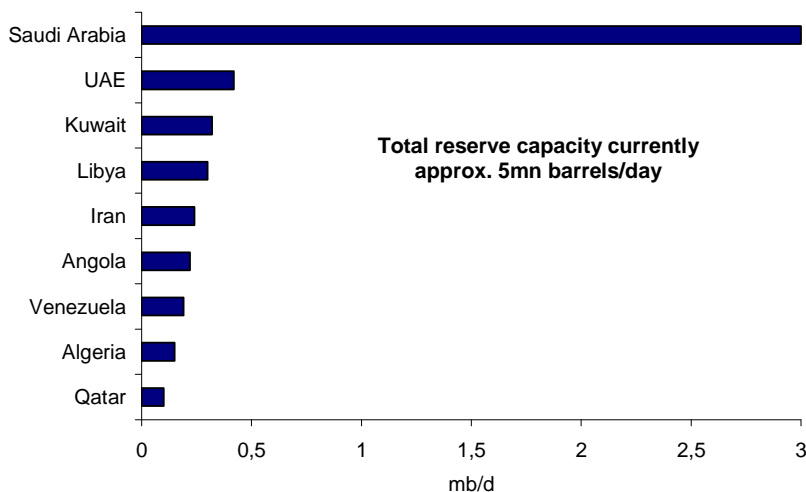
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## OPEC discipline on a steep slide

### OPEC happy with price band of USD 70-80

At the 155<sup>th</sup> meeting in December the current production volume was left unchanged. OPEC seems to regard an oil price between USD 70 and 80 as optimal. On the one hand it is low enough in order not to burden the still frail economy too much, on the other hand alternative sources such as oil sand or deep sea oil are not attractive and mostly unprofitable at this level. Wind and solar power are no serious competitors (without massive subsidies that is) at this price level either. The profit margin of OPEC seems robust at this price level. This is why we do not expect any imminent changes to the official production policy. According to OPEC, the current prices are meant to satisfy both producers and consumers.

### OPEC's reserve capacity



Sources: Bloomberg, OPEC, Datastream, Erste Group Research

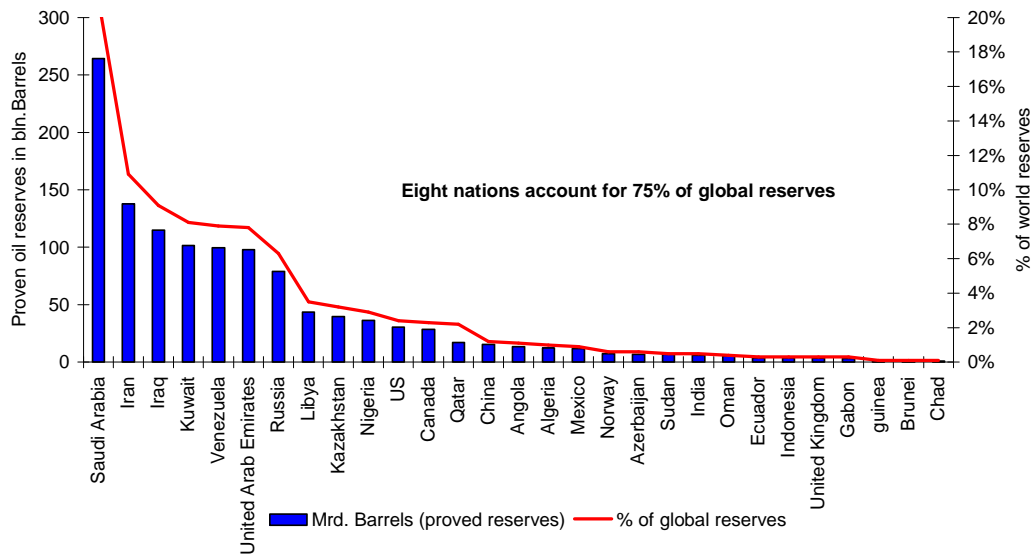
### Quota discipline down to 50 %

The uncommon level of discipline in fulfilling the quotas among the OPEC countries (which was responsible for the price stabilisation in the first half of 2009) has fallen rapidly. In the course of the price increase, the discipline slackened; the current fulfilment of quotas is down to 50%. Especially the high production of Russia instilled the desire to step up their own output into other countries. Angola, Iran, Nigeria, and Ecuador were the main countries to step out of line by disregarding production quotas. This means that OPEC has de facto already increased its production.

OPEC currently produces close to 60% of total volume but owns more than 80% of reserves. The economic and of course also political power of OPEC will continue to increase; the IEA expects 80% of additional production to come from OPEC countries. However, the actual reserves – especially those of the Saudi oilfields – are of dubious nature. No productivity ratios, details, or updates on reserves are being published. This would also explain why the by far largest OPEC producer, Saudi Arabia, has refused to have its reserves validated by foreign institutes for years.

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Breakdown of global oil reserves



Sources: BP Statistical Review of World Energy, Erste Group Research

## Peak Oil revisited

*“It is quite a simple theory and one that any beer drinker understands. The glass starts full and ends empty, and the faster you drink it, the quicker it’s gone”*

Dr. Colin Campbell, Oil Depletion Analysis Centre

### IEA issues first peak oil warning

The IEA has issued its first peak oil warning, saying it may occur by 2020<sup>2</sup>. Chief Economist Fatih Birol is convinced that the production of conventional crude oil will reach its peak in 2020 at the latest. This is quite surprising, considering the fact that the agency has so far been quite critical with regard to peak oil. Upon analysis of 800 oilfields the IEA reached the conclusion that, if demand develops in a similar fashion, new resources of 40mn barrels/day would have to be discovered by 2030 (i.e. four times the production of Saudi Arabia) in order to avoid a long-term price shock.

### An article in “The Guardian” confirmed that forecasts might have been overly optimistic

An article in The Guardian<sup>3</sup> raised quite a few eyebrows in this context. In its World Energy Outlook, the IEA expects oil demand to increase to 105mn barrels/day by 2030. The agency envisages a situation where the additional demand can be covered by rising OPEC production and by a higher share of unconventional sources. However, in the aforementioned article, an IEA employee confirmed that far too optimistic numbers had been chosen deliberately in order to avoid a panic.

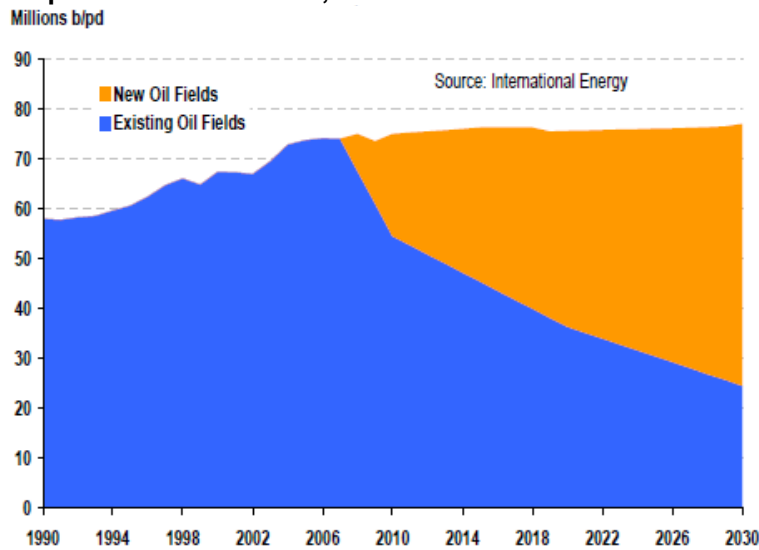
<sup>2</sup> [http://www.economist.com/businessfinance/displaystory.cfm?story\\_id=15065719](http://www.economist.com/businessfinance/displaystory.cfm?story_id=15065719)

<sup>3</sup> <http://www.guardian.co.uk/environment/2009/nov/09/peak-oil-international-energy-agency>



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**Oil production 1990-2008, forecast 2009-2030**



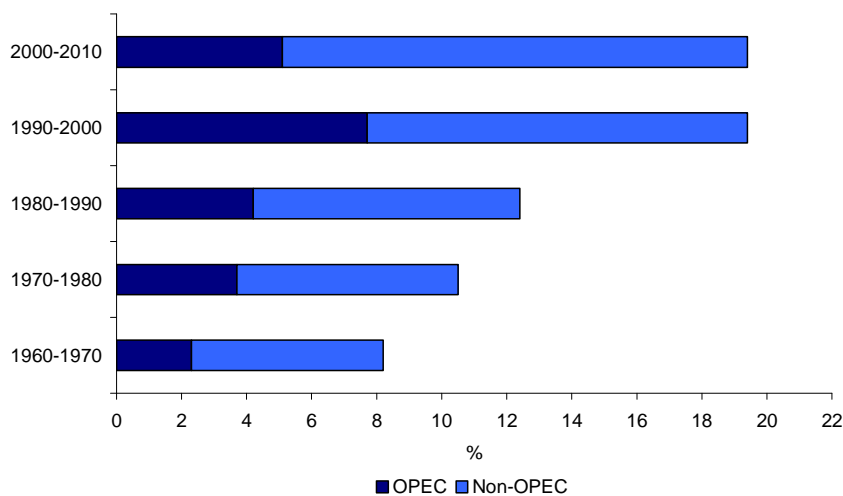
Sources: ETF Securities, IEA

After Norway, Great Britain, Mexico, and China, Russia seems to be the next to make it past peak production. Deep-sea production should see its peak in 2012. This means that the importance of Saudi Arabia, Iraq, Kazakhstan, and the United Arab Emirates is still rising.

**Four oilfields have been producing 90% of Saudi Arabian oil since 1955**

Saudi Arabia has recently reported the launch of an investment programme worth USD 120bn over the next six years. Half of the sum is earmarked for the development of onshore and offshore production, and the remainder will be set aside for the expansion of refineries and investments in foreign oil companies<sup>4</sup>. Saudi Arabia is the only oil producer with really significant reserve capacity (N.B. currently more than 3mn barrels/day). The country expects an average increase in demand of 1mn barrels per year until 2030, resulting in almost 105mn barrels/day in 2030. The high degree of concentration of the Saudi Arabian production also illustrates the predicament of the industry. Since 1955<sup>5</sup> only four large fields have accounted for 90% of the entire Saudi oil production. Given that the country continues to refuse entry to foreign experts to review the reserves, a certain degree of scepticism regarding the claimed reserves is justified.

**Global decline rates in %**



Sources: WEO2008, IEA, BMO, Erste Group Research

<sup>4</sup> [http://www.qnaol.net/QNAEn/News\\_Bulletin/Economics/Pages/10-02-01-0944\\_868\\_0013.aspx](http://www.qnaol.net/QNAEn/News_Bulletin/Economics/Pages/10-02-01-0944_868_0013.aspx)

<sup>5</sup> Please refer to Matthew Simmons "Twilight in the desert"

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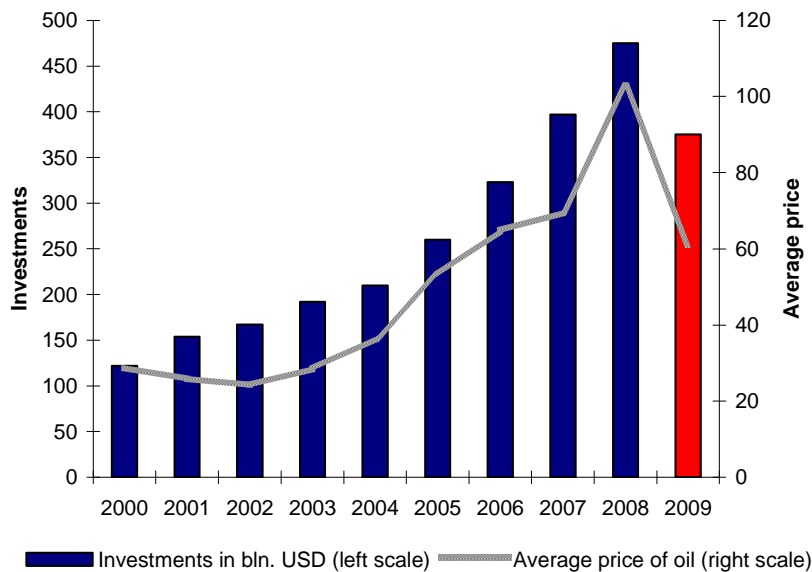
**IEA estimates costs for new oil at USD 75/barrel**

According to a study by the IEA<sup>6</sup> the costs of discovering and producing a barrel of new oil currently amount to USD 75/barrel. The IEA considers the increase a combination of rising labour and land costs and of waning output. Saudi Arabia regards USD 70-75 as cut-off rate for new projects, and the development costs outside OPEC are often above USD 100/barrel.

**USD 26 trillion of investments required by 2030**

In its World Energy Outlook, the IEA postulates a required investment volume of USD 26 trillion by the year 2030. More than half of it would be allocated to discovering new oil wells in order to make up for the receding production. However, in the course of the financial crisis the opposite happened. The investment budgets were curbed by almost 22% or USD 100bn in 2009 in comparison with 2008.

## Annual investments vs. oil price



Sources: IEA, Bloomberg, USGS, Erste Group Research

## ***“Exploration hopes to find elephants and generally finds mice...”***

**Total production hugely dependent on “Giant Oil Fields”**

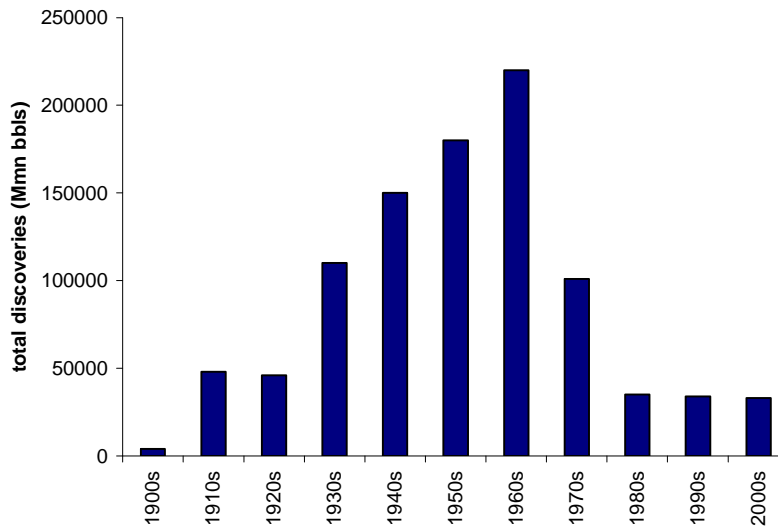
70% of daily oil supply is covered by oilfields whose discovery dates back to before 1970. The total number of producing oil fields currently amounts to 4,000 worldwide. The majority of these fields produce less than 20,000 barrels/day, and 3% of the fields account for almost half of the output. These more than 3% producing 100,000 barrels are called “giant oil fields”. According to Matthew Simmons there are currently close to 120 giant oil fields worldwide, accounting for almost 47% of total supply. The 14 largest fields make up 20% of supply, at the moment there are only four fields left that produce more than 1mn barrels/day. 20 years ago there were 17. The average age of these fields is about 52 years.

*“We are running the risk of another oil crisis when demand outstrips supply around 2014 or 2015. There won’t be enough oil and gas by the middle of the next decade.” Christoph de Margerie, CEO Total, September 2009*

<sup>6</sup> Global Cost Study 2009

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## Oil discoveries since 1900



Sources: EIA, Oil and Gas Journal, Erste Group Research, OPEC

### Numerous large discoveries, but with dubious profitability

The Brazilian Petrobras has recently reported two large discoveries. The fields named Tupi and Guará are supposed to turn Brazil into one of the leading producing nations. Guará is estimated to contain reserves of at least 2bn barrels, Tupi at least 5bn. Tiber, the latest discovery of BP in the Gulf of Mexico, made headlines as well. It is the deepest discovery to date, at a depth of 10km. However, the field lies below numerous kilometres of salt and rock, which will make production decidedly more difficult. Optimistic estimates set its volume at almost 5bn barrels. Horizontal drilling procedures yield 2.5x to 7x as much oil as vertical ones, but the costs are almost 300% higher<sup>7</sup>. The profitability of the production remains therefore dubious, and the technical challenges are enormous. The frequent hurricanes are another problem for the oil rigs, and the production costs of such sophisticated offshore projects tend to reach at least USD 60/barrel.

### The largest discoveries since 2006

Year	Location	Company	Minimum reserve in barrels
2006	Tupi, Brazil	Petrobras	5,000e
2009	Tiber, USA	BP	1,000-5,000e
2008	Guara, Brazil	Petrobras	2,000e
2005	V. Filanovsky, Russland	Lukoil	1,811e
2007	Nanpu, China	CNPC	1,635e
2009	Miran West, Iraq	Heritage Oil	1,100e
2007	Caramba, Brazil	Petrobras	934e
2008	Guara, Brazil	Petrobras	881e
2007	Carioca, Brazil	Petrobras	867e
2008	Tsentralanaya, Russia	Tsentrkaspneft	632e

Sources: FuW, WoodMackenzie, Erste Group Research

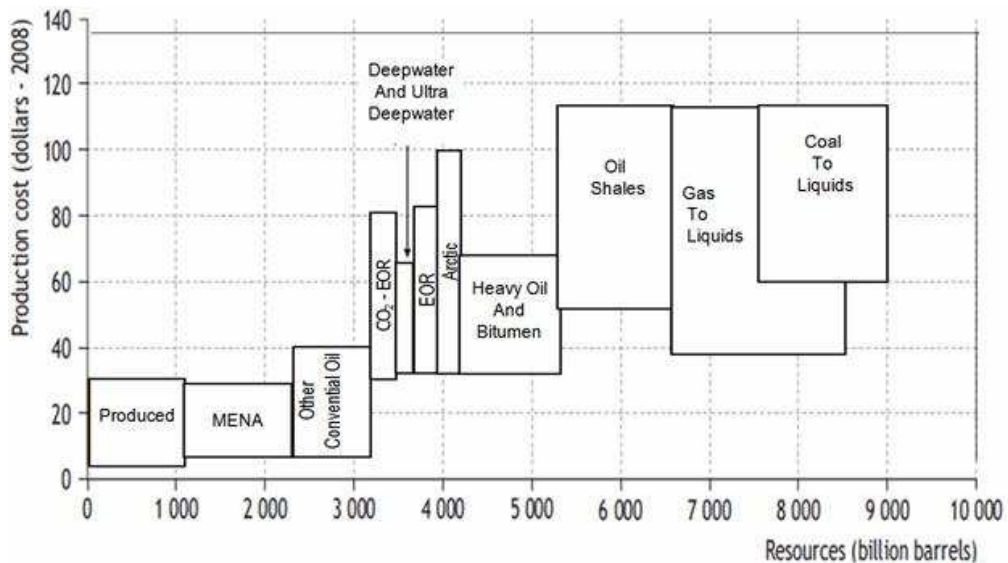
### Economically extractable resources largely depleted

The following chart illustrates the structure of production costs for different fossil fuels. More than 1.1 trillion barrels have been produced for less than USD 30, and in the Middle East and North Africa production costs currently average USD 30/barrel. The easily and economically extractable reserves are largely exhausted. As soon as some 50% of an oilfield has been exhausted the production curve records a steep fall and costs increase exponentially. In the event, tertiary methods of oil production are required ("enhanced oil recovery" – EOR), which inflates production costs. Among those are the injection of gas and chemicals, numerous ultrasonic sound techniques, the injection of microbiologically active cultures, and also the thermic production.

<sup>7</sup> Please refer to "Horizontal Drilling", Helms 2008

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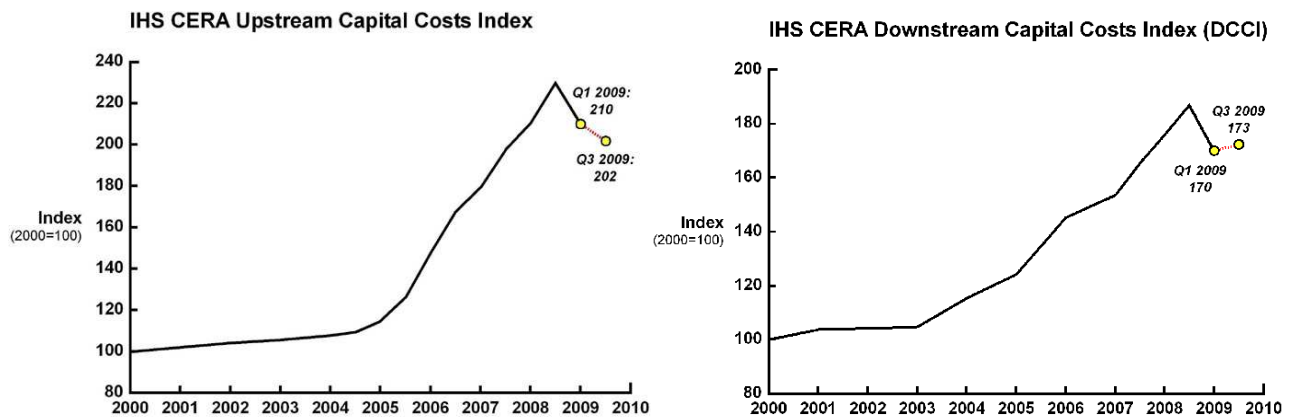
## Production costs vs. disposable resources



Sources: Middle East Economic Survey, IEA

The increased costs both upstream (exploration and production) and downstream (i.e. the refining process of crude oil into petro products, distribution, marketing etc) are best illustrated by the IHS Cera indices. Both indices contain the costs of machinery, plants, material, and personnel (both skilled and unskilled labour).

## IHS CERA Upstream and Downstream indices clearly on the rise since 2000



Sources: IHS Cambridge Energy Research Associates

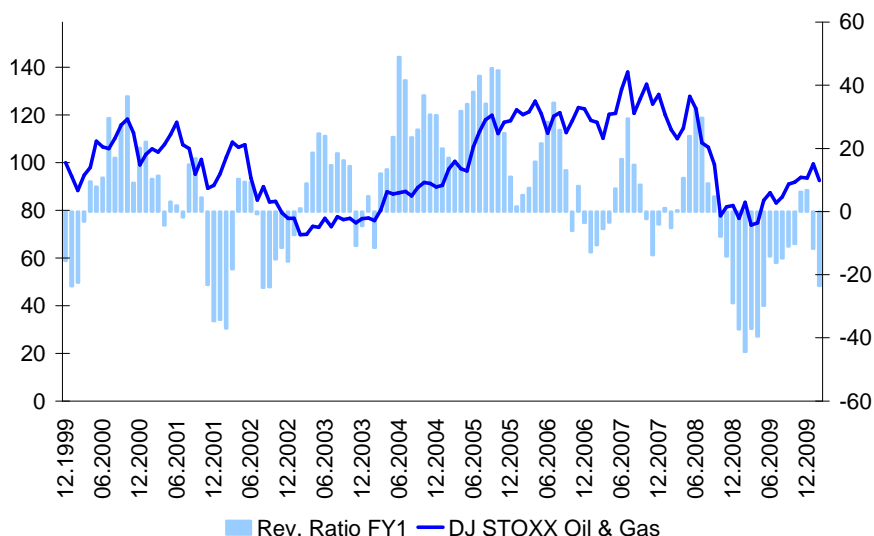
## Refinery margins at a 15-year low

The following graph also shows the dilemma of the industry<sup>8</sup>. In spite of drastically increased oil prices the broad European oil and gas index for example has recorded a decline. The weak earnings of the refineries are ever more burdensome for the results of the multinational groups as they cannot pass on the high prices of crude oil to the refined product section (petrol, kerosene etc). For example, refinery margins fell to a 15-year low in the fourth quarter of 2009. The demand for petrol remains on its downward path as well, and it has been clearly so since 2007. Due to the receding reserves take-over activity should remain vivid as well in the future. The consolidation in the sector is a clear indicator that the search for “elephant fields” has been all but given up. The big oil groups therefore replace their reserves largely by means of expensive acquisitions and not so much through exploration anymore. The following chart highlights the disappointing price performance of oil shares during the past ten years:

<sup>8</sup> Please refer to Oil Report 2009, “Drilling on Wall Street“, pages 16-18

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Share prices (standardised) vs. revision ratio DJ Stoxx Oil & Gas



Sources: Erste Group Research, Datastream

## Fight for African reserves

In order to replace the gradually disappearing reserves, the industry has to assume ever growing risks. In this context a fight for the reserves in Africa seems to be evolving. Given that the African oil reserves are hardly explored, the international interest has clearly intensified recently. The multinational oil companies are particularly focusing on West Africa; the recent discoveries off the coast between Ghana and Sierra Leone may have been the trigger. Along with shortages in staff and the lack of infrastructure, the political risk in Africa is enormous – as proven for example by the numerous attacks by rebels in Nigeria.

## Can – and will – Iraq flood the oil market?

### Iraqi Ministry of Oil wants to step up production from 2.5 to 12mn barrels/day

There is the chance, albeit a small one, that the Iraqi oil production will increase massively over the next few years. The second round of licensing international oil companies was a full success; so far, licences for ten large fields have been granted. The deals affect fields with a total volume of reserves of more than 60bn barrels. The Iraqi Ministry of Oil, newly headed by Oil Minister Hussain al-Shahristani has announced to increase production from 2.5mn to 12mn barrels/day. This would make Iraq the world's biggest oil producer.

### Second round of auctions triggers “gold rush”

The first round of licensing had been a disappointment. Only one licence was signed, with the oil companies criticising the illusory demands of the Iraqi government as well as the delicate safety situation. Given that 95% of Iraq's public revenues is derived from the oil industry, the government adjusted the terms. Thus the second round of the oil auction 2009 exceeded all expectations, triggering a sort of gold rush in the Iraqi oil sector. In the following, the six largest deals:

### The six most important licence agreements in Iraq

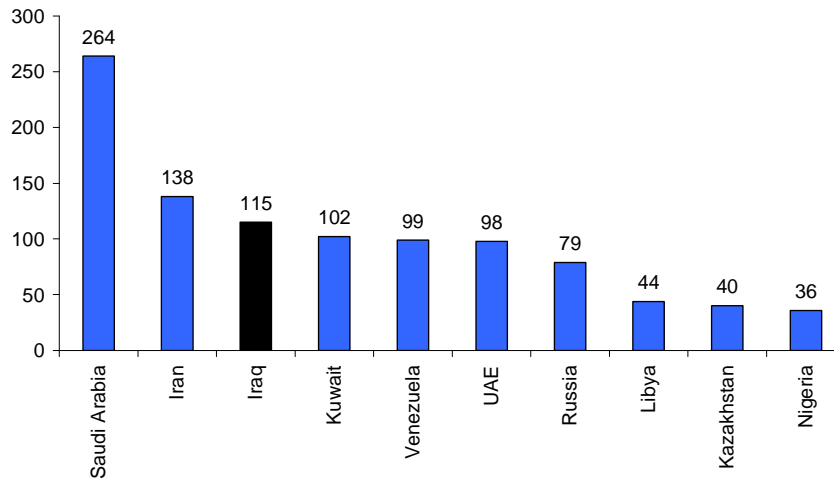
Field	Consortium	Reserves (in billions of barrels)	Production target (in mn barrels/day)
Rumaila	BP, PetroChina	17	2.85
Majnoon	Petronas, Royal Dutch Shell	12.6	1.8
West Qurna-2	Lukoil, Statoil	12.9	1.8
West Qurna-1	ExxonMobil, Royal Dutch Shell	8.7	2.33
Zubair	Eni, Occidental, Kogas	4	1.2
Halfaya	Petronas, Total, PetroChina	4.1	0.54

Sources: Iraqi Ministry of Oil, OPEC, Erste Group Research

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At currently 115bn barrels of proven reserves Iraq holds the third-largest oil reserves worldwide. The Ministry of Oil currently even assumes the country might be sitting on reserves of 200bn barrels.

## Proven reserves in billions of barrels



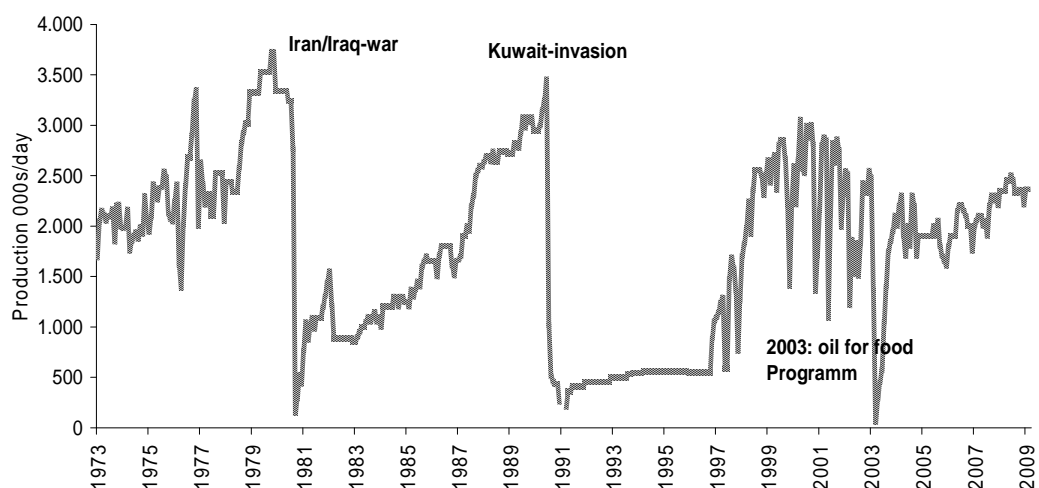
Sources: BP, Datastream, IEA

### Achievement of the ambitious production targets seems illusory

But how realistic are these ambitious targets really? Only Russia has so far managed a comparable increase in production, and it did so back in the 1990s, when it boosted production from 6mb/d to 9.5 mb/d within only a few years. That said, the conditions were different after the collapse of the Soviet Union. On top of that, Iraq seems to be lacking the necessary infrastructure and the human resources. In its December 2009 report, the IEA has clearly revised its production forecast of Iraq upwards. However, still only 3mn barrels are expected for 2014, and the targets of the Iraqi Ministry of Oil are called extremely ambitious and practically unfeasible (in the time span mentioned).

The following chart shows the highly volatile development of the Iraqi production. Currently production is at 2.5mn barrels/day and thus on a similar level as before the outbreak of the Iran-Iraq war.

## Iraqi oil production since 1973



Sources: BP, Datastream, IEA

The largely autonomous Kurdish region in the North should definitely offer the most attractive risk/return ratio. The government expects production to increase to almost 1mn barrels by 2014. We consider this forecast realistic and indeed a bit on the conservative side.

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## Iraq: summary

### **Iraqi production targets could turn into breaking test for OPEC**

Should the Iraqi oil production really be stepped up by 10mn barrels/day, this would come with massive consequences for the market. The market has been exempt from OPEC quotas since the beginning of the 1990s, but if the ambitious production targets should really be pursued, the old quota of 3.1mn barrels could be reinstated. Higher quotas would go at the expense of countries such as Venezuela or Iran that are currently battling a decline in production. This would lead to major disagreement inside OPEC and could turn into a real breaking test for the cartel.

### **Unattractive contract terms hold no incentives for Western oil companies**

Iraq has enormous oil reserves, but the royalty agreements remain unfavourable for Western oil companies (with the exception of those in Kurdistan), which means there is little if any incentive for further exploration. Currently the companies have only signed 20-year service agreements. This means that the oil companies have acquired no property rights, but they only get compensated for production that exceeds a certain minimum volume. Baghdad explicitly ruled out any more lucrative investment agreements.

### **Production increase to 5-6mn by 2014 realistic**

We believe that Iraq could produce 5 to 6mn barrels/day by the year 2014. This would be considerably more than the maximum production of 3.5mn barrels at the beginning of the 1980s. However, this best-case scenario calls for a further stabilisation of the political situation, less corruption, and sustainable peace in the country. In view of the history of the country, this remains a big question mark. The parliamentary elections in March and the withdrawal of the US troops in August should constitute a first acid test.

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## ***Supply: summary***

There is enough oil around, but the structure of the supply make a case for clearly higher prices in the long term. In the 1960s, new fields still accounted for 50-60%, whereas by the 1990s this share had fallen to 20-25%. Today new fields make up only 12-15% of total oil production. In the future, this ratio will drop to 7-10%<sup>9</sup>. This means that the majority of future oil production will not stem from new fields, but from already producing ones. At the moment the recovery rate averages 15-18%. An increase to 35% through enhanced oil recovery (EOR) and improved oil recovery (IOR) would tap an additional trillion of barrels of crude oil.

*"We usually find oil in new places with old ideas. Sometimes, also, we find oil in an old place with a new idea, but we seldom find oil in an old place with an old idea. Several times in the past we thought we were running out of oil whereas we were only running out of ideas." Parke Dickey, American geologist, 1910-1995)*

Given that about 5% of production is based on EOR, this technology should hold remarkable potential for an increase in efficiency. The production of aging reserves could be increased or stabilised; the high costs are the only disadvantage. In any case, the low investments in exploration should cause massive problems in the long run. At the moment investments do not even reach 20% of the volume recommended to step up production from currently 86mn barrels to 125mn barrels by 2030. We therefore expect secondary and tertiary production technologies and unconventional oil and gas to become more important. The newly discovered fields will therefore not prevent the shortage in supply, but only delay it.

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<sup>9</sup> SPE International, "Oil, Gas and Energy: Myths and Realities"



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## 3. Shale gas as “game changer“ for the energy sector?

*“Shale gas is the most important energy development since the discovery of oil“<sup>10</sup>*

### **Unconventional gas with highest growth rates until 2030**

The IEA expects the production from unconventional gas reserves to increase by 71% by the year 2030. This would make the segment the most rapidly growing energy source in the coming decades. Geologists believe unconventional gas to exceed the conventional reserves by a factor of 10. This enormous potential could revolutionise the entire sector in the long run. Therefore we would like to dwell on this topic for a little longer and give you an overview and outlook in the following.

The following gas reserves are called unconventional:

- Shale gas
- Coalbed methane (CBM) – methane from unused coal seams
- Coal mine methane – methane from abandoned coal mines
- Gas sands

### **Shale gas is a silent revolution**

#### **Development of Shale gas was a game changer for the US energy industry**

Especially shale gas, i.e. natural gas embedded in highly impervious shale, should offer considerable potential once the new production technologies have shown to be ready for the broad market. The USA shows that shale gas is in fact a “game changer”. A couple of years ago the country was about to set up numerous large-scale and costly terminals for the import of LNG – today it looks like the USA will soon turn into a net exporter of natural gas<sup>11</sup>. The rapid development of alternative sources of gas was the decisive factor here.

#### **New technologies: hydraulic fracturing, 3D seismic analyses, and horizontal drilling**

The economically viable exploration of shale gas was only made possible by horizontal drilling. The procedure involves at first hundreds of metres of vertical drilling. When the target zone has been reached, the drill continues horizontally. As soon as the gas pressure decreases, another innovation is employed: hydraulic fracturing breaks up the rock; more specifically, a compound of water, sand, gel, and chemicals is injected into the drill hole at high pressure. This causes fine cracks in the rock through which the shale gas can flow to the drill hole. The use of seismic 3D analyses has also contributed significantly to the accuracy and increased efficiency of the drillings.

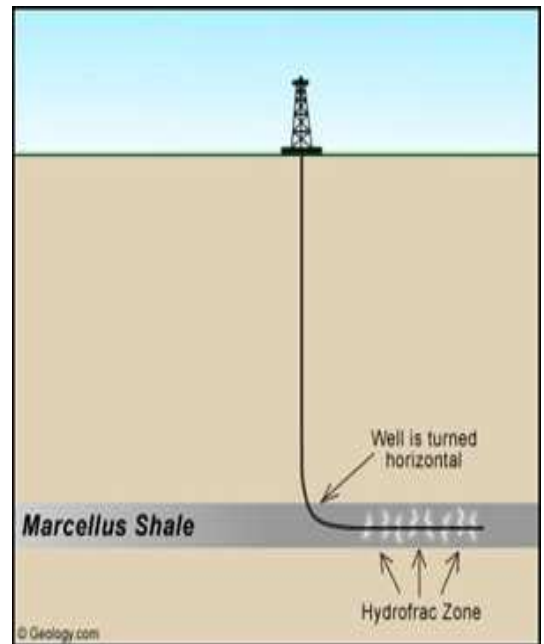
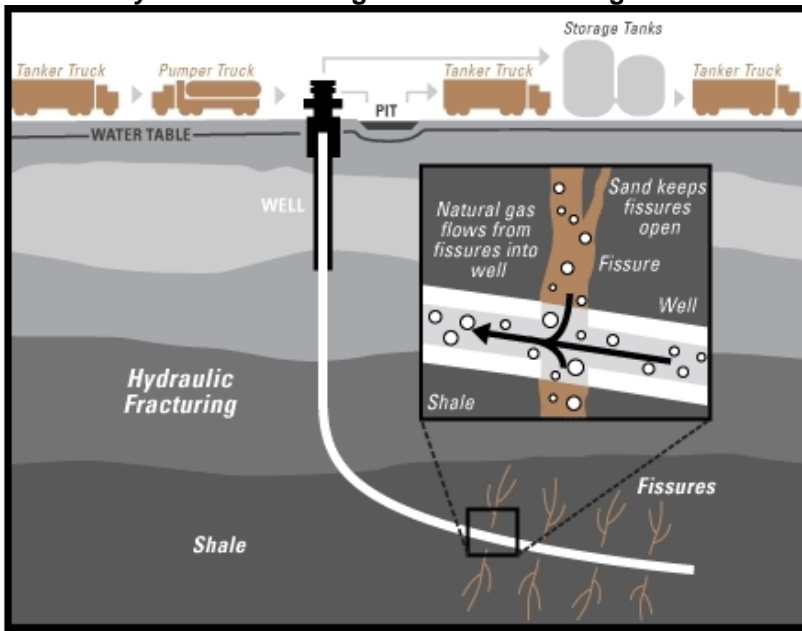
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<sup>10</sup> Fred Julander, CEO Julander Energy

<sup>11</sup> Please refer to John Curtis in “Russia’s ‘fracked’ future”

# Special Report Oil

## Process: hydraulic fracturing & horizontal drilling



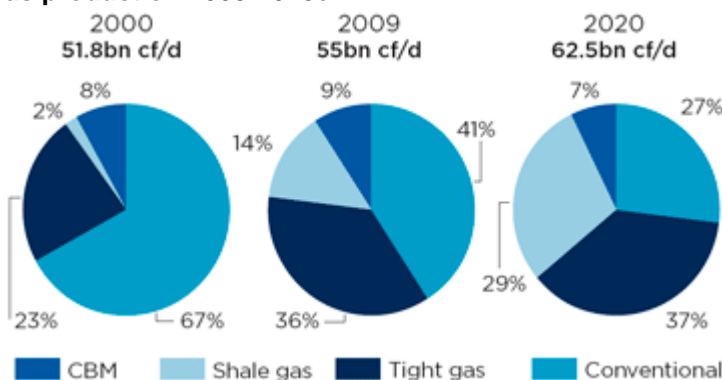
Source: <http://www.taipanpublishinggroup.com>

Source: Geology.com

### USA as pioneer in the exploration of unconventional gas reserves

The paradigm shift started almost ten years ago in the USA (which, back then, was still the second largest gas producer behind Russia), when the first CBM reserves were discovered in Colorado and New Mexico, and the shale gas field Barnett was discovered in Texas. Modern production technologies and an increase in know-how turned Barnett into the largest natural gas field in the USA within a few years. In the USA shale gas has become state-of-the-art. Currently the 40,000 shale gas drill holes account for 10% of the entire consumption. In ten years shale gas is supposed to cover up to 50% of the North American demand<sup>12</sup>. Wood Mackenzie is slightly more pessimistic and expects shale gas to have captured a market share of 29% and CBM one of 7% by 2020.

### Gas production 2000-2020e



Source: Wood Mackenzie

### Gazprom reacts to shale gas boom in the USA

The decision recently taken by Gazprom to postpone the development of the gigantic gas field "Shtokman" in the Arctic to 2016 is probably also due to the shale gas boom in the USA. Gazprom had intended to develop Shtokman (together with Total and Statoil) primarily to supply the USA with LNG; but the USA have become largely self-sufficient due to the shale gas revolution. Experts assume 20% of conventional gas reserves in the Barent Sea, but the production costs clearly exceed those of shale gas due to the technical and logistical challenges. In 2009 Russia produced 12.4% less natural gas than the year before and had to surrender the rank of largest gas-producing nation to the USA for the first time since 2002.

<sup>12</sup> Shaun Polczer, "Shale expected to supply half of North America's gas", Calgary Herald, April 2009

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## The race for shale gas licences in Europe is on

**The energy industry senses that it is headed for big changes**

In Europe the development of these unconventional natural gas resources has only just started. With the exception of a few American companies only few multinationals have the necessary expertise. However, this situation is beginning to change. The shale gas euphoria has only just hit Europe and should trigger a paradigm shift in the energy sector. The technology transfer of the European multinational oil companies (Royal Dutch Shell & Haynesville Shale, Eni & Barnett Shale) should be the decisive driver for the development in Europe. Exxon Mobil is currently drilling in Lower Saxony, OMV is planning test drills in the Vienna basin, and Royal Dutch reported explorations for shale gas in Sweden.

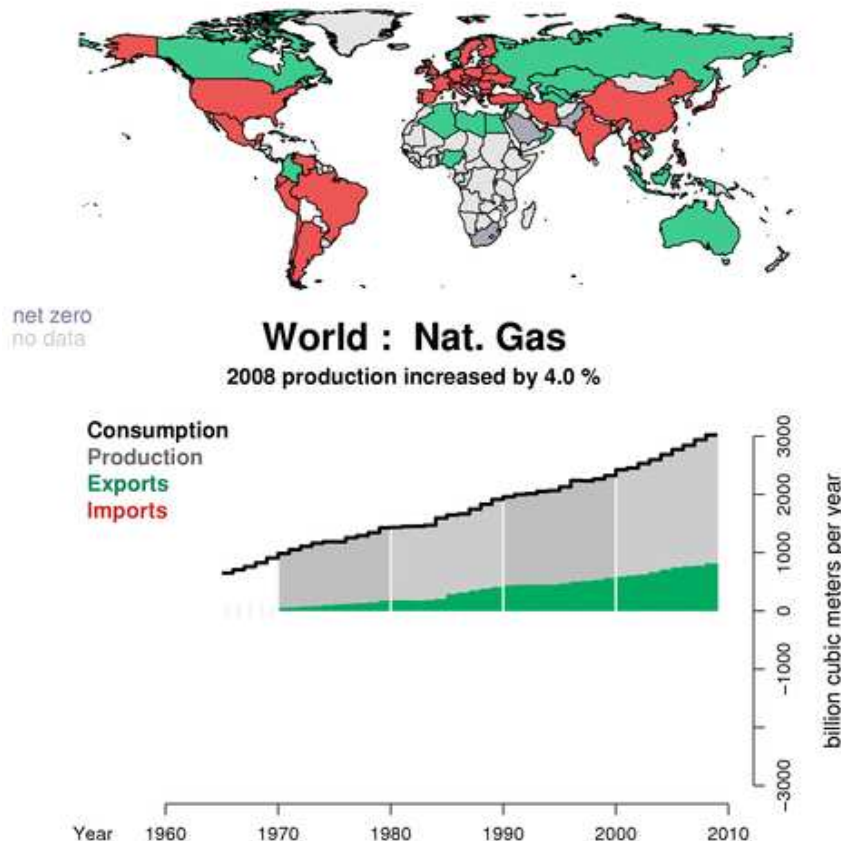
**Shale production would come with far-reaching consequences for the energy policy of the EU**

The production of shale gas in Europe would come with numerous positive long-term implications. The prices for European consumers are often twice as high as North American consumer prices. Russia constantly threatens to suspend delivery. Therefore the political dependence of countries such as Austria, the Czech Republic, Poland, or Ukraine is significant. Should the Polish reserves turn out even remotely as big as expected, the country could quickly turn into a net exporter of natural gas, which would be of outstanding relevance for the entire EU.

**Shale gas could secure European gas supply and reduce dependence on Russia**

The following chart illustrates how important shale gas would be for the whole of Europe. With the exception of Norway, all European countries are net importers of natural gas. Finland (100%), Slovakia (100%), Bulgaria (92%), Lithuania (90%), the Czech Republic (83%), Austria (almost 77%), and Poland (70%) mainly buy their gas from Russia<sup>13</sup>. Germany imports almost 40% of its natural gas from Russia too, with natural gas accounting for 22.5% of total energy consumption in Germany. The supply reliability could therefore be increased drastically via Nabucco (gas from Iran and Central Asia) and through the development of unconventional gas resources.

### Natural gas: Export and import nations worldwide



Sources: mazamascience.com, BP Statistical Review 2009

<sup>13</sup> The Economist, Greg Pytel, Sobieski Institute

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## Poland and Ukraine as “new Texas”?

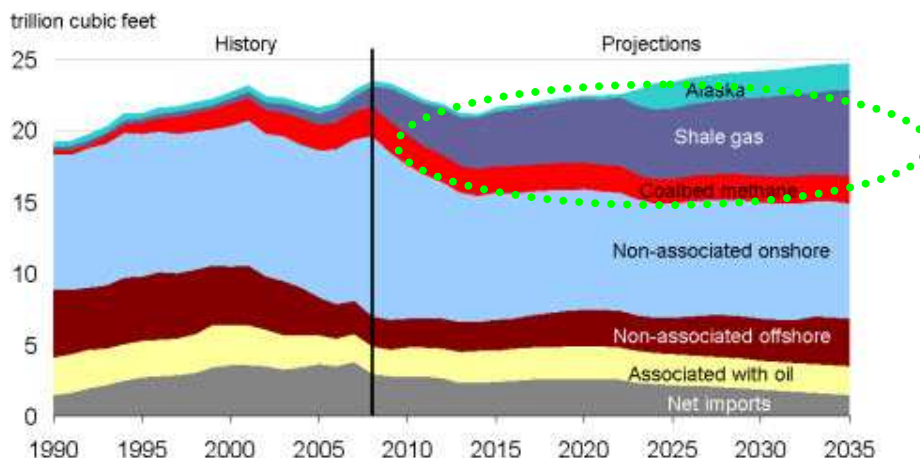
Especially the Polish gas resources seem to contain enormous potential. Conservative estimates set the volume of the reserves at 500 to 700bn cubic metres. Wood Mackenzie even expects possible reserves of 1.4tn cubic metres. So far 30 companies have secured themselves licences in Poland, among them Chevron, Lane Energy, BNK, Exxon, and ConocoPhillips. Geologists see a striking similarity between the Lublin basin and the Barnett shale reserves in Texas. In fact, the thickness of the Silurian layer<sup>14</sup> of more than 200 metres seems to offer decidedly more potential than comparable reserves in the USA. Given that geological formations know no borders, the Ukrainian part of the Lublin formation could have an equally large potential. This would appear plausible and logical, given that ExxonMobil, ConocoPhillips, Marathon Oil, and the national Polish oil company PGNiG have reported the acquisition of licences in Eastern Poland, directly along the Polish-Ukrainian border. Due to the current dependence on Russian gas imports the development of these gas reserves would be of considerable relevance to Poland's and Ukraine's future supply reliability.

The question of whether the geological setting in Europe is as good as in North America has not been answered yet. The pan-European co-operative research project GASH (Gas Shales in Europe) was founded with this in mind. It is coordinated by the geological research centre Potsdam, which provides information and investigates into new technologies for the efficient exploration of shale gas.

## Industry experts confirm potential

Daniel Yergin, Chairman of IHS CERA, said the most important innovation in the energy sector in the past decade was neither solar nor wind power, but unconventional gas. Peter Voser, CEO of Royal Dutch Shell, called shale gas the biggest hope for the future decades, not the least as gas causes only half as much toxic emission as oil. And Thierry Desmares, Chairman of the board of Total, recently voiced his doubts in public that the industry could ever produce more than 95mn barrels/day (+13% relative to the current output). Therefore there should be a focus on natural gas given that it was the only economically and ecologically agreeable alternative to oil. JPMorgan thinks that shale gas has the potential to replace 20mn tonnes of LNG by 2015, and 60mn by 2020. In Western Europe alone, JP expects 510tn cubic feet of shale gas reserves. This equals about the consumption of Germany for 175 years<sup>15</sup>. Tony Hayward, CEO of BP, called shale gas a “game changer” as well given that it could also revolutionise the energy policy of the USA in the next 100 years<sup>16</sup>. The following chart of the EIA also highlights the growing importance of shale gas.

### EIA – energy mix in 2035



Source: EIA, Annual Energy Outlook 2010

## Wave of takeovers to be expected

After many multinational oil groups have missed the development, acquisition should pick up drastically. The takeover of XTO Energy by ExxonMobil worth more than USD 40bn was

<sup>14</sup> The period on earth ca. 443.7-416 million years ago

<sup>15</sup> <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aAK.6l3WmQyg>

<sup>16</sup> <http://www.reuters.com/article/idUSLDE60R1MV20100128>

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probably just the starting signal. It was the largest takeover of the sector in ten years and indicates the expected future perspective and relevance of shale gas. XTO has been active in the development of alternative gas resources for years and has amassed countless licences and an excellent expertise in the production of unconventional gas reserves. Moreover, Schlumberger recently announced the takeover of rival Smith Industries for USD 11bn. Just like BJ Services (that was taken out by Baker Hughes for USD 5.5 bln.), Smith specializes in a wide range of fracturing and shale gas drilling techniques. Total has entered into a joint venture with Chesapeake Energy, another leader in the area of shale gas. And the Japanese Mitsui has recently reported to invest USD 3bn in the development of the Marcellus shale reserves in Pennsylvania in a joint venture with Anadarko Petroleum.

## Shale Gas: summary

### Shale gas set to gain significant importance in the future

The oil market should not be seen in isolation from the gas market. Although natural gas will not be able to substitute the receding oil production, shale gas should become ever more important especially for the USA and Europe (cue “resource nationalism”). The USA is becoming self-sufficient in energy practically over night because of shale gas. According to a study by Rice University<sup>17</sup> shale gas could also drastically reduce the dependence of Europe on Russia and the Gulf States.

### Natural gas is the cleanest fossil fuel

Alternative forms of natural gas should also play a bigger part with regard to ecological aspects in the future, seeing that it burns much cleaner than coal and crude oil. This should also mean additional support for shale gas with respect to the CO<sub>2</sub> limits. The only frequently heard points of criticism are the high water consumption and the pipelines that would have to be built; however, the ecological damage is minor when compared to conventional energy sources. Especially in comparison with unconventional oil (e.g. oil sand), shale gas is ecologically clean and energy-efficient to boot. Production costs have also been gradually reduced in the USA on the back of improved production technologies and numerous innovations, as a result of which production would also make sense if gas prices were to fall.

We are therefore optimistic that the exploration of shale gas reserves in Europe will become massively more important. We expect particularly vivid exploration and acquisition activity in Poland and Ukraine. For this reason we regard unconventional gas – especially shale gas – as the most interesting investment opportunity in the energy sector.

*“The Stone Age did not end for lack of stone, and the Oil Age will end long before the world runs out of oil.”*  
Sheik Zaki Yamani

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<sup>17</sup> “US-Canadian shale could neutralize Russian energy threat to Europeans”, May 2009

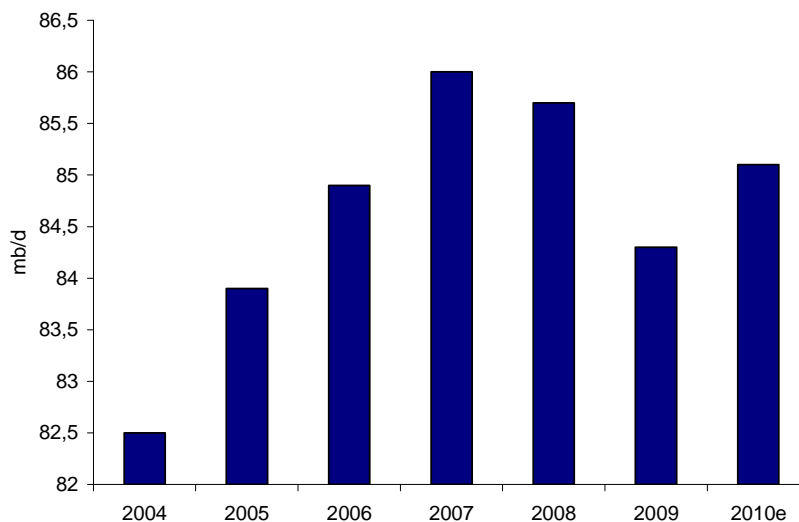
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## 4. Demand

### Most drastic decrease in demand since the 1980s

For the first time since 1983, global demand for oil fell in two consecutive years (2008: -0.3% to 85.7mn barrels/day, 2009: -1.6% to 84.3mn barrels/day). Demand should pick up slightly again in 2010. The consensus expects an average increase of 1.4% or 1.2mn barrels/day. We expect OECD demand to rise as well for the first time since 2005. This means that basically consumption has stabilised, but the upswing will be mainly supported by countries outside the OECD, in particular by China. The consensus currently expects demand in China to increase by 0.4mn barrels/day. The industrialised nations on the other hand seem to be ever more clearly headed for the peak-demand scenario. US demand has been chronically weak. Most recently it had dipped to 18.8mn barrels/day, drastically down from 19.1mn barrels/day last year when the crisis was in full swing.

### Oil demand 2004-2010e



Source: Datastream

### High inventories advise caution

The development of the inventories advises caution. Since demand fell faster than OPEC could curb production, inventories soared to a record-high. Normally there is an inverse relationship (i.e. when inventories rise, prices fall and vice versa), but last year they increased substantially. Average inventories accounted for 24% of total consumption in 2009. If the economic recovery continues, the high inventories can be gradually drawn down in 2010. The fact that investors are massively underweighted in short-term contracts could speed up the development, all the way to backwardation.

### Oil remains the most important energy carrier by a long shot

The IEA expects global energy demand to double by 2050. Oil demand is expected to soar from currently 85mn barrels to 105mn barrels by 2030. Even if alternative forms of energy are becoming gradually more important, oil and gas will continue to cover the majority of energy demand (60% in 2008 vs. 58% in 2030). However, a forecast over 20 years seems of little relevance if it is merely an extrapolation of the past.

### USA highly dependent on oil imports

The daily demand in the USA comes to almost 19mn barrels, and every day imports increase. Back in the days, oil used to be a central factor of the economic rise from an agricultural state to an industrial superpower. The American oil groups used to be the most powerful companies in the world for decades. But in 2008, USD 440bn<sup>18</sup> were spent on oil imports, i.e. almost 3/5 of the current account deficit. While the domestic production moved beyond its peak already in the 1970, the main supplier, Mexico, is currently fighting drastically shrinking production volumes as well. This comes with far-reaching geopolitical implications. The current sustainable paradigm

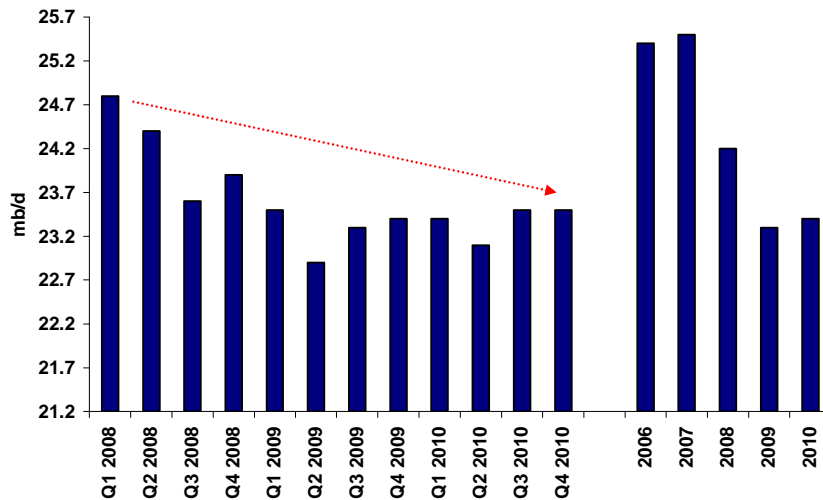
<sup>18</sup> „Der schmierige Abschied vom Öl“, Financial Times Germany, 27.08.2009



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shift is also illustrated by the fact that Saudi Aramco already exports more than 1mn barrels/day to China, which means that the USA is not the largest customer of Saudi oil anymore.

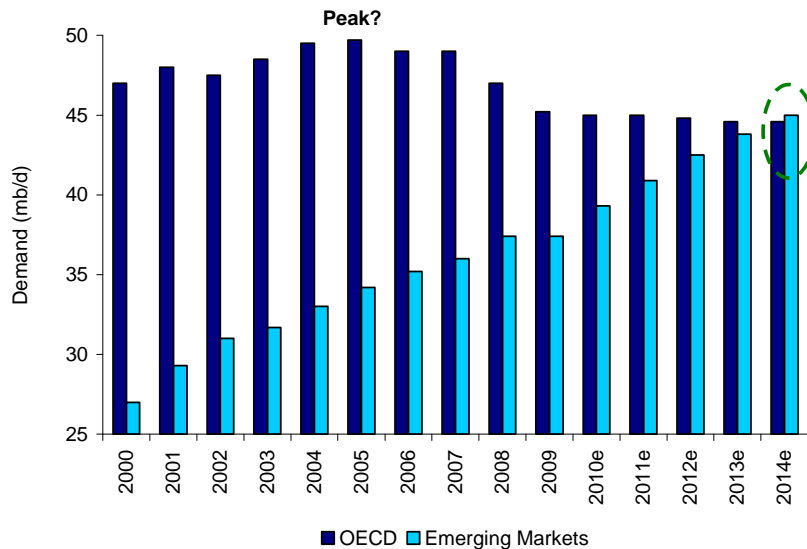
## Demand OECD North America



Sources: IEA, Oilmarketreport.org, Erste Group Research

The recession throttled demand for oil, but the situation in the various regions was mixed. In Asia and Latin America, mainly the growth rates were down, but not the absolute numbers. If this development were to last, the oil demand in the emerging markets would exceed that of the industrialised nations for the first time in 2014.

## Oil demand OECD vs. emerging countries 2000-2014e

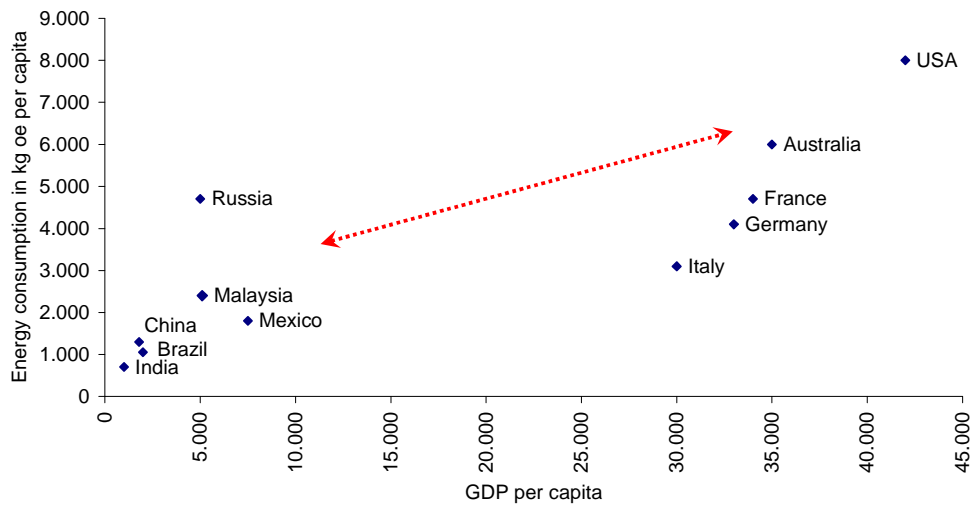


Sources: IEA, OPEC, OECD, Erste Group Research

The following graph shows the discrepancy between the oil consumption of Western industrialised nations and emerging countries. North America accounts for 4.5% of the global population, but consumes 28% of global energy production. For example, less than 4% of the Chinese own a car, whereas in the USA the penetration rate is almost 78%. In India, about 1% of people own a car.

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## Energy consumption vs. GDP/capita



Source: United Nations, Population Prospects

According to the United Nations, the world population will have increased by 34% to 9.4bn by the year 2050. The long-term consequences for energy demand are obvious. However, oil consumption is generally wasteful and inefficient and can be reduced without throttling economic growth or reducing the standard of living.

## Long-term demographic development

	Population		Projected Population in billions		Percent of Population Ages	
	2009	Year 2025	Year 2025	Year 2050	<15	65+
<b>World</b>	<b>6.810</b>	<b>8.087</b>	<b>8.087</b>	<b>9.421</b>	<b>27</b>	<b>8</b>
More developed	1.232	1.282	1.282	1.318	17	16
Less developed	5.578	6.805	6.805	8.103	30	6

Sources: United Nations, Population Prospects, Fischer Weltalmanach

## A Chinese “Black Swan”?

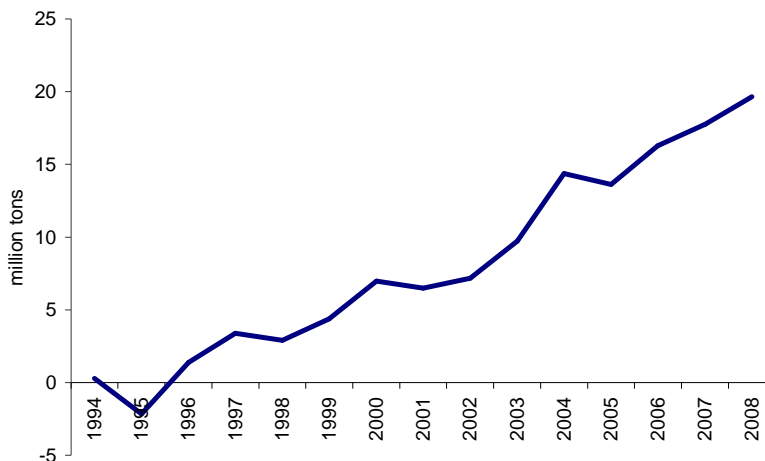
### China steps up investments in Africa and Latin America

The Chinese thirst for oil has certainly been the most important development of the past decade on the demand side. In 2000, the country accounted for 5.6% of total demand, today this number has risen to 9.3%. China tries to secure the gradually growing demand through large-scale investments in Africa or Latin America. It attempts to enter into long-term supply contracts spanning over decades and in return offers know-how, infrastructure as well as favourable financing terms and cooperation in other economic sectors. For example, it agreed on a loan of USD 10bn as well as extensive cooperation in exploration with the Brazilian Petrobras. In Nigeria CNOOC signed supply contracts for more than 6bn barrels of crude oil with a transaction value of almost USD 50bn. It signed a supply contract with Venezuela worth USD 16bn, and has entered into similar agreements with Kazakhstan, Angola, Iraq, and Iran. The Chinese government also announced it would step up the strategic oil reserves by 60%. Already back in 2003 the country built strategic oil reserves in the region of the deep-sea port Dalian and in the Bay of Bohai, and it intends to set up ten additional large reservoirs by 2011. China said it wanted to build reserves to reach a level of self-sufficiency for 100 days.



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## Chinese oil net imports

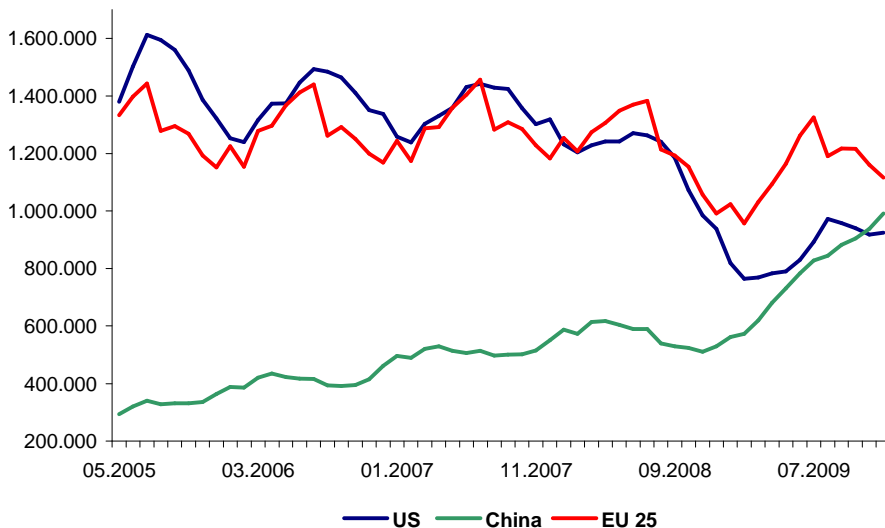


Sources: CEIC, Bloomberg, Erste Group Research

## 2030: 200 million cars in China?

The number of cars sold rose by 54 % year-on-year in 2009. Currently 1,000,000 units are sold every month. The number of Demand for petrol, on the other hand, has only increased by 6%, which is mainly due to the reduction of petrol subsidies. Moreover, cars are a status symbol in China and are almost exclusively used for weekend outings. In day-to-day traffic in the rapidly growing urban centres, public transport plays a significantly more important role than in the USA. The long-term forecasts support the enormous growth potential. According to the IEA, India and China should increase their oil consumption to almost 25mn barrels/day. The majority is expected to come from transportation; China is expected to have 200 million cars on the streets by 2030, and India 115 million.

## Monthly car sales (5-month moving average)



Sources: CEIC, Bloomberg, Erste Group Research

## The China of today reminds one of the USA in the 1920s

The China of today is somewhat similar to the USA of the 1920. Industrial growth was mainly fuelled by high exports, supported by an artificially low currency. China is also the world's biggest creditor today, and the gearing of households and the corporate sector is equal to that of the USA in the 1920s. Back then the USA was hoarding almost 6% of global GDP in foreign exchange reserves in a period of extraordinary prosperity. Should the analogy continue, China would probably face a crisis similar to the one of the 1930s in the USA – i.e. a deep depression and the collapse of the banking sector. Due to the striking similarities we think such a development is possible. But in the long run, this would also mean that China would overcome

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this deep crisis and emerge from it as strongest political, economic, and financial power of the world. We consider this also a realistic scenario.

**Mere extrapolation of the past will also be devastating for China...there is no escaping the basic laws of economics**

However, we are sceptical about the – meanwhile generally accepted – belief in the Chinese economic miracle. The mere extrapolation of the past is devastating in the long run. The massive stimulus measures avoided a dramatic economic slump and managed to absorb the hefty decline of the export sector. However, the overcapacities – considerable as they were even before – have further increased. The public share in the overall economic output has been gradually growing, with public infrastructure projects responsible for the majority of growth. Dubai seems to have granted the world a sneak preview into a classic boom-and-bust cycle, although the Chinese dimensions are 81 times bigger (GDP Dubai: USD 54bn vs. GDP China: USD 4,400bn). Since China is no open economy, it may remain on the growth path for longer. But in the long term, China, too, will not escape the basic principles of economics.

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## 5. Excursus: Oil price development from the perspective of the Austrian School of Economics

### Austrian School offers new angle on asset price developments

The Austrian School of Economics offers investors a new angle for the forecast of asset and commodity prices. Quite in contrast to ordinary economists, followers of the Austrian School (hereinafter referred to as “the Austrians”) do not consider the rising demand for oil or other commodities the decisive factor for rising prices. Rather they regard the continuous expansion of money supply that is triggered by credit expansion in our fractional reserve system as the crucial factor for increasing prices. For Austrians, one position stands: the more monetary units are in the system, the lower their intrinsic value.

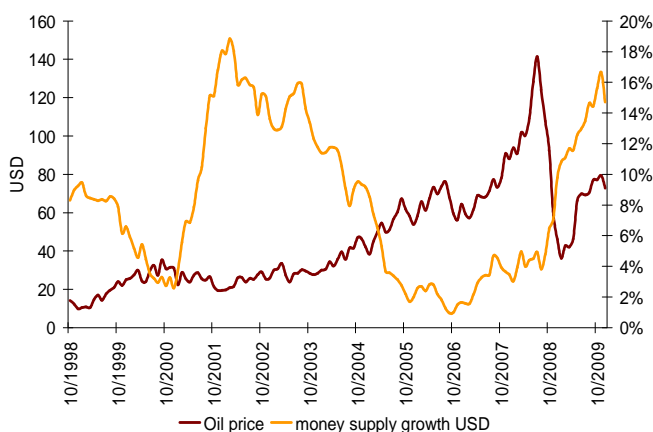
### No stabilising factor in the global monetary system since 1971 anymore

Until 1971 a “Gold standard light” was limiting the central banks in the expansion of the money supply, because until then the central banks that were members of the Bretton Woods monetary system could exchange US dollars into gold at a fixed price of USD 35 per ounce. But in August 1971 President Nixon terminated the agreement to exchange US dollars for gold after the USA had probably already lost half of its gold reserves. Thus the global monetary system cut its last connection to the stabilising gold anchor. Since then central banks have been able to print and circulate new fiat money at will. The digital age with its digital money has made this monetary expansion easier than ever. It therefore comes as no surprise that the past 40 years have been highly inflationary in historical comparison. For this reason the drastically risen oil price in the past years is not surprising either: for Austrians, the rising demand for a commodity such as oil is not the decisive factor for an increasing price, but simply the fact that especially since 1971 more and more book and digital money has been brought into circulation on a global scale.

### Loose monetary policy after 2000 as oil price driver

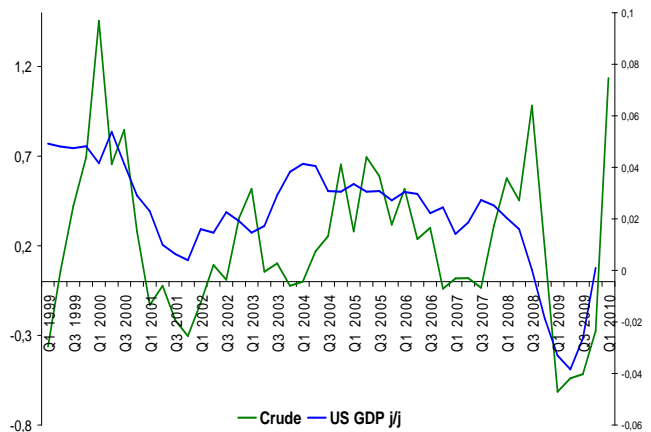
Let us look at the period of October 1998 to December 2009 in more detail. We believe that the major money- and credit expansion in the USA between 2002 to mid-2005 was a pre-condition for rising oil-prices between 2002 to mid-2008. The significant expansion of M-1 (M-1 comprises physical currency + demand accounts) in the USA has been the result of an easy money policy that aimed at restarting the economy after the dot.com crash. The right hand graph shows, that short-term price fluctuations in Oil prices do correlate with the development of the US economy. However the spike up in mid 2008 proves to be the exception, given the fact the Oil prices exploded while real economic declined.

Oil price vs. money supply growth in USD



Source: Fed. St. Louis, Reuters

Oil price vs. US GDP growth yoy



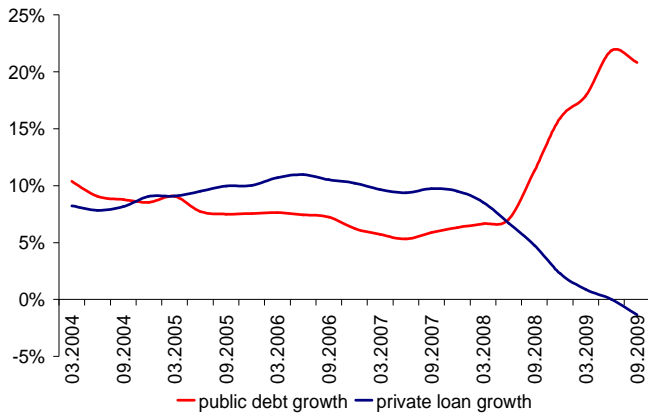
Source: Datastream

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## Deflationary tendencies in USD and the Eurozone since mid-2009...

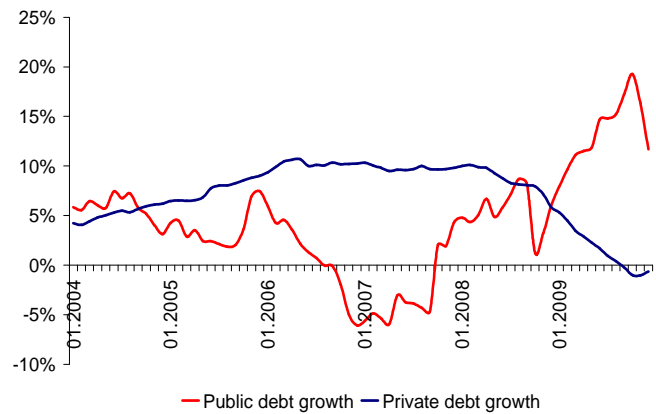
That said, we wish to point out that well until mid-2009 private and public debt levels expanded quite well in the USA and the Eurozone. The measures taken by the Fed and the ECB since autumn 2008 aimed at keeping private and public debt levels rising. The following graphs show however, that currently quite the opposite is the case. Both in the USA and the Eurozone private sector debt decreased in absolute terms. Only public sector debt increased drastically until September, although also at a falling rate since October 2009.

Credit expansion public vs. private sector – USA



Sources: Fed, St. Louis, Reuters

Credit expansion public vs. private sector – Eurozone



Sources: ECB, Reuters

## ...negative for the oil price

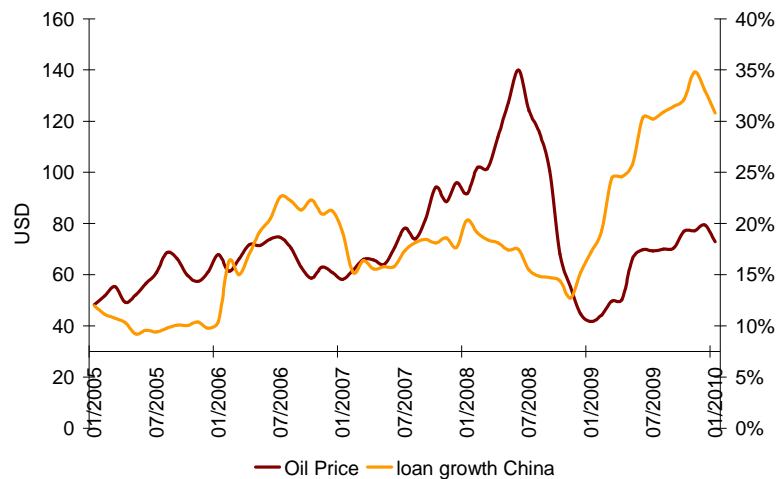
In this context it is crucial to differentiate between money and credit (also referred to as book or deposit money). The measures taken by the Fed and the ECB since autumn 2008 have led to a drastic expansion of the money supply, and said money supply is in turn the basis of an additional expansion of credit in a fractional reserve system. However, the credit and book money volume has been on the decline since mid-2009 in spite of the expansion of the money supply. In the past decades the continuous expansion of the credit and book money volume has had an inflationary effect on asset and commodity prices. Therefore we believe that the current receding trend of credit and book money volume will have a negative impact on asset and commodity prices. Not the least as the increase in public debt that has so far helped stabilise asset prices has reached its limits.

## Chinese credit expansion drives oil price in 2009

We therefore think that the massive expansion of the money supply in the USA and Europe is not responsible for the drastic increase in the oil price in the past twelve months. Rather we regard the dramatic credit expansion in China (+34% in 2009) as decisive factor for the dynamic development of the oil price in 2009. In view of the imploding export markets China decided in October 2008 to boost domestic demand with new credits worth about EUR 1,000bn. Given that the Chinese banking sector was spared the agonies of the sub-prime crisis, China's banks had no problems expanding new lending. This extreme level of new debt led to a strong comeback of almost all important commodity prices in 2009.

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Oil price vs. credit expansion China 2005 - 2009



Sources: People's Bank of China, Reuters

## China's restrictive monetary policy in 2010 negative for the oil price

In January 2010 the Chinese central bank hit the brakes. Therefore we expect the volume of new lending in 2010 to be down from 2009. The restrictions on new loans have already had negative effects on the equity and commodity markets. If the Chinese central bank maintains its restrictive monetary policy, we envisage negative repercussions from this stance for the oil price in 2010.

*Excursus by Gerald Walek, CFA*

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## 6. CFTC planning stricter regulations

### **Speculators have been blamed for the commodity rally**

The “bad speculators” have been blamed for years by politicians, the media, and the public for the rising commodity prices. And in 2010 it seems words will turn into actions. However, the important function of intermediary and provider of liquidity is often forgotten. Also, it is very difficult to differentiate between useful and excessive speculation – but this point tends to get relegated to the sidelines in public discussions.

### **Interventions on the free market often counter-productive**

Many an example in the past would lead one to query the sense in restricting the free market. For example, forward contracts in wheat were prohibited 100 years ago in Germany. As a result, the price doubled within a matter of months. And numerous studies show that the abandonment of onion futures in 1963 in the USA triggered a considerable increase in prices and higher volatility as well.

### **Positions limits are meant to reduce speculation**

The US supervisory authority CFTC now wants to gradually limit speculative demand, which would fit President Obama’s latest populism of trying to outlaw banks’ nostro trading and to re-establish the dual banking system. Along with the nostro trading in the banking system, the OTC market is supposed to be made more transparent as well. In January a first proposal for position limits was presented at the NYMEX and ICE. These limits are meant to reduce speculation. However, the exemption for swap dealers (banks for example), means that de facto nothing will change. The exemption currently covers crude oil, heating oil, and petrol traded on the NYMEX or the ICE. According to recent news the futures supervisor CFTC wants to meet with the IEA, OPEC, and a number of financial institutions in order to discuss the practical implementation of such position limits.

### **Presumably negative consequences for the oil price in the short and medium term**

If too restrictive regulations were imposed, a large part of the trading volume would probably be shifted to other exchanges. This should be clearly detrimental to the attractiveness and in turn to the capital inflow into commodities, at least temporarily. The simple pruning of the free market would thus yield a counterproductive result, while a stronger focus on the transparency of the market participants and on the way prices are arrived at is of course desirable.

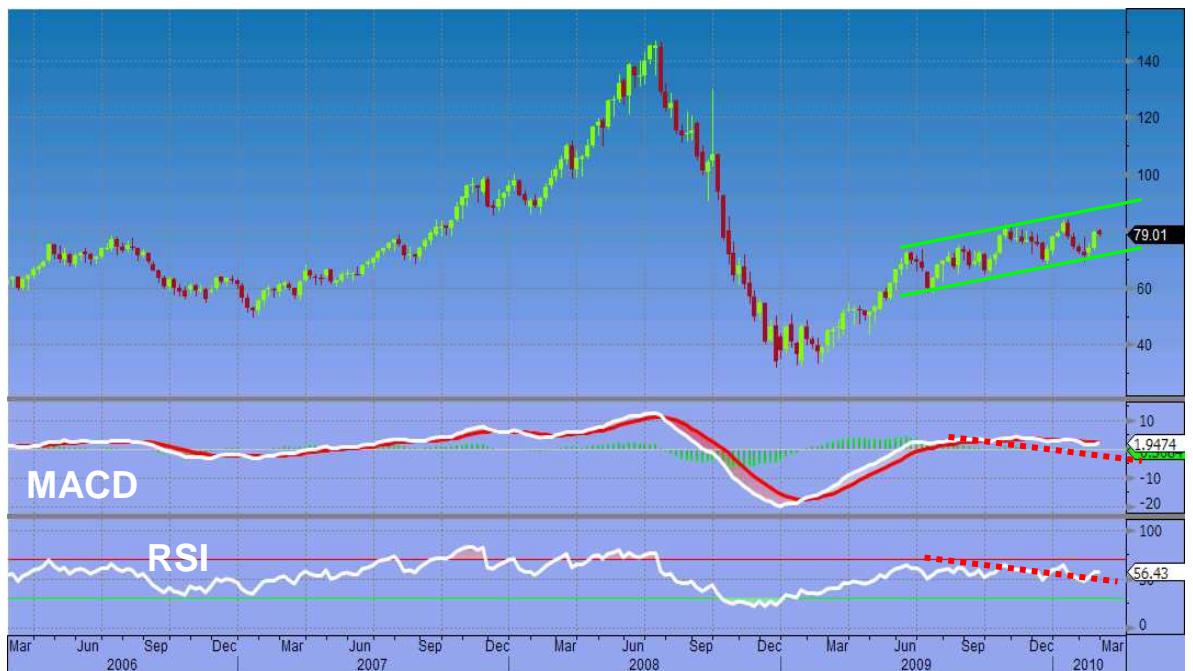
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## 7. Technical analysis

### “Make or break“ setup?

After a strong rally last year the price has been on the rise since autumn, yet with little momentum or dynamics. In summer 2009 a new uptrend was established whose upper limit is currently situated at USD 90. The lower limits were good buying signals every time. The 2009 high of USD 82 will probably offer some strong resistance, and after that the USD 87.9 mark (December 2007 and February 2008 lows) will be hard to crack. The following resistance mark will be at USD 89.50 (50% Fibonacci retracement) and at USD 102 (61.8% Fibonacci retracement). The TomDe Mark Sequential System is still long. However, there is massive resistance in the regions of USD 82 and 86; as well as clear support at USD 75. Both MACD and RSI indicate negative divergences. This means that the upward trend is nearing its end. But it is too early to take short positions. At the moment the price is still slightly above the 30-day and 60-day moving average. The 200-day average (rising every day at the moment) is currently at 71. This means that stop limits would make sense in the area of USD 70-72. There are additional resistance marks at USD 69.30, 62.00, 53.90, and 47.30.

### Chart since 2005



Sources: Bloomberg, Erste Group Research

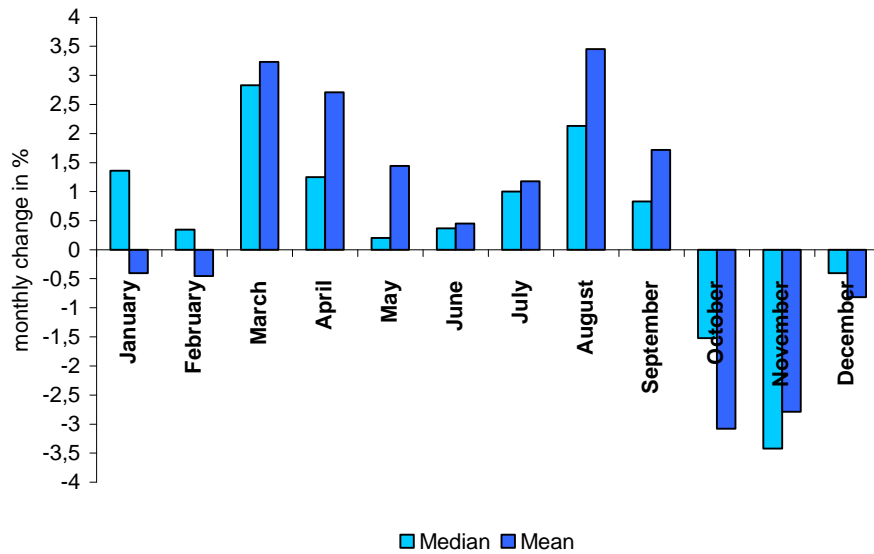
### Seasonality profound and reliable

The oil price is highly seasonal, as are the prices of most commodities. Oil tends to hit lows in February or at the latest at the end of March. Therefore from a seasonal point of view the time is right to take long positions. Over the year, we usually see the highs in August or September. This is caused by the hurricane season in the Gulf of Mexico as well as the stockpiling before the heating season. In 21 of the past 26 years the oil price increased between 24 February and 22 May<sup>19</sup>. For this reason we expect rising price on the back of seasonalities.

<sup>19</sup> Please refer to Cycles Research, USA, 2010

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Monthly returns since 1980



Sources: Datastream, Erste Group Research

## **Commitment of Traders Report (CoT) signals further upside**

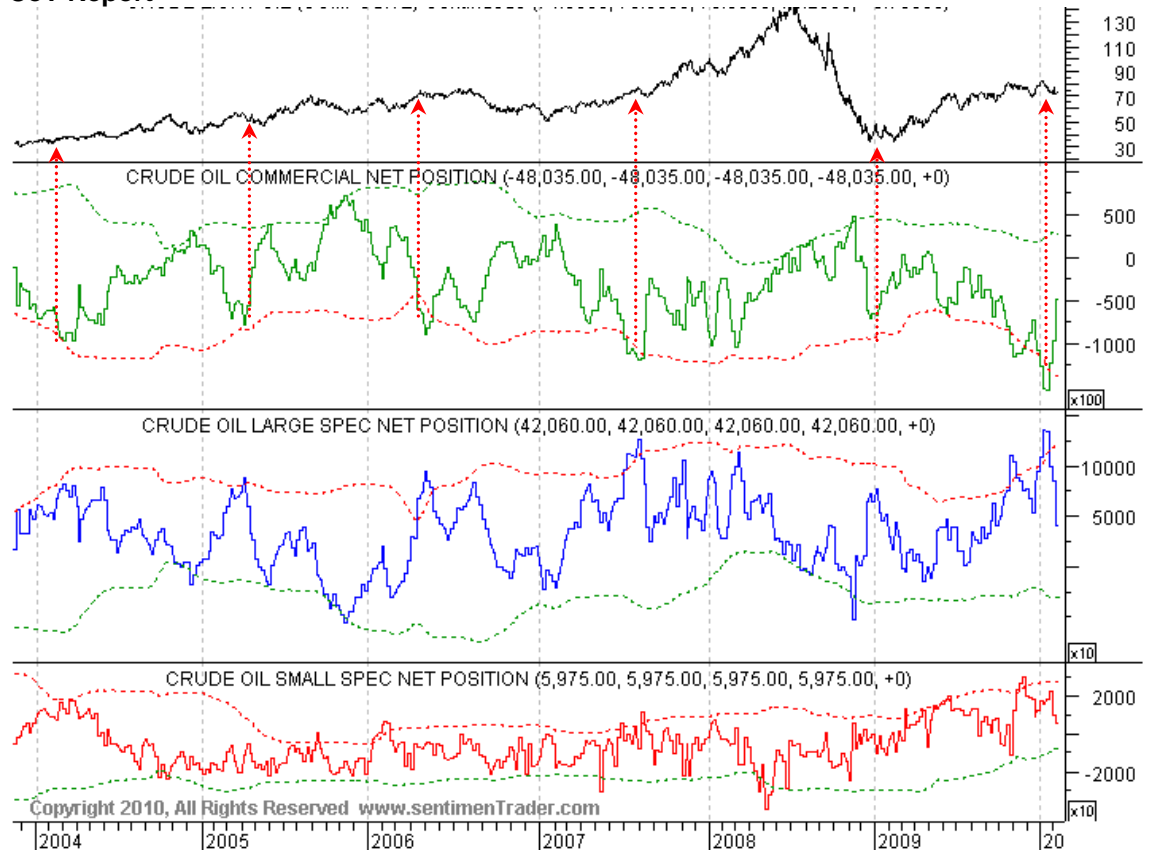
The weekly report of the CFTC illustrates the positions of commercial traders (“commercials”), large speculators (“large specs”), and small speculators (“small specs”). The CoT-Report tends to hold interesting information with regard to the positioning of the various market participants.

The **Commercials** have reduced their massive short positions by almost 100,000 contracts in the past weeks. This should come with positive implications for the future price development. The profound seasonality of the oil price could be responsible for this setting and sort of turn into a self-fulfilling prophecy. The **large speculators** were gradually building positions in 2009 and are now net long – a reliable indicator for short-term price increases.



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## CoT Report

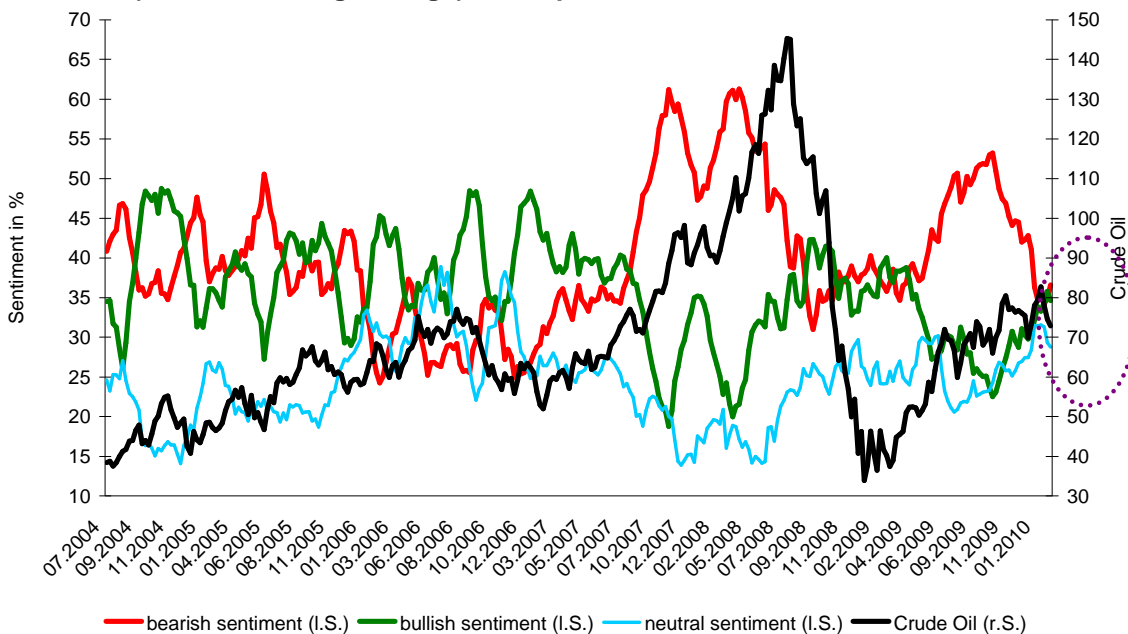


Source: [www.sentimentrader.com](http://www.sentimentrader.com)

### Sentiment remains bearish

Most recently only 26% of market participants were still bullish according to the Bloomberg Sentiment index. 26% were neutral, and 47% were bearish with regard to the future development of the oil price. This would appear to be too pessimistic an assessment. The following chart shows that the 3M moving average is fully balanced between optimistic, pessimistic, and neutral market participants. This would suggest a sideways movement.

### Sentiment (3-month moving average) vs. oil price

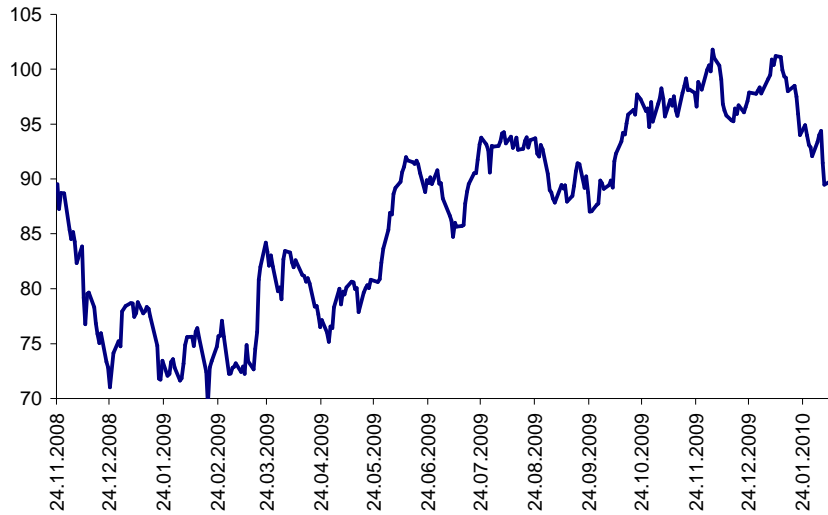


Sources: Bloomberg, Erste Group Research

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The long-term contracts (futures with delivery date in 2017) remained above USD 70 even at the height of the crisis and were traded above USD 100 already in autumn again. That, too, can be interpreted as clearly positive sign of confidence in the long run.

## WTI crude future – delivery June 2017



Sources: Bloomberg, Erste Group Research

The inflation-adjusted chart also highlights the long-term upward trend of the oil price. However, the price is about to hit the upper limit of the 75% confidence interval, which is why we expect it to return to its average value again.

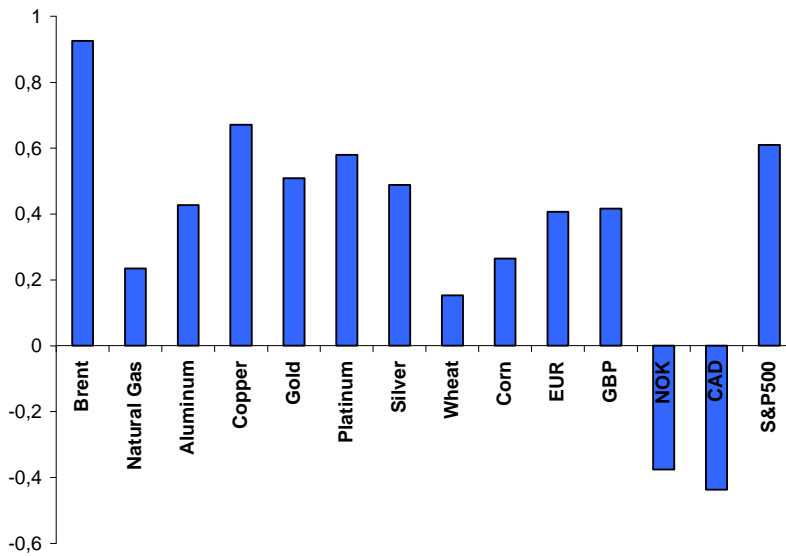
## Inflation-adjusted chart – logarithmic scale



Source: Sharelynx.com

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**Correlations: WTI vs. various commodities, currencies, and indices (90 daily returns)**



Sources: Datastream, Erste Group Research

## **Ratio analysis**

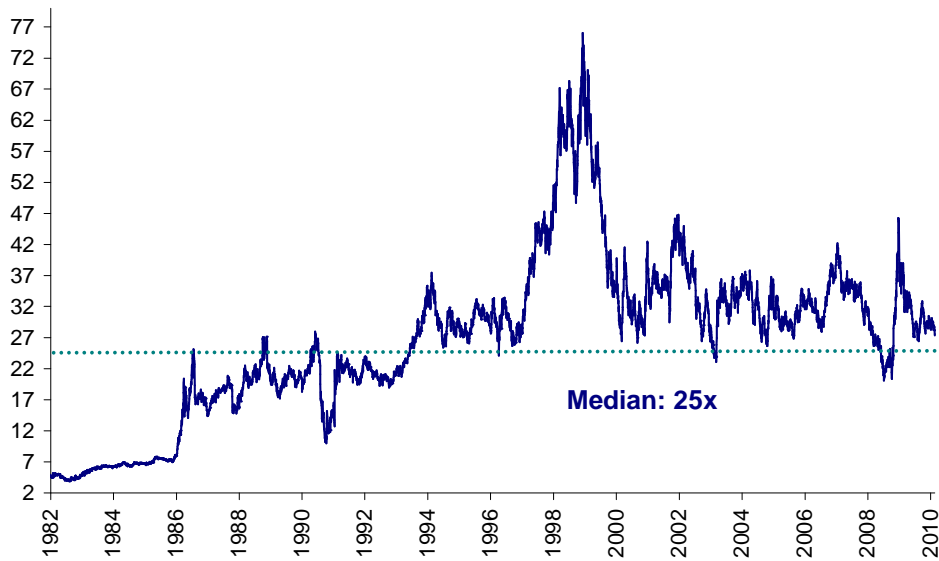
Ratio analysis is a simple yet extremely useful part of the technical analysis universe. By simply dividing one value by another one, one obtains a ratio, which can be depicted as ratio line in the charts. If the line increases, the numerator is gaining vis-à-vis the denominator. This means that a rising line indicates relative strength. The analysis of long-term relations between oil and other assets is meant to help the investor look at the current market situation from a new and long-term perspective. The simple mathematical operation of the division, representing a direct, long-term comparison of the variables involved, shows whether an asset is fairly valued, overvalued, or undervalued.

### **Oil shares/oil (currently 27x)**

In comparison with the long-term median of 25x, oil shares are quite fairly valued at 27x. The low of the last decade was 21x, at the time the oil price reached its all-time-high. Apparently there is good support around 26x, which would mean that in the medium term the shares of producing companies might fare better than the commodity itself. However, we do not expect a development similar to the one in 1999 (when the ratio hit 77x).

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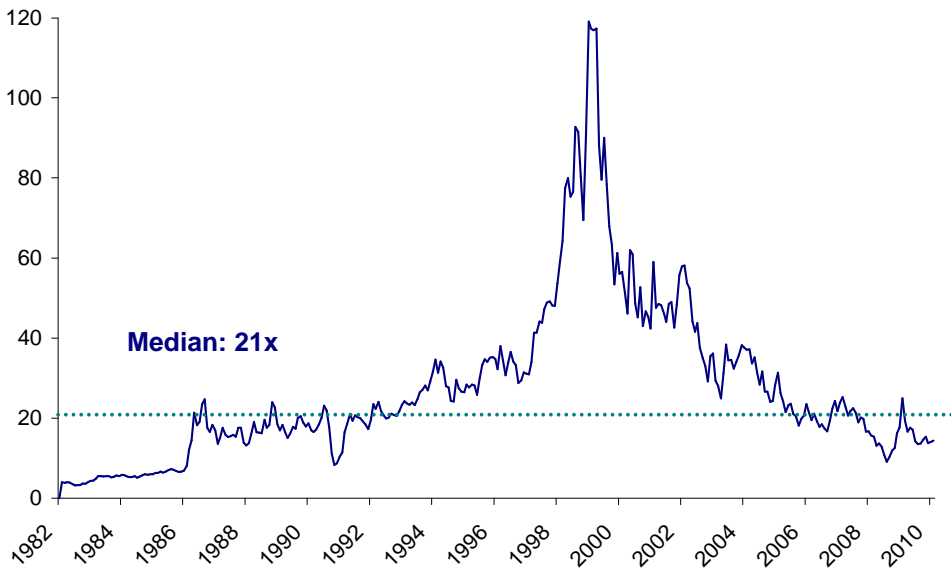
## Ratio: oil and gas producers / oil price



Sources: Datastream, Erste Group Research

## S&P500/oil (currently 15.20x)

In comparison with the US equity market, oil currently commands a favourable valuation. The current ratio of 15x is clearly below the long-term median of 21x.

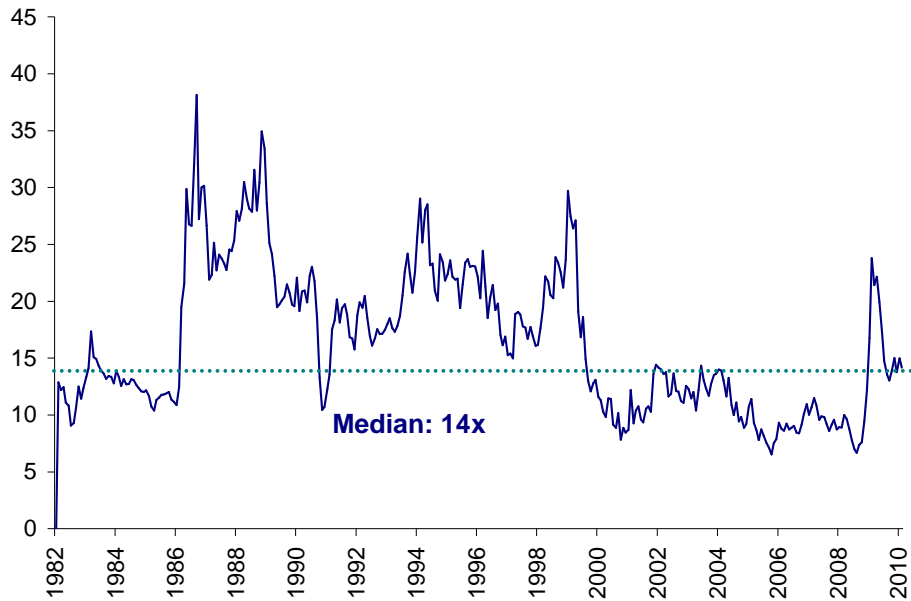


Sources: Datastream, Erste Group Research

## Gold/oil (currently 15.28x)

One ounce of gold currently buys 15 barrels of oil, which is slightly more than the long-term median of 14. Last year oil was still attractively valued vis-à-vis gold, whereas currently it is fairly valued.

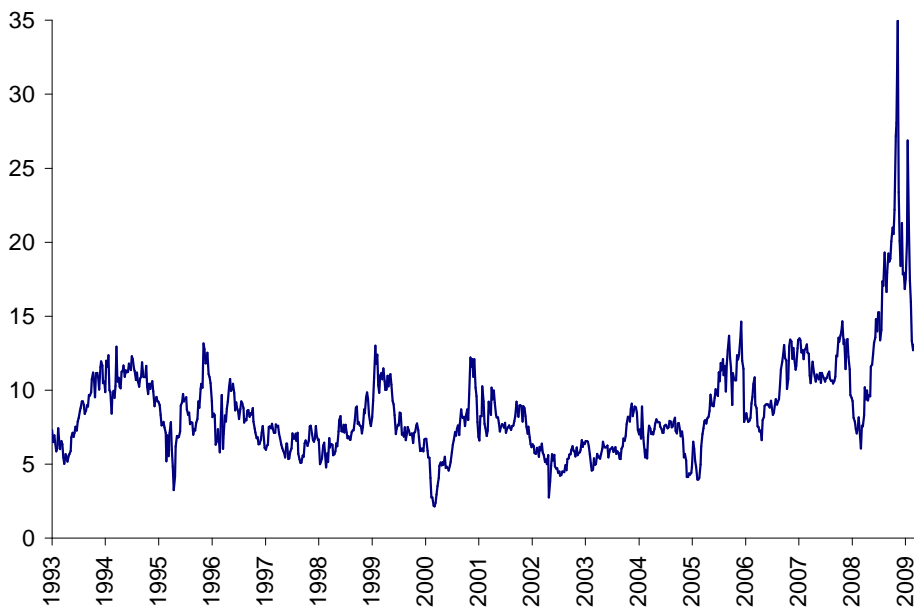
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Sources: Datastream, Erste Group Research

## Oil/natural gas (currently 16.6x)

At ratios of up to 35x, natural gas showed clearly too low valuations relative to oil last year. In the meantime this extreme situation has eased off, but at 16.6x it is still cheap in a long-term perspective, the median being 7.8x. Therefore we expect natural gas to clearly outperform crude oil in the future.



Sources: Datastream, Erste Group Research

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## ***Technical analysis: conclusion***

**Prices increased too fast, too far – upside potential probably limited**

In summarising the result of the technical analysis, one should generally point out that last year the price found a bottom upon extensive search. This period was followed by an impulsive move. However, prices seem to have risen too fast and too far. Therefore we only see a limited upside potential, with the receding momentum and the negative divergences providing reliable leading indicators.

**Seasonality suggests further price increase – trend reversal expected for mid-2010**

We interpret the fact that the oil price is generally still on the rise in spite of the seasonal weakness and the rejuvenated US dollar as clear signs of strength. The sentiment is currently neutral as well and far away from any buying stampede or euphoria, as is supported by the CoT data. According to the ratio analysis oil is currently valued within the boundaries of its long-term history relative to other asset classes. Therefore we expect prices to continue increasing slightly in the first half, although hitting the “magic” USD 100 seems unlikely. Oil shares are showing massive relative weakness and should not be seen as leading indicator here. Due to the negative divergences we expect a trend reversal for the second half of the year at the latest, where the oil price should dip to the USD 60 area or even lower.

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## 8. Conclusion

### **Risk/return profile currently not attractive for oil investments**

The risk/return profile is currently not attractive for oil investments. Investors will have to give up their belief in perennially rising prices (for now). OPEC has signalled more than once that it regarded a price band of USD 70-80 as optimal, and we do not expect the cartel to abandon that view. The slump from USD 150 to USD 30 was excessive, but the current prices do not reflect the low demand in our opinion. From our point of view, the drastically increased risk appetite, excess liquidity, and optimistic expectations of a significant economic recovery were the main contributors to the price rise. And the unshakable trust in the alleged Chinese economic miracle is fuelling hopes for a further price increase. Therefore we think that any further price increase will ultimately be built on shaky grounds and will thus not be sustainable.

### **Economy is still on a bumpy ride**

However, the economy is probably still in for a bumpy ride. We still doubt the hardiness of the “green shoots” and think that there is too much economic optimism priced into the oil sector. We can hardly see any room for positive surprises; as soon as the global stimulus programmes expire (and do not get replaced), oil demand should recede again. The artificially created prosperity should not be confused with actual, healthy growth. Therefore the discussion should be shifted to the latently weak demand.

### **High inventories represent Achilles heel for oil prices**

The low oil demand is best reflected by the weak crack spreads and the low capacity utilisation of the refineries. The high inventories probably represent the Achilles heel of the oil price, as the current oversupply will exert pressure on the price. As soon as demand is primarily covered from inventories, the downward momentum should pick up speed again.

### **Oil shock 2012?**

Currently there is enough oil around, but the structure of the supply would suggest considerably higher prices in the long run. Given that oil was sometimes traded below the marginal costs of production last year, which caused numerous oil nations severe financial hardships, investments worth almost USD 100bn were scrapped. This could be the base for a fourth oil shock 2012 or 2013; this year we only see little upward potential left.

### **Fragile geopolitical situation as biggest question mark**

We think that geopolitical problems and military conflicts are currently not taken sufficiently into account and represent a massive risk. In Nigeria, the number of attacks on pipelines has drastically increased. Given that President Yar A’duas’s health is still critical the situation should remain unstable. The Iran conflict seems to be coming to a head as well. In case of a military square-off, the Strait of Hormuz, i.e. the most important trading route for oil from the Gulf region, would be blocked. And the parliamentary election in Iraq in March as well as the withdrawal of troops of the US military in August should cause tensions too.

### **Natural gas should outperform oil**

We are clearly bullish on natural gas in the long run, especially on unconventional natural gas resources. For the next three to five years we expect prices within a band of at least USD 7 to 10. This should ensure attractive margins for alternative natural gas producers. According to an old rule of thumb, the oil price divided by 6 should yield the gas price. This is based on the fact that one requires 6 times as much gas to generate the energy of one unit of oil. This means that currently oil is too expensive, or gas too cheap – or both.

### **Natural gas is the cleanest fossil fuel – shale gas will become massively more important in the long run**

Natural gas should also play a more important role in terms of ecological aspects in the future, given that it burns much cleaner than coal or crude oil. This should also mean additional support for shale gas with respect to the CO<sub>2</sub> limits. The only frequently heard points of criticism are the high water consumption and the pipelines that would have to be built; however, the ecological damage is minor when compared to conventional energy sources. Especially in comparison with unconventional oil (e.g. oil sand), shale gas is ecologically clean and energy-efficient to boot. We are therefore optimistic that the exploration of shale gas reserves will become massively more important in Europe. We expect particularly keen exploration and acquisition activities in Poland and the Ukraine.

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For this reason we regard unconventional gas – especially shale gas – as one of the most interesting investment opportunities in the energy sector.

**Our roadmap for 2010: 1st half: target price of max. USD 90 - 100. 2nd half: trend reversal to be expected.**

**Average price 2010: USD 72 barrel**

We interpret the fact that the oil price is currently still on the rise in spite of the seasonal weakness and the rejuvenated US dollar as clear signs of strength. The sentiment is currently neutral as well and far away from any buying stampede or euphoria, as is supported by the CoT data. According to the ratio analysis oil is currently valued within the boundaries of its long-term history relative to other asset classes. Seeing that there is an oversupply of oil, we do not expect the oil price to trade above the "magic" mark of USD 100/barrel on a sustainable basis. The market seems to be in good balance for 2010. Only a broad, sustainable, and - especially - global economic upswing could trigger supply shortages. Therefore we expect - for technical and tactical reasons - a continuation of the recent uptrend in the first half of 2010. Due to the negative divergences, poor seasonal factors and the weak fundamentals, we expect a trend reversal for the second half of the year at the latest, where the oil price should dip to the USD 60 area or even lower. Therefore we forecast an average price of USD 72/barrel in 2010.

*Ronald-Peter Stöferle, CMT*



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## Contacts

### Group Research

#### Head of Group Research

Friedrich Mostböck, CEFA +43 (0)5 0100 - 11902

#### CEE Equity Research

Co-Head: Günther Artner, CFA +43 (0)5 0100 - 11523

Co-Head: Henning Eßkuchen +43 (0)5 0100 - 19634

Günter Hohberger (Banks) +43 (0)5 0100 - 17354

Franz Hörl, CFA (Steel, Construction) +43 (0)5 0100 - 18506

Gernot Jany, CFA (Banks, Real Estate) +43 (0)5 0100 - 11903

Daniel Lion, CIIA (IT) +43 (0)5 0100 - 17420

Christoph Schultes, CIIA (Ins., Util.) +43 (0)5 0100 - 16314

Thomas Unger (Oil&Gas) +43 (0)5 0100 - 17344

Vera Sutedja, CFA (Telecom) +43 (0)5 0100 - 11905

Vladimira Urbankova, MBA (Pharma) +43 (0)5 0100 - 17343

Gerald Walek, CFA (Machinery) +43 (0)5 0100 - 16360

#### International Equities

Hans Engel (Market strategist) +43 (0)5 0100 - 19835

Stephan Lingnau (Europe) +43 (0)5 0100 - 16574

Ronald Stöferle (Asia) +43 (0)5 0100 - 11723

#### Macro/Fixed Income Research

Head: Gudrun Egger, CEFA (Euroland) +43 (0)5 0100 - 11909

Alihan Karadagoglu (Corporates) +43 (0)5 0100 - 19633

Rainer Singer (US) +43 (0)5 0100 - 11185

Elena Statelov, CIIA (Corporates) +43 (0)5 0100 - 19641

Mildred Hager (SW, Japan) +43 (0)5 0100 - 17331

#### Macro/Fixed Income Research CEE

Co-Head CEE: Juraj Kotian (Macro/FI) +43 (0)5 0100 - 17357

Co-Head CEE: Rainer Singer (Macro/FI) +43 (0)5 0100 - 11185

#### Editor Research CEE

Brett Aarons +420 233 005 904

#### Research Croatia/Serbia

Head: Mladen Dodig +381 11 22 00 866

Damir Cukman (Equity) +385 62 37 2812

Alen Kovac (Fixed income) +385 62 37 1383

Iva Cerovsky (Fixed income) +385 62 37 1716

Davor Spoljar (Equity) +385 62 37 2825

#### Research Czech Republic

Head: David Navratil (Fixed income) +420 224 995 439

Petr Bartek (Equity) +420 224 995 227

Vaclav Kminek (Media) +420 224 995 289

Jana Krajcova (Fixed income) +420 224 995 232

Radim Kramule (Oil&Gas) +420 224 995 213

Martin Lobotka (Fixed income) +420 224 995 192

Lubos Mokras (Fixed income) +420 224 995 456

#### Research Hungary

Head: József Miró (Equity) +361 235-5131

Bernadett Papp (Equity) +361 235-5135

Gergely Gabler (Equity) +361 253-5133

Orsolya Nyeste (Fixed income) +361 373-2830

#### Research Poland

Head: Artur Iwanski (Equity) +48 22 330 6253

Magda Zabieglik (Equity) +48 22 330 6250

Tomasz Kasowicz (Equity) +48 22 330 6251

Piotr Lopaciuk (Equity) +48 22 330 6252

Marek Czachor (Equity) +48 22 330 6254

Wiktor Tymochowicz (Equity) +48 22 330 6253

#### Research Romania

Head: Lucian Claudiu Anghel +40 21 312 6773

Mihai Caruntu (Equity) +40 21 311 27 54

Dumitru Dulgheru (Fixed income) +40 21 312 6773 1028

Cristian Mladin (Fixed income) +40 21312 6773 1028

Eugen Sinca (Fixed income) +40 21312 6773 1028

Raluca Ungureanu (Equity) +40 21311 2754

#### Research Slovakia

Head: Juraj Barta, CFA (Fixed income) +421 2 4862 4166

Michal Musak (Fixed income) +421 2 4862 4512

Maria Valachyova (Fixed income) +421 2 4862 4185

#### Research Ukraine

Head: Victor Stefanyszyn (Fixed Income) +38 044 593 - 1784

Svitlana Bazilevich (Equity) +38 044 593 - 9286

Maryan Zablotsky (Fixed income) +38 044 593 - 9188

### Group Institutional & Retail Sales

#### Institutional Equity Sales Vienna

Head: Brigitte Zeitlberger-Schmid +43 (0)5 0100 - 83123

#### Cash Equity Sales

Hind Al Jassani +43 (0)5 0100 - 83111

Werner Fuerst +43 (0)5 0100 - 83121

Josef Kerekes +43 (0)5 0100 - 83125

Cormac Lyden +43 (0)5 0100 - 83127

Neil Owen +43 (0)5 0100 - 83114

Stefan Raidl +43 (0)5 0100 - 83113

Simone Rentschler +43 (0)5 0100 - 83124

#### Derivative Sales

Christian Luig +43 (0)5 0100 - 83181

Manuel Kessler +43 (0)5 0100 - 83182

Sabine Kircher +43 (0)5 0100 - 83161

Christian Klikovich +43 (0)5 0100 - 83162

Armin Pfingstl +43 (0)5 0100 - 83171

Roman Rafeiner +43 (0)5 0100 - 83172

#### Institutional Equity Sales London

Head: Michal Rizek +44 20 7623 - 4154

Dieter Benesch +44 20 7623 - 4154

Tatyana Dachyshyn +44 20 7623 - 4154

Declan Wooloughan +44 20 7623 - 4154

#### Institutional Equity Sales Croatia

Zeljka Kajkut (Equity) +38 562 37 28 11

Damir Eror (Equity) +38 562 37 28 13

#### Institutional Sales Czech Republic

Michal Brezna (Equity) +420 224 995-523

Ondrej Cech (Fixed income) +420 224 995-577

Michal Rizek +420 224 995-53

Jiri Smehlik (Equity) +420 224 995-510

Pavel Zdichynec (Fixed income) +420 224 995-590

#### Institutional Sales Hungary

Gregor Glatzer (Equity) +361 235-5144

Krisztián Kandik (Equity) +361 235-5140

Istvan Kovacs (Fixed income) +361 235-5846

#### Institutional Equity Sales Poland

Head: Andrzej Tabor +4822 330 62 03

Pawel Czuprynski (Equity) +4822 330 62 12

Lukasz Mitan (Equity) +4822 330 62 13

Jacek Kryszinski (Equity) +4822 330 62 18

#### Institutional Equity Sales Slovakia

Head: Dusan Svitek +48 62 56 20

Rado Stopiak (Derivatives) +48 62 56 01

Andrea Slesarova (Client sales) +48 62 56 27

#### Saving Banks & Sales Retail

Head: Thomas Schaufler +43 (0)5 0100 - 84225

#### Equity Retail Sales

Head: Kurt Gerhold +43 (0)5 0100 - 84232

#### Fixed Income & Certificate Sales

Head: Thomas Schaufler +43 (0)5 0100 - 84225

#### Treasury Domestic Sales

Head: Markus Kaller +43 (0)5 0100 - 84239

#### Corporate Desk

Head: Leopold Sokolicek +43 (0)5 0100 - 84601

Alexandra Blach +43 (0)5 0100 - 84141

Markus Pistracher +43 (0)5 0100 - 84100

Roman Friesacher +43 (0)5 0100 - 84143

Helmut Kirchner +43 (0)5 0100 - 84144

Christian Skopek +43 (0)5 0100 - 84146

#### Fixed Income Institutional Desk

Head: Thomas Almen +43 (0)5 0100 - 84323

Martina Fux +43 (0)5 0100 - 84113

#### Fixed Income International & High End Sales Vienna

Jaromir Malak/ Zach Carvell +43 (0)5 100 - 84254

U. Inhofner/ P. Zagan/ C. Mitu +43 (0)5 100 - 84254

#### Fixed Income International Sales London

Paul Osmont/ Simone Pilz +44 20 7623 4159