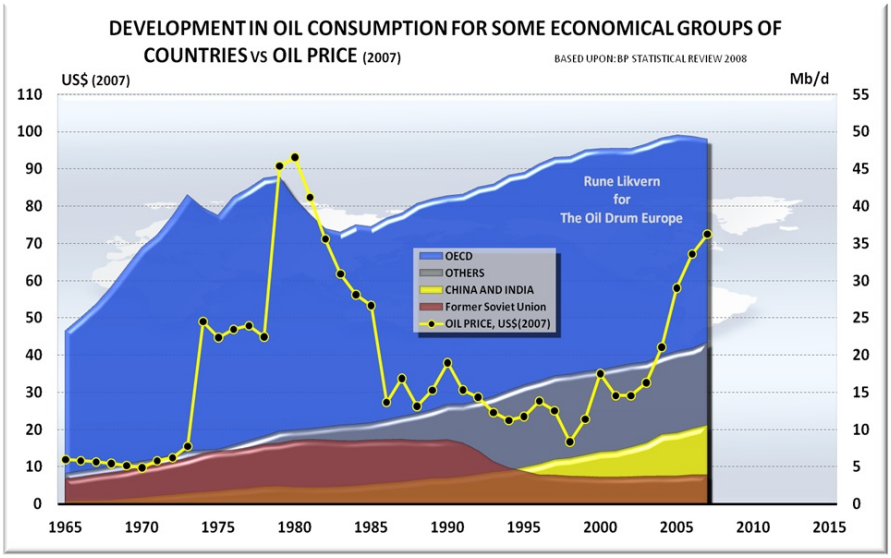
The Oil Drum: Europe
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

Has OECD oil consumption peaked?

Posted by Rune Likvern on April 14, 2009 - 9:47am in The Oil Drum: Europe
Topic: Demand/Consumption
Tags: bric, china, oecd, oecd europe, oil consumption, oil stocks, original, world oil production [list all tags]



The above diagram shows that the pattern of growth in oil consumption has varied greatly for different groupings of countries. Oil consumption in China and India has continued to grow, whether or not oil prices rose greatly. Oil consumption also continued to grow in the "Others" category, which includes many of the oil producing nations. Oil consumption in the Former Soviet Union also followed a pattern somewhat independent of world oil prices. It was only the OECD whose consumption changed significantly as world oil prices changed.

Based on this comparison, it seems to me that OECD consumption is far more affected by oil price changes than the consumption of other countries. Based on data shown in this post, it seems to me that OECD economies can only absorb a price increase of US$10 per barrel in a year, without experiencing slowdowns in their economies and a reduction in oil consumption. Non-OECD economies (including BRIC countries) are more resilient, and are more likely to continue to show growing consumption.

Below the fold, I examine similarities and differences in oil consumption patterns of OECD and Non-OECD countries and offer my view as to what the future may hold.

Recessions tend to follow increases in oil prices-for example price spikes lead to recessions in 1973/1974, 1979/1980, and 1990/1991, as indicated on this graph by Jeff Rubin when he was Chief Economist at CIBC World Markets. Even if this economic downturn is somewhat different from previous ones, it seems like strong growth in oil prices in 2008 is instrumental in slowing down OECD economies. In the early 1980s, some substitution took place, mainly replacing oil consumption with nuclear and natural gas consumption. This time there is no meaningful scalable substitute for oil, putting the OECD countries in a much worse position than they were when oil

prices spiked earlier.

It looks increasingly like the OECD economies are falling victim to what I have started to refer to as the "Oil Price Trap". The oil price (at today's US$50/Bbl) is presently too high to add valuable pulling strength to slow down the economic downturn and bring the OECD economies back into growth. At the same time, the present oil price is too low to stimulate sufficient investment in future capacity growth to bring about much needed renewed economic growth.

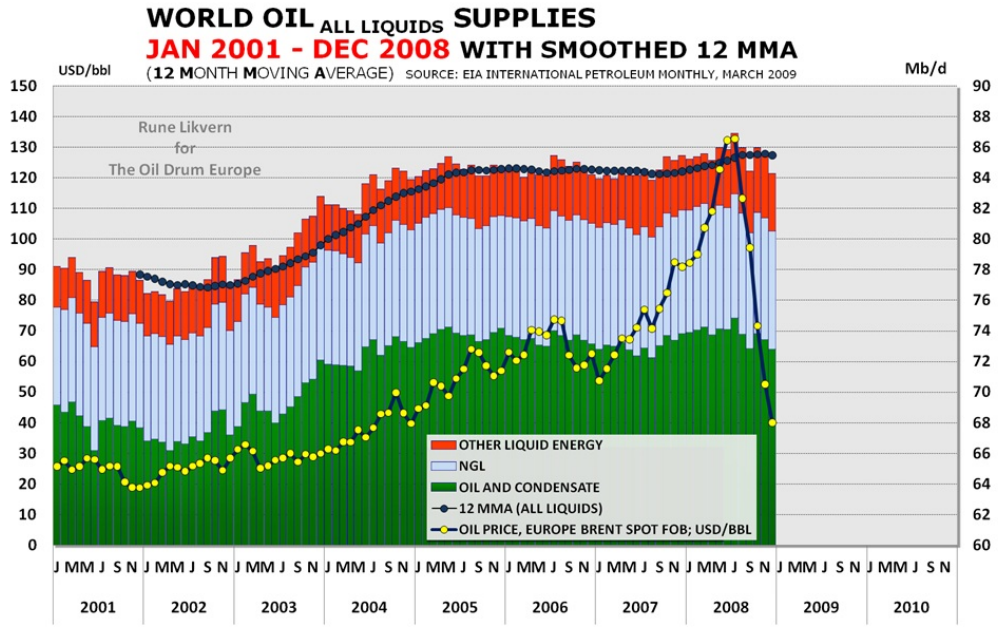


Figure 01 *The above figure illustrates the world supplies of all liquid energy split on classes for the period January 2001 to December 2008 as reported by EIA in their International Petroleum Monthly's (IPM) plotted against the right hand axis. NOTE: Axis not zero scaled. The diagram also shows the movement (yellow circles connected with black line) of the average monthly oil price (Europe Brent Spot FOB) plotted against the left hand axis.*

The global oil supply (all liquids) has for all practical purposes been on a plateau during the last four years. It took almost a quadrupling of the price to increase total oil supply by approximately 1 Mb/d.

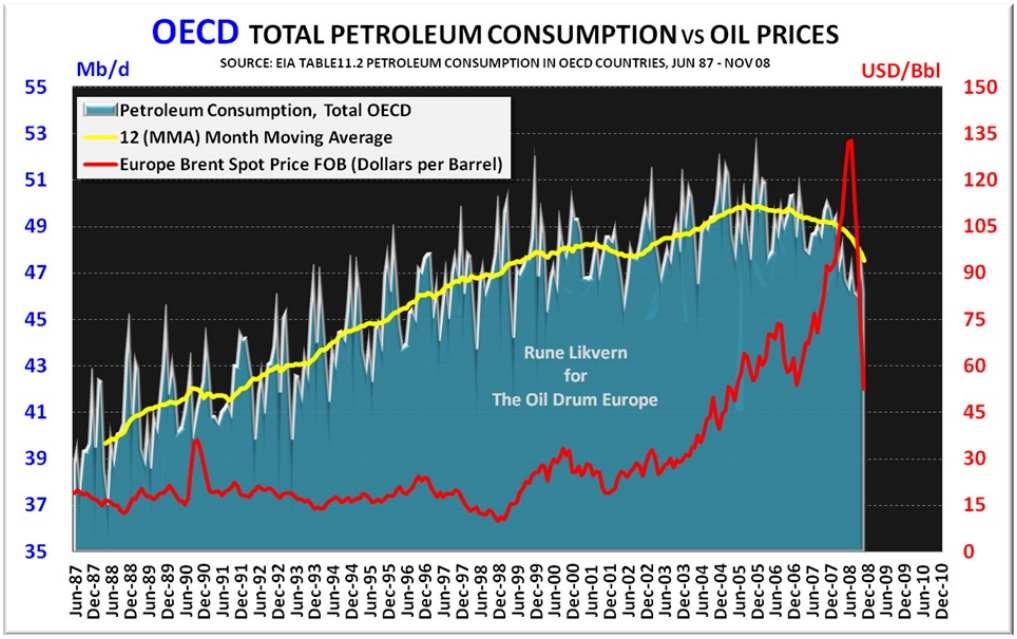


Figure 02 *The above figure illustrates OECD countries total petroleum consumption for the period June 1987 through November 2008 as reported by EIA plotted against the left hand axis. NOTE: Axis not zero scaled. A 12 Month Moving Average (12 MMA) is added (yellow line) to smoothen seasonal swings in consumption. The diagram also shows (thick red line) the average monthly oil price (Europe Brent Spot FOB) plotted against the right hand axis.*

The diagram illustrates that as oil prices moved above US$60/Bbl, it affected growth in consumption. The diagram also illustrates that as oil prices continued to rise above US$75/Bbl, consumption started to decline. This decline accelerated with growing prices and the emerging economic slow down in 2007/2008. When oil prices remained at US$30/Bbl or below, oil consumption continued to grow at a stable rate. For OECD, historical data suggests that growth in oil consumption could be maintained while oil prices increased by about US$10/Bbl per year, and the economies continued to grow.

It is also worth noting that the growth in OECD consumption ended early in 2006. This is before Nouriel Roubini stood before an audience of economists at the International Monetary Fund and announced that a crisis was brewing, and before the acronyms CDS, CDO, SIV, Alt-A etc. became mainstream. Between early 2006 and November 2008, OECD oil consumption declined by 2,5 Mb/d or approximately 5 %, and the decline continues.

The diagram also illustrates that at higher prices, oil becomes increasingly unaffordable for OECD customers. Because of this, price rationing sets in as prices breach a certain level.

Oil prices are presently around US$50/Bbl while the OECD economies are projected (on average) to contract 5 % in 2009. If economies are contracting, this suggests that these economies now have a weakened ability to support higher oil/energy prices.

Inasmuch as the OECD economies consist of several regions with differences in taxation of petroleum products, one might expect that a higher taxation level on petroleum products would introduce some moderation in the decline of petroleum consumption when crude oil prices grow.

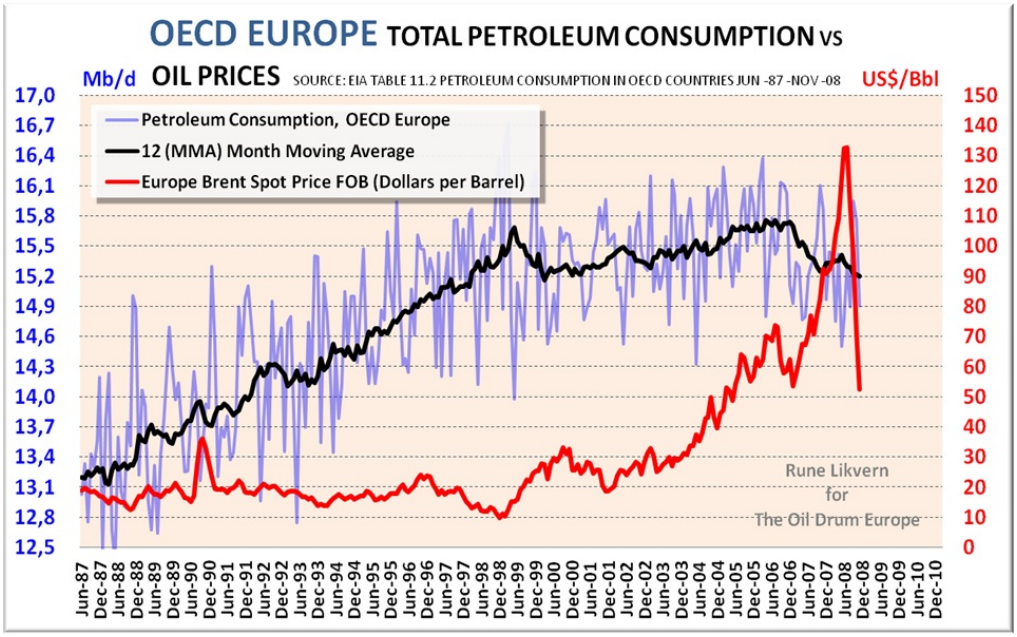


Figure 03 *The above figure illustrates OECD Europe total petroleum consumption for the period June 1987 through November 2008 as reported by EIA plotted against the left hand axis. NOTE: Axis not zero scaled. A 12 Month Moving Average (12 MMA) is added (black line) to smoothen seasonal swings in consumption. The diagram also shows the movements (thick*

red line) of the average monthly oil price (Europe Brent Spot FOB) plotted against the right hand axis.

The data suggests that for OECD Europe, which has higher petroleum taxes than the US, consumption grew until oil prices reached US$60/Bbl and decline in consumption set in during winter 2007 as oil prices continued even higher.

DOES THE EXCHANGE RATE BETWEEN EURO AND US Dollar MATTER?

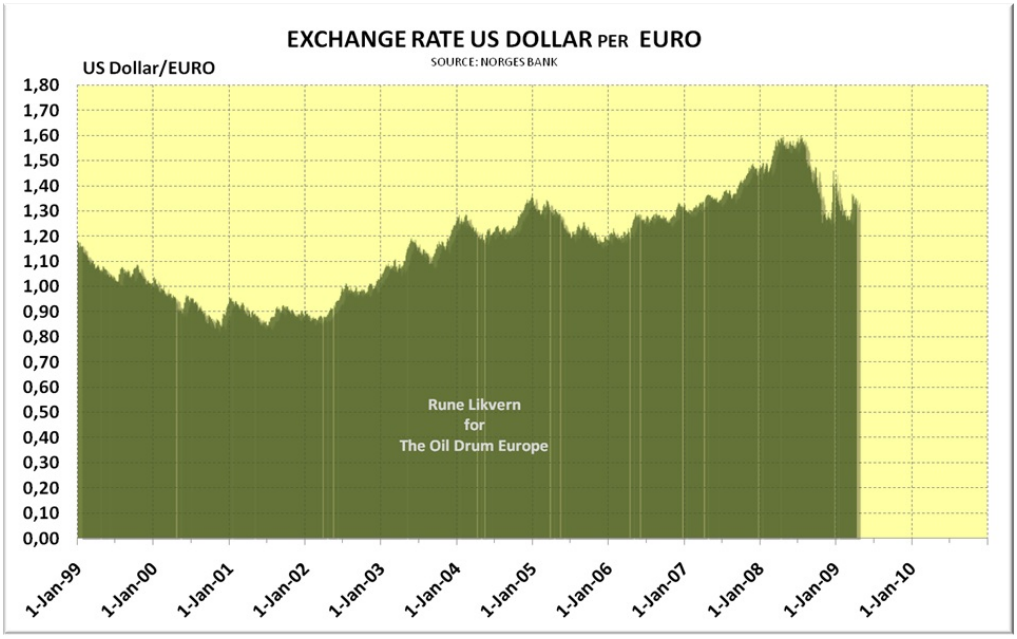


Figure 04 *The above figure illustrates the exchange rate between US Dollars and EUROs since 1999.*

For the period shown, there is little indication that swings in the exchange rate have played a significant role in OECD Europe's oil consumption. Variations in the exchange rate seem only to introduce ripples on the surface.

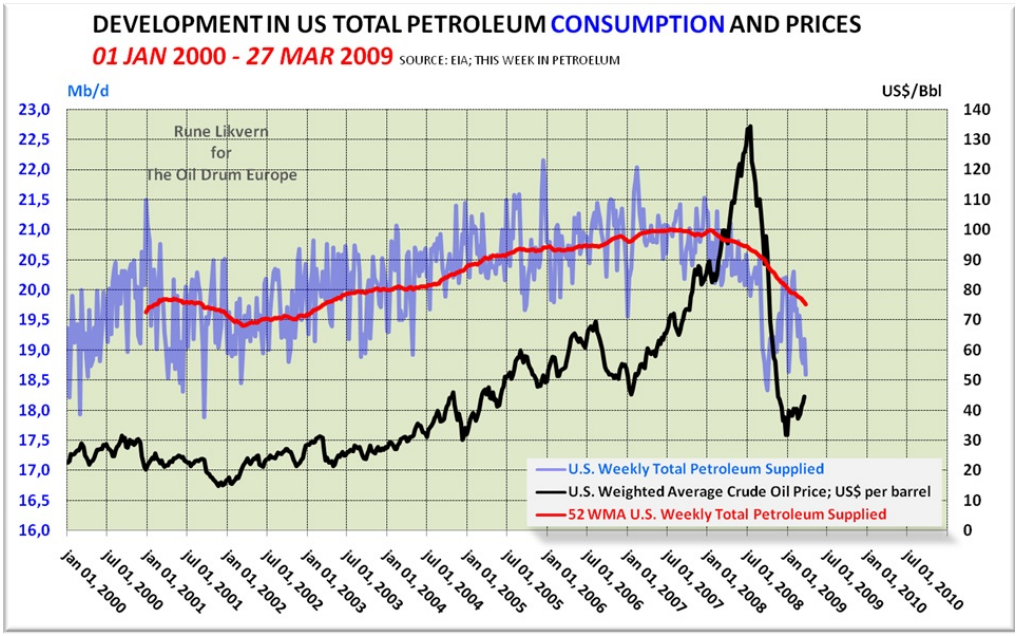


Figure 05 *The above figure illustrates US total petroleum consumption for the period January*

2000 through March 2009 as reported by EIA plotted against the left hand axis. NOTE: Axis not zero scaled. A 52 Weekly Moving Average (52 WMA) is added (red line) to smoothen seasonal swings in consumption. The diagram also shows (thick black line) the average weighted crude oil price plotted against the right hand axis.

The diagram shows a similar pattern as for all OECD and OECD Europe. US total petroleum consumption reached a high (or peaked) about the same in time as housing prices peaked as illustrated here. The continued decline in consumption after the crude oil price collapse seems to be mainly driven by growing unemployment and the recession.

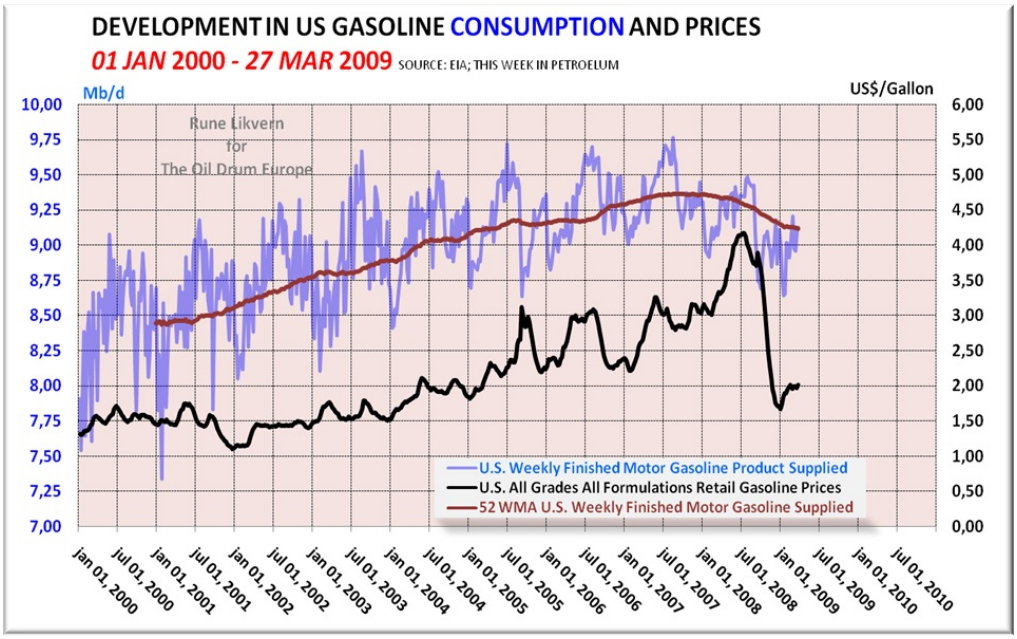


Figure 06 *The above figure illustrates US gasoline consumption for the period January 2000 through March 2009 as reported by EIA plotted against the left hand axis. NOTE: Axis not zero scaled. A 52 Weekly Moving Average (52 WMA) is added (dark red line) to smooth seasonal swings in consumption. The diagram also shows the movements (thick black line) of the average gasoline price plotted against the right hand axis.*

The diagram illustrates that gasoline consumption reached a high in the second half of 2007. (This also happened for diesel, while kerosene reached a high earlier.) An average gasoline price of US$2,60/gallon slowed consumption, and as the price moved higher the decline in consumption accelerated. This again illustrates that there is a threshold above which gasoline becomes unaffordable for some people, and these people start to make adjustments. The diagram also illustrates that as prices retreated to around US$2,00/gallon, the decline in consumption came to a halt.

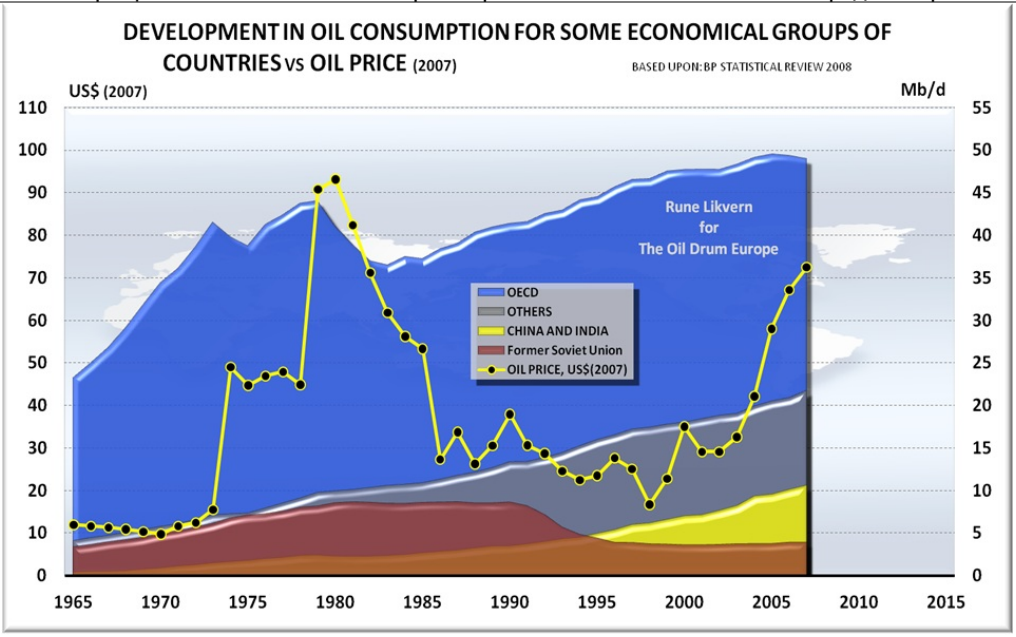


Figure 07 *The above figure illustrates oil consumption for OECD (blue), China and India (yellow), Former Soviet Union (FSU) (brown) and the others (grey) for the years 1965 through 2007 plotted towards the right hand axis. The oil price in 2007 dollars is plotted as black dots connected by a yellow line towards the left hand axis.*

The figure above shows that the 1973/1974 oil price shock resulted in a relatively small reduction in OECD oil consumption and a recession.

The 1979/1980 oil price shock with the doubling of the oil price led to a longer recession, but also a deeper decline in OECD's oil consumption. At this time, alternate fuels, including natural gas and nuclear were brought on line, reducing OECD's need for oil, particularly for electrical consumption.

As oil prices again started their growth in 2004 it started to affect OECD oil consumption and the diagram illustrates that OECD consumption started to decline while prices continued to grow.

Based on Figure 07, oil consumption for China and India was little affected by the oil price shock of 1979/1980. The recent (starting 2004) run up in crude oil prices seems to have had only a small impact on the growth in oil consumption of these countries.

FSU seems also to have been little affected by the run up in oil prices. The exception here is the dissolution of the Soviet Union, which resulted in a major decline in consumption.

The "Others" category includes all the OPEC countries, plus some other countries that have historically had low oil use. This group seems to have had a continuous growth in oil consumption independent of price fluctuations in all the years reflected in the above diagram.

Why is it the OECD economies seems to have a weaker resilience towards big increases in oil (or energy) prices than other countries?

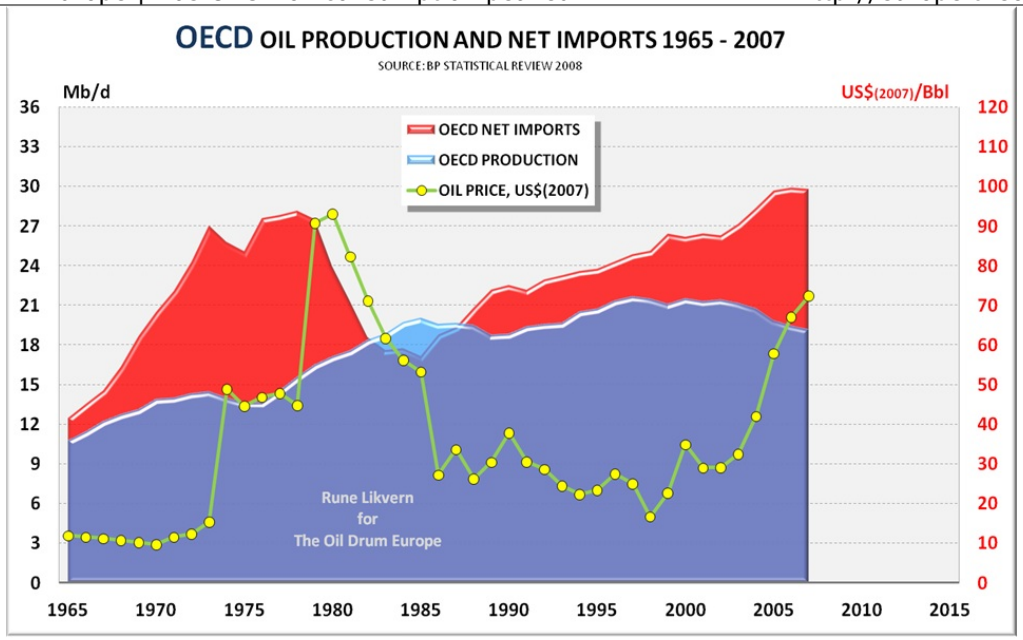


Figure 08 *The above figure illustrates oil consumption for OECD split between OECD members production (blue) and net imports (red) for the years 1965 through 2007 plotted towards the left hand axis. The oil price in 2007 dollars is plotted as yellow dots connected by a green line towards the right hand axis.*

The figure illustrates that by the 1973/1974 oil price shock, OECD oil production was in a temporary decline. By the 1979/1980 oil price shock, OECD oil production had begun to grow because of additional production from fields in Alaska, Mexico and the North Sea. The availability of more oil within OECD may have contributed to the oil price decline (collapse), and cut the need for imports, thus helping the OECD economies. As oil prices remained in the US$30/Bbl (2007) range, OECD imports started to grow. The recent run up in oil prices that started in 2004 coincided with a sharp decline in OECD production and a corresponding need to increase imports.

This closer look on OECD oil production, which now is in terminal decline, and OECD net oil imports suggests this is not solely about the oil price. The effects seem to be compounded by the volume of OECD net oil imports.

Figure 01 above shows that total world oil supplies grew a little in 2008 and in figure 02 that OECD consumption had (as of November 2008) declined by around 2,5 Mb/d since the average oil price reached around US$60/Bbl.

The data thus suggests that some countries were able to afford the recent higher oil prices better than OECD. This seems to run contrary to expectation, since the OECD countries represent the richest countries in the world. That oil consumption grows in some of the oil exporting countries is no surprise, but it does not explain all the growth.

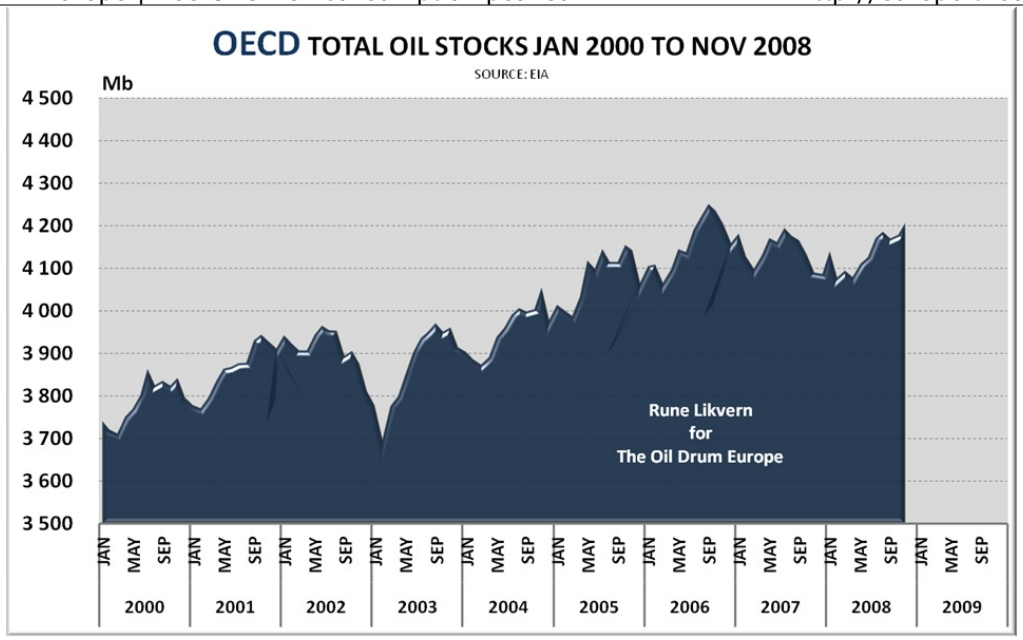


Figure 09 *The above figure illustrates OECD total oil stock changes from January 2000 through November 2008. NOTE: y-axis not zero scaled*

The figure illustrates that there has been a stock build within OECD through 2008. In other words, this shows that total OECD supplies have been higher than total OECD consumption.

Using data for 2007 as a base line, it should now be possible to identify changes in oil consumption (or supplies) for Non OECD countries through 2008.

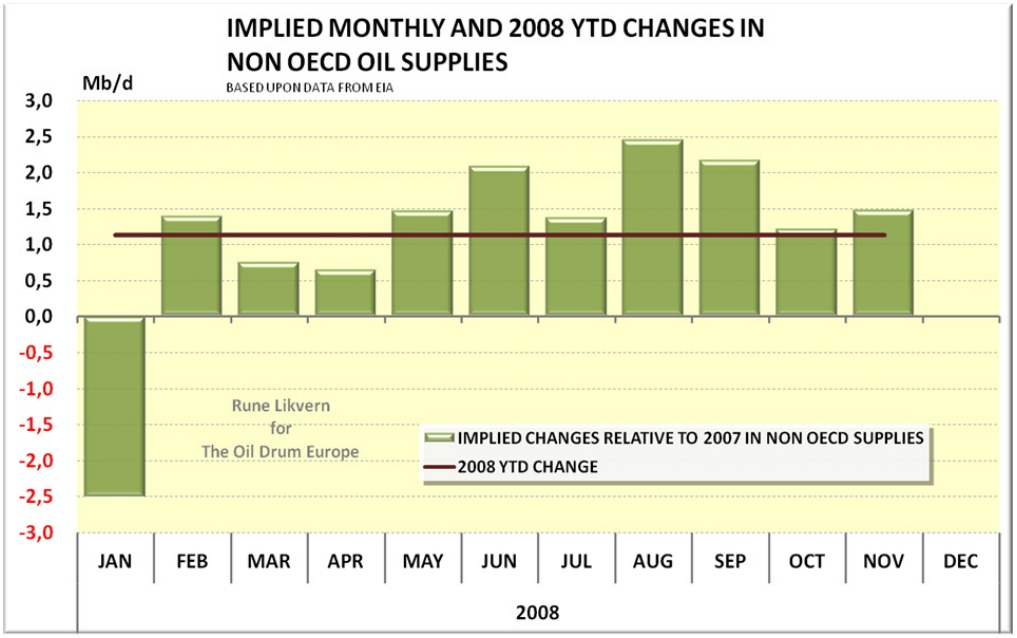


Figure 10 *The above figure illustrates Non OECD changes in oil consumption/supplies through 2008*

Despite the high oil prices through 2008, Non OECD countries continued to increase their consumption/supplies as they have done as OECD consumption started to decline in 2005.

Could this suggest that an economic decoupling between OECD and Non OECD countries is now gaining strength?

It is currently estimated that OPEC has shut in a capacity of 3 - 4Mb/d. For the next 3 - 4 years many estimates show that new capacity brought on line will at most offset the decline from producing fields. If an economic decoupling now is gaining strength, could it be that the Non OECD countries will eat into most or all the existing spare capacities in the next few years?

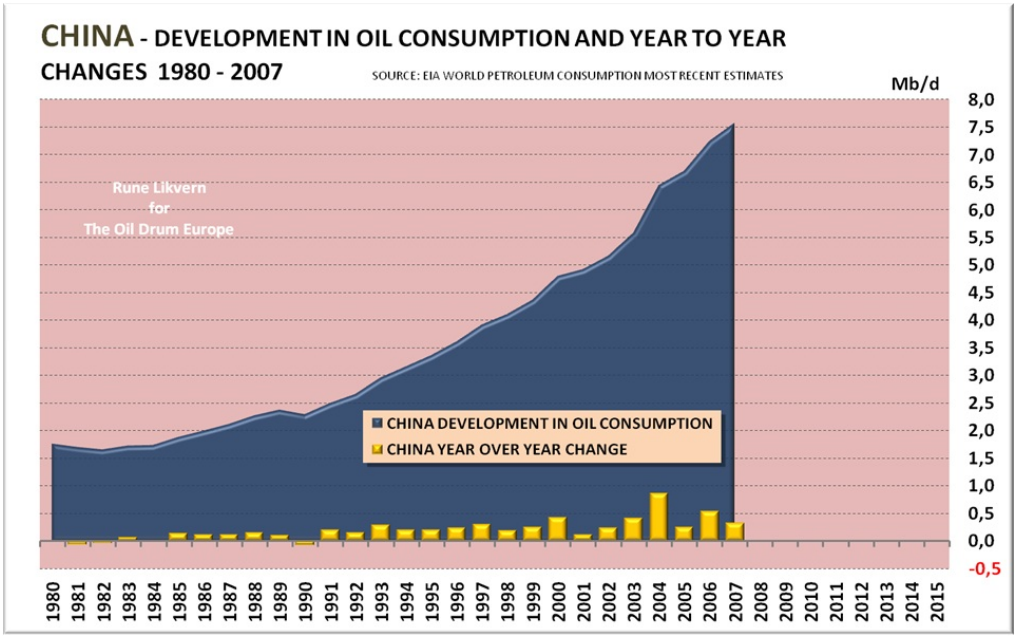


Figure 11 *The above figure shows the growth in the Chinese oil consumption together with the annual changes. Based on what was portrayed in figure 10 there is reason to expect that China's oil consumption through 2008 will grow are a rate similar to its growth in recent past years. China's growth is likely to continue in 2009, though at a slower pace than earlier projections called for.*

In 2007, each person in the US used 11,5 times as much oil as the average Chinese. GDP for each person in the US at PPP (Purchasing Power Parity) was in 2007, 8,7 times higher than for the average Chinese.
As of 2007 the average Indian had a purchasing power only half of the Chinese, but as this article on the Tata's Nano and "India Defies Slump, Powered by Growth in Poor Rural States (From Wall Street Journal) suggests the global bidding war for oil is about to see a growing number of bidders.

One way to look at the data above is that if 9 Chinese (or 18 Indians) pooled together to bid on oil against one person from the US (or a person from any G-7 countries), the 9 Chinese would combined have more purchasing power. The outcome from a bidding war is that one wins, while the other ends up empty handed. This comparison illustrates the challenges which now face the OECD countries and increasingly may face in the future. Because of the challenges in winning this bidding war, OECD consumption looks likely to have peaked, whether or not world production has peaked.