

CAN OIL REACH \$200 A BARREL?

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Oil is a non-renewable, finite commodity that powers production in the world economy. In 1970, the global oil demand was 47 million barrels per day and the International Energy Agency forecasted an increase of 120 million barrels a day by 2030 (Shelley T, 2005). The rich oil reserves in Saudi Arabia have consequently made it the largest producer having exported 8,525 barrels a day during 2006 whilst the United States imported an overwhelming 12,357 barrels per day in the same year (IEA¹, 2006). Net oil importers are distinguished as non-oil producing since the country has inadequate oil reserves to sustain consumption.

To begin with, the oil price surge has been significantly impacted by the strong growth in the Middle East (especially China and India), which has had a big impact on the global growth and has shifted the demand for oil rightwards, establishing a higher equilibrium price in the oil market (Hunt, 2002). The IMF²'s World Economic Outlook 2007 suggests that the global growth will exceed 4% in 2008, out of which 2/3 come from the developing countries and China's economic growth is expected to exceed 10%. In China, the personal income has grown pushing up consumption, and to meet the higher demand for goods, China has increased its demand for oil. The demand for oil has also been shifted up by the population growth. With a colossal population of 210 million reported at the end of 2007 (Schwankert S, 2008), China has surpassed the production of oil

companies and non OPEC producers reinforcing the supplier power of the Middle East (Rutledge I, 2005). The OPEC's World Oil Outlook argues that the world population is going to increase by 1% in the next 20 years.

The dominant position of China in the oil market is amplified by its status as the second largest oil consumer with 50 per cent of crude oil imports (Anderlini J, 2007). The country's commodity price is anticipated to elevate by one to three per cent by 2020 (Skeer J and Wang Y, 2006) and it primarily imports oil from countries such as Sudan and Iran to compensate low domestic production (Yetiv S A, 2004) and support its expansive manufacturing industry. Having previously produced less barrels (Economist, 2007), OPEC has decided to maintain current output in defiance of greater demand. Although, planned oil reserve completion in Zhejiang province in the long run, could ease pressure on oil prices (Zhou M, 2008).

Oil is the basic fuel for transportation and, as the number of people owning a car increases, this will also contribute towards a soaring demand for oil. Considerable growth in the utilisation of automobiles (IBID) and switch to diesel generators as a result of electricity deficiency (Fenton D, 2004) has levitated the world wide commodity price (Blas J and Dennis N, 2008). Vehicles have become more accessible to a larger proportion of China because of growing incomes and affordable prices. Reduced efficiency as a result of increased congestion and supplementary luxuries such as air-conditioning (Skeer J and Wang, 2006) has forced the need for

¹ International Energy Agency

² International Monetary Fund

higher oil volumes. Alternatively, other factors can account for the hike in the oil price: the decrease in the oil supply caused by the limited spare capacity (BP graph) and it is considered to take eleven years on average before a new oil discovery can be used in commercial production (Elekdag et. al., 2008). Furthermore, an FT article also draws attention upon that the US refinery has been at a low level in the last years, together with a low level of investment in refining and infrastructure (Chris Flood, 2008). The geopolitical tensions and deterioration of security conditions in the Middle East might contribute as well. In addition, as the oil is traded in dollars, the depreciation of the dollar may account for a part of increase (Cheng and Mercer-Blackman, 2007). If the rise is measured in Euros, than the increase would be smaller, because the exchange rate excludes the weak dollar impact.

The oil price rise has different impacts among the economy of oil producing countries, such as OPEC(including Saudi Arabia), Russia, Mexico, Norway, and oil importing countries, which includes the developing Asia, Japan, EU or US (Financial Times Map, 2008). Firstly, the increase in the oil price might lead to a permanent supply shock, as it is maintained for 5 years. The consequences of this shock in the non-oil producing countries are illustrated in the AS-AD framework. It can be considered that the economy is at long-run equilibrium at point A to begin. Oil is one of the basic inputs to production, and because of its reduced availability combined with an inelastic demand for oil, the oil price rises and will affect negatively the production output, the productivity and profit margins in the short run. As the AS curve shifts left, the equilibrium point in the short run is now B, determining output to fall and the price level to increase, and consequently the real money supply to decrease. The output level decrease may be observed especially in some industries that use oil intensively in production.

Some examples can be the companies that produce cars (the demand for SUVs, which represents more than 2/3 of US demand for cars, will go down) or the airline industry which is likely to reduce its profitability (the expected profits for 2008 have gone down by \$2.8 billion). The traffic growth is also expected to decrease by 4% in the next years (IATA, 2007). Not only specific industries, but the overall output might be affected by the supply shock. The IMF and IEA have illustrated that a \$10 increase per barrel will result in a 0.25-0.5% decrease in the world GDP, but it will still follow an upward trend in long-run. However, the short-term effects on production are much stronger than the ones in long term, especially because of the uncertainty of further oil price level (Schneider, 2004). Blanchard (1988) argues that the supply shocks increase steadily, reaching a peak in two years and a plateau in five years.

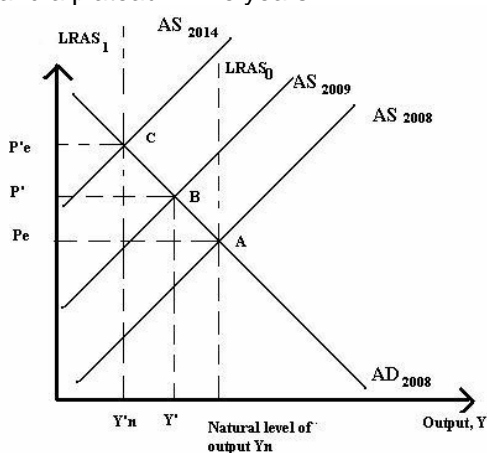


Figure 1. Oil price shock without any monetary authority intervention

As seen from the Figure 1, the increasing oil prices have a strong impact on soaring inflation in the non-oil producing countries. Another factor with a great impact on inflation is the people's expectations: prices of goods have gone up, employees are more pessimistic, expect higher inflation and request higher salaries. As people perceive the change as permanent, their expectations of

future inflation causes the price level to increase again and a new equilibrium is achieved at point C in long run, with lower output and higher inflation. An IMF's analysis estimates that a 50% increase in the oil price would lead to an increase in inflation of 1.3% in US and EU and 0.8% in Canada, 0.7% in Japan (Hunt, 2002). A persistent change in oil prices can influence also the potential output through its effect on the capital stock accumulation (Weber, 2006). In Figure 1, the long-run aggregate supply curve shifts leftward.

Because the output goes down, companies may face losses and need to cut back labour, and unemployment will go up. The reduction in the GDP is associated with the reduction in the labour productivity, and also causes the real wages to fall, because the general level of prices increases. If the reduction in the productivity is smaller than the one in the real wage, than the firms will lay off workers, which will lead to increased unemployment and further GDP growth reduction.

Without any government intervention, the economy is heading towards point C in Figure 1, a combination called stagflation³. In the long run, an increase in the oil prices may determine firms to develop new technological methods which are going to affect the production structures and the reallocation of capital and labour from oil-intensive industry to non-oil intensive industries. This will further affect unemployment in the long-run (Loungani, 1986). In contrast, it can be argued that changes have become less persistent now than in the past, especially due to innovations, alternative sources of energy, industries that are better energy-efficient or new labour markets. Mankiw (2006) suggests the macroeconomic effect of oil prices may vary because of different factors affecting this increase: the supply shortage in the

1970s compared with the demand increase in the present.

An important factor in establishing the impact of oil price hike is the central bank and government behaviour concerning the monetary policy. They may decide not to respond !!!! to the oil price shock, because they are uncertain whether there is a permanent change, and keep the interest rates constant, as it is described above. Another possibility may be to tighten the monetary policy or use a expansionary monetary policy.

In the first case, the central bank aims to keep the inflation down by reducing the money supply. This determines higher interest rates, higher cost of capital, resulting in a decrease in investments. Moreover, the exchange rate increase and the foreign goods are cheaper than domestic goods, which means that net exports decrease. There is also an effect of decreasing consumption expenditure as the interest rate, the opportunity cost of savings, goes up. Therefore the aggregate expenditure decreases, and the AD in Figure 2 shifts left to AD_1 . This tightening monetary policy will slow inflation, but because output has gone down, unemployment will rise.

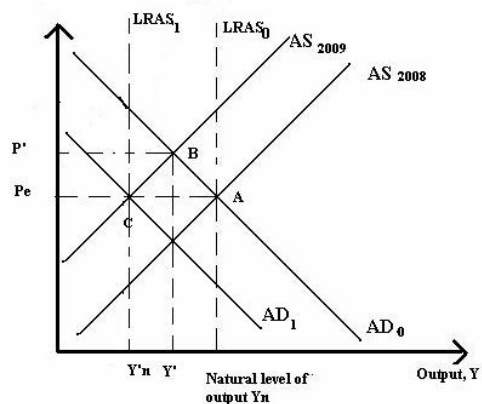


Figure 2. Oil price shock and tightening monetary policy

³ "A combination of rising price levels and falling output" (Mishkin, 2006)

The second type of response from central bank is to use an expansionary monetary policy, which aims to keep the output at the same level and keep unemployment low. This implies lowering the interest rates, which will push up investment, net exports and consumption. The aggregate demand will shift right to AD_1 in Figure 3. The new equilibrium point is C, where the output and employment are at their natural levels, but the general level of price is higher. This can be the start of process called push-up inflation, if the price of oil would be increased further by accommodating the supply shock. In the case the oil price is maintained constant, it is likely that the monetary authorities will increase the money supply just once.

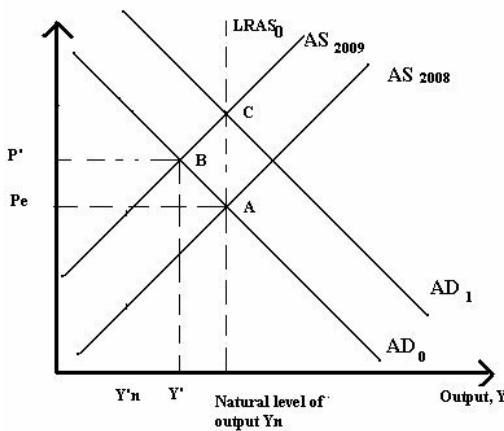


Figure 3. Oil price shock and expansionary monetary policy

A good way to explain the trade off between inflation and unemployment in short-run is the Phillips curve. Figure 4 shows how each of the policies would be situated on the Phillips curve. Bernake et al (1997) remarks that actually the effects on the economy are not only determined by the oil prices, but also by the monetary policy chosen. Using the traditional Phillips curve, Mishkin (2007) finds evidence that the Phillips curve has flattened and that an increase in inflation is not so responsive to a decrease in unemployment as before, especially due to a reduction in the world oil

dependency. This would mean that a monetary policy can be set to promote both low inflation and low unemployment, even in the case of an adverse supply shock. The long-run Phillips curve is vertical at the natural rate of unemployment, showing that there is no trade-off between unemployment and inflation. How quickly this trade-off disappears depends mostly on how quickly the price expectations adjust.

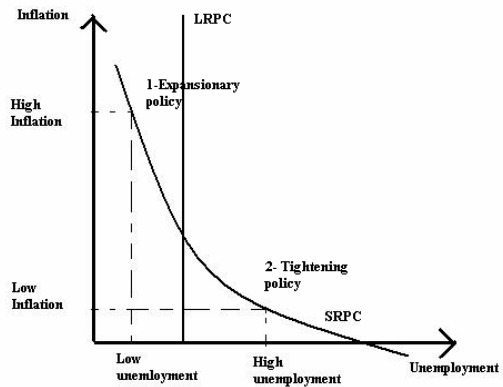


Figure 4. Phillips curve

In the case of oil producing countries, the impact of oil prices surge is generally a positive one. Oil has an inelastic demand, therefore an increase in the price of oil leads to a slightly decrease in demand of imports from the non-oil producing countries, but overall the oil producing countries benefit from the higher exports revenues. Hence, there is a transfer of funds, of wealth and of purchasing power from one group of countries to the other. Mussa (2002) argues that an increase of \$5 in the price of oil would lead to a trade balance improvement by 6.5% in the oil producing countries.

The increase in the GDP in oil exporting countries affects positively the consumption in these countries. IMF (2007) suggests that oil importing countries have historically a greater propensity to consume than the oil exporting countries, therefore the decrease in the consumer demand in the oil importing countries exceeds consumer

demand increase in the oil exporting countries. The world demand for goods is decreased and the world supply of savings is increased. The increase in the supply of savings brings down the interest rates and should stimulate investment. A significant part of the money that comes into the economy goes to the government of these countries. Depending on the financial situation of the country, they might replenish their reserves (Saudi Arabia) or pay their debts (Mexico, Venezuela), but also spent on infrastructure and other projects. IMF estimates that 75% of the surplus in the trade balance will be spent in 3 years (Mussa, 2002).

In Figure 5, there is an increase in the domestic aggregate demand, leading to an increase in the general level of prices and in the inflationary pressures on the economy. A new equilibrium in the short-run is at point B. As the output level increases, the unemployment rate in the economy will decrease. However, the economy will not remain at this level, because the output is above the natural rate level. To compensate the general rise in prices, workers will demand higher salaries, and therefore the cost of inputs in production will eventually shift the aggregate supply leftward to AS_1 . Point C is the long run equilibrium that resumes a higher price level, but no change in output or unemployment.

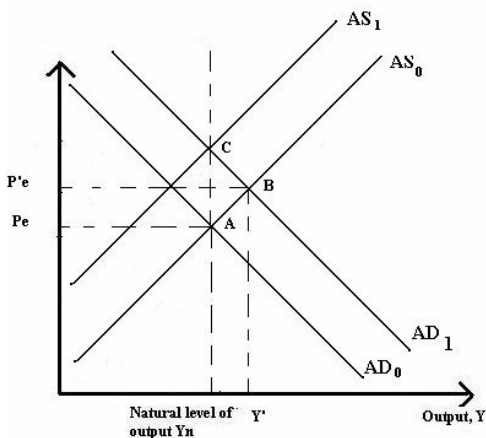


Figure 5. Demand shock in the oil exporting countries

Following on the net exports increase in the oil producing countries, the wealth effect increases and appreciates the exchange rate that might give rise to the Dutch Disease syndrome, which refers to a reduced competitiveness in the exports of the manufacturing sector - a good example is Nigeria (Olomola, 2006). By contrast, the increase in the wealth effect may be affected by the dollar depreciation against other currencies, which reduces the purchasing power. In other words, it will be more expensive for the oil exporting countries to buy foreign goods.

In conclusion, the effect induced by the surge of the oil prices differs from country to country, mainly because of the different rates of dependency of the oil, from oil producing countries to non-oil producing countries. Not only the oil price increase itself, but also monetary policy response affects the growth, inflation and unemployment. There are several empirical analyses that predict that an oil price shock will not be as severe as the ones in the 1970s. However, a similar simulation has been done by SAFE⁴ at World Economic Forum Meeting in 2006 and they found that an increase in the oil price to 120\$ a barrel would result in an increase in world oil expenditure to 8% of the world GDP. Mostly, the percentage of world oil expenditure of the world GDP has varied in the range of 1-3% and only in the global recessions exceeded 4%. In conclusion, there a high likelihood that the oil price increase will affect negatively the non-oil producing countries and cause a recession⁵, while the oil exporting ones will only benefit in the short-run, as inflation increases in the long run.

⁴ Securing America's Future Energy

⁵ "A period where real GDP decreases and there is a negative real economic growth" (Parkin et al, 2005)

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