

Box 1

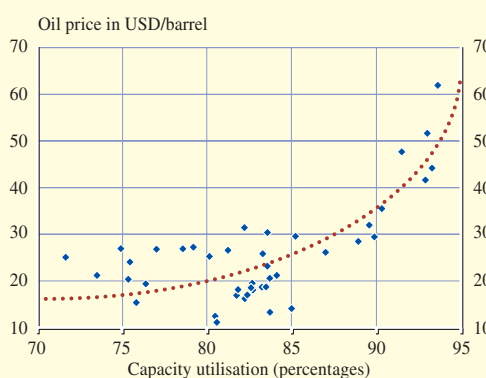
FACTORS ACCOUNTING FOR THE RISE IN OIL PRICES

Oil prices have soared since early 2004, reflecting the increased tightness in the oil markets that have become highly sensitive to shocks. The price of Brent crude oil (which serves as a benchmark) increased from around USD 30 in January 2004 to an all-time high of USD 67.5 in September 2005. Thereafter, it has decreased only slightly, standing at USD 62.2 on 11 January 2006. This strong rise in oil prices is largely attributable to the erosion of spare capacity and the emergence of bottlenecks throughout the oil supply chain following unexpectedly strong demand. This box highlights that, in this context, some of the historical relationships between oil market fundamentals (i.e. supply, demand, inventories, capacity) and prices appear to have changed since 2004.

Notably, the recent rise in oil prices seems to reflect non-linearities in the relationship

Chart A OPEC capacity utilisation and oil prices

(quarterly data; Q1 1995-Q3 2005)



Sources: Bloomberg and ECB calculations.

between oil prices and the quantities supplied to the market. Indeed, marginal increases in the volumes of oil produced and consumed are now associated with larger rises in the corresponding prices, as production capacities are reaching their limits. Since it often takes years to build additional extraction and refining capacity, the price of oil has become more sensitive to the quantity supplied as it approaches production capacity.

OPEC spare capacity acts as a buffer against unexpected supply disruptions or unexpected surges in demand. As shown in Chart A, the slope of the relationship between OPEC capacity utilisation and oil prices tends to become much steeper as the utilisation rate approaches 100%. The unexpected strength of demand, which in 2004 grew at its fastest pace in three decades, eroded spare capacity along the entire oil supply chain, as investments by oil companies had been driven by projections of a “normal” pace of demand growth.

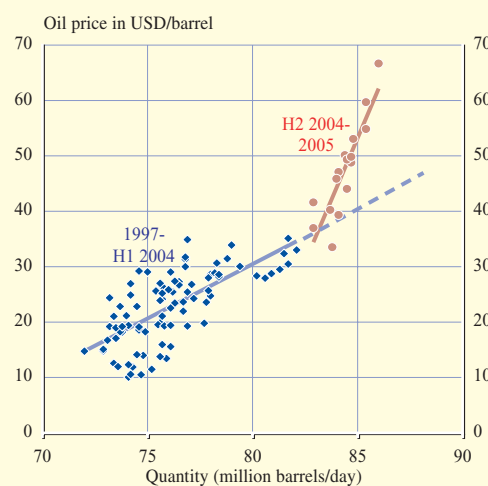
When total quantities of oil supplied are plotted against corresponding prices (see Chart B), the period 1997-2005 can be split into two sub-samples: from 1997 to the first half of 2004 and from the second half of 2004 to September 2005. The slope of the interpolation line for the most recent sub-sample has steepened significantly compared with the past. This is consistent with the hypothesis that capacity constraints in the oil industry have led to the emergence of non-linearities in the relationship between quantity and prices.

Moreover, the unexpected strong demand has eroded not only spare production capacity but also spare refining capacity. The oil industry’s flexibility to switch between refining different types of oil has consequently decreased and the premium on light and sweet grades of crude oil (e.g. Brent) compared with heavy and sour grades (e.g. Dubai) has increased markedly since mid-2004 (see Chart C).

A change in the functioning of oil markets can also be illustrated by a break in the relationship between oil inventories and prices. Prior to 2004, higher oil prices were generally associated with lower industry-held oil inventories, as the higher the oil prices the

Chart B Total oil supply and prices

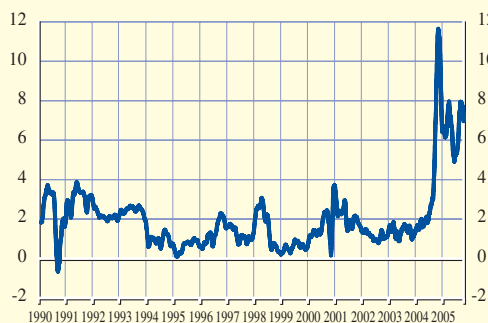
(monthly data; January 1997-October 2005)



Sources: Bloomberg and ECB calculations.

Chart C Premium of Brent crude oil over Dubai Fateh

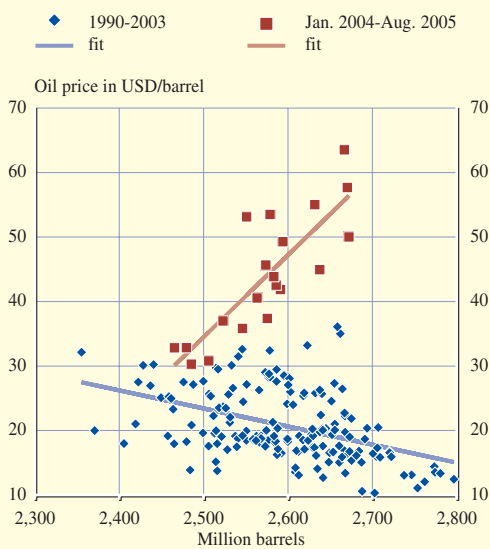
(USD per barrel; 30-day moving average)



Source: Bloomberg.

Chart D Industry-held inventories of oil in the OECD and oil prices

(monthly data)



Sources: International Energy Agency and Bloomberg.

greater the cost of holding oil inventories. The historical negative relationship between levels of industry-held oil inventories and oil prices has broken down since 2004. It may be that heightened concerns over the security of oil supplies have been an incentive to hold higher levels of inventories as a buffer against possible future supply disruptions, despite rising prices (see Chart D). In this context, rising prices may have been interpreted as a signal of future price increases.

The capacity constraints that have emerged throughout the oil supply chain need to ease in order for oil markets to become less sensitive to shocks. Additional investments would allow capacity utilisation to return to levels consistent with a normal functioning of oil markets. Initiatives to foster a more efficient use of energy sources should also be encouraged.¹

¹ See also statement by G7 Finance Ministers and Central Bank Governors, London, 2-3 December 2005, and the press release of the Economic and Financial Affairs Council Meeting, Brussels, 6 December 2005.