ERSTE GROUP

Special Report Oil – March 2011

Force Majeure - Middle East

Political tsunami not to be stopped soon

Commodity rally largely liquidity-driven

Will the rising oil price trigger the next recession?

Shale Gas on the Rise

Peak oil reached in conventional oil?

Development from the point of view of the Austrian School of Economics: moderate upward potential in the short run, trend reversal afterwards

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Average Brent price 2011: USD 124/barrel

Special Report Oil

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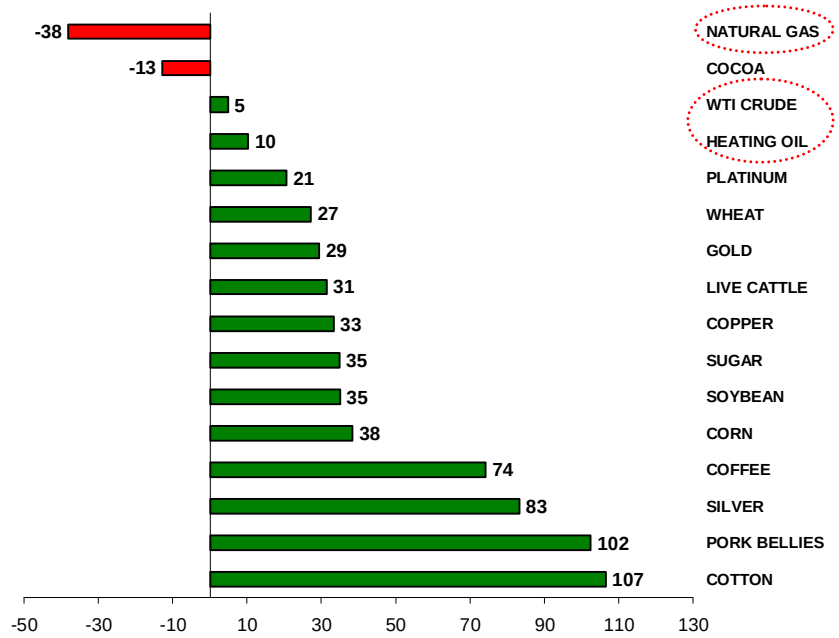
Special Report Oil

1. Introduction

As discussed in our Oil Report 2010, "Too fast, too furious… now time for a break", the risk/return profile for oil-investors was of limited attractiveness last year, both in absolute terms and in relation to equities or other commodities. But to be fair, we have to point out that the correction that we had anticipated for the second half of the year never happened. We underestimated the amount of ink that the Federal Reserve was going to pour into its "virtual printing press" and the extent of relentless deficit spending and, at the beginning of 2010, failed to foresee how little importance was going to be attached to monetary stability. The weak US dollar is a logical consequence of the quantitative easing, which in our opinion is really just a euphemism for printing "virtual" money.

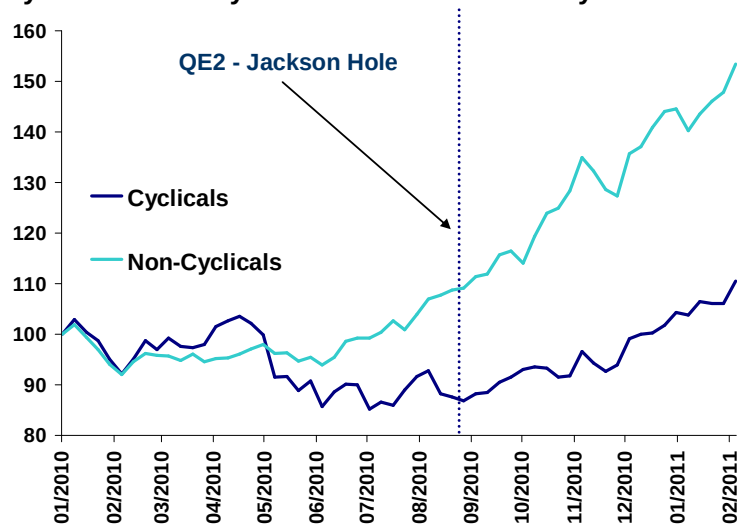
Price development commodities 2010 in %



Sources: Datastream, Erste Group Research

The performance of the various commodities was very mixed. Whereas the (relatively) non-cyclical agricultural commodities and gold, a commodity, which we are known to favour, recorded a clear upswing, the classically cyclical commodities (among those copper, oil, aluminium, coal, tin, and nickel) picked up momentum relatively late. What does that mean for 2011? We expect that the belief in the economic recovery will be reflected in a substantial increase in the prices of cyclical commodities. **The energy sector, no.1 underperformer among the cyclicals last year, should emerge as the clear beneficiary of this sector rotation.**

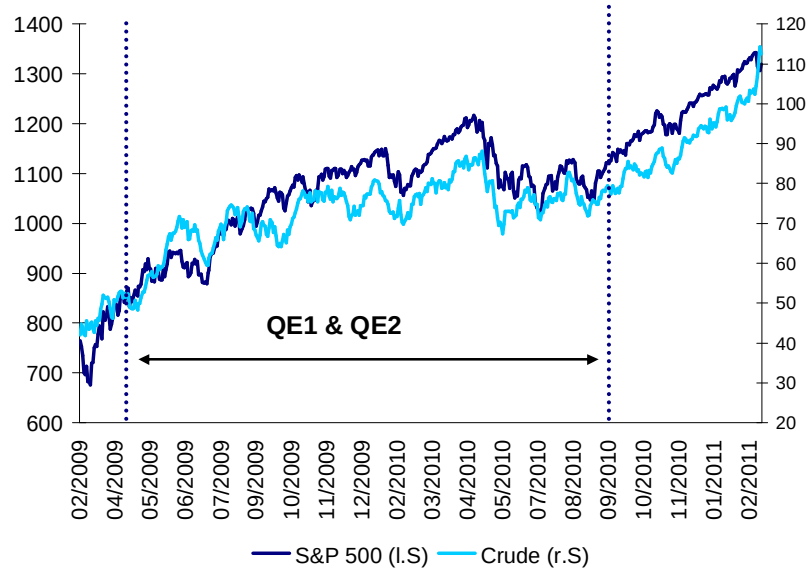
Cyclical vs. non-cyclical commodities January 2010 to February 2011



Sources: Datastream, Erste Group Research

We believe that the "Bernanke put" is the main reason for the price increases in the commodity segment. The Fed has repeatedly emphasized the positive effects of higher stock prices. Commodities also benefit from the investors' increased willingness to assume risks, as the following chart clearly illustrates. It is quite impossible to explain the extremely high correlation of the equity market and the oil price with classic supply/demand patterns. According to Dave Rosenberg[1] there is a 86% correlation between the movements in the Fed balance sheet and in the S&P 500 since the onset of QE two years ago. Indeed, the monetary policy seems to have turned into the most important determining factor. Since QE2 was announced, the speculative net exposure of wheat and oil for example at the CBOT has doubled; the one of copper has increased by 90%, and that of soy by 40%[2]. **One can therefore assume that the rally is mainly driven by liquidity.**

Oil price vs. S&P500



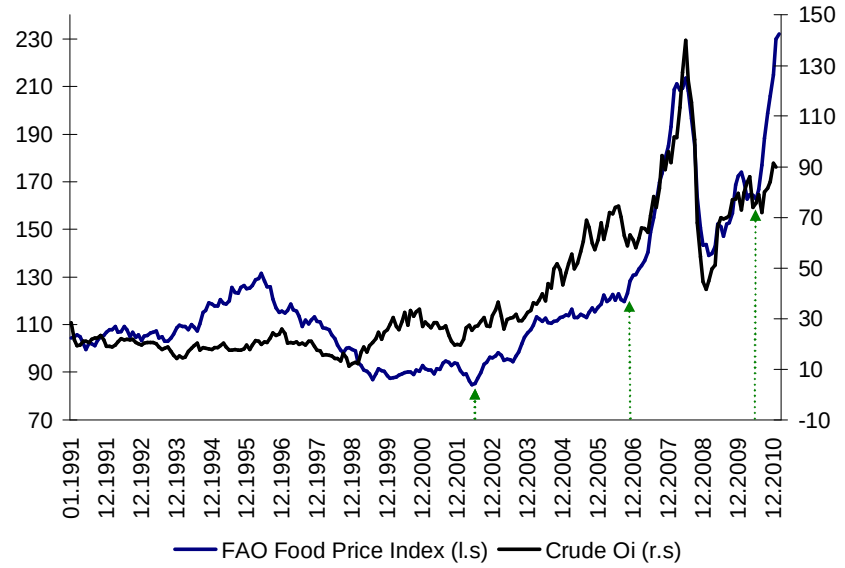
Sources: Datastream, Erste Group Research

As discussed in our latest Gold Report, the discussion about inflation these days focuses on the symptom of the price increases rather than on their causes. Rising prices are therefore only a valve for the increased money supply. Many a time the fact that the expansion in money supply is responsible for the rising price levels is simply forgotten. The FAO Food Price index also illustrates this, having set a new all-time-high

[1] Please refer to "Breakfast with Dave", Gluskin Sheff, 1 March 2011
[2] Please refer to "Breakfast with Dave", Gluskin Sheff, 7 February 2011

recently. Natural disasters, structural imbalances and a sharp increase in speculative demand were also crucial to the uptrend in soft commodity-prices. The correlation coefficient with the oil price has been 0.91 since 1991. On top of that, it seems like the FAO index is slightly leading in relation to oil, particularly when it comes to impulsive upswings.

Food prices vs. oil price



Sources: Datastream, Erste Group Research

That said, the wait-and-see stance taken by OPEC also contributed to the recent price increases. At its latest meeting, the organisation had indicated that it would only intervene from USD 100/barrel onwards. The fact that the ordinary meeting in March was cancelled would also suggest a further increase in prices until the next ordinary meeting in June, where we believe OPEC will step up production again. We do not think that the cartel would wish to provoke another price spike like in 2008.

On the demand side, China clearly remains the driving factor. The recent interest rate hikes and the numerous increases in the minimum reserve requirements are supposed to facilitate a “soft landing”, but have so far shown little success. In 2010 money supply was up 19.7%, and credit growth expanded by 18% (after 35% in 2009).

We remain critical of the blind faith in the Chinese economic engine. China can and will not be the single driving force of worldwide recovery, the sheet anchor and messiah of the global economy, or the only hope of oil demand. We will discuss the reasons for our bearish stance on China on the following pages.

Geopolitical tensions are not fully priced in

Revolutionary large-scale fire to be expected?

The oil price has hit the front page for the first time in months. The political unrest against the dictatorships or autocracies in Egypt, Yemen, Libya, Jordan, and Tunisia and the fear of a spill-over of the "wave of change" to Saudi Arabia, the United Arab Emirates, and Iran was fuelling speculations with regard to the effects on the oil supply. The whole MENA region produces 30mn barrels/day and exports more than 21mn barrels/day. Egypt is no significant producer, but 4.5mn barrels of oil pass through the Suez Canal and the Sumed pipeline every day. Whereas the Canal is relatively easy to defend from a military point of view, the pipeline cannot be protected from attacks. And with a population of 80 million, Egypt is also an Arab key state and plays a crucial role for the region.

Libya's production amounts to nearly 1.7 mn barrels/day, representing 1.8% of total production. If the production were disrupted, the spare capacity of OPEC would be reduced to dangerous levels. In the wake of the upheaval in Egypt, things started heating up in Algeria as well. The population demanded the immediate resignation of President Bouteflika. Algeria produces 1.27mn barrels/day and is thus one of the smallest OPEC producers, but it would still be very difficult to offset the breakdown if it were to happen. People have also taken to the streets in Bahrain, and in Saudi Arabia, Yemen and even in China the protests are gaining momentum.

We do not expect this political tsunami to be stopped soon. The young population has no perspectives and rebels against the excessive bureaucracy, the unfair division of income, and the mountain of corruption. Whether the movement is edging towards Shiite theocracies or gradual democratisation is currently difficult to predict. But the democratic opposition is only loosely organised, which means that the scenario where the radical fundamentalists seize power is much more likely. One thing is for sure however, and that is the fact that we believe that oil will be traded with a substantially higher political premium in the future. **In our opinion the large-scale geopolitical fire and its effects are clearly underestimated.**

The deeper you push a ball under water, the higher it jumps once it has slipped out of your hands.

	RANK			
	corruption	press freedom	democracy	youth unemployment rate in %
Algeria	105	141	125	24
Bahrain	48	153	122	20
Egypt	98	130	138	25
Iraq	175	144	111	na
Jordan	50	140	117	27
Kuwait	54	115	114	11
Lebanon	127	115	86	22
Libya	146	192	158	32
Morocco	85	146	116	22
Oman	41	153	143	17
Qatar	19	146	137	2
Saudi Arabia	50	178	160	29
Somalia	178	181	na	na
Sudan	172	165	151	na
Syria	127	178	152	19
Tunisia	59	186	144	31
UAE	28	153	148	12
Yemen	146	173	146	na

Source: EIU, ILO, Credit Suisse, Transparency International, The Economist, United Nations

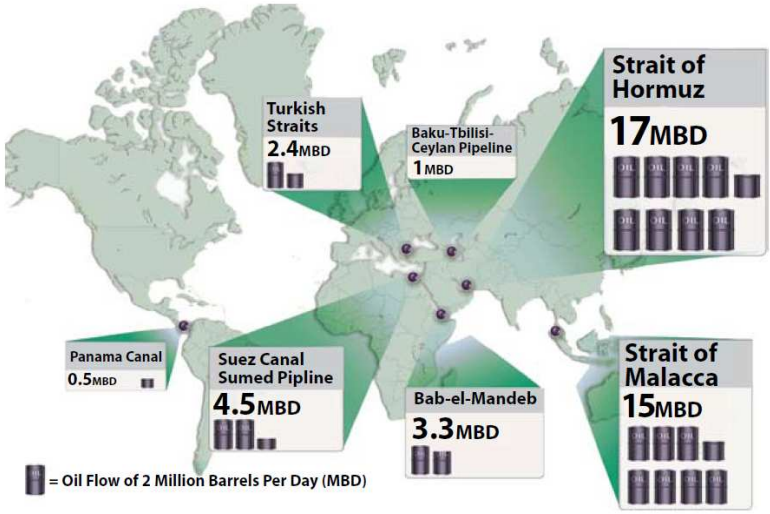
The latently smouldering Iran crisis seems to be gradually deteriorating. The recent manoeuvre of two Iranian ships has added fuel to the situation. On top of that the status quo in Iran is extremely tense – and should only get tenser – due to the cancelled subsidies for petrol and gas (i.e. the resulting price hike). Last December Iran cancelled the governmental subsidies (a total of USD 70bn, i.e. almost a third of the public budget) for fuel and food, and the petrol rationings were cut by 10%. The consequences for the population were dire. Petrol prices

more than quadrupled. Food prices have so far doubled, and inflation should soar to almost 70%. In the first days after the taking-effect of these measures, fuel demand dropped by almost 15%, and power consumption decreased by 6%. The reason for the measures seems bizarre: “Oil and gas belongs to the twelfth Imam”, i.e. the Shiite messiah.

The nuclear programme constitutes another central point of contention. Teheran has continued to enrich its uranium, and the IAEA now believes that Iran has the material for two nuclear bombs at its disposal. The additional sanctions imposed by the other countries are not exactly helping to deescalate the situation, and diplomacy is at a dead end. Not willing to accept nuclear arms, Israel destroyed an Iraqi nuclear reactor already back in 1981, and it did the same thing to a Syrian reactor in 2007. Possible scenarios of a military strike on Iran can be accessed on the homepage of the Saban Center for Middle East Policy[3].

The impact on the important transport route in the Strait of Hormuz can hardly be imagined and quantified. Some 17mn barrels/day pass through this bottleneck, i.e. 33% of the entire volume of oil that is transported by sea. The **Strait of Malacca** is a similar chokepoint of global trade. About 15mn barrels are daily transported through this strait that links the Indian with the Pacific Ocean. Even a temporary blockage of one of those two transport routes would come with dramatic implications for global trade.

Overview: world trade bottlenecks



Source: US Department of Energy

In Nigeria elections will be held in April. Traditionally, elections tend to be bloody in Nigeria and more often than not go hand in hand with attacks on pipelines and production sites. Both the 2003 and 2007 elections were dominated by bloody attacks with repercussions on the oil production. The attacks on the Trans-Nigeria pipeline of Shell caused a “force majeure” situation, rendering Shell unable to fulfil its supply contracts. The rebel organisation Mend has already announced it would continue attacking the major oil companies.

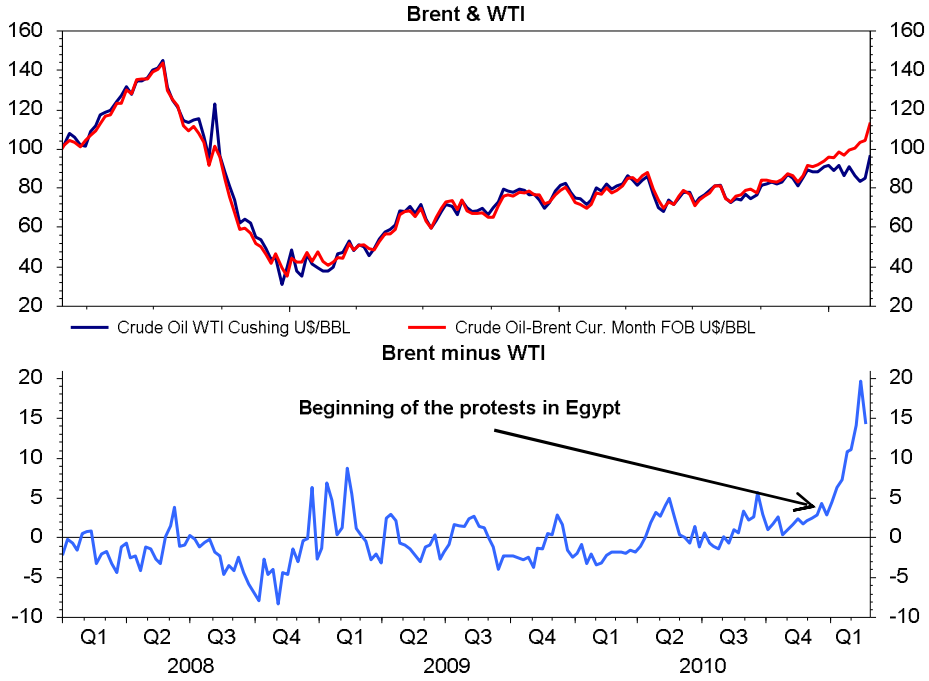
[3] http://www.brookings.edu/reports/2010/02_iran_israel_strike_pollack.aspx

Spread between WTI and Brent should decrease in the medium term – Brent has a political premium priced in

The spread between WTI (NYMEX) and Brent (ICE) has seen a drastic widening recently. Historically speaking, WTI tends to trade USD 1.30 higher, but currently Brent exceeds WTI by USD 15. The historical premium of WTI vs. Brent is due to the fact that the quality of Brent is slightly inferior, which means that the refining process is more costly.

We believe that the record levels that spreads have reached are due mainly to the political premium. The following chart highlights the fact that the divergence began around the time of the protests in Egypt at the end of January. Brent is the referential unit for almost 65% of all oil transactions worldwide, but production amounts to only 1.5mn barrels/day – i.e. less than 2% of global production[4]. Also, production has been receding drastically for years, which also pushes the price. On top of that the market is much less transparent given that, in contrast to the USA, no inventory data are available, and there is no spot market. Nevertheless, Brent is gradually becoming more accepted, seeing that it is considered the benchmark price in Europe, Asia, and the Middle East. To this extent, the events unfolding in the Middle East weigh decidedly heavier on the price of Brent than on WTI.

Brent vs. WTI

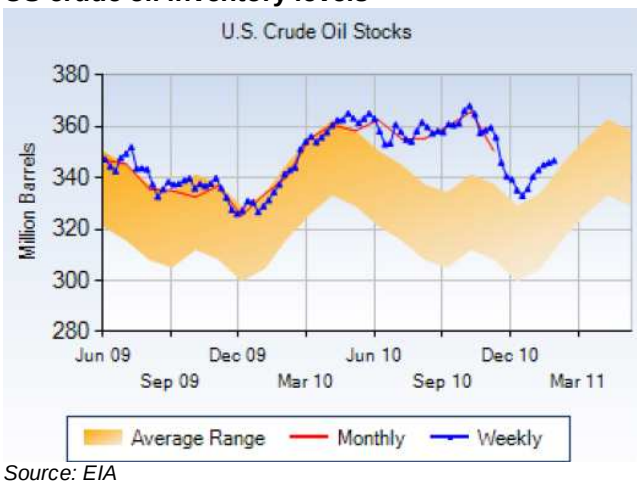


Sources: Datastream, Erste Group Research

In addition, the relative weakness of West Texas Intermediate is not so much based on any form of weaker demand but rather on massive imbalances in Cushing, where WTI is delivered. At the moment an unusually high number of refineries are undergoing maintenance work. The petrol inventories in the USA are at their highest level in more than 20 years, i.e. the supply in the market is by far enough to meet demand. This scenario is also confirmed by the gradually intensifying contango in WTI. These structural problems should last until the end of summer, after that the spreads should come down again. **Due to the CoT positioning we expect the divergence between Brent and WTI to perish in the long run at the expense of Brent.**

[4] Financial Times Germany, 26 January 2010, Tobias Bayer – "Warum Brent Kapriolen schlägt" ("Why Brent is going mad")

US crude oil inventory levels



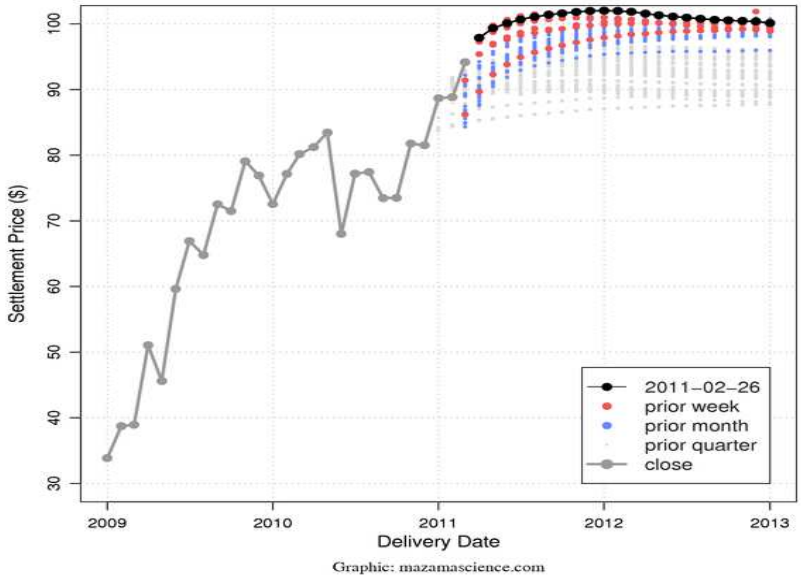
Source: EIA

Backwardation/contango

The premium on the forward market has recorded a drastic decline in recent months, with the forward curve flattening gradually since 2010. **On 6 December Brent futures were traded in backwardation for the first time in two years.** This means that futures with shorter maturities are more expensive than those with longer maturities. In other words, holding a position generates profits instead of costs. The forward structure curve is by default the long investor's best friend.

That is of course nothing extraordinary; in the (long-term) past Brent has more often than not been traded in backwardation. Backwardation occurs mainly in tight markets, whereas contango represents an indicator of oversupply on the market. Therefore we believe that the futures may remain in backwardation for an extensive period of time. We also expect inventories to decrease by a substantially stronger degree than anticipated, and as a result we envisage OPEC to step up production at the next meeting in June in order to ensure a sufficient supply for the market.

NYMEX Crude forward market curve



Source: Mazamascience.com

The IEA has increased its forecast yet again. The agency now expects a global consumption of 89.1mn barrels/day in 2011, which would be tantamount to an increase of 1.6%. The EIA also expects an increase of almost 1.4mn barrels/day to 89mn barrels/day. On the other hand, production is only expected to reach 88.1mn barrels/day, which leads to only two conclusions: either Saudi Arabia increases its production, or the inventories are gradually drawn down.

The criticism of the US dollar hegemony is getting louder

The performance of the US dollar constitutes a central determining factor for the development of the oil price. The criticism of the US dollar hegemony is getting louder on a daily basis. The Chinese rating agency **Dagong Global Credit** has recently downgraded the rating of the United States to AA. According to Dagong the quantitative easing has sustainably eroded the legitimacy of the US dollar as global reserve currency[5]. The agency saw the USA as lacking in willingness to pay off its debt and accused it of being ignorant vis-à-vis its creditors.

The following graph illustrates the fact that the US dollar index (a basket of currencies consisting of the euro, the Japanese yen, the British pound, the Canadian dollar, the Swedish crown, and the Swiss franc) is still locked in a long-term downward trend. The index has recently broken through the threshold of 80 points, which now has turned into a massive resistance. The dollar index has been caught in a secular bear market since July 2001 and has lost almost 40% since then. **Therefore the dollar creditors' efforts to diversify come as no surprise.**

US dollar index since 1983

Sources: Bloomberg, Erste Group Research

Generally speaking, the criticism of the US dollar has become rather substantial on a global scale, as substantiated by numerous examples:

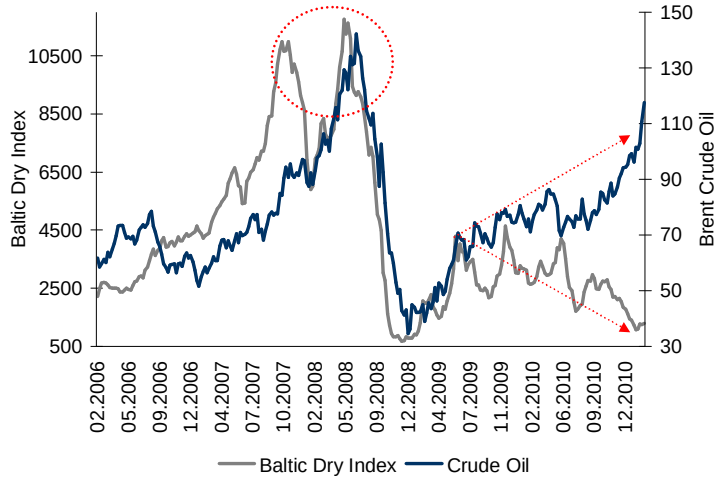
- In October "The Independent" reported that China, Russia, Brazil, Japan, and a number of Gulf States were planning to stop settling oil transactions in US dollar by 2018. The dollar should be replaced by a basket of currencies including the Chinese yuan, the Japanese yen, the Russian rouble, the euro, gold, and other commodities. The political implications of such a decision would be enormous.
- The Iranian oil exchange accepts settlement in many currencies except US dollar.
- Nine countries in Central and South America and the Caribbean have recently agreed on setting up a monetary union.
- Turkey wants to invoice international transactions with Russia, Iran, and China in local currency. On top of that, Russia will allow the settlement of transactions with China in yuan and rouble.
- Four Gulf nations (Saudi Arabia, Kuwait, Bahrain, Qatar) have agreed to establish a monetary union. In the long term plans are to introduce a physical currency, the "gulfo", and an own central bank is supposed to be set up. Within the region, oil contracts are not settled in dollar anymore. The GDP of the area amounts to USD 1.2 trillion, and it holds 40% of global oil reserves.

[5] Reuters, "China rating agency blames U.S. for 'credit war' ", 28 January 2011

Does the increase in the oil price trigger the next recession too?

The following chart illustrates the global economic slump in 2008. The Baltic Dry index is the benchmark index for global freight rates of bulk goods (among others iron ore, copper, gravel, grain, and coal) and is thus an important indicator for global trade. As such, it also constitutes a reliable leading indicator for the oil price. The chart shows that the Baltic Dry index is currently developing a massive divergence from the oil price, which has been gradually getting wider.

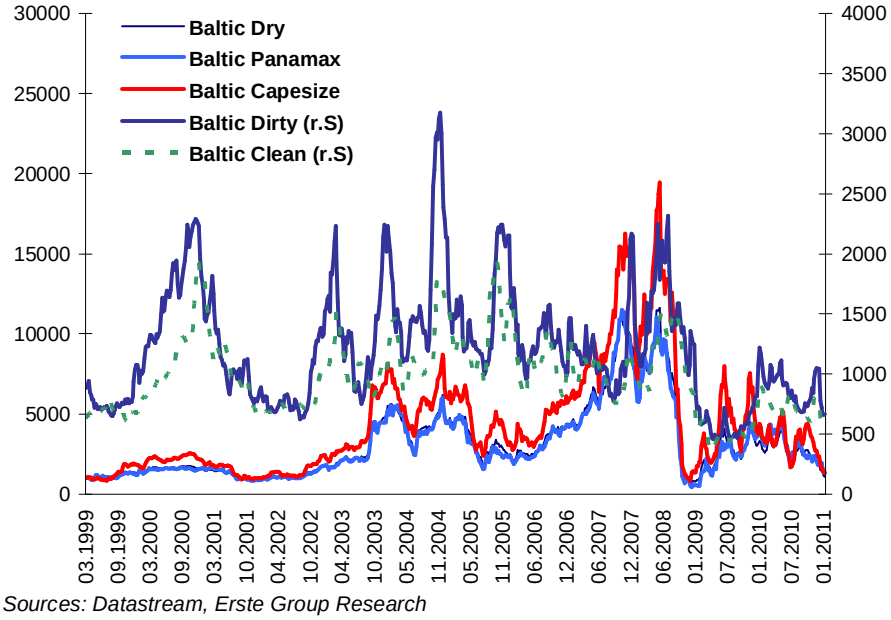
Baltic Dry index vs. oil price



Source: Datastream, Erste Group Research

Taking into consideration all Baltic indices[6], one may start to doubt the global economic recovery. But to be fair, one has to note that the capacities of the big shipping companies have increased drastically. However, prices should still rise within the framework of a global recovery of world trade. This leads us to deduce that the current upswing is mainly due to expansive monetary policy.

Baltic indices since 1999



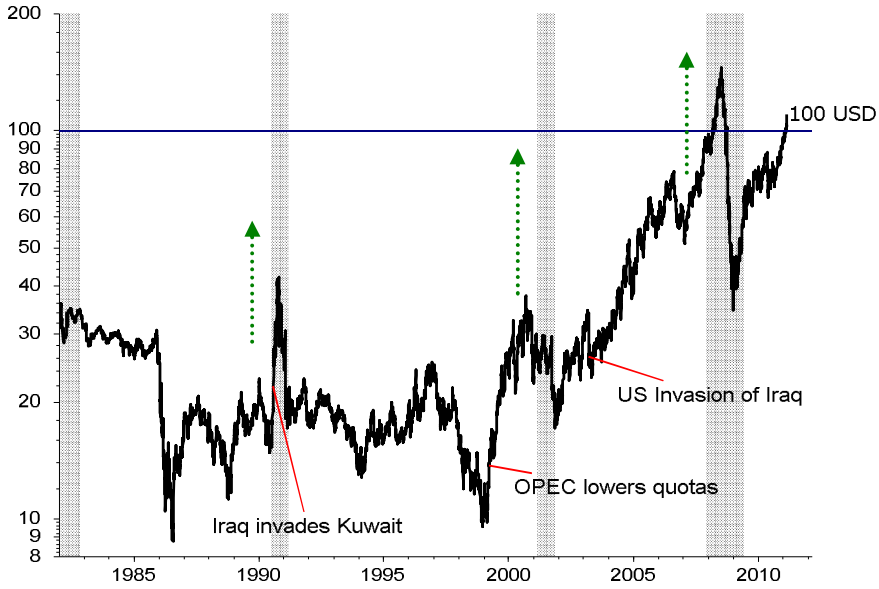
Sources: Datastream, Erste Group Research

The effects of the high oil price will soon feed through to the economic bottom line. According to the IEA the OECD nations spent USD 790bn on oil imports in 2010, i.e. USD 200bn more than in 2009. Jeff Rubin contends that the oil price increase in 2008 triggered the financial crisis and that the mortgage crisis was only a

[6] Please refer to http://en.wikipedia.org/wiki/Baltic_Exchange

symptom of the high oil price. According to Rubin, high oil prices caused four out of the five most recent global recessions[7]. This was on the one hand due to consumption, which is affected by the oil price, and on the other hand by the transfer of assets to exporting nations. For example, the transfer of petrodollars in 2008 amounted to USD 700bn in 2008, 400bn of which were going to OPEC nations.

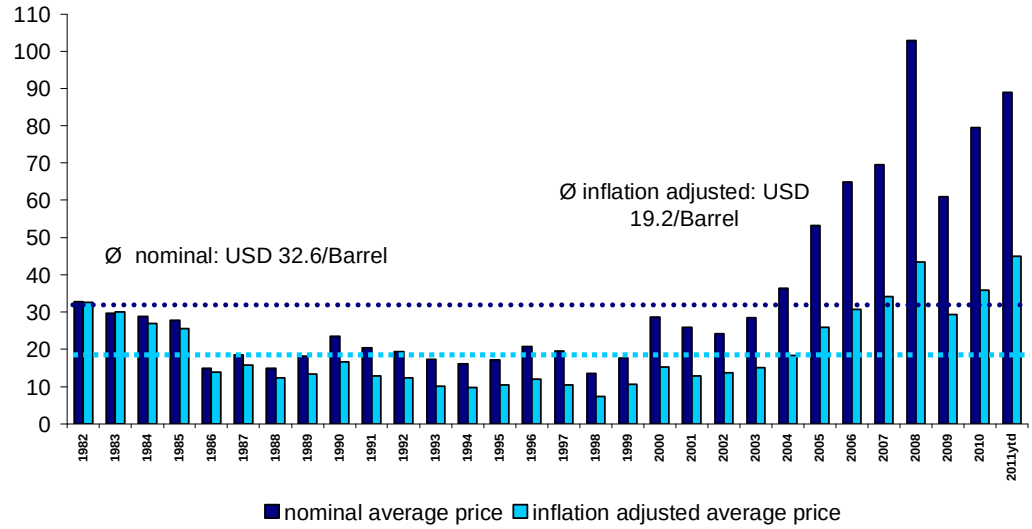
Oil price (logarithmic scale) and recessions (shaded)



Source: Datastream

The illusion of a "low" oil price is probably based on the fact that many market participants regard the all-time-high of USD 147 in 2008 as benchmark. At its current level the oil price is more than 200% above its long-term average of USD 32.6. Even adjusted for inflation, oil is anything but cheap. At USD 35/barrel on an inflation-adjusted basis, oil is traded clearly above its long-term average of USD 16.6/barrel. In other words, oil is expensive in a historical comparison, neither nominally nor adjusted for inflation.

Real vs. inflation-adjusted average price since 1982

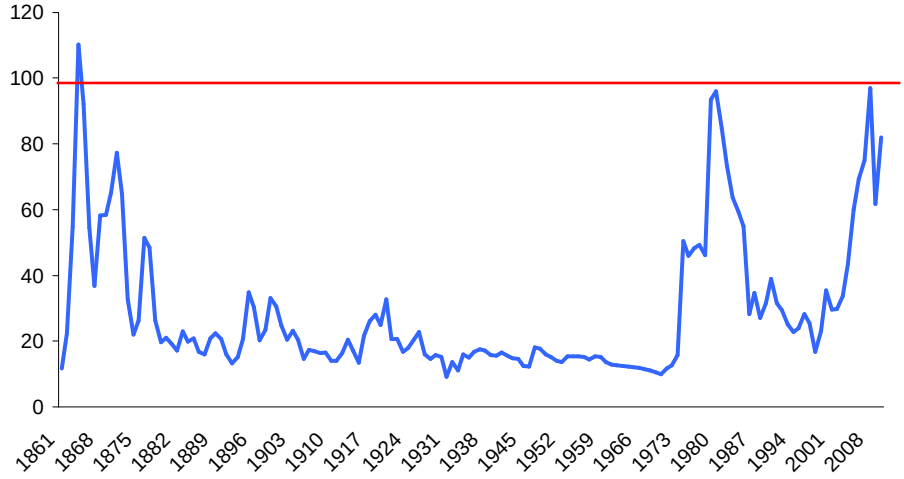


Sources: Datastream, Erste Group Research, sharelynx.com, Bloomberg

The long-term comparison also reveals the fact that the oil price is traded close to its 150-year inflation-adjusted all-time-high.

[7] Please refer to Jeff Rubin "Oil prices caused the current recession"

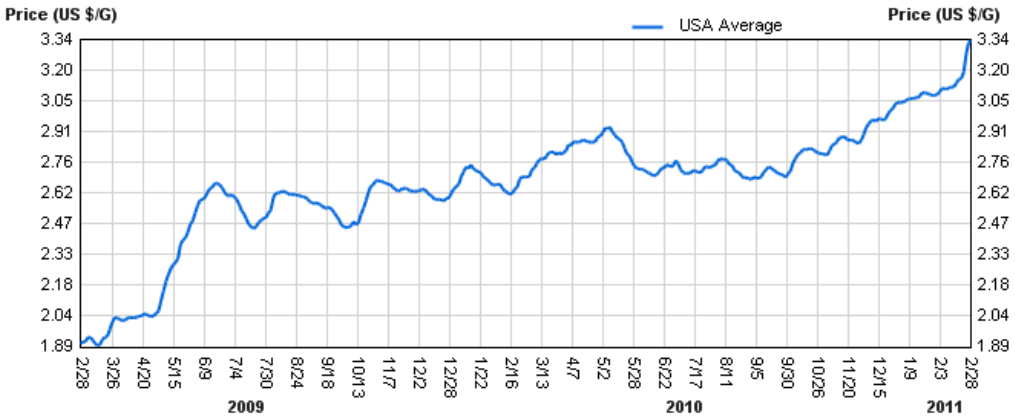
Oil price 1861 to 2010 (in USD, 2009 = 100)



Sources: BP Statistical Review 2010, Erste Group Research

An increase in the oil price tends to affect the economy with a time lag of several months. According to a rule of thumb, an increase in the oil price of 10% causes the GDP to fall by about 25bps. Since the announcement of QE2, the petrol price has risen by 22%. Petrol has increased above the important mark of USD 3 per gallon for the first time since October 2008 again in the USA. The high price feels like an additional tax to the US consumers. An increase in the price of 10 cents per gallon translates into a burden of USD 14bn per year for the US households. This means that an increase to USD 4 per gallon would put a burden of almost USD 70bn on US consumption. **Many indicators – among them the relatively obvious weakness of the retail index in comparison with the S&P 500 index as well as the still extremely negative ABC consumer confidence[8] – suggest that "Joe on the street" can already feel the consequences of the price rise.**

Petrol price USA (USD per gallon)

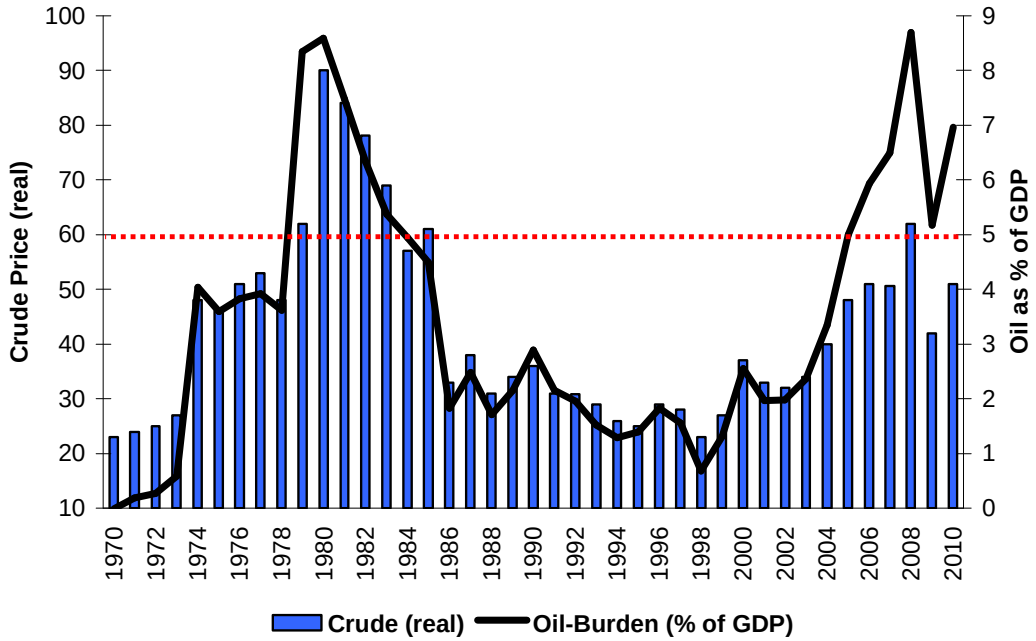


Source: Gasbuddy.com

According to the IEA the amount spent on oil accounted for 4.1% of global GDP in 2010. Should the price increase above USD 100 in 2011 on a sustainable basis, the percentage would probably rise to 5%, which, from a historical point of view, has always been a critical level for the economy. At an average price of USD 120/barrel of Brent this would account for 6% of GDP, at USD 150 for 7.5%. It would therefore come with clearly negative repercussions for oil-demand and the economy in general. Therefore we do not think that OPEC would wish to nip the shoots of the economy in the bud and expect the cartel to step up production drastically, should the price rise sustainably above USD 100.

[8] Please refer to Wellenreiter, 2 February 2011

Oil price burden (% of GDP) vs. inflation-adjusted oil price 1970-2010



Sources: Datastream, OECD, Bloomberg, Erste Group Research

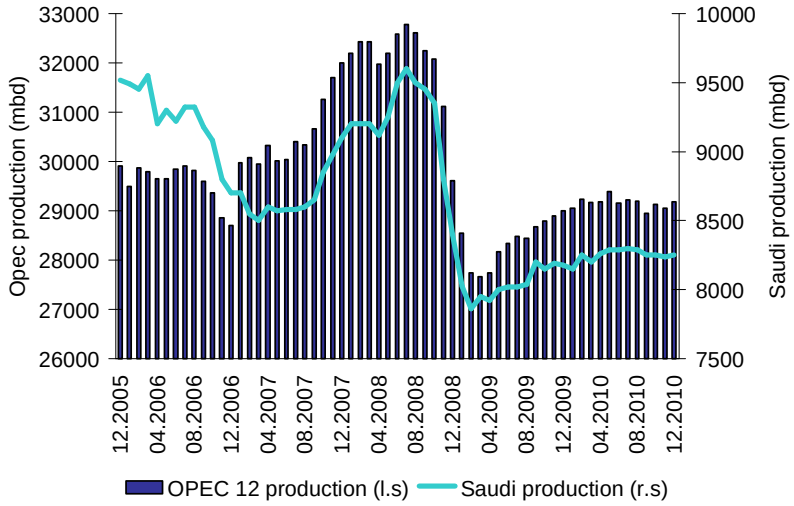
2. Supply

On the supply side, 2010 was largely dominated by positive surprises, both inside and outside OPEC.

OPEC production

OPEC production amounted to 29.2mn barrels/day in 2010. The contribution from Nigeria accounted for the biggest increase (+14.2%). OPEC has continued to raise production in 2011. Output was up at 29mn barrels/day, i.e. the highest volume in two years. Although some member states (e.g. Venezuela) have been getting cosy with the idea of triple-digit oil prices, we expect Saudi Arabia to ensure a sufficient supply on the market.

OPEC production vs. Saudi Arabian production



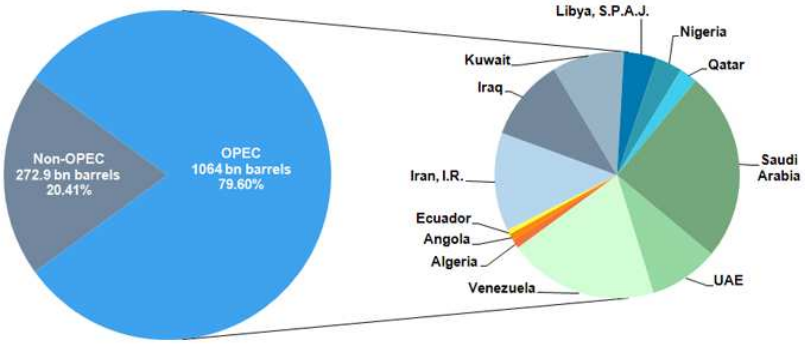
Sources: OPEC, Bloomberg, Erste Group Research

OPEC currently accounts for slightly less than 40% of total production; the market share should soar to 52% by 2030. The IEA expects 80% of the additional production to stem from OPEC countries. In addition, OPEC holds 80% of all reserves. In other words, the economic and political power of OPEC will increase dramatically. However, the actual reserves – especially those of the Saudi Arabian oil fields – are at the very least up for discussion.

As recently reported[9], Saudi Arabia may have overstated its reserves by 300bn barrels (i.e. close to 40% of total reserves). The former vice president of Exploration at Saudi Aramco pointed out that global peak oil might be reached in 2012 and that Saudi Arabia might only be able to achieve the planned production of 12.5mn barrels/day in 2017 and only with the support of a massive investment programme. The peak of Saudi Arabian production was going to be reached in 2021. Al-Husseini expects that 6mn barrels/day worth of new discoveries would have to be made per year in order to meet the increased demand on the one hand and to replace the receding production of aging fields on the other hand. This is also in line with the statements made by Fatih Birol (chief economist of the IEA). **Given that al-Husseini is anything but a follower of conspiracy theories, his opinion is definitely worth considering.**

[9] The Guardian, “Saudi Oil Reserves overstated”, 8 Feb 2011

OPEC share in global oil reserves (as of the end of 2009)



OPEC proven crude oil reserves , end 2009
(billion barrels)

Saudi Arabia	264.59	24.9%	Iraq	115.00	10.8%	Libya, S.P.A.J	46.42	4.4%	Algeria	12.20	1.1%
Venezuela	211.17	19.8%	Kuwait	101.50	9.5%	Nigeria	37.20	3.5%	Angola	9.50	0.9%
Iran, I.R.	137.01	12.9%	UAE	97.80	9.2%	Qatar	25.38	2.4%	Ecuador	6.51	0.6%

Source: OPEC Annual Statistical Bulletin 2009

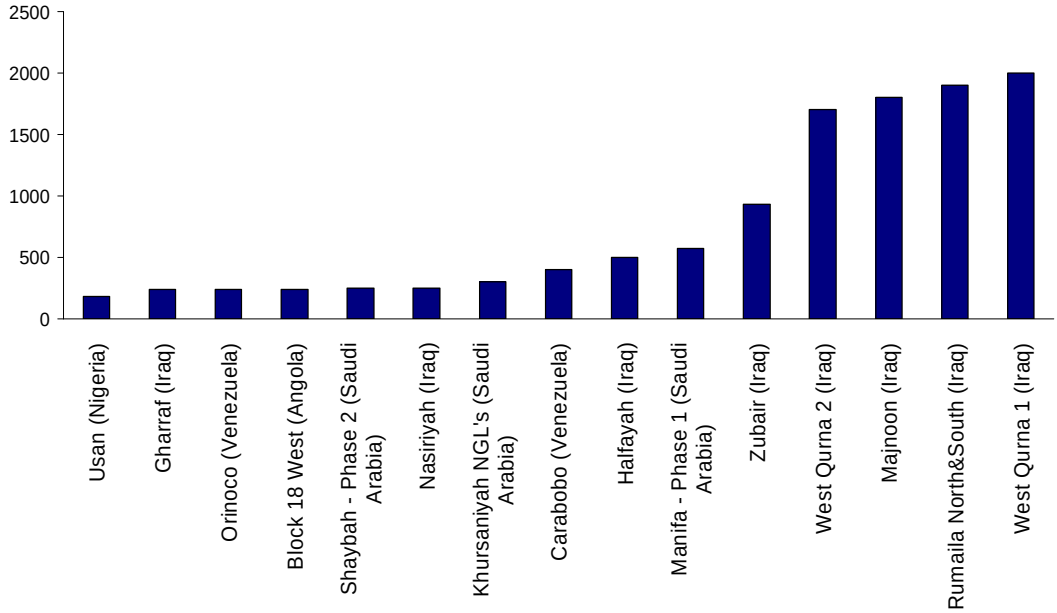
The unusual discipline when it comes to fulfilling the quotas has rapidly deteriorated along rising prices. Currently the quota fulfilment ratio is only 48%. The higher production of Russia in particular led a few OPEC members to deviate from their quotas, most notably so Angola, Venezuela, Iran, Nigeria, and Ecuador, all of which failed to comply with their production quotas. This means that OPEC has de facto already increased production.

	Production (million barrels/day)	Oil reserves (billions of barrels)	Refinery capacity (million barrels/day)
Algeria	2,482,000	115	804,000
Angola	1,811,000	12.2	
Ecuador	1.784.000	13.5	
Iraq	495,000	6.5	
Iran	4,216,000	137.6	1,860,000
Qatar	1,345,000	26.8	
Kuwait	2,481,000	101.5	931,000
Libya	1,652,000	44.3	
Nigeria	2,061,000	37.2	
Saudi Arabia	9,713,000	264.6	2,100,000
United Arab Emirates	2,599,000	97.8	673,000
Venezuela	2,437,000	172.3	1,311,000

Source: BP Statistical Review 2010

The following overview illustrates what projects OPEC considers the most important ones for its future. The majority of the new production is supposed to come from Iraq; we are critical about this premise. The Iraqi government continues to insist it will be able to produce an additional 9.9mn barrels/day by 2017, while we still regard this assumption as illusory. The lack in infrastructure and personnel resources combined with the clear shortfall of investment would strongly argue against it. Iraq holds massive oil reserves, but with the exception of Kurdistan the royalty agreements remain unfavourable for Western oil companies, which means that there is little incentive for additional exploration. Given the status quo, companies only enter into service contracts that span a duration of 20 years. These contracts do not furnish the oil companies with any property rights; rather the companies receive remunerations for production volumes beyond a certain minimum. Baghdad explicitly ruled out more lucrative contracts that would have involved relinquishing a share to the foreign companies. BP expects Iraq to produce 4.5mn barrels/day by 2020 and 5.5mn barrels/day by 2030. We are slightly more optimistic and believe that Iraq could produce 5 to 6mn barrels/day by 2014. This would be in clear excess of the production high of 3.5mn barrels set at the beginning of the 1980s. **However, for this best-case scenario to come through the political situation would have to continue stabilising, corruption would have to decline, and the country would have to see sustainable peace. Given the history of the country this is a big question mark.**

Capacity expansions OPEC (in 000 barrels/day)

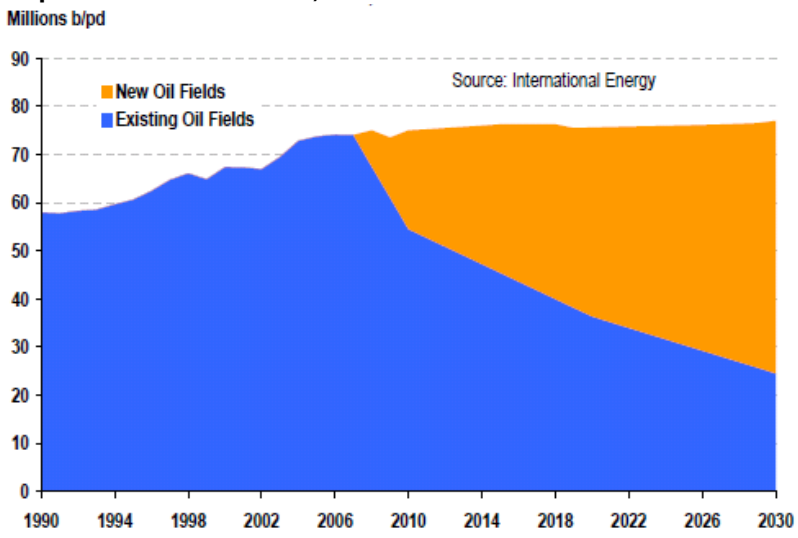


Sources: BP, IEA, OPEC, Bloomberg, Oil&Gas Journal

For Saudi Arabia, the expansion of Manifa is the most important project in the log run. Manifa is supposed to produce 900,000 barrels/day. However, it produces strongly sulphuric oil, and designated refineries would have to be built first. Whereas the initial plan was for the Manifa field to become operative in 2013, the recent schedule aims for its opening by 2023.

According to a study by the IEA[10] the costs of discovering 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.

Oil production 1990-2008, forecast 2009-2030



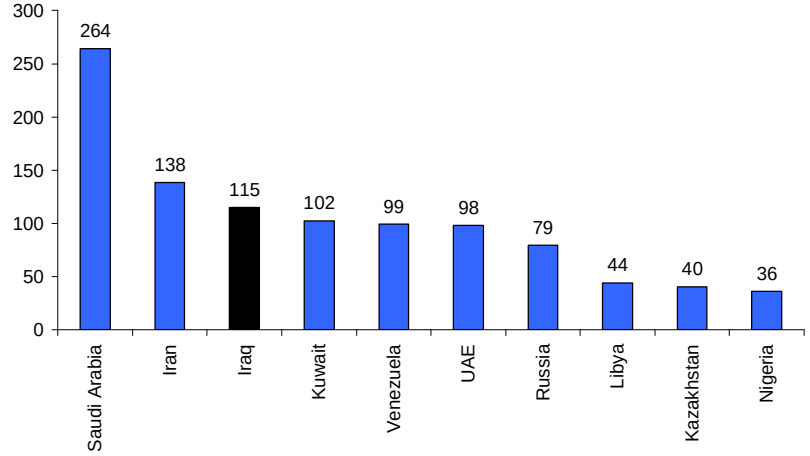
Sources: ETF Securities, International Energy

Iran represents another factor to be taken into consideration for the supply side. Iran holds the second-largest oil reserves (and the largest gas reserves) in the world. The majority of the Iranian reserves are locked in fields that are not yet producing; on top of that the country is strongly underexplored. Yet production is still falling and was down 1% to 3.70mn barrels/day in 2010.

[10] Global Cost Study 2009

The sanctions against Iran will presumably expedite this downward trend, given that foreign project managers, drilling engineers and geologists are leaving the country and the access to capital, technology, and human resources is slowly waning. According to National Iranian Oil Company USD 30bn would have to be invested annually for the production target of 5.15mn barrels/day to be reached by 2016. We think this is unlikely to happen, therefore we expect production to fall to about 3mn barrels/day by 2014. Should domestic demand continue to develop this dynamically (which is dubious in view of the recent cancellation of subsidies), oil exports would fall to less than 1mn barrels/day by 2015.

Proven reserves in billions of barrels



Sources: BP Statistical Review 2010, Datastream, IEA

Non-OPEC production

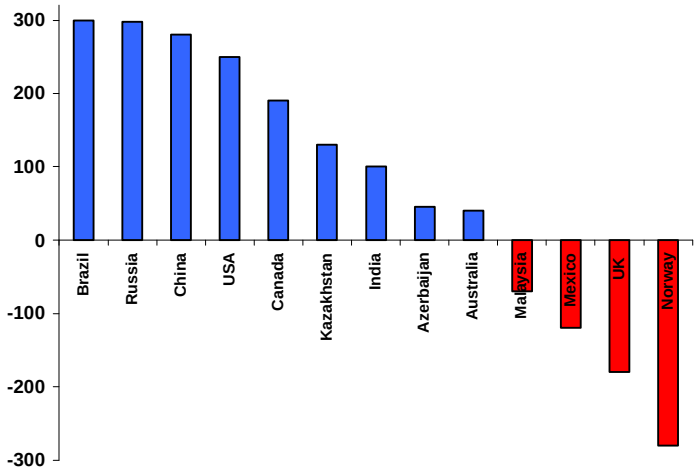
Non-OPEC production increased by slightly less than 847,000 barrels/day in 2010 and should continue to rise in 2011, albeit by much less. Brazil, Russia, and China will yet again be the main contributors to the increase. Russia reported a rise of 2.2% to 10.1mn barrels/day. Thus Russia was the only country to produce more than 10mn barrels/day. Some new fields (e.g. Vankor in Eastern Siberia) started producing sooner than anticipated. For 2011 production is expected to rise to 10.5mn barrels/day.

USA: after shale gas now shale oil boom

The USA recorded the first increase in production in 23 years, which was due to the recent developments in the fracking technology for oil shale. In 2007 the technology was employed in the Bakken shale for the first time. Since then production has been boosted by almost 50% to about 500,000 barrels/day. Should the tests for the projects in Wyoming, Colorado, Texas, and New Mexico yield positive results, US production could post an increase of 20% in the next five years[11] and thus reduce the dependence on imports drastically.

[11] Associated Press, “New drilling method opens vast oil fields in US”

Changes in the non-OPEC production 2011e



Sources: Bloomberg, BP, IEA, Erste Group Research

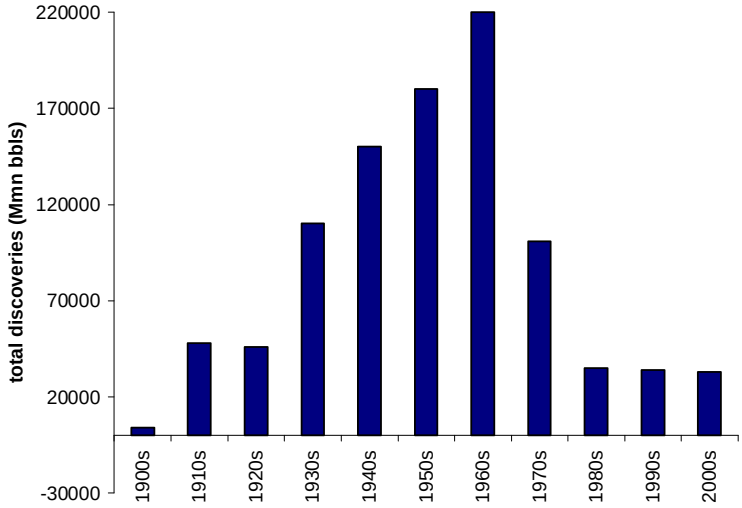
The long-term hopes of the oil industry also rest with the development of the Brazilian reserves. We remain sceptical given that the technical challenges are enormous. The efforts are definitely further proof that the easy and inexpensive reserves have been largely exhausted. The reserves are located under the sea at a depth of about 5-8 kilometres, under a salt layer of up to 3 kilometres in thickness. The high pressure and the big temperature differentials make production very complex, risky, and costly. This means that the financial viability of production remains dubious. The frequent hurricanes represent another massive problem for the oil platforms, given that the production costs of such difficult offshore projects amount to at least USD 60/barrel. Nevertheless Brazil is optimistic. Petrobras will invest close to USD 200bn in the development of Tupi in the coming years.

Africa seems to constitute another big hope of the oil industry, seeing that this continent is largely underexplored, and foreign IOCs are still welcome. Along with the offshore projects in West Africa (mainly in Ghana, Sierra Leone, and Cameroon), we have recently seen promising exploration results in East Africa as well (Tanzania, Ethiopia, Mozambique). According to a BP statistic, Africa currently holds almost 128bn barrels worth of reserves.

The production structure leads us to a pessimistic evaluation. 70% of the daily demand is derived from oil fields that were discovered before 1970. The total number of producing oil fields currently amounts to more than 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 3% producing more than 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.

“*It is just a fact that all large, conventionally exhaustible oil fields have been long discovered. So the search is becoming more and more difficult. It is like playing Battleships: at first you always hit the big tank ships. But it takes you much longer to hit all the small submarines.” Klaus Bitzer*

Oil discoveries since 1900

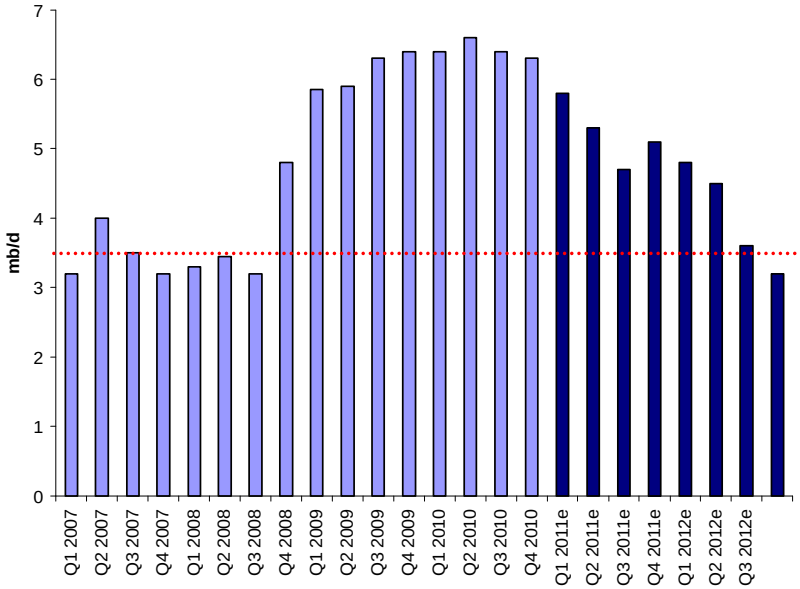


Sources: EIA, Oil and Gas Journal, Erste Group Research, OPEC

Spare Capacity[12]

The spare capacity of OPEC was between 6 and 6.5mn barrels/day in 2010. We expect it could fall significantly in 2011, and further in 2012 to already critically low levels. The recent development substantiates this theory: in February 2011 spare capacity decreased from 5.6mn barrels/day to 4.9mn barrels/day. Should demand follow the consensus forecast of about 1.5mn barrels/day, spare capacity would be close to 3mn barrels/day in 2012 – i.e. a level that we have last seen in 2007/2008. On top of that we expect OPEC to step up production both officially and unofficially, which by definition eats into spare capacity. **Therefore we believe to have seen the maximum spare capacity in 2010 and that the market will now turn substantially tighter.**

Aggregate spare capacity 2007 to 2012e



Sources: IEA, DOE, OPEC, Erste Group Research

[12] Spare capacity is the difference between theoretical output (production levels that can be run for extended periods of time, usually 90 days) and the current production. The spare capacity of non-OPEC oil fields is usually zero, since the goal is to achieve maximum output levels on all fields.

Even though it would seem that there is currently still enough supply in the market, we remain sceptical as to whether the spare capacity would be available at short notice (by definition within up to 90 days). On top of that, Saudi Arabia, the United Arab Emirates, and Kuwait account for almost 70% of spare capacity. Nine OPEC countries with receding production rates in recent years account for the rest.

The Deepwater Horizon disaster will change the industry forever

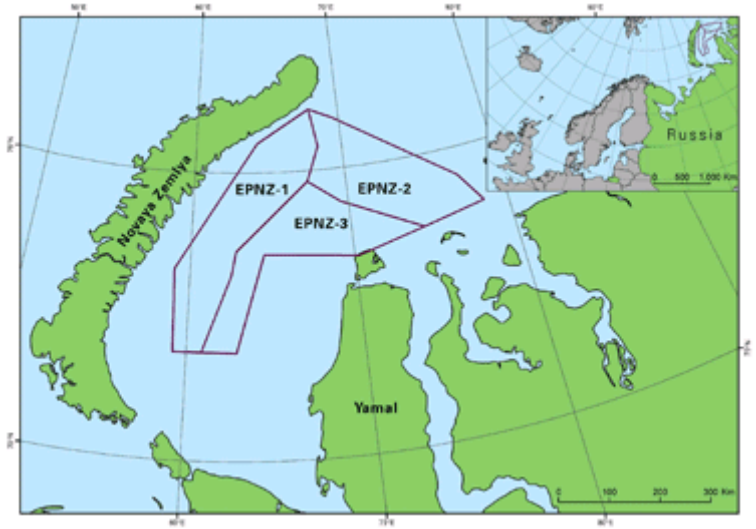
The oil spill in the Mexican Gulf will come with numerous long-term consequences for the industry. On the one hand the issue of offshore production has turned into a political subject, on the other hand costs will increase. Numerous additional safety measures have been demanded for offshore drilling projects, such as parallel release wells and additional safety valves. The maintenance costs will rise rapidly, as will the insurance costs. We also expect longer approval procedures and fewer permits for new drillings. This is particularly problematic since the majority of the new production as supposed to stem from deepwater projects. Given that more and more nations are critical vis-à-vis IOCs, offshore production was one of the last hopes of the multinational oil companies. **Deepwater drilling was also responsible for the largest part of the new production. Without deepwater production, the production volume would be at the level of 1997.**

We also expect the large companies to adjust their risk assessment accordingly and thus attach higher risk values to deepwater drilling, and that they will generally not tackle or at least postpone slightly riskier projects. We believe that this will affect US production in particular. **Financial and organisational contingency planning for worst-case scenarios will cause higher costs for operators as well as contractors.**

Rosneft and BP sign “deal of the decade“

The cross-ownership of BP and the Russian Rosneft – a transaction worth 10 billions – has been called “deal of the decade” all around. It is not only the first significant interlocking participation of an IOC and an NOC, but the project is unique in the industry both in terms of magnitude and complexity. The joint exploration and development of the three EPNZ fields could change the oil market on a sustainable basis. The area of 125,000 km² on the Russian continental shelf in the Arctic Ocean has not been explored yet; only seismic data are available so far. The resources are estimated at 37bn barrels of oil and 100 trillion cubic metres of natural gas, which is equivalent to 100bn barrels of oil. However, the field could become operative in 10-15 years at the earliest.

EPNZ fields



Source: Offshore-Energytoday.com

BP takes over 9.5% of Rosneft, while the Russian company receives 5% in BP. The transaction volume amounts to roughly EUR 10bn. BP gets a 43% stake in the joint venture and has to bear the entire exploration

costs. The two companies will also set up a joint research centre in S. Petersburg, one of whose tasks will be to assess the other Arctic shelves. BP assumes that the area could contain 50% of the oil reserves that are yet to be found worldwide[13].

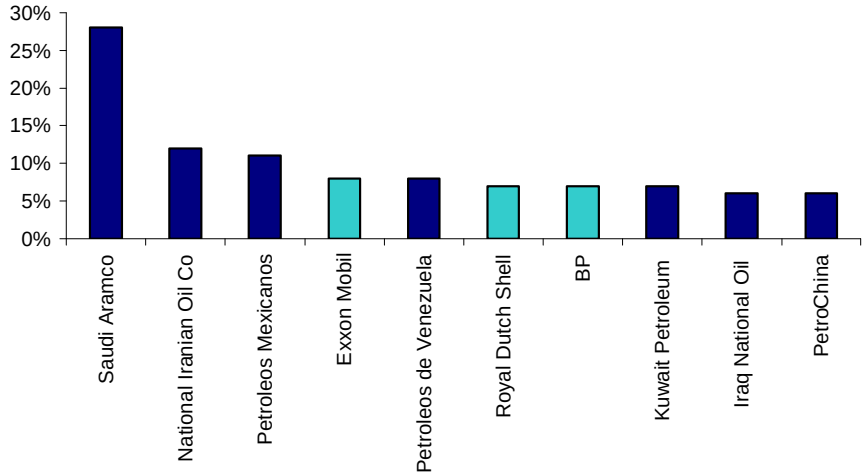
The strategic alliance seems to be a child of the recent crises. On the one hand Rosneft is ambitiously leveraged and lagging technologically, on the other hand BP still suffers from the aftermath of the Deep Horizon disaster. Having recorded its first loss since 1992 and budgeting USD 40bn in clean-up costs and compensation payments, BP has had to part with numerous investments and refineries. The idea is now to focus on more rapidly growing emerging countries, with Russia apparently representing one central pillar of this new strategy. Should the cooperation turn out successful, we expect numerous other NOCs to follow suit and form similar alliances.

However, the alliance may now be stopped in court. TNK-BP has been granted a preliminary injunction given that BP had, according to TNK-BP, violated the non-compete clause for Russia. We believe that the alliance will only be delayed, not prevented. Generally speaking, Russia should now gradually open up to IOCs. According to a report in Davos, Rosneft wanted to set up a joint venture with Exxon Mobil in order to explore in the Black Sea. A similar news report mentioned a connection with Chevron the other day.

The influence of state-held groups is growing – gradual nationalisation of the oil business

40 years ago the majority of production and reserves was in the hands of private, international oil companies (IOCs) that hailed mainly from the USA. Nowadays, Exxon, Chevron, BP, and Royal Dutch are still among the largest energy producers worldwide, but they only account for 3% of global oil and gas production. The state-controlled groups of the most important producing countries account for the lion's share these days. National oil companies (NOCs) currently hold 80% of the entire reserves, 14% are held in the form of joint ventures of NOCs and IOCs, and only the remaining 6% are in the sphere of IOCs. **The multinational oil companies have turned into casual bystanders and have to content themselves with the part of the junior partner or develop into specialist niche players.**

Top 10 companies by production



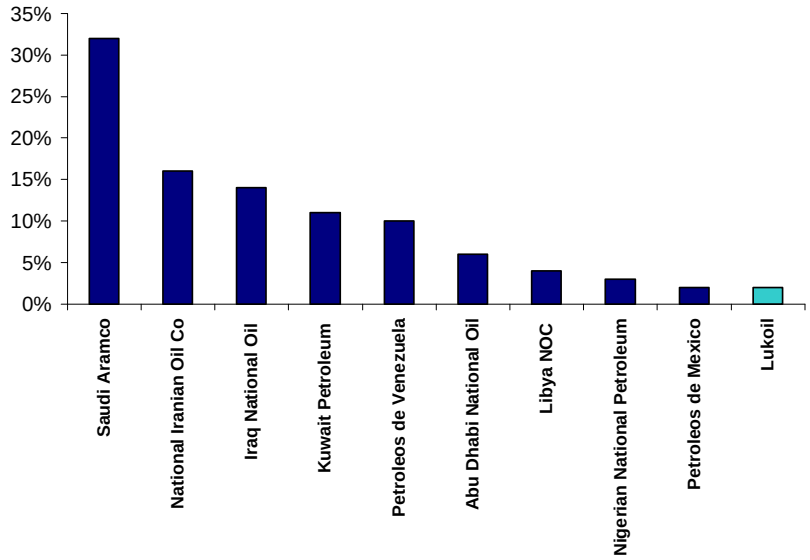
Sources: Petroleum Weekly, Erste Group Research

The growing market dominance of state-held oil companies will come with massive consequences in the long run; the predicament being that the established oil companies are running out of exploration targets, and the access to large oil fields is being curtailed continuously. However, the NOCs often lack in expertise. Technical and economic know-how tend to be clearly below the levels found in the private sector. In addition, the state-held companies hold the majority of the reserves that are still available, but they lack the human resources that would be required to do more than just maintain the current production levels. In 1965 the private sector still owned 85% of all

[13] "Yet-to-find" describes the unproven yet geologically possible future exhaustible resources.

oil reserves. **But within the framework of growing resource nationalism, nationalisations and expropriations have become routine.**

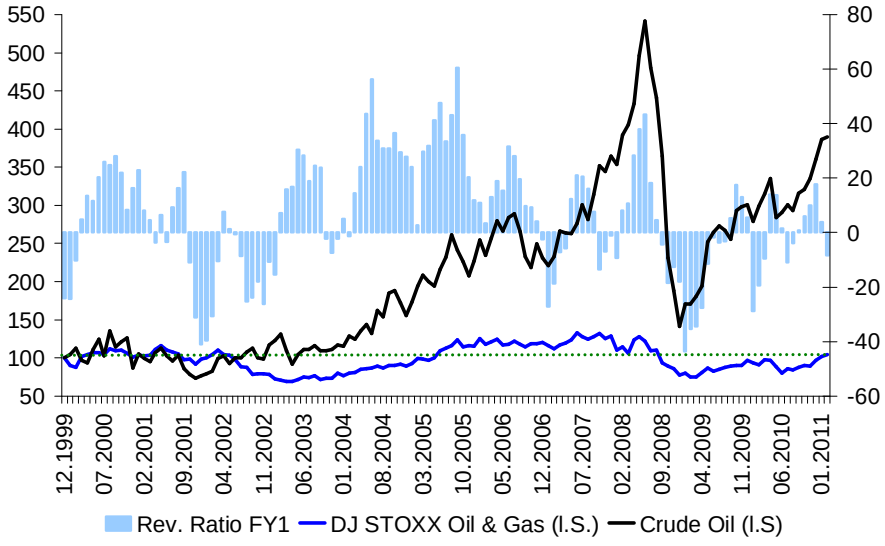
Top 10 companies by reserves



Sources: Petroleum Weekly, Erste Group Research

Due to the receding reserves takeover activity should remain vivid. The sector consolidation clearly shows that the search for "elephant fields" has been almost given up. The big oil groups thus replace their reserves mainly through expensive acquisitions rather than by going through the process of exploration. In spite of the drastic increase in oil prices the broad European oil and gas index for example has been moving sideways. The weak margins of the refineries have become an ever-greater burden on the results of the multinational companies. The following chart illustrates the disappointing price performance of oil shares (especially relative to the strongly increased oil price) in the past ten years:

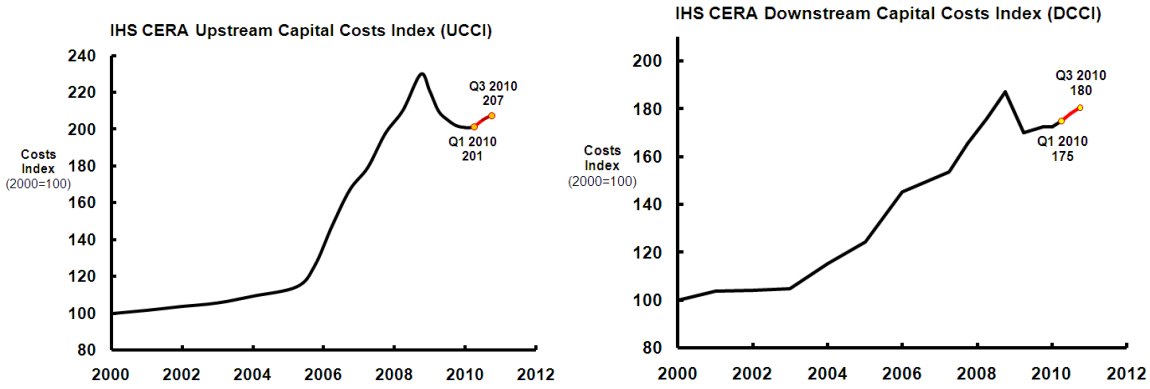
DJ Stoxx 600 Oil & Gas and Crude Oil index vs. revision ratio EPS



Sources: JCF Factset, Erste Group Research

The higher costs in both the upstream (exploration and production) and downstream segment (i.e. the refining of crude oil into petroleum products, distribution, marketing etc) are best illustrated by the IHS Cera indices. Both indices include costs of equipment, plants, materials, and personnel (both skilled and unskilled labour).

IHS CERA Upstream und Downstream indices since 2000 in a clear upward trend



Sources: IHS Cambridge Energy Research Associates

Secondary and tertiary production technologies as the industry's hope

Given that the recovery rate of oil fields is still low (on average only 15-18% of the reserves are processed), the future focus will be on secondary and tertiary technologies such as EOR (Enhanced Oil Recovery) and IOR (Improved Oil Recovery). In simple terms, oil is ousted of the deposit by flooding it with gas or water or injecting steam, polymers or similar. This also reduces the viscosity. Ultrasonic stimulation and the injection of microbiologically active substances have also been gaining importance. Horizontal drilling or fracking can also lead to higher recovery rates and thus higher production, but all of these techniques cause costs to rise drastically.

Given that about 5% of production is based on EOR, this technology should hold remarkable potential for an increase in efficiency. In the USA EOR already makes up almost 12% of production, and counting. EOR is expected to produce an additional 2.5mn barrels/day by the year 2025. According to a study by Durham University[14] up to 3bn barrels of oil could be produced additionally only in the North Sea. The production of aging reserves could thus be increased or at least stabilised. The injection of CO2 seems to be the biggest hope. According to the Saudi Arabian Oil Minister Ali al-Naimi, the average recovery ratio could be 50%, sometimes even up to 75%. **The high costs are the only downside.**

[14] http://www.dur.ac.uk/dei/news/?itemno=11339

3. Peak Oil – scaremongering or soon reality?

"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change." Charles Darwin

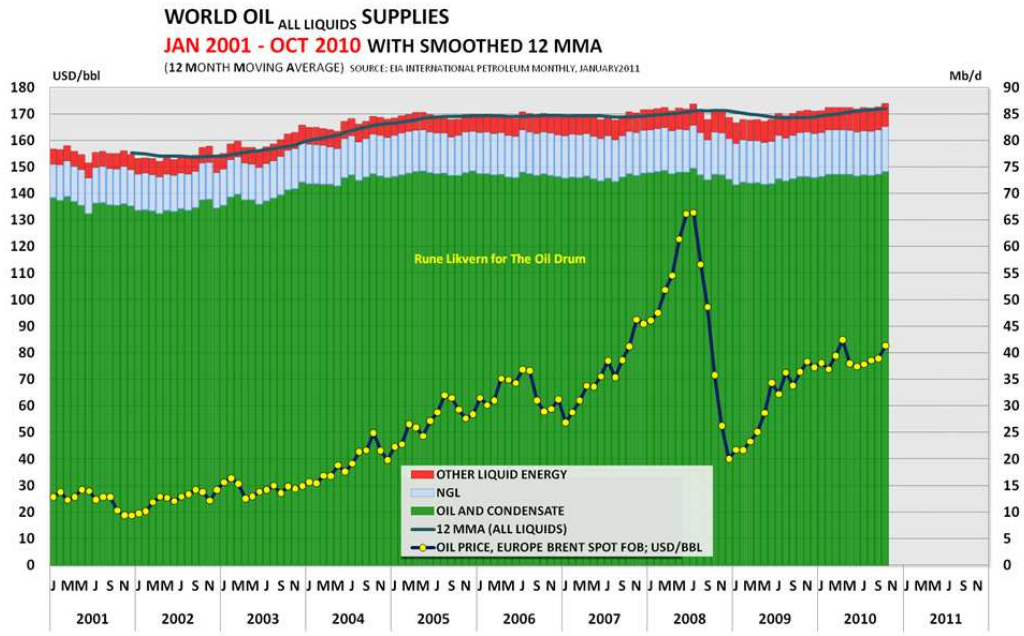
As already pointed out in the previous two special reports, we think that the maximum global production of conventional oil could soon be reached. There is no doubt that peak oil is more than simple scaremongering. The production profile of specific fields, regions, and countries has the same structure, i.e. that of a bell-shaped curve. According to Robert Hirsch 64 countries have already reached their maximum production levels. Nevertheless peak oil seems to remain a contrarian topic. **According to a Credit Suisse poll, only 5% of investors currently regard peak oil as a threat. The remaining 95% expect peak oil in 20 years or not at all.**

Overview: producing nations, peak production, and decrease in production since then

Country	Peak year	Peak production (mb/d)	Depletion rate from peak
USA	1970	9.6	2.60%
Russia	1987	11.5	2.40%
Indonesia	1991	1.7	3.00%
UK	1999	2.9	6.90%
North Sea	2000	6.4	5.60%
Norway	2001	3.4	6.10%
Mexico	2004	5.5	5.50%

Source: "The Peak of Oil Age", analyzing the world oil production Reference Scenario in World Energy Outlook 2008, March 2010

The following chart also supports the notion that we may have seen peak oil in conventional oil production. The stacked-up bars symbolise the supply of conventional oil, LNG, ethanol, and bio diesel. The chart also highlights the fact that oil production is at the same level as 2005 in spite of the substantially higher price. **This clearly indicates production problems in conventional oil.**

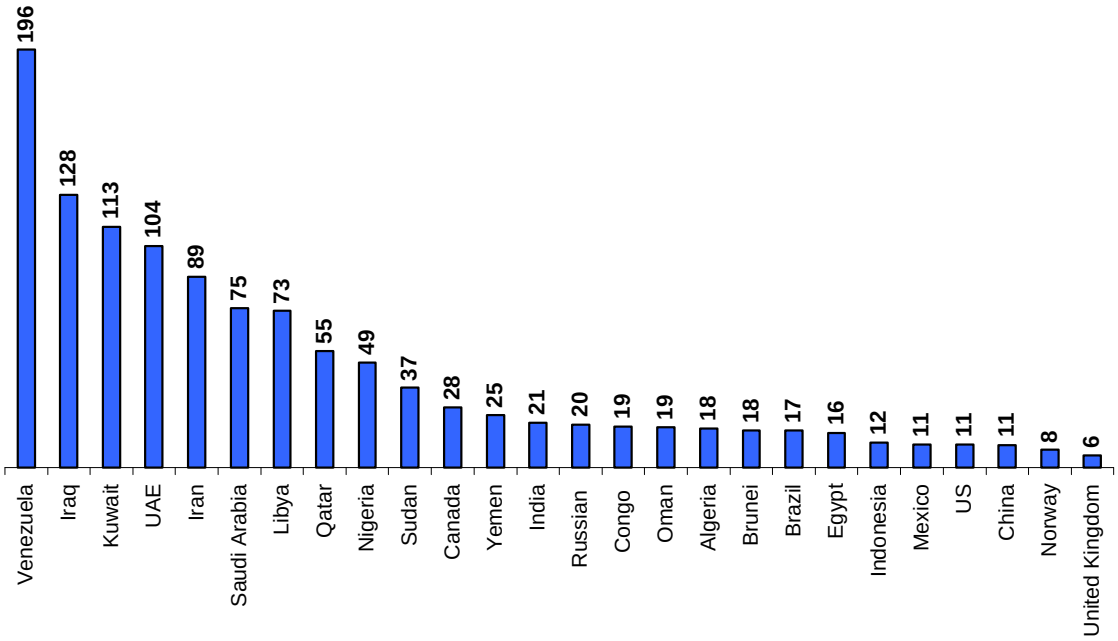


Source: Rune Likvern, www.theoildrum.com

More and more official institutions are dealing with this issue, which underlines the fact that peak oil is not just a chimaera of doomsday prophets, scaremongers, and congenital pessimists, but rather imminent reality. For example, the British Department of Energy and Climate Change is collaborating with the Ministry of Defence and the Bank of England on a study about the consequences of peak oil. The US Department

of Defense also published a study[15], which called for the US military to be made independent of oil by the year 2030. The growing influence of oil nations such as Iran and Venezuela and the resulting dependence are regarded as threat. The only countries with a reserve/production ratio of more than 75 years are currently Iraq, Iran, Saudi Arabia, Venezuela, Kuwait, and the United Arab Emirates. The rising demand for oil in China is also regarded as detrimental to the interests of the USA.

Reserve/production ratio in years



Source: BP Statistical Review of World Energy 2010

The study "Peak Oil - Sicherheitspolitische Implikationen knapper Ressourcen" (Peak oil – implications of scarce resources on the safety policy) by the German Department for Future Analysis, a think tank of the German Bundeswehr, is particularly interesting and delicate. The study, which is well worth a read, describes how as a result of the declining oil production a tipping point could be reached, from which point onwards the economic system would tip over and the following consequences are possible[16]:

- The Western industrialised powers lose their influence
- Dramatic shifts of political and economic balances of power
- Massive reduction of mobility
- Further erosion of trust in governmental institutions and politics
- Negative impact on democracy, since a systemic crisis would create "space for ideological and extremist alternatives to existing forms of government"
- Possible partial or full failure of the markets, which could result in a regression to barter trade
- Shortages in the supply of essentially important goods, such as food, and famine as a result
- Price shocks in practically all areas of the industry and in almost all stages of the value chain
- Banks would lose their basis of business, since companies with low creditworthiness would not survive
- Loss of confidence in currencies, as a result hyperinflation, and return to barter trade on local level
- Mass unemployment and state bankruptcies

Due to the massive dependence on oil imports, Germany should apply a higher degree of pragmatism vis-à-vis oil exporters. The study was not supposed to cause panic, but to appeal to take pre-emptive steps and embark on a thought process on the issue. The psychological thought pattern is thus described: ***"… it is therefore difficult to imagine what impact the gradual withdrawal of one of the most important sources of energy of our***

[15] "Fueling the Future Force – Preparing the Department of Defense for a Post-Petroleum Era", Department of Defense, September 2010
[16] The German federal government stated that it explicitly disagreed with this scenario

civilisation would have. Psychological barriers make us disregard the undeniable facts and cause an almost intuitive refusal to deal with this difficult topic in depth". [17]

„People only accept change when they are faced with necessity, and only recognize necessity when a crisis is upon them" (Jean Monnet)

[17] Implications of scarce resources on the safety policy, page 78

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

Austrian School opens up new angle on oil price development. In our Oil Report 2010 we analysed the development of the oil price for the investors for the first time from the point of view of the Austrian School of Economics. Representatives of the Austrian School (especially Ludwig von Mises) saw that a centrally managed system of fiat money made the natural order of the free market topple over. This, in the opinion of the Austrian School, destabilising influence of a centrally managed fiat monetary system is reflected by booms and overheating as well as recessions and economic crises in the real economy.

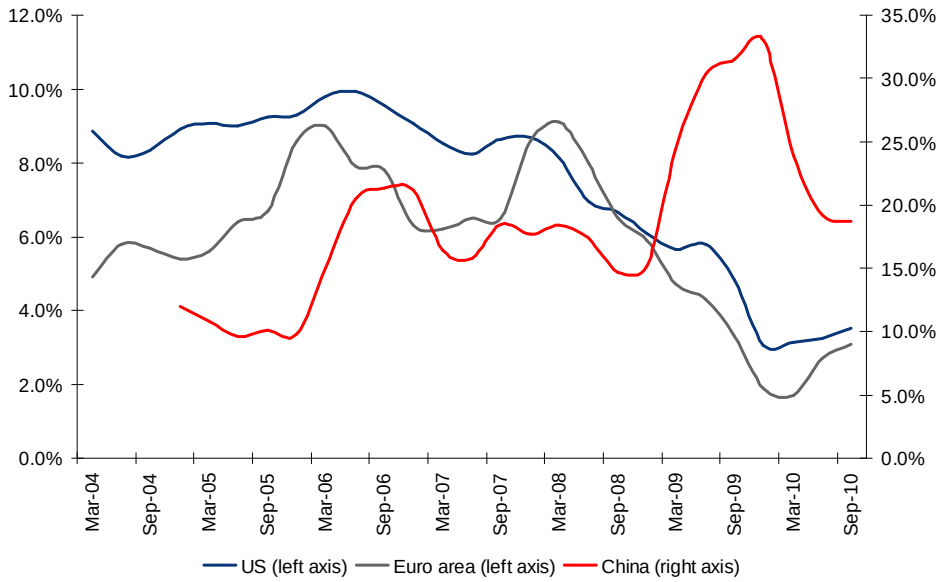
Money/credit cycle – two stages. When considering the future oil price development we believe it is therefore helpful for the investors to be aware of the impact of centrally controlled monetary measures on the real economy. This money and credit cycle usually comes in two stages. In the first stage (loosening cycle), the banking system gradually accelerates lending to private households, companies, and the public sector as a result of the centrally controlled expansive monetary policy (key interest rate cuts, reductions in minimum reserve requirements for the banking system, expansion of the central bank credit). This is the period of time that is usually associated with a good economic development. This is also where bad investments occur, which in the absence of real resources cannot be fully employed.

Two essential factors lead to rising prices in this phase. On the one hand the rising price level merely reflects the fact that given the expansive monetary policy the economic players have more currency units at their disposal. On the other hand the pressure on the “maintenance fund” (i.e. capital goods and the part of the population that is fit for work) increases because of the rising investment and consumption demand. In order to fight these unpleasant side effects of the upswing, the centrally managed monetary policy enters stage 2 – the tightening cycle (increase in key lending rates and minimum reserve requirements, reduction or stabilisation of central bank credit). As a consequence lending by banks to companies, households, and the public sector declines. With a certain time lag, more and more economic participants with outstanding debt come under pressure due to the declining lending volume and as a result of the lack of refinancing options. The bad decisions that were taken in the first stage are now gradually emerging, and economic resources (capital goods and labour force) have to be re-allocated. We know this stage as recession.

Disparate development of the global economy. In the wake of the collapse of the US investment bank Lehman Brothers in October 2008 the most important central banks of the world embarked on an expansive monetary policy (interest rate cuts, reductions in minimum reserve requirements, expansion of central bank credit). From a regional perspective, the various economies have shown a mix of reactions to this stimulus. Whereas the most important emerging markets (China and South East Asia as well as South America) reacted promptly in 2009, the USA and Western Europe showed a rather subdued reaction.

The most important emerging markets have already progressed to stage 2 (tightening cycle) of the monetary cycle. The most important emerging markets such as China, India, or Brazil have been affected by the rapidly rising price level since the second half of 2010. This is simply a symptom of the massive lending we had seen 12 to 18 months before. It therefore comes as no surprise that China and also Brazil have taken more defensive monetary steps since the first half of 2010 (interest rate hikes, increase in the minimum reserve requirements for banks, redemption of central bank credit). The following chart illustrates this development. Whereas in China credit growth (red line) already picked up considerable momentum in 2009, the Eurozone (grey line) and the USA (blue line) only started to record a rising trend in the second half of 2010 (i.e. with a time lag of 1.5 years).

Debt in the USA, Eurozone, and China Mar-04 – Sep-10



Sources: ECB, US Fed, PBoC

Eurozone and USA still in stage 1 (loosening cycle) of the monetary cycle. The graph also shows that lending in the Eurozone and in the USA picked up a bit only in the second half of 2010 again, which means that the most important developed markets are still in stage 1 of the monetary cycle. This is also substantiated by the fact that both the ECB and the US Federal Reserve still pursue an expansive monetary policy (no interest rate hikes so far, central bank credit keeps getting expanded – "QE2").

Improved credit dynamics in Europe and the USA buys the emerging markets time. We believe that the economic development of the emerging markets is the main driver of commodity prices and crude oil. Since these countries are already in stage 2 of the monetary cycle, investors should be cautious with commodities. But as long as there are no problems in the property or financial sector (especially in China), we expect the positive trend of the commodity prices and thus also for crude oil to last. In this context it is also worth noting that the continued acceleration of lending in the USA and the Eurozone lengthens the time axis of the cycle for the emerging markets. This means that the bad investments that were probably made in 2009 and 2010 on the back of the massive credit growth in the emerging markets will remain undisclosed for a while.

On the basis of the theories of the Austrian School we can still see a moderate upward potential for the commodity prices in the short term (six to twelve months). But for the medium term (one to three years) our analysis based on the Austrian School leads us to conclude that commodity prices will incur a massive setback, much like in 2008 and 2009. This is mainly due to the fact that the monetary measures that were taken in 2008 and 2009 are very similar to those taken in 2001 and 2002 after the dot.com crash and that were ultimately the seed of the financial crisis in 2007 and 2008.

Excursus by Gerald Walek, CFA

5. Talking about a (energy) revolution pt.2[18]?

"Shale gas is the most important energy development since the discovery of oil" [19]

As already pointed out in our previous special reports, we believe that shale gas is on one hand one of the most important factors of our future energy supply and on the other hand one of the most attractive investment opportunities. Geologists believe unconventional gas to exceed the conventional reserves by a factor of 10. We believe that whatever is deemed "unconventional" gas today will soon be "conventional" gas due to technological progress[20]. We are also convinced that the European energy and gas market will undergo dramatic changes in the coming years, and that the dependence on Russian gas will be a thing of the past. Currently we seem to see the beginning of this transformation process.

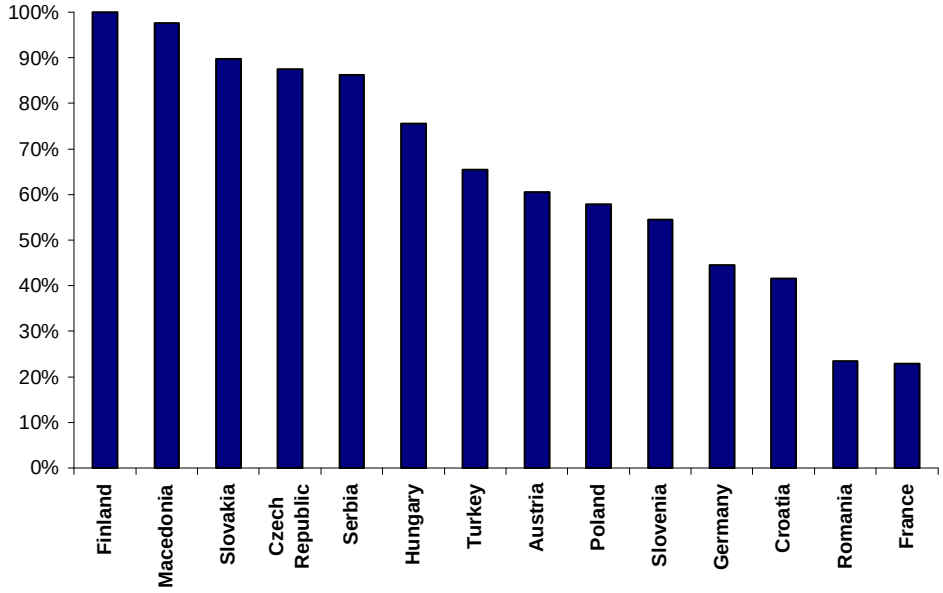
If shale gas can really gain a foothold in (Eastern) Europe on a sustainable basis, this would come with extensive effects for Europe. On the one hand the frequent threats by Russia to suspend deliveries would become obsolete, and on the other hand the prices should take their cues from the market prices in the future. At the moment the gas prices in Central Europe are about 100% higher than in America.

In contrast to oil and other commodities, there is no global market for natural gas. The gas market is still local and thus not globally integrated. The oversupply of natural gas and the success of LNG (liquefied natural gas[21]) will keep the pressure on the gas exporters and thus the pegging to the oil price may soon be a thing of the past. Also, the long-term contracts – a customary form of contract in Europe – are now subject to gradual adjustment. For example Gazprom and E.On agreed to peg the prices a least partially to the spot prices. We regard this as an important development, which should continue to pick up momentum.

Gazprom has recently mentioned the rising influence of unconventional gas in Poland, after its earlier (mostly) negative campaigns. The fact that Gazprom feels threatened by the shale boom is also exemplified by the company's plans to suspend the development of the Shtokman gas field by another three years. Gazprom now expects the field to become operative by 2018. And the fields of the Yamal peninsula should commence production later than anticipated as well, especially since the costs of both projects have risen dramatically and are now hardly profitable at current gas prices. The following chart illustrates the enormous dependence of many European countries on the Russian gas supplies.

[18] Please refer to the Oil Report 2010
[19] Fred Julander, CEO Julander Energy
[20] Please refer to Erste Group Research, "Unconventional gas in Poland", Radim Kramule, 22 Nov, 2010
[21] In this process, natural gas is cooled down to -161 degrees Celsius until it turns liquid. Thus almost 580 cubic metres are compressed into one cubic metre. Afterwards it is transported on special ships and at the destination heated up again, from where it travels on in pipelines.

Percentage of Russian gas supplies in terms of total consumption



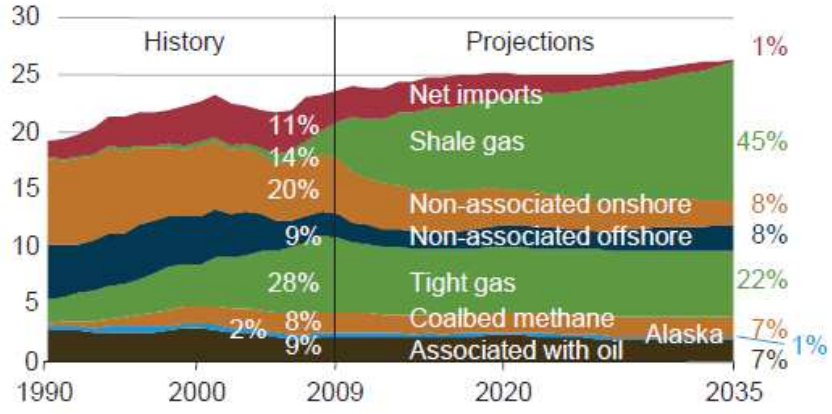
Source: Gazprom (2009), IEA, BP, Erste Group Research

Shale gas in the USA – the blue print for the European gas sector?

"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

The USA turned into the biggest natural gas producer in 2009, passing Russia. Half of the supply is already derived from unconventional sources, i.e. CBM (coal bed methane), shale gas, and tight gas. Currently shale gas accounts for about 15% of the US gas supply. This figure could grow to almost a third, given that the two fields Marcellus and Haynesville indicate rising production rates. T. Boone Pickens even expects a market share of 50% by the year 2020, whereas the EIA is slightly more pessimistic in expecting shale gas to cover about 45% of the entire supply by 2035.

US gas market 1990-2035e



Source: EIA

Often the high water consumption and the fear of contaminated ground water are cited as main counter-arguments. However, we believe that is mere scaremongering. Shale gas tends to be found in depths of several kilometres, whereas ground water tends to be close to the surface (up to maximum depths of 300 metres). If the cementation and lining of the drill hole are done properly, there is no risk to the ground water. This is where the producers have learnt from their initial mistakes. And the often-criticised water consumption involved in the fracking procedure is a case of over-dramatisation as well. The comparison with industrial sites, mining

companies, or the energy sector puts the high water consumption into perspective. An average drill hole requires about 15mn litres of water. An 18-hole golf course for example needs the same amount of water in two to three weeks[22]. On top of that the water management technologies are constantly progressing, leading to a significant decline in water consumption.

Energy carrier	Required water in litres per MMBTU of generated energy
Shale Gas	**2.2 to 6.8**
Natural gas	3.7 to 11.3
Coal (incl. slurry)	7.6 to 30.2
Coal (excl. slurry)	16 to 28
Nuclear power	30.2 to 52.9
Conventional oil	30.2 to 75.6
Coal gasification	41.6 to 98
Shale oil	83.2 to 211.7
Fischer-Tropsch (coal)	155 to 227
EOR	79.4 to 9,450
Ethanol (corn)	9,487 to 109,998
Bio diesel (soy)	52,920 to 283,500

Source: Chesapeake Energy

We have recently heard rumours in the USA about a halt of production and significantly more stringent regulations for shale gas. We believe that this is an exaggeration, given that shale gas has meanwhile turned into an enormous economic factor. According to API[23] gas production would fall by up to 57% in the case of a stricter legislation. The natural gas industry employs almost 600,000 people and contributes USD 385bn to the GDP. Just recently President Obama has also underlined the crucial strategic relevance of the industry. Vehicles powered by natural gas and natural gas stations are supposed to benefit from tax breaks and subsidies.

The translation of the shale experience to the European case

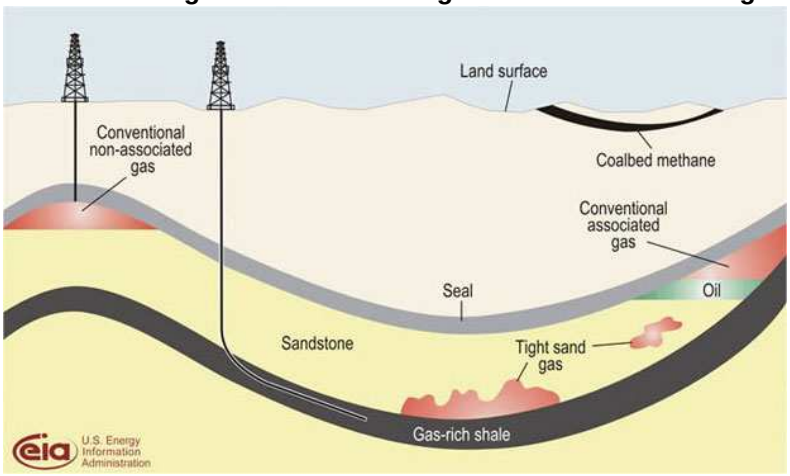
The scepticism vis-à-vis shale gas is still enormous in Europe. But the sentiment was similar in the USA at the beginning of the 90s. After the USA had gone beyond a "tipping point", i.e. a critical mass, substantial growth ensued. Production per drilling rig in the USA has almost risen exponentially as a result of improved technologies in production and higher expertise with regard to the geological specificities of shale gas deposits. Improving expertise also results in falling costs. While the costs of the Barnett Shale eight years ago amounted to USD 5/mmBTU[24], they have meanwhile fallen to USD 3/mmBTU. In 2004 average drilling time was 110 days, today it is 18 days. In addition, many studies substantiate the notion that costs as low as USD 2.5/mmBTU are possible, which means that the production of shale gas would partially be cheaper than the production of conventional gas. Currently we can see the transfer of technology from the USA to Europe. Therefore we assume that the development of shale gas in Europe should progress much more swiftly.

[22] Advanced Resources Interrnational Inc., "Worldwide Gas Shales and Unconventional Gas: A Status Report", Vello A. Kuuskraa

[23] API, "summary of the national effects of federal hydraulic fracturing regulation"

[24] The measuring unit of natural gas is usually mmBTU (million British thermal units). 1 BTU is equal to the caloric energy required to warm up 1 British pound of water by 1 degree Fahrenheit. 1mmBTU is approximately equal to 239 kWh.

Schematic diagram: conventional gas vs. unconventional gas



Source: EIA

The American Association of Petroleum Geologists assumes Western Europe to hold unconventional gas reserves of almost 15bn cubic metres. This would easily ensure enough supply for the coming decades. However, it is not possible to expect Europe to emulate the development in the USA 1:1. The availability of drilling rigs represents a possible bottleneck. Some 100 active land rigs were available in Europe in 2010, whereas in the USA the number was 2,500 according to Baker Hughes. The low number of rigs of course causes inflated prices in Europe. On top of that there is a lack of experienced engineers and geologists. We also believe that the population might be critical of shale drilling in the beginning. The population density in Europe is vastly different than that in the USA. The average population density in the USA is 32 people per km², whereas in the UK it is 255, in Germany 225, in Poland 122, and in the Ukraine 78. Given that the shale layers in Europe tend to be located in greater depths than in the USA, water consumption will also be substantially higher. The geological structures are in parts similar to the USA, which is probably why the US companies have been acquiring so aggressively in order to apply for licences. **At the moment a fight for the information hegemony is going on in Europe, given that only a few companies have reliable seismological and drilling data and thus knowledge about the geological specifications at their disposal.**

Poland – the "Sheikdom at the Vistula"?

At the moment the sector focuses on the unconventional gas resources in Poland. If they were only remotely as big as currently predicted, Poland would turn into a net exporter of gas within just a few years. The bandwidth of estimates reaches from 1.4bn (Wood/Mackenzie) to 3bn cubic metres (Advanced Resources International). This would equal the Polish annual consumption of the next 100 to 200 years. Even if demand were to increase by 40% over the next five years – as for example expected by the state-held PGNiG – Poland would have a comfortable supply at its disposal. **Commercial production could commence already in two to three years, although any significant volumes will probably only be produced in seven to ten years.**

Initial drilling results in the South Eastern part of Poland (Markowola) have confirmed the high expectations. According to officials, Poland already fancies itself the "second Norway", or the "Sheikdom at the Vistula"[25]. Drillings are currently executed in Lebien (3 Legs Resources), Slawno (BNK Petroleum), and Markowola (PGNiG). On top of that, a number of global players have taken their positions. Eni has recently reported the takeover of Minsk Energy Resources and thus gained excess to three licences, i.e. to almost 2,000 km² in the Polish Baltic Basin. The company wants to embark on six drillings in 2011 and translate their Barnett Shale experience to Europe.

Next Stop: Ukraine

Now that the "sweet spots" in Poland are gone, Ukraine should be the next stop of the "shale gas caravan". Geologists have found striking similarities between the Lublin Basin and the Barnett Shale in Texas. In fact the thicker Silurian layers[26] suggests a substantially higher potential than in comparable deposits in the USA.

[25] FTD, „Bohren bis zum Mittelpunkt der Erde" (Drilling to the centre of the earth), 4 September 2010
[26] Geologic age of the earth 400 million years ago

In the Lublin Basin the layers seem to be almost ten times as thick (1,300m) as in average US shale. Experts also expect sizeable shale gas and CBM reserves in the Dnieper-Donetsk Basin. For example Mykola Zlochevsky (Minister of Environment and Natural Resources) and Eduard Stavytskyi (Chairman of Nadra of Ukraine) [27] consider it the biggest shale gas deposit in the world. According to WoodMackenzie the Lublin Basin could contain 3 trillion cubic metres' worth of reserves. Chevron also wants to jump the Ukrainian shale gas bandwagon and is currently in negotiations[28]. The Ministry is also in initial negotiations with Shell and ExxonMobil in order to set up a joint venture for shale gas and CBM[29].

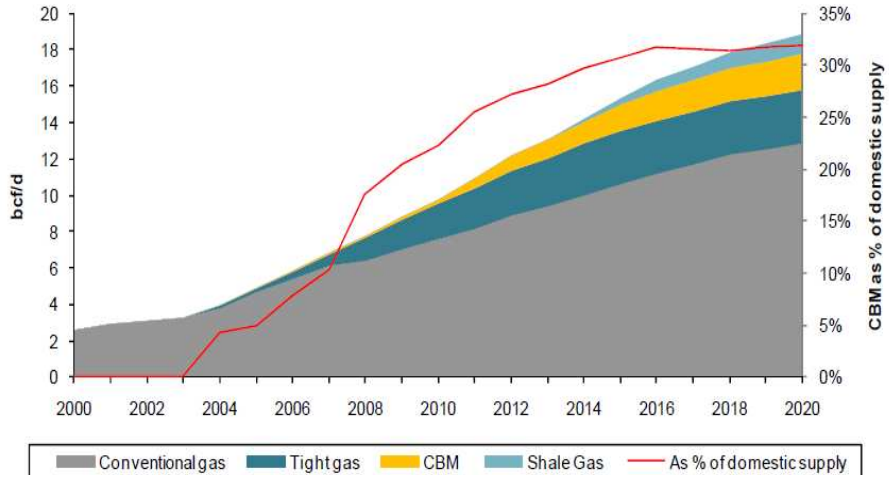
Due to the current dependence on Russian gas imports the development of these gas reserves would be of utmost importance to Poland and Ukraine to guarantee their future supply. The projects seem to be backed by political support, as confirmed by Yuriy Boiko, Minister of Energy, who within the next five years wants to produce an additional 20bn cubic metres of natural gas from shale gas and CBM. This is equal to half of the gas imports from Russia.

China also bets on shale gas

China alone wants to more than double the share of gas in the next decade and to massively reduce especially the combustion of coal, which is very harmful to the climate. Coal currently accounts for 80% of energy demand, whereas gas makes up only 1%. Beijing has come to realise that both CO2 and sulphuric emissions would have to be reduced drastically and local gas production would have to be supported. Unconventional gas is supposed to play an important part in this scenario and to cover 30% of Chinese gas demand by 2020[30]. PetroChina has recently announced that it wanted to step up the production of CBM by a factor of 12 to a total of 4mn cubic metres by 2015. The overall CBM resources of China are estimated at 37bn cubic metres.

The technology transfer for this development has already started. CNOOC and PetroChina have acquired numerous CBM and shale projects in the USA and Australia and established joint ventures. This highlights the fact that an agreement was entered into last year with the US government within whose framework China would be assisted in developing shale gas resources. On top of this PetroChina also invested USD 5.4bn in Encana, the leading Canadian gas producer. In this transaction, PetroChina has taken over 50% in the Cutbank-Ridge Shale project in British Columbia. The deal makes sense for both parties, given that the Canadians depend strongly on the US market and can thus diversify, and PetroChina benefits from the technology transfer. The fact that an LNG plant was being built in Kitimat seems to have put the seal on the cooperation.

Chinese gas production until 2020

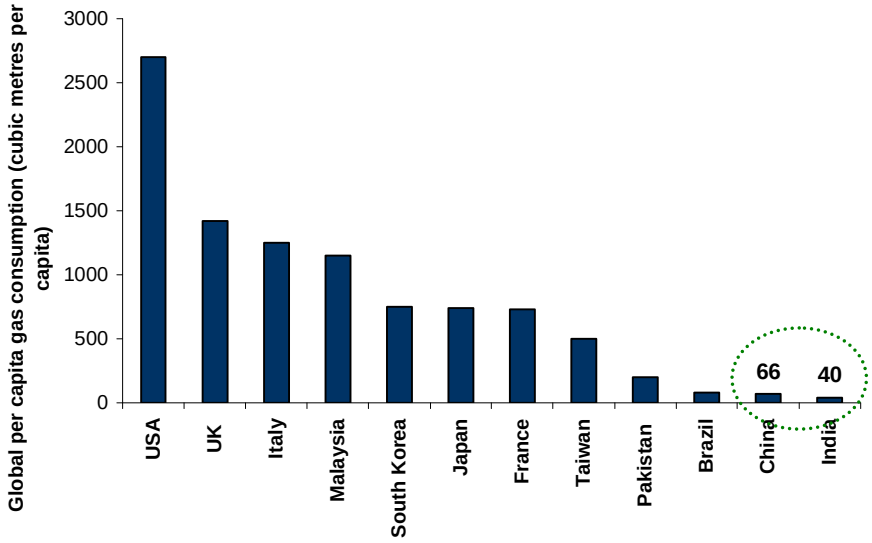


Sources: BernsteinResearch, „The Long View: Bernstein Asia-Pac Energy – Lift Off For China's Unconventional Gas Revolution"

[27] http://www.ots.at/presseaussendung/OTS_20101129_OTS0155/ukraine-behauptet-das-weltweit-groesste-schiefergasvorkommen-zu-besitzen
[28] http://www.nrcu.gov.ua/index.php?id=148&listid=139133
[29] http://ukrainian-energy.com/news/economics/107
[30] BernsteinResearch, „The Long View: Bernstein Asia-Pac Energy – Lift Off For China's Unconventional Gas Revolution"

Wood Mackenzie expects natural gas consumption in China to soar from 9 bcf/day today to 43 bcf/day in 2030, i.e. to increase by a factor of almost 5x. This is to be achieved on the one hand by substantially higher domestic production, and on the other hand by higher pipeline capacities from Central Asia and increased LNG imports. This was also a main issue in the recently published five-year plan. According to the latter, China should follow the example of the USA and turn into an essential producer of unconventional gas. Official Chinese statements have set the goal of defining 50 to 80 shale projects and exploring and developing close to 30 projects by 2020.

Gas consumption per capita (as of 2009)



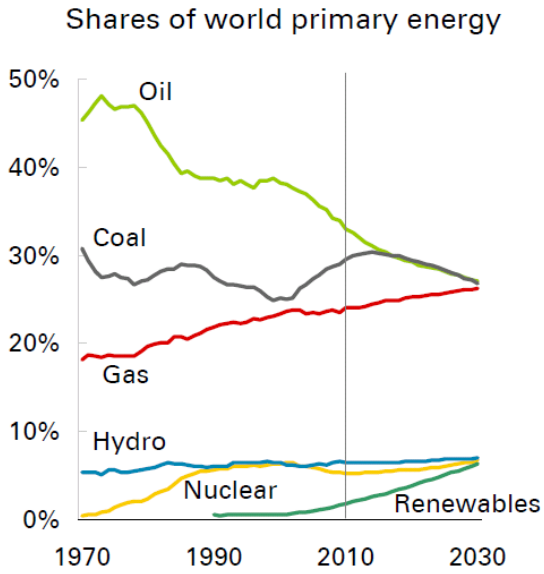
Sources: BP Statistical Review 2010, Bloomberg, Deutsche Bank, Erste Group Research

Shale gas: summary

"Shale Gas will Rock the World" [31]

The global paradigm shift to shale gas seems to have come out of the starting blocks. Time will tell whether shale gas will be only a temporary solution on the way to renewable energies or indeed a prime energy source. But we are optimistic and believe that it will represent an essential part of a long-term energy solution. Generally speaking, gas should continue to gain importance and acceptance. The IEA forecasts a rising share of gas as part of the energy mix in its three models until 2035 in all three scenarios. We think that natural gas – and particularly shale gas – will act as an important bridge in order to be able to replace fossil energy carriers in the long run. This is also supported by the study of the Department of Future Analysis, according to which "natural gas perpetuates the challenges in safety politics created by peak oil and thus turns into a political secondary currency. The political weight of supply relations in natural gas records an appreciation." [32]

[31] Wall Street Journal, 10 May 2010
[32] "Peak Oil - Sicherheitspolitische Implikationen knapper Ressourcen" (Peak oil - Implications of scarce resources on the safety policy), Centre of the Transformation of the Bundeswehr, p. 51



Source: BP Energy Outlook 2030

We expect the European shale gas production to increase substantially already from 2015 onwards. Shale gas will not be able to fully solve our energy problem, but it will be able to mitigate the situation profoundly. If the supply of gas rises in the long term, demand will adjust accordingly. T. Boone Pickens for one has promoted a radical idea. He recommends that all American trucks switch to liquefied gas. According to Pickens, this could cut the dependence on oil imports from the Middle East in half. As part of the improved production techniques and numerous new technologies, production costs were reduced substantially as well in the USA, which means that production would also make economic sense if the gas prices were to fall. We believe that the majority of projects would break even at USD 3.5mmBTU.

The long-term ecological implications should not be underestimated either. Natural gas is by far the cleanest fossil energy carrier. Especially in comparison with unconventional oil (e.g. oil sand) gas is ecologically clean and on top of that energy-efficient. The combustion of gas generates no soot, and the CO2 emissions are substantially below those of oil or coal. A gas-fired power plant emits almost 50% less CO2 than a coal-fired power plant. Thus it would probably be the simplest and most inexpensive solution in order to cut emissions, to shut down all coal-fired power plants and replace them with gas and steam turbines. The coal industry will therefore be one of the biggest losers, given that many planned coal-fired power plants will now not be built as a result of the measures intended to cut back on CO2 emissions. Lambert Energy estimates that this way the targets of the climate summit in Copenhagen might be met or even over-fulfilled[33]. BP expects the share of gas in the European power generation to possibly rise from currently 42% to 65% in 2030. **Given that the worldwide exploration has only just started, we are only at the beginning of a long-term development. We therefore believe that the shale gas sector represents one of the most attractive investment opportunities in the energy industry.**

"Shale gas will impact the gas industry with the same force the Internet has impacted communication"
Ken Chernin

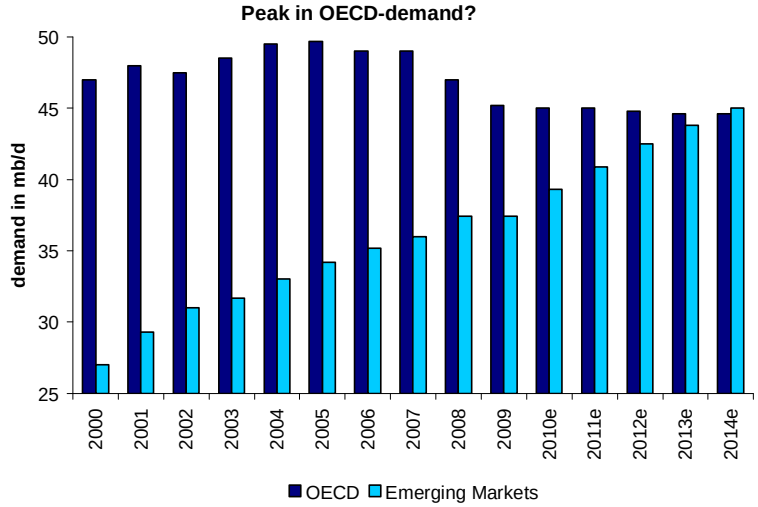
[33] Please refer to the Sector Report "Unconventional gas in Poland", Radim Kramule, 22 Nov, 2010

6. Demand

The demand side recorded a development last year that was as dynamic as we had last seen it in 2004. Consumption in 2010 was up 2.6mn barrels/day; in January 2010 the consensus had expected an increase of merely 1mn barrels/day. Demand within OPEC was surprisingly strong, and in the emerging markets the high expectations were indeed more than met in some cases.

Generally speaking demand has been gradually shifting from West to East: China demanded an additional 800,000 barrels/day, and the Middle East consumed 300,000 barrels/day more last year. OPEC has recently revised its demand forecast strongly upwards and now expects to produce 29.8mn barrels/day, which represents an increase of 400,000 barrels in comparison with the previous forecast.

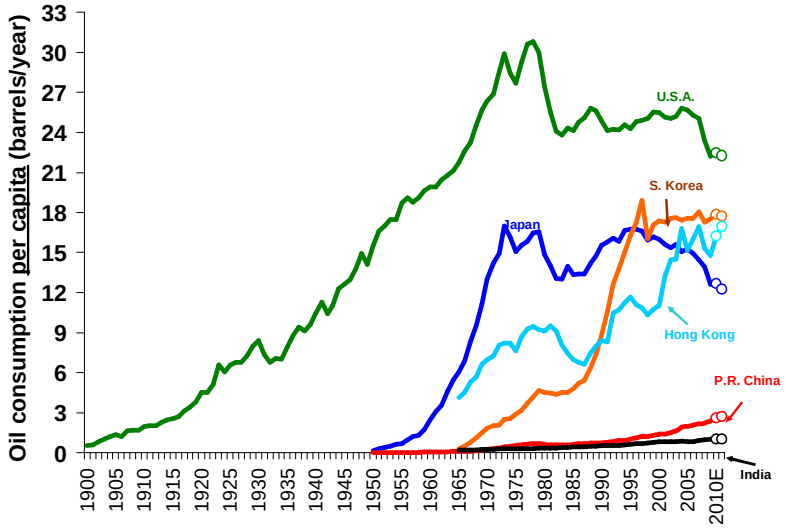
Oil consumption (mn barrels/day) OECD vs. non-OECD



Sources: IEA, OPEC, Bloomberg, Erste Group Research

The IEA expects a global economic growth rate of about 4.5% p.a. until 2015. It also envisages energy efficiency to rise by almost 3%. On the basis of these forecasts, oil demand would amount to almost 92mn barrels/day in 2015. On top of that the agency expects OPEC to step up production by a significant degree, which means the spare capacity for 2015 is still expected at 5mn barrels/day. The IEA has recently revised the demand forecast considerably upwards for 2011, expecting 89.1mn barrels/day or an increase of 1.4mn barrels/day.

Demand development y/y

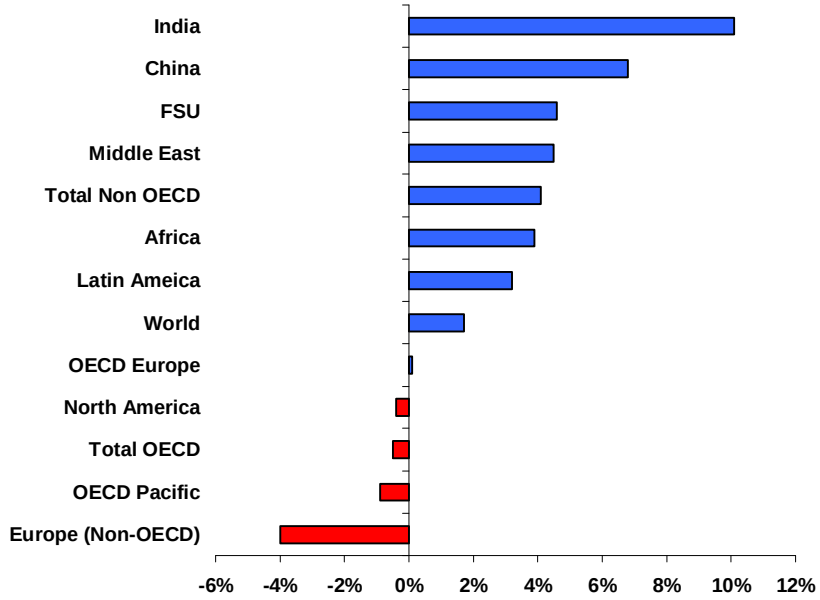


Sources: Barry Bannister, Stifel Nicolaus

In it's"Energy Outlook 2030"[34] BP predicts a strong dominance of the emerging markets as well as a drastically rising degree of energy efficiency. By the year 2030 BP expects an increase in energy consumption of 40%, 93% of which should hail from non-OECD countries. On an annualised basis this translates into a growth rate of energy consumption in the emerging countries of 2.6% p.a. While the share of renewable energy should rise from 5 to 18%, natural gas is expected to account for the largest growth rates in the segment of fossil energy carriers.

The drastic increase in consumption seen in some big producing countries causes export quotas to fall gradually – the Middle East being a case in point. Seeing that domestic demand has recorded rising growth rates on the back of the flourishing economy, export quotas have been falling every year. According to the IEA Oil Market Report demand should rise to 7.9mn barrels/day or 9% of total demand in 2011. In 2007 demand was still at 6.6mn barrels/day. The Saudi Oil Minister announced to implement a rigid efficiency programme, given that the export capacity has been falling due to the strong increase in domestic demand. This has turned into a problem, given that oil exports account for 87% of Saudi revenues and contribute 40% of GDP. The CEO of Saudi Aramco[35] has warned that if demand were to continue to grow this dynamically, it would reach almost 8mn barrels/day by 2030. On account of this situation, the country was going to diversify as well as hook up a few nuclear power plants to the grid by 2020.

Demand growth (yoy)



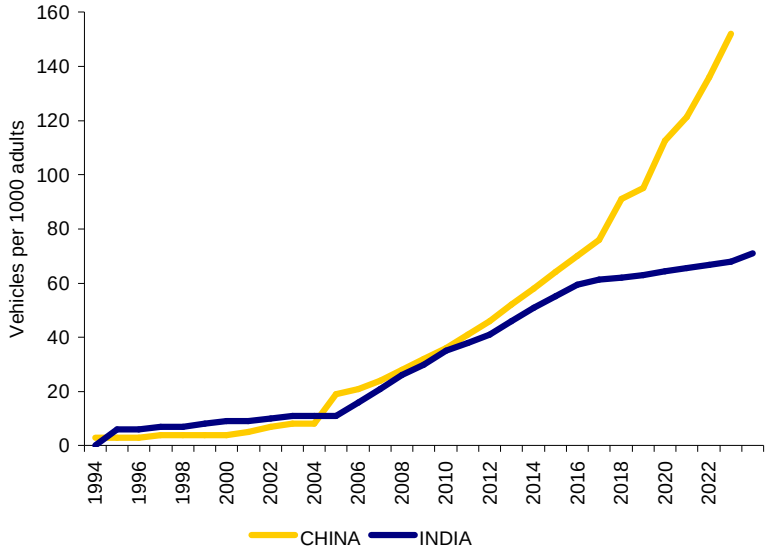
Quelle: EIA, Bloomberg, Datastream, BP Stat. Review, Erste Group Research

"The growing importance of China on the global energy market cannot be overemphasised" (IEA World Energy Outlook)

In November China's consumption exceeded 10mn barrels/day for the first time. In total 2010 consumption increased by almost 950,000 barrels/day. We assume that China will consume close to 18mn barrels/day by 2030 and thus pass the USA as biggest consumer. In the future China will be the driving force in the automotive sector. Since 2009 China has had more motorway kilometres (65,000) than Europe, and by 2020 the country wants to catch up with the USA (100,000km). The paradigm shift is also exemplified by the fact that in 2010 General Motors sold more vehicles to China than in the USA.

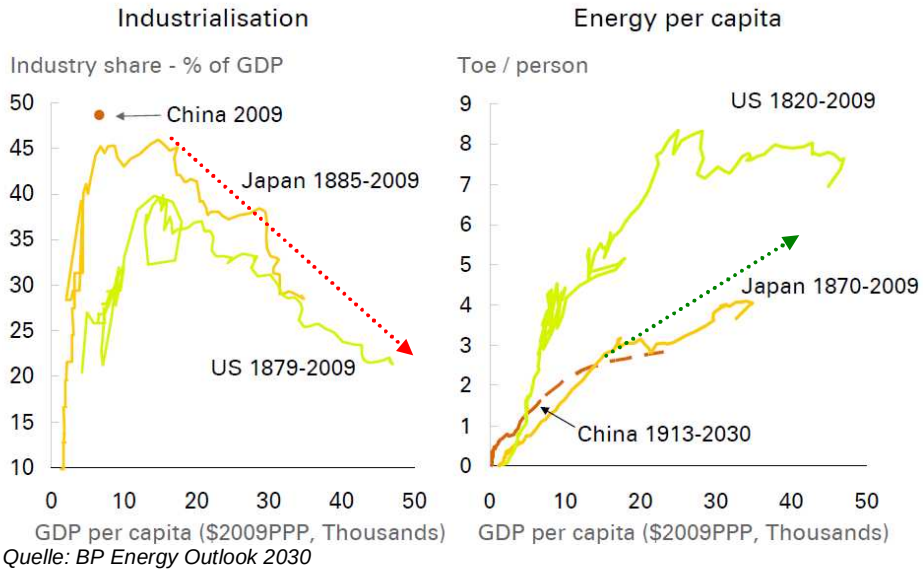
[34] http://www.bp.com/sectiongenericarticle.do?categoryId=9035979&contentId=7066648
[35] Eurasia Review, Saudi Arabia Energy Profile

Passenger cars per 1,000 citizens, China and India until 2022



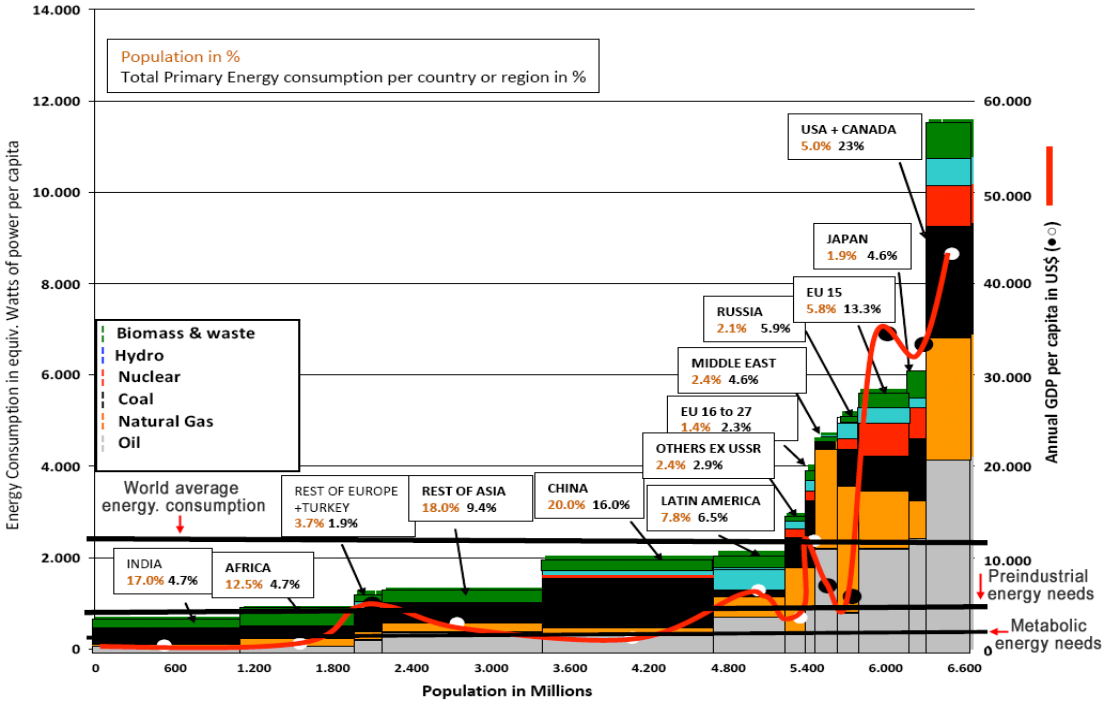
Source: CEIC, Bloomberg, Erste Group Research

Energy consumption will follow the current trend and become gradually less energy-intensive, given that the focus will be shifting from the industrial sector to services within the framework of this development. Also, the increase in energy efficiency is on of the central topics of the twelfth five-year plan. The goal is to cut consumption over the next five years by 17% per GDP unit.



Quelle: BP Energy Outlook 2030

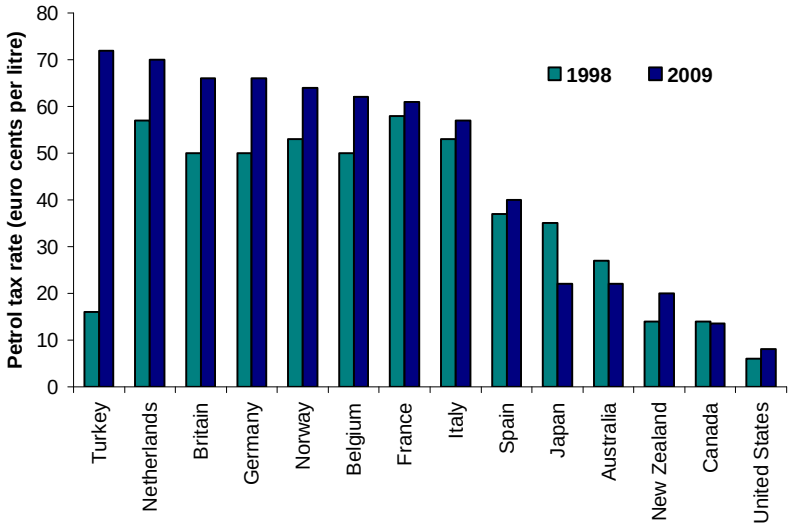
The following graph illustrates the discrepancy between the oil consumption of Western industrialised countries and the emerging countries. Interestingly, oil consumption is following the Pareto principle (80/20): some 80% of the world's population consume less than 20% of total energy. Average consumption per capita is 2,200 kilowatts per person annually, whereas the USA consumes roughly six times hat amount. North America accounts for 4.5% of the global population but consumes 28% of global energy production. For example, less than 4% of all Chinese own a car, whereas in the USA the penetration rate is almost 78%. In India, less than 1% of the population own a car.



Source: Oildrum.com

US drivers account for almost 10% of global demand. According to Epa the vehicles built in 2010 consume more fuel than those built in 1987. In other words, there is no sign of an ecological conscience detectable. This is of course also a result of the fact that there is little incentive to save. Whereas in Germany and Austria the tax burden (mineral oil tax and VAT) amounts to almost 70 cents per litre, US drivers currently pay less than 10 cents.

Tax burden per litre of petrol 1998 vs. 2009



Sources: OECD, UNO, CIA World Factbook, Erste Group Research

Oil sector as main beneficiary of the increase in investment demand

The development of ETFs and ETCs allows investors to take position on the commodity market in a simple and inexpensive fashion. The GSSCI index is the most important commodity index, including 24 commodities. Its focus is on energy (71.8%), whereas industrial metals (4.7%), precious metals (3.1%), and agricultural commodities (12.2%) are strongly underweighted. Investment demand by institutional but also private investors has increased substantially in the past years. According to Barclays, commodity index investments rose to 374bn in 2010. **Thus, commodities are still of subordinate relevance as asset class. By comparison: the global equity markets are currently capitalised at about USD 54 trillion.**

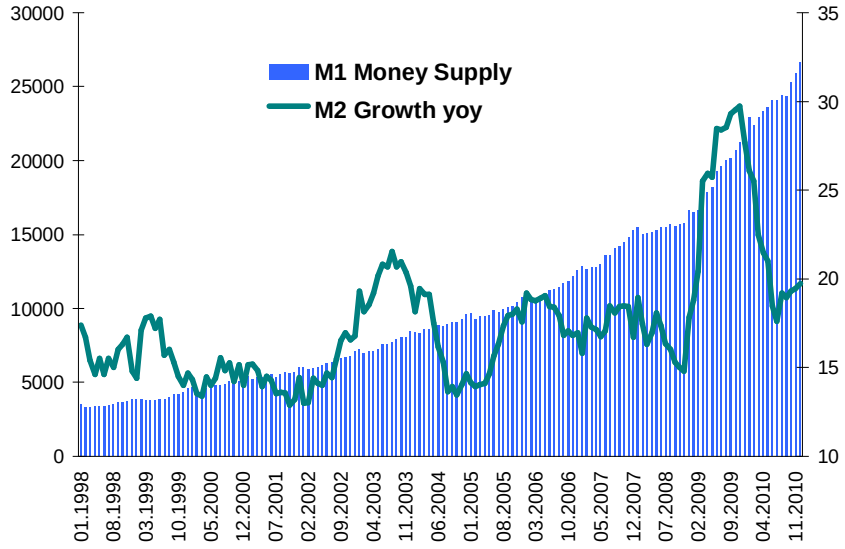
It is still customary in many countries to subsidise fuel. Just like everywhere else, this results in the inefficient allocation of resources and in the distortion of the market forces and competition. And more efficient technologies and renewable energies are prevented, while the waste of energy is being subsidised. On top of this, subsidies constitute an enormous burden for importing nations. According to the models of the IEA, the subsidies of fossil energy in 2009 amounted to USD 130bn. In the record year of 2008, the amount was USD 280bn.

7. A Chinese "Black Swan" pt. 2[36] ?

According to an old saying on the stock exchange, "if the USA sneezes, the rest of the world catches a cold". But in the meantime it would seem as if this had become true for China. We remain critical vis-à-vis the unlimited China optimism that seems to be the current consensus. The Chinese economy has grown by almost 10% per year in the past ten years. According to Bloomberg, the consensus expects real growth of 7.7% p.a. for the next 20 years, which we regard as drastically over-optimistic. The extrapolation of historical growth rates is dangerous, as a look through history books shows. Sometimes this boundless optimism reminds us of Japan at the end of the 1980s. 20 years ago the Japanese GDP accounted for 18% of global GDP – today the share has fallen to 8%. The daily news reports about billions worth of takeovers and investments by the Chinese underpin this picture. An interesting detail: Hong Kong has passed Tokyo as most expensive office location.

The stimulus package in 2009 worth almost 14% of GDP helped repair the economic dent quickly yet superficially. Artificial stimulus of this sort naturally comes with quicker results in a centrally controlled economic system. State-held companies accounting for almost 30% of aggregate output can be forced to invest, as banks can be forced to lend. China is currently inflating its money supply by a more substantial degree than any other nation[37]; M2 increased by almost 20% in November y/y and at the moment amounts to 185% of GDP. On average M2 has increased by 18.8% p.a. in the past decade, while GDP has been growing at 10.9% annually. China currently has the highest M2/GDP ratio worldwide.

M1 money supply (left scale) vs. M2 growth in % (right scale)



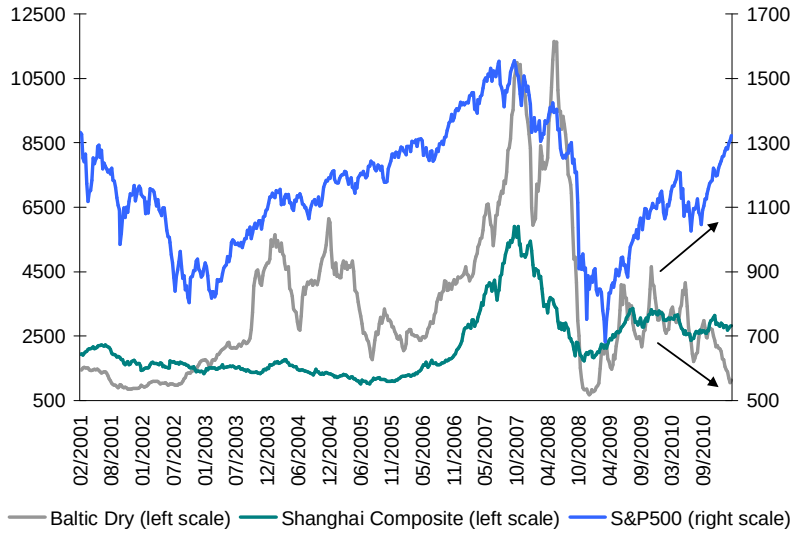
Sources: Datastream, Erste Group Research

Given the drastic rise in property prices and the record levels of the food prices, the PBoC now wants to tighten its monetary policy in order to facilitate a soft landing. Battling inflation is on top of the agenda[38]. The minimum reserve requirement was raised to almost 20%. The situation is similar to the fourth quarter of 2007 where comparable steps were taken. But China remains miles behind the curve, and the massive overcapacities in key industries such as steel, aluminium, cement, and chemicals are ever more difficult to gloss over. Ironically, capacity utilisation is significantly lower than in 2008 (87.2%). In 2010 it averaged 82.4%.

[36] Please refer to our Special Report Oil 2010
[37] Please refer to Darryl Robert Schoon, Inflation and the Future Price of Gold
[38] Inflation was only 4.9% in January, but the calculation model had been modified. The share of (the drastically increased) food prices in the basked of goods was reduced.

The slowdown of Chinese credit growth substantiates our pessimism and will probably affect both the commodity prices as well as all asset prices generally on a global scale. While credit had been growing at an absurd rate of 34% in 2009, it slowed down to 18% in 2010[39]. The current estimate for 2011 is 12-13%.

S&P500 vs. Baltic Dry vs. Shanghai Composite



Sources: Datastream, Erste Group Research

On a political level, the unrest in North Africa should worry Beijing. Seeing that in 2012 the 18th National Congress of the Communist Party will be held (where the government will go through the usual changing of the guard procedure), the fight against inflation seems to mainly serve the purpose of ensuring social stability. The Chinese inflation statistics euphemise the actual price increase. The massive discrepancies between the Chinese energy consumption and GDP growth lead us to deduce that China is currently in the phase of "low quality growth", and this phase is coming to an end.

We do no expect the Chinese economy to collapse, but a profound market consolidation seems overdue. To an economy that has been growing at double-digit rates for years, a GDP growth rate of only 5% feels like a severe recession. The sooner China allows the necessary cuts to be made, the less deep they will go. However, the Chinese government is confronted with a difficult task. Due to the extremely high capital intensity of the Chinese economy (gross fixed capital formation > 40% of GDP) future growth will hinge on a higher propensity to consume of the Chinese population. But in order to boost China's domestic consumption real wages would have to rise first. And currently it is precisely the low wages that represent China's most important competitive advantage, which have facilitated the high growth rates in the past decade. It is therefore clear to see that the Chinese leaders are caught between a rock and a hard place.

History has often shown that what had been planned as "soft landing" ended up as abrupt crash. Following the teachings of Ludwig von Mises, a laissez-faire policy would be the only right answer to the recession. The massive interventions in the market delay the cleansing of the market and only make the following consolidation worse.

The China of today is somewhat similar to the USA of the 1920ies. 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 a severe crisis 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 this deep crisis and emerge from it as strongest political, economic, and financial power of the world. We consider this also a realistic scenario.

[39] Please refer to the excursus on Austrian economics (CEE Strategy Q2 2010)

We are therefore 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 have so far helped avoid a dramatic economic slump. 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 disproportionately bigger. Since China is a centrally planned 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.**

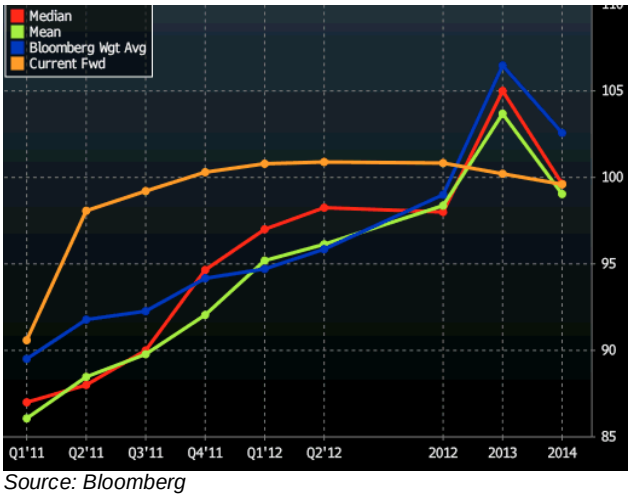
8. Technical Analysis

Sentiment signals increasing optimism

According to the latest Bloomberg sentiment index the percentage of the bullish market participants has risen dramatically in recent days. 57% are bullish, 23% bearish, and 20% of market participants are neutral with regard to the future development of the oil price. This still seems like too pessimistic an assessment of the future. In summer 2008 when oil was traded at its all-time-high of USD 147/barrel, the bullish market participants still accounted for almost 70%. **Therefore there should yet be some upward potential given that the consensus is not overwhelmingly bullish at this point.**

The analyst forecasts show a positive scenario from a contrarian point of view. The 25 analysts polled for the consensus expect a WTI price of 89.25 (median) in 2011. The 2012 median is 99, the 2013 median 104, and the 2014 median is 102. The Brent forecasts are more or less on the same level, which means that the spread between WTI and Brent is expected to narrow again. The number of analysts polled has been on a continuous rise for years, a sign that the banks have been hiring commodity analysts and that the sector is growing in importance.

Screenshot Bloomberg forecasts WTI 2011-2014



Source: Bloomberg

Also according to Google Trends, the upside potential still seems to be considerable. The number of search queries for the term “oil price” is currently hovering around the average of the past years. Market sentiment seems to be far from it’s peak in 2008. The same is true for the terms “Peak Oil”, “oil crisis”, “oil war”, and “oil supply”. **Therefore we believe that there is much more room for surprises on the upside.**

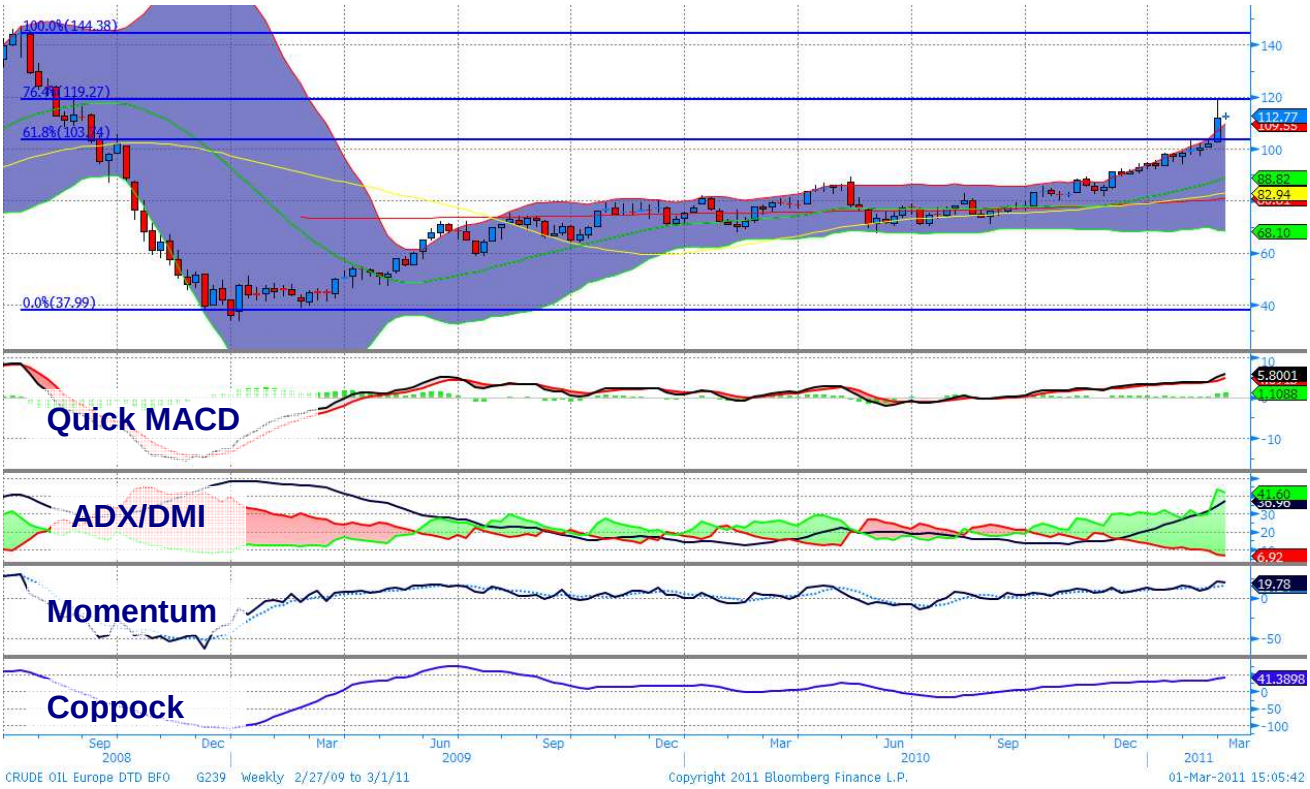
Google Trends – Search Querry „oil price”

Source: Google Trends

Special Report Oil

After a relatively narrow sideways range last year the oil price has now broken out of that range on high volumes. Almost all technical indicators confirm the validity of the outbreak. The 62.8% retracement at USD 102 was vehemently passed. The breaking of this Fibonacci threshold tends to indicate a strong bull market and suggests an increase to a new all-time-high. The MACD is sending buy signals, as is the Coppock indicator (providing long-term signals). According to ADX/DMI the strength of the trend is enormous, and momentum as well as On-Balance-Volume also confirm the outbreak. The TomDe Mark Sequential System also indicates a buy. Therefore we expect the oil price to continue rising. In the short term a return into the Bollinger band seems possible, although the overbought situation should quickly subside. The next big resistance line is at USD 119 (76.4% Fibonacci retracement), and after that the all-time-high from 2008 at USD 147 represents the next hurdle. **As soon as the parabolic phase has been reached, the sentiment starts spiking, and first divergences are emerging, we recommend stops be set. However, it currently seems to be too early for that.**

Chart since 2008

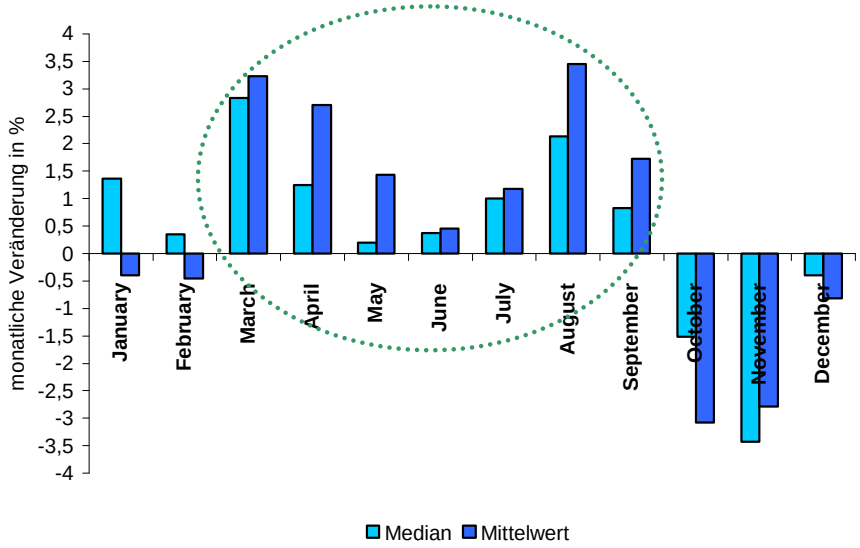


Sources: Bloomberg, Erste Group Research

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 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 22 of the past 27 years the oil price increased between February and May. **For this reason we expect rising prices on the back of seasonalities.**

Special Report Oil

Monthly returns since 1980



Sources: Datastream, Erste Group Research

The following monthly chart illustrates the 10-year development of natural gas. Both in 2005 and in 2008 the upward trend was suddenly broken at USD 14/mmBtu. Since 2010 the price has been in a narrow range, and USD 5 seems to represent a massive resistance. The MACD is lying in wait below zero, whereas the Coppock indicator has generated a buying signal on the one hand, but a negative divergence on the other hand. The stochastics and Williams %R suggest a slightly positive interpretation at the moment. ADX/DMI indicates that the strength of the trend is finding a bottom. Therefore we expect the price to continue bottoming out. A quick, impulsive upward trend is unlikely. **The next massive resistance can only be found at USD 5.1 (76.4% Fibonacci retracement).**

Monthly chart natural gas spot

Sources: Bloomberg, Erste Group Research

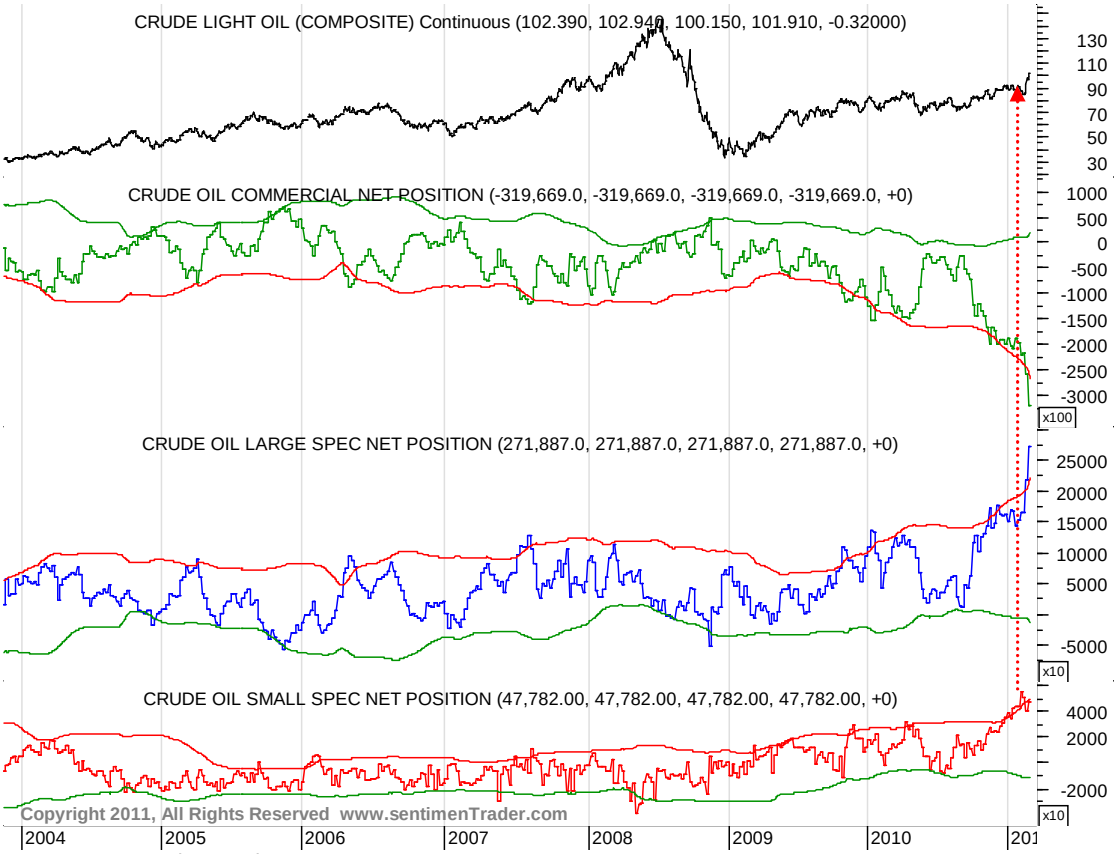
Special Report Oil

Commitment of Traders Report signals imminent reversal

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

The chart illustrates the fact that both the small and the large speculators are currently above the upper barrier of the band (2 standard deviations). Above the green band is the bullish zone, and below it the bearish one. The Commercials have been stepping up their net short positions in the past weeks, holding close to 300,000 short contracts. They have mainly reduced their long positions, which is a clearly bearish sign. The large speculators have massively increased their positions within the framework of the current spike, as have the small speculators. **We believe that this scenario constitutes a cap for the oil price, at least in the medium term, given that the extent of speculation has hardly any upward potential left anymore.**

CoT Report



Source: www.sentimentrader.com

The inflation-adjusted logarithmic chart also illustrates the fact that the oil price is locked in a long-term upward trend. It is also clearly above the upper barrier of the 75% confidence interval, which is why we expect it to return to its average.

Inflation-adjusted chart – logarithmic scale

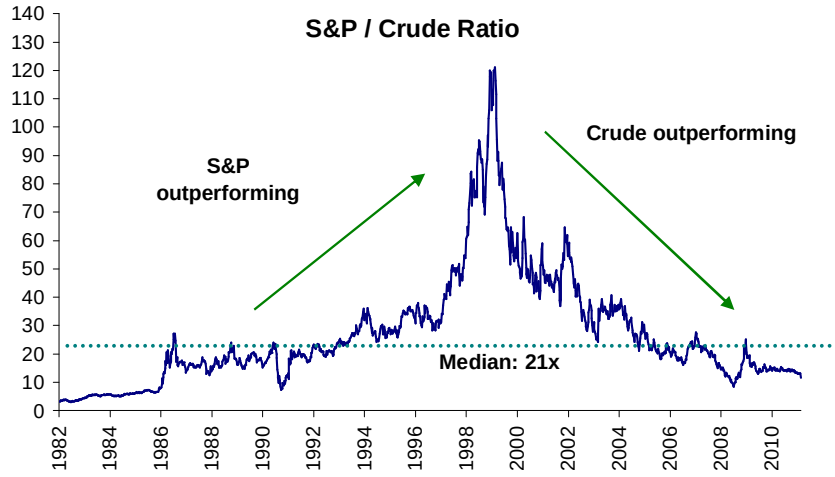
Source: Sharelynx.com

Ratio analysis

Ratio analysis is a simple yet extremely useful part of the technical analysis. 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.

S&P500 /oil (currently 11x)

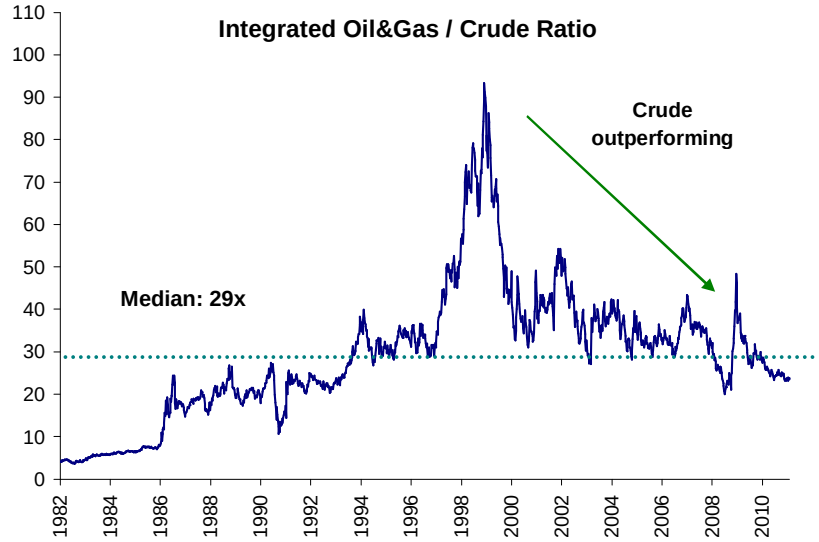
In comparison with the broad US equity market, oil is currently expensive. The long-term median of 21x means that one unit of the S&P 500 index would buy 21 barrels of oil. At the moment, this ratio is at only 11x. It would seem the period of clear outperformance is over and the ratio is bottoming out.



Sources: Datastream, Erste Group Research

Integrated Oil & Gas index /oil (currently 23x)

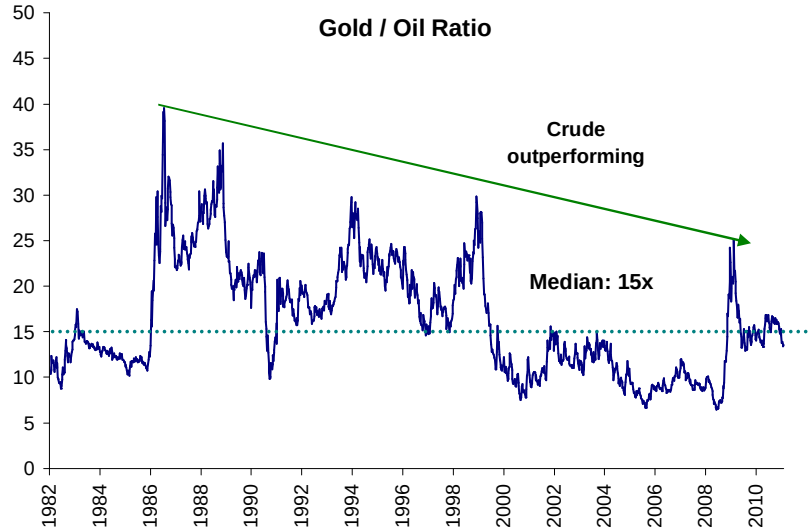
In relation to the oil & gas sector index oil currently commands an expensive valuation. But it seems that the outperformance is slowly coming to an end the ratio is finding a bottom. In comparison to the service and equipment sector, the supplier sector seems to be gaining relative strength. Therefore we prefer this sector to the producing oil companies.



Sources: Datastream, Erste Group Research

Gold/oil (currently 13x)

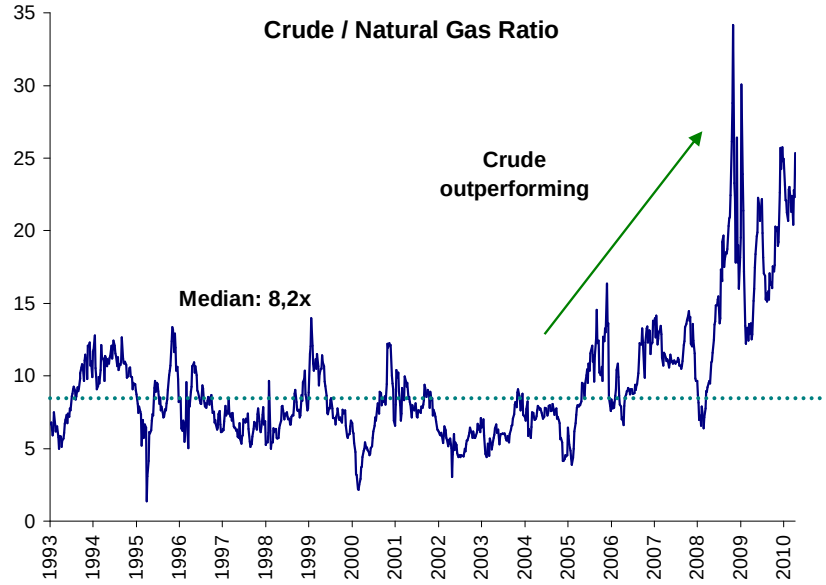
One ounce of gold currently buys 13 barrels of oil, which is slightly less than the long-term median of 15. From this perspective, gold is fairly valued relative to oil. But it seems the almost 25 years of outperformance of oil are drawing to an end.



Sources: Datastream, Erste Group Research

Oil/natural gas (currently 25x)

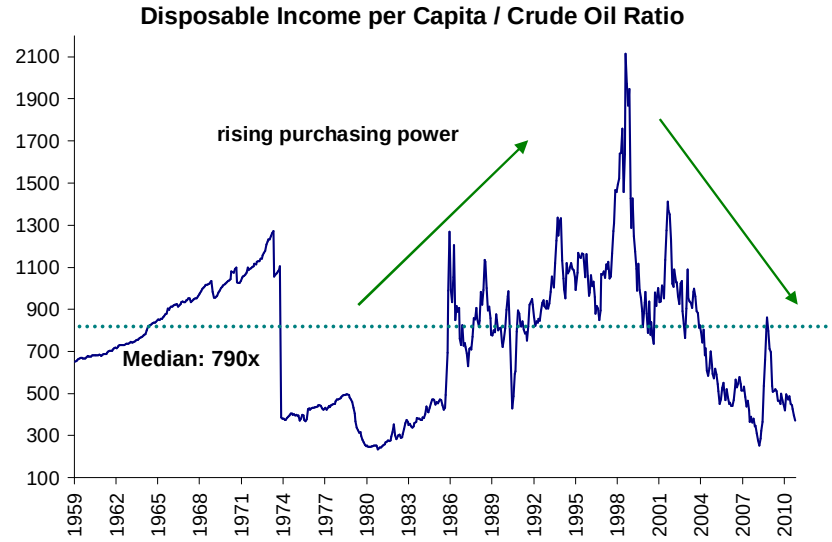
Natural gas is still extremely cheap in comparison to oil. Currently the ratio is 25x, which is substantially above the long-term median of 8.2x. Given the underlying tendency of returning to the average value we believe that natural gas should strongly outperform oil in the future.



Sources: Datastream, Erste Group Research

Average annual income per capita / oil (currently 370 x)

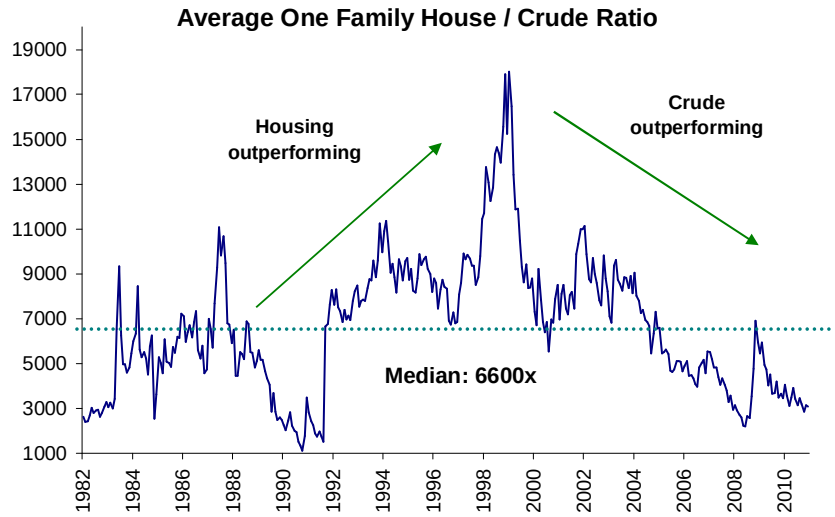
The oil price is currently extremely high in relation to the disposable income per capita – or put differently, the purchase power of the US population is at its lowest level since the 1980s. The long-term median since 1959 has been 790x – but currently one the annual income will only buy you 370 barrels of oil. **This is further proof of the rapidly falling purchase power of the US dollar.**



Sources: Datastream, Erste Group Research

Property / oil (currently 3100x)

At the moment an average single-family house buys 3,300 barrels of oil. The long-term median is 6,600, which means that property is currently very attractively priced in terms of oil. It seems that there is a support at 3,000. Therefore we expect property to outperform oil in the future.



Sources: Datastream, Erste Group Research

9. Conclusion

The global stimuli by the governments and central banks and the almost worldwide zero-interest rate policy caused the commodity rally to continue in 2010. But the artificially created prosperity should not be mistaken for healthy, real growth. Therefore the future development of the oil price should also strongly depend on whether a third Quantitative Easing programme will be implemented. It is quite impossible to explain the extremely high correlation of the equity market and the oil price with classic supply/demand patterns. Indeed, the monetary policy seems to have turned into the most important determining factor. Since QE2 was announced, the speculative net exposure of wheat and oil for example at the CBOT has doubled; the one of copper has increased by 90%, and that of soy by 40%[40]. One can therefore assume that the rally is mainly driven by liquidity. On top of that, the year before the presidential elections (USA) tends to be clearly positive for the US equity market. In the past 80 years, 95% of the third year of a presidential cycle has recorded a positive performance with the average gain of the S&P index equalling 18.2%. In 93% of the cases the US equities were up on the year. **Given that the correlation between US equities and the oil price is stronger than ever this year, this should provide a positive environment.**

We generally believe that the smouldering political risks are not fully priced into the oil price. The Iran conflict is growing more acute on a daily basis, as is the situation in Libya, Iraq, Iran and the Middle East in general. Although the political status quo in Saudi Arabia, Oman, Bahrain, and the UAE is more stable than in Egypt, we still believe that a domino effect is possible. The latent social tensions due to high unemployment, political repression, the drastic increase in food prices, and growing gaps in income should not be underestimated. The rallying oil price only adds to the dissatisfaction and at the same time fuels inflation. The same is true for many other nations (e.g. China and India), which have also seen their first protests.

It is difficult to predict the dynamics of such developments, but we do not expect the unrest to subside as quickly as it has come up. This is why we can imagine the "wind of change" to blow through Saudi Arabia as well. King Abdullah is very sick, and his crown prince is unpopular. Therefore a changing of the guards would come as a welcome reason to take to the streets. The unemployment rate of the 20 to 24 year old is 42%[41]. The social dynamite that such a desperate situation contains is enormous. The most recent "social action" worth almost USD 40bn should calm the situation only temporarily; it will not solve the structural problems. Should production in Libya and Algeria be disrupted only briefly, this would practically exhaust the spare capacity of Saudi Arabia. On top of that Libyan oil contains less sulphur and is lighter than Saudi oil and is thus not that easily replaced.

"If we want everything to stay as it is, everything will have to change" Giuseppe Tomasi di Lampedusa

We also do not believe that Saudi Arabia is able to step up production by a massive degree without any problems. The country has never produced more than 11mn barrels/day, which is why we think it is unlikely to expect it to expand production to 12mn barrels/day within a short period of time. In the recent past the country has fallen short of practically all production targets, so the problem seems to be of a structural nature. We also continue to regard the blockade of the two most important bottlenecks of oil transportation – i.e. the Straits of Hormuz and of Malacca – as potential risk. In case of a supply blockage on one of the two routes the oil price would definitely set new all-time-highs, which would presumably be located on the other side of USD 200/barrel. **Therefore we can see an upside risk for the oil price and increase the political premium.**

The drastic increase in consumption seen in some big producing countries causes export quotas to fall gradually. The comparison of the export quotas over the past ten years reveals a worrying trend. Numerous nations (among those Venezuela, Norway, Mexico, UK, Argentina, Yemen) seem to have reached their maximum production, while domestic demand is rising. We believe that the resulting decline in oil exports is also hardly discounted. Generally we seem to be stuck in a two-stage development. At the beginning of the cycle the record inventories were gradually being drawn down, and now the spare capacities are falling as a result of the substantial increase in demand. **We are thus getting closer to a scenario that is rather similar to what happened in 2008.**

[40] Please refer to "Breakfast with Dave", Gluskin Sheff, 7 February 2011
[41] The Telegraph, "Mid-East contagion fears Saudi oil fields", Ambrose Evans-Pritchard

The high oil price is definitely a threat to economic growth. According to the IEA the amount spent on oil accounted for 4.1% of global GDP in 2010. Should the price increase above USD 100 in 2011 on a sustainable basis, the percentage would probably rise to 5%, which, from a historical point of view, has always been a critical level for the economy. At an average price of USD 120/barrel of Brent this would account for 6% of GDP, at USD 150 for 7.5%. It would therefore come with clearly negative repercussions for oil-demand and the economy in general. Therefore we do not think that OPEC would wish to nip the shoots of the economy in the bud and expect the cartel to step up production drastically, should the price rise sustainably above USD 100.

On the supply side we consider peak oil an actual threat; we believe that the global maximum production of conventional oil could soon be reached. There is no doubt that peak oil is more than simple fear mongering. The production profile of specific fields, regions, and countries has the same structure, i.e. that of a bell-shaped curve. According to Robert Hirsch 64 countries have already reached their maximum production levels. The fact that a growing number of official institutions such as for example the German Bundeswehr, the Bank of England, and the US Department of Defence have started to scrutinise peak oil in their studies confirms this latent threat.

We are bullish in the long term with regard to natural gas and particularly in unconventional natural gas resources. Since natural gas can substitute crude oil in many areas without a problem due to its chemical features, we expect it to turn into the fastest growing fossil energy carrier. This is why we also believe that it will have to replace a large share of crude oil in the transition phase. Natural gas should also play an important part in the future with regard to ecological aspects, given that the combustion process leaves significantly less contamination than coal or oil. This should also offer further support to gas in view of the CO2 limits. In the next 3-5 years we expect natural gas prices of at least USD 7-10/MMBtu; this should ensure attractive margins for (alternative) natural gas producers. We are optimistic about the production of shale gas in Europe becoming massively more important. We expect vivid exploration and acquisition activity especially in Poland and Ukraine. **Therefore we regard unconventional gas – and shale gas in particular – as one of the most interesting investment opportunities in the energy sector.**

On the demand side China remains the determining factor. The country's thirst for oil should continue to grow in 2011, albeit at substantially lower dynamics, given that the Chinese monetary policy has become increasingly restrictive. The recent interest rate hikes and the numerous increases in the minimum reserve requirements are supposed to facilitate a "soft landing", but have so far shown little success. In 2010 money supply was up 19.7%, and credit growth expanded by 18% (after 35% in 2009). **We remain generally cautious about the blind faith in the economic growth of the emerging markets and believe that, at least in the short run, the growth rates priced in are substantially too high.**

On the basis of the theories of the Austrian School we can still see a moderate upward potential for the commodity prices in the short term (six to twelve months). But for the medium term (one to three years) our analysis based on the Austrian School leads us to conclude that commodity prices will incur a massive setback, much like in 2008. This is mainly due to the fact that the monetary measures that were taken in 2008 and 2009 are very similar to those taken in 2001 and 2002 after the dot.com crash and that were ultimately the seed of the financial crisis in 2007 and 2008.

In relation to the S&P 500 index, the oil & gas sector index, natural gas, the disposable income and property, oil is currently expensive. But since no extreme values have been reached so far we expect this trend to last for a bit longer. From a technical point of view the CoT positioning leads us to take a pessimistic stance, whereas seasonality and sentiment are still sending positive signals.

We therefore see mainly upside risk for the oil price. Even though the supply in the market is currently still sufficient, we believe that the wave of revolutions will continue to roll and could thus push the oil price to new highs. **For technical reasons we therefore expect the upward trend to continue at least in the first half of the year, and we also think that new all-time-highs are possible**. As soon as the parabolic phase has been reached, the sentiment starts spiking, and first divergences are emerging, we recommend stops be set. However, it currently seems to be too early for that. **We expect an average price of Brent of USD 124 for the full year.**

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