

London's Economic Outlook: Spring 2006

The GLA's medium-term planning projections

April 2006



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1. Executive summary

The Greater London Authority's (GLA) eighth London forecastⁱ, suggests that:

- London's Gross Value Added (GVA) should grow at 2.7 per cent in 2006 and 2.6 per cent in 2007, rising slightly to 2.8 per cent in 2008.
- London is likely to see steady employment growth from 2006 through to 2008, slightly below the trend growth rate of 0.9 per cent in 2006 and 2007, but rising above trend to 1.1 per cent in 2008.
- London household spending will probably grow more slowly than GVA in 2006 and 2007 and slightly above in 2008. Household spending is forecast to grow faster than household income throughout 2006 to 2008.

Table 1.1 summarises this report's forecasts and provides an average of independent forecasts.

Table 1.1: Summary of forecasts

Annual growth rates (per cent)	2005	2006	2007	2008
London GVA (constant 2002 £ billion)	2.1	2.7	2.6	2.8
<i>Consensus (average of independent forecasts)</i>		2.7	3.1	3.5
London civilian workforce jobs	1.4	0.8	0.8	1.1
<i>Consensus (average of independent forecasts)</i>		0.4	1.1	1.1
London household spending (constant 2002 £ billion)	1.5	1.9	2.2	2.9
<i>Consensus (average of independent forecasts)</i>		2.2	2.7	3.3
London household income (constant 2002 £ billion)	2.4	1.0	1.9	2.6
<i>Memo: Projected UK RPIXⁱⁱ (Inflation rate)</i>	2.3	2.6	2.4	2.1
<i>Projected UK CPIⁱⁱⁱ (Inflation rate)</i>	2.1	2.4	2.1	1.6

Source: GLA Economics' Spring 2006 forecast and consensus calculated by GLA Economics.

2. Introduction

The spring 2006 edition of *London's Economic Outlook* (LEO) is GLA Economics' eighth London forecast. The forecasts are issued every six months to assist those preparing planning projections for London in the medium term. The report contains the following:

- An overview of recent economic conditions in London, the UK and the world economies with analysis of important events, trends and risks to short and medium-term growth (Section 3).
- The 'consensus forecast' – a review of independent forecasts indicating the range of views about London's economy and the possible upside and downside risk (Section 4). In this document, 'consensus forecast' refers to the average of the four independent forecasters listed under Section 2.1.
- The GLA Economics forecast for output, employment, household expenditure and household income in London (Section 5).
- An in-depth assessment of a topic of particular importance to London's medium-term future (Section 6). This issue features a report on oil prices.

2.1 Note on the forecast

Any economic forecast is what the forecaster views as the economy's most likely future path and as such is inherently uncertain. Both model and data uncertainty as well as unpredictable events contribute to the potential for forecast error. GLA Economics' forecast is produced by Experian Business Strategies (EBS) on the basis of assumptions provided by GLA Economics. GLA Economics' review of independent forecasts provides an overview of the range of alternative opinions. Independent forecasts are supplied to the GLA for the main macroeconomic variables by the following organisations:

- Cambridge Econometrics (CE)
- The Centre for Economic and Business Research (CEBR)
- Experian Business Strategies (EBS)
- Oxford Economic Forecasting (OEF)

Only the most likely outcomes, which the different forecasting organisations provide, are recorded. Each forecaster may also prepare scenarios they consider less likely but these are not shown here. The low and high forecasts combine the lowest and highest forecasts respectively taken from each year separately and which, may therefore, come from different forecasters. High and low estimates therefore may not represent the view of any one forecaster over the whole of the forecast period.

Economic forecasting is not a precise science. These projections provide an indication of what is most *likely* to happen, not what will *definitely* happen.

3. Economic background: World economic growth still strong but risks remain

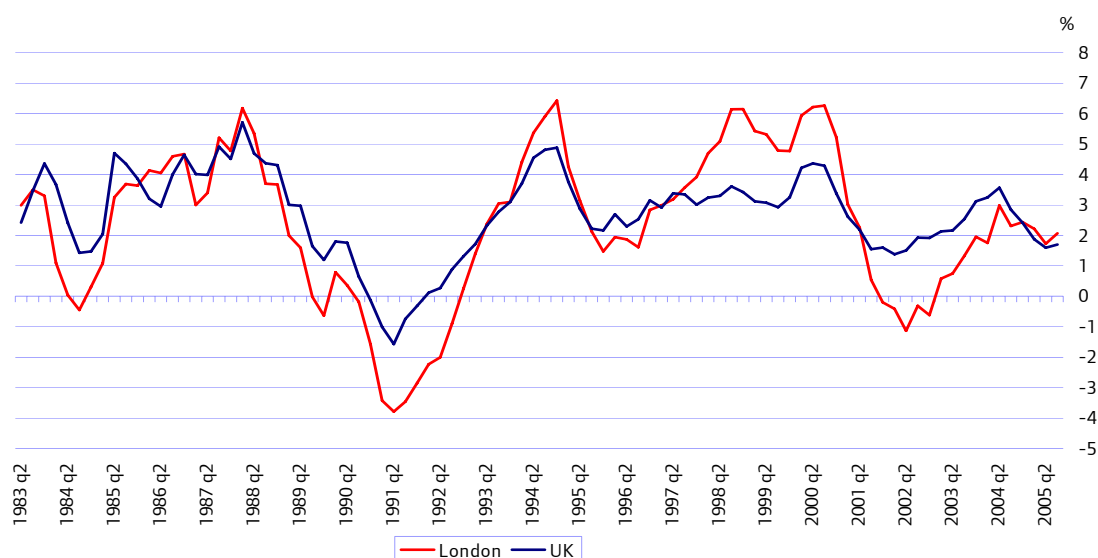
This section provides an overview of recent developments in the London, UK and world economies.

3.1 The London economy

Economic growth has been positive in London since 2002 and this continued to be the case in 2005. Furthermore, for the first time since 2000, London's economic growth rate exceeded that of the UK in 2005.

Economic growth in London during 2005 would have been even faster if there had not been a slowdown in consumer spending that occurred both across London and the UK as a whole. High levels of consumer debt, an increasing tax burden and lower house price inflation were key factors in this spending slowdown and the Bank of England responded by reducing interest rates to 4.50 per cent in August 2005 from the previous level of 4.75 per cent.

Figure 3.1: Output growth – London and UK
Real GVA, annual % change, last data point is Q3 2005



Source: Experian Business Strategies

The London economy in 2005 also had to withstand the impacts of the July 7 terrorist bombings. In economic terms, these impacted most severely upon the tourism sector with a lower than otherwise expected number of visits to London during the second half of 2005 from both domestic and international tourists. Despite the bombings, however, international visitor numbers to London over the whole of 2005 still showed an increase over 2004 and are expected to increase further in 2006.

In the retail sector meanwhile, the terrorist attacks led to retail sales in Central London dropping sharply year-on-year throughout the July to September 2005 period.

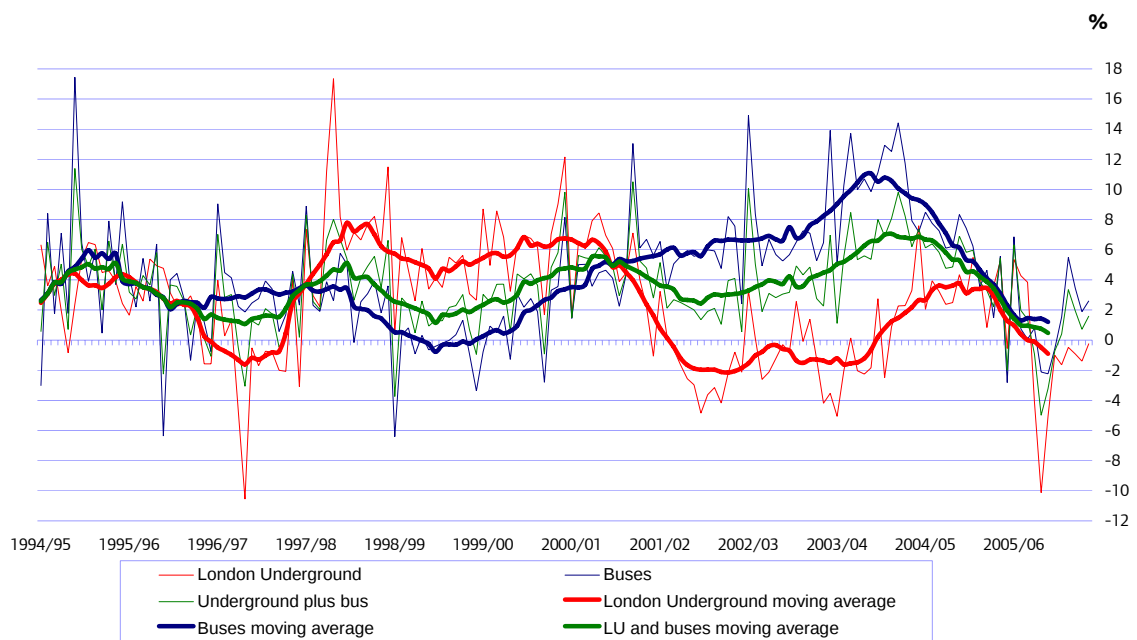
However, this terrorism induced downturn in Central London retail was shortlived and by late 2005/early 2006, year-on-year retail sales in Central London had not only fully recovered but annual growth rates had risen to significantly above those being seen in the rest of the UK.

The outlook for 2006 is therefore positive with London currently outperforming the rest of the UK in terms of growth in output, growth in employment and growth in the value of retail sales. One of the reasons for this is that services are outperforming manufacturing and London has a more service based economy than the rest of the UK. Growth in the financial and business services sector is particularly important for London and this key sector has seen an upturn. There was a surge in trading activity in London's foreign exchanges last year which extended the City of London's lead as the world's pre-eminent centre for currency dealing.

Bus and underground usage declined sharply following the London bombings in July but recent figures show a return to levels similar to pre-July 2005. There is positive annual growth in the use of the underground and bus systems combined despite the tragic events in July last year.

Figure 3.2: London public transport

Last data point is the 28-day period ending 04/03/06

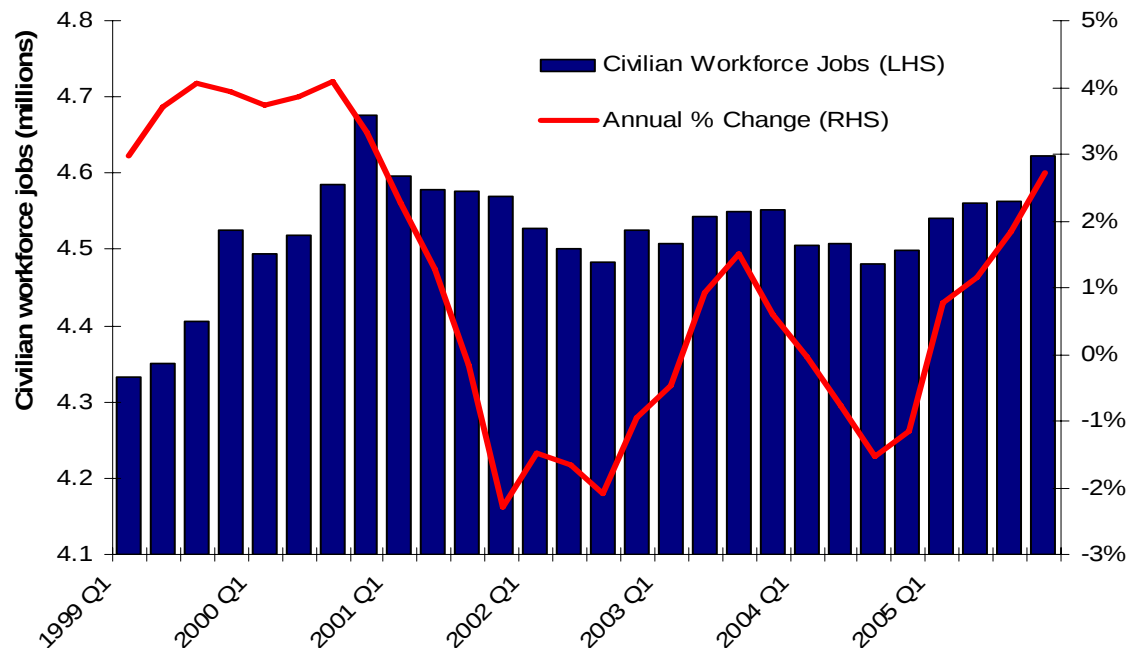


Source: Transport for London

London's labour market seems to have improved in 2005. Annual workforce jobs growth continued on a rising trend throughout 2005 following a slowdown in 2004. As shown in Figure 3.3, year on year growth in the fourth quarter was 2.7 per cent. The number of workforce jobs in London has risen to over 4.6 million which is only 55,000 short of the peak of Q4 2000.

Figure 3.3: London civilian workforce jobs

Level and annual % change, last data point is Q4 2005



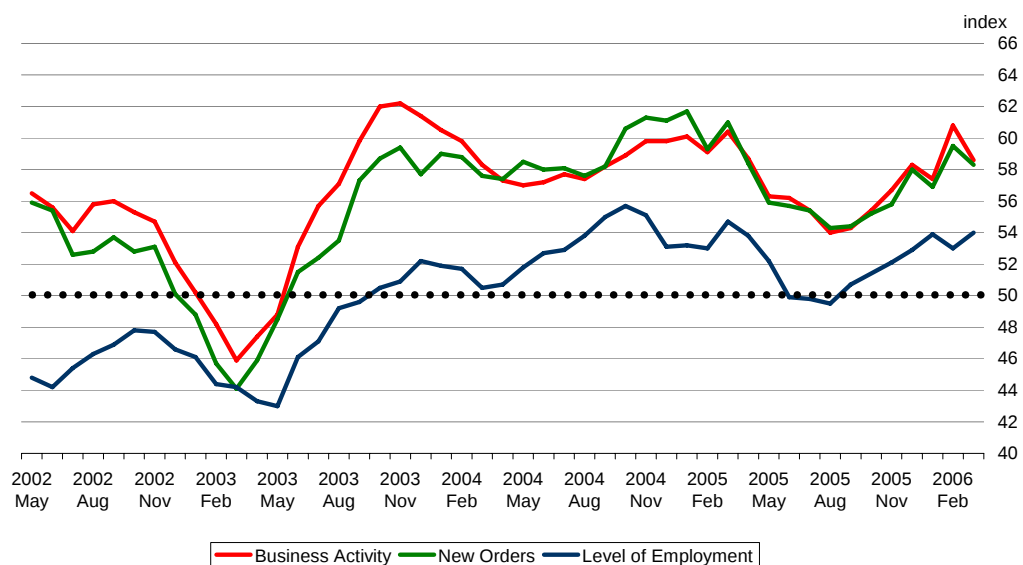
Source: Office for National Statistics

Business survey results also indicate an upturn in the London economy in the latter half of 2005 and early 2006. Figure 3.4 shows that surveys on business activity, new orders and the level of employment have all picked up since summer 2005.

Figure 3.4: Recent survey evidence on London's economic climate

Purchasing Manager's Index (PMI) survey, last data point March 2006

Seasonally adjusted index (above 50 indicates increase, below 50 indicates decrease)



Source: Purchasing Manager's Index/Royal Bank of Scotland

3.2 The UK economy

UK Gross Domestic Product (GDP) is estimated to have risen by 0.6 per cent in the first quarter of 2006 the same quarterly growth rate as in the fourth quarter of 2005. The annual growth rate in the first quarter of 2006 was 2.2 per cent, compared with 1.8 per cent in the fourth quarter of 2005. Overall the UK economy grew by an estimated 1.8 per cent in 2005 (the lowest rate since 1992). This was a slowdown compared with 2004, when the UK economy grew by 3.1 per cent.

The Chancellor revised up his budget deficit projection for 2006/7 in the Budget report in March 2006. However, in the pre-Budget report in December 2005 the Chancellor announced a new longer estimate of the length of the current economic cycle to 1997/98 to 2008/9, making his self-imposed 'Golden Rule' of not borrowing except to invest over the economic cycle more achievable.

Table 3.1: HM Treasury and consensus forecasts for the UK economy (March 2006)

Annual % change, unless otherwise indicated

	Average of Independent Forecasters		Budget March 2006	
	2006	2007	2006	2007
GDP growth (per cent)	2.2	2.3	2-2 ½	2 ¾-3 ¼
Inflation rate (Q4: per cent)				
CPI	1.9	1.9	2	2
RPI	2.3	2.4	-	-
Claimant unemployment (Q4: mn)	0.96	0.98	-	-
Current account (£bn)	-27.9	-28.4	-32 ¾	-36 ½
PSNB (2006-07, 2007-08: £bn)	38.3	36.6	36	30

Note: CPI = Consumer Price Index, RPI = Retail Price Index, mn = million, bn = billion

Source: HM Treasury Comparison of Independent Forecasts, March 2006

HM Treasury Financial Statement and Budget report Chapter C: The Public Finances

CPI inflation rose above its target of 2 per cent in the second half of 2005, largely due to the direct and indirect impact of the rise in oil prices. It then fell back and stood at just below target in March 2006 despite continued high energy prices. The Bank of England seems to continue to consider the impacts from high oil prices to be relatively short term and that inflationary pressures will remain contained over the next two years (the horizon for monetary policy impact). This assessment could change if energy prices continue to climb and lead to higher wage settlements; currently however, earnings growth remains stable.

One of the main factors behind the deceleration of the growth rate between 2004 and 2005 was the slowdown in domestic demand (primarily consumer spending), although this did pick up slightly towards the end of the year following the Bank of England's quarter per cent reduction in interest rates in August 2005. The slowdown in consumer spending reflects the high level of consumer debt, an increasing tax burden (the share

of household earnings devoted to tax payments has risen over the past two years from around 22 per cent to approximately 24 per cent^{iv)} and lower house price inflation.

Services showed a steady rate of growth throughout 2005. In particular business services and finance, saw healthy annual growth of 3.7 per cent. This was positive for London's economy with its service orientated economy. By contrast the production sectors performed relatively poorly, and worse than in 2004 as shown in Table 3.2.

Table 3.2: Recent growth in broad industrial sectors of UK economy

Annual % change

Industrial sectors	2005				2006		
	Q1	Q2	Q3	Q4	Q1	2004	2005
Agriculture, forestry, and fishing	-1.5%	0.7%	-1.0%	-1.4%	0.8%	0.9%	-0.8%
Mining & quarrying inc oil & gas extraction	-7.5%	-7.5%	-11.3%	-8.3%	-5.4%	-8.4%	-8.7%
Manufacturing	-0.3%	-1.5%	-0.4%	-2.3%	-0.8%	1.7%	-1.1%
Electricity gas and water supply	-2.4%	-0.2%	-1.8%	-1.0%	2.0%	2.3%	-1.4%
Construction	1.6%	1.7%	0.8%	0.4%	1.0%	3.3%	1.1%
Distribution hotels and catering; repairs	1.7%	0.7%	0.2%	1.4%	1.5%	5.1%	1.0%
Transport, storage and communication	4.5%	3.4%	3.4%	3.7%	3.4%	2.6%	3.7%
Business services and finance	3.1%	3.7%	3.9%	4.0%	4.0%	3.8%	3.7%
Government and other services	2.1%	2.1%	3.1%	3.0%	2.7%	2.3%	2.6%

Source: Office for National Statistics

Table 3.3 shows that annual household spending growth in the UK slowed considerably in 2005, with the lowest annual growth rate of 1.2 per cent in the third quarter. However, the fourth quarter showed a pick up to 1.5 per cent. Annual household spending growth in 2005 as a whole slowed from 3.6 per cent in 2004 to 1.7 per cent in 2005.

Table 3.3: UK domestic expenditure growth

Annual % change

Expenditure	2005					
	Q1	Q2	Q3	Q4	2004	2005
Households	2.7%	1.5%	1.2%	1.5%	3.6%	1.7%
Non-Profit Institutions	0.1%	0.7%	1.3%	2.8%	1.8%	1.2%
General Government	1.4%	2.4%	3.5%	4.3%	3.1%	2.9%
Gross Fixed Capital Formation	4.2%	1.2%	4.6%	3.1%	5.1%	3.2%

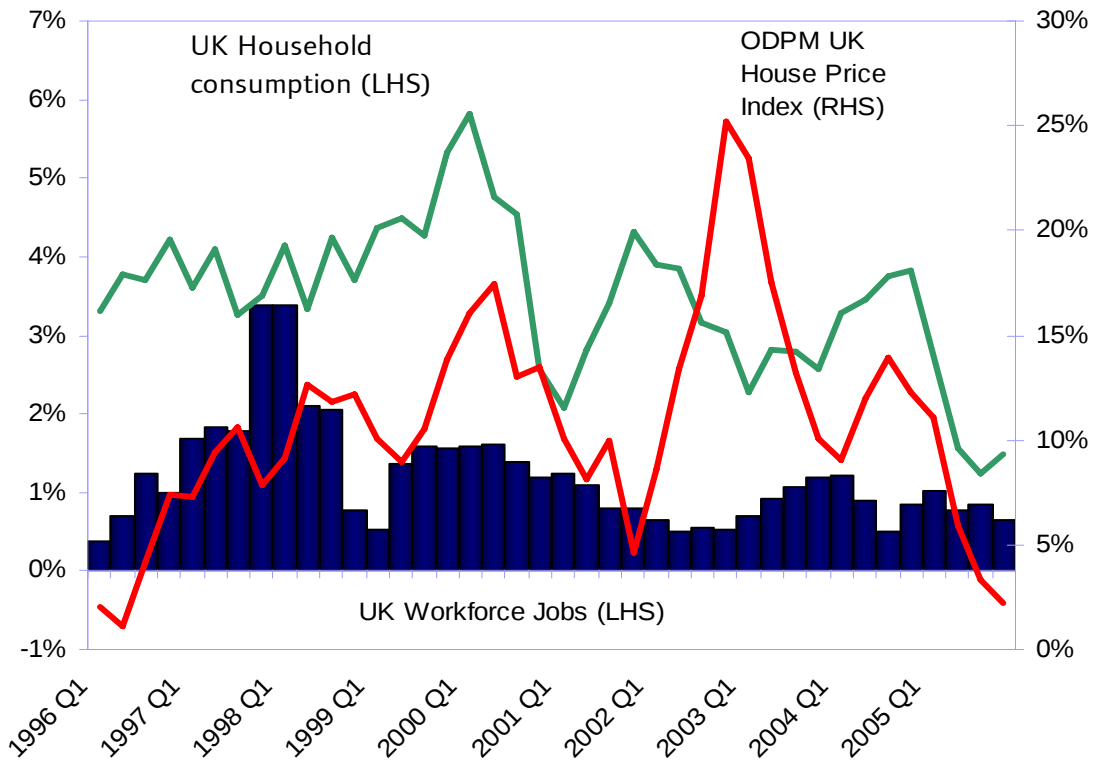
Source: Office for National Statistics

The slowdown in consumer spending has not been compensated for by sufficiently strong growth in investment or government spending. Furthermore, net trade (the balance of exports and imports) overall only made a broadly neutral contribution to GDP growth in 2005. Nevertheless, this represents a change in the position over recent years, as typically net trade has been a drag on the economy's overall growth rate^v. The slight improvement reflects the slowdown in consumer spending on durable goods and

business investment, both of which are import intensive. However, UK export demand has been held back by weak demand for imports in the euro area, the UK's main export market.

Figure 3.5: UK consumer spending, workforce jobs and house prices

Annual % change, last data point is Q4 2005



Note: LHS=Left Hand Scale, RHS=Right Hand Scale

Source: Office for National Statistics

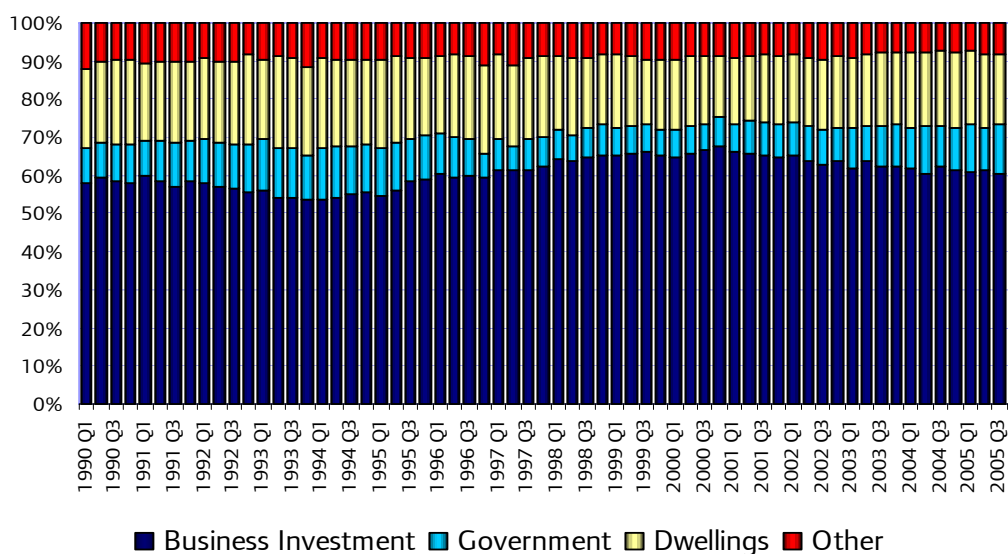
Figure 3.5 shows that the annual rate of house price inflation slowed significantly in 2005 although this slowdown tailed off towards the end of 2005 and there was a pick-up in early 2006 on nearly all measures of house price inflation.

Fig 3.7 in Box 3.1 on business investment shows that total annual investment growth in the UK has been positive since the beginning of 2004. However, a sizeable proportion of recent investment growth has been from the public sector. Annual growth in business investment has also been positive since the beginning of 2004, but remains low compared to the mid-to-late 1990s. Sustained high oil prices which have driven up energy and raw material costs alongside increased payments by companies into their in-house pension funds and weaker domestic consumer demand have been factors in sluggish business investment. A recent Bank of England Regional Agents report of business conditions indicates that companies currently expect only modest increases in investment spending^{vi}.

Box 3.1: Business investment

Over recent years, levels of business investment have been subdued. Figure 3.6 shows that since the end of 2000 business investment as a proportion of total investment has been declining. This has been the case despite low long-term interest rates, a stable economy and since 2003 a pick-up in equity markets. Quarterly figures from the ONS show that business investment fell by 0.9 per cent in the last quarter of 2005, the largest quarter-on-quarter fall since the third quarter of 2003.

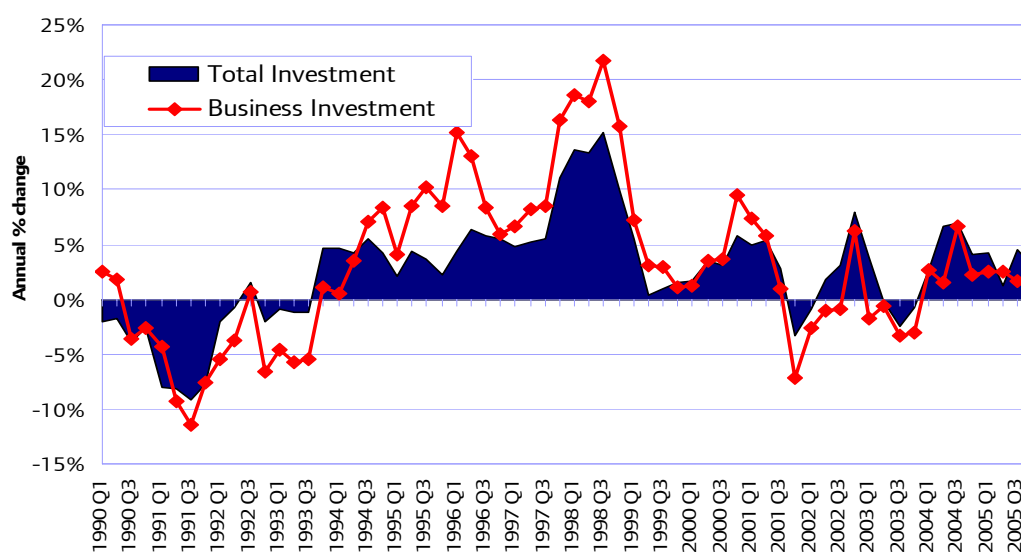
Figure 3.6: UK Investment by type, as a percentage of total
Gross Fixed Capital Formation, last data point – Q4 2005



Source: ONS

Figure 3.7 shows that business investment grew at an annual rate of 1.3 per cent in the last quarter of 2005, while total investment grew at an annual rate of 3.1 per cent.

Figure 3.7: UK Total and Business investment, annual growth
Gross fixed capital formation, last data point – Q4 2005



Source: ONS

Company pension deficits

One of the major factors in the slowdown of business investment is the large deficits in company pension funds. The aggregate pension fund deficit of all UK companies is estimated to be between £100 and £130 billion^{vii}. This is approximately equivalent to 10-13 per cent of GDP. Proposals put forward by the Pensions Regulator in October 2005 require companies to fill these deficits over a period of ten years. Assuming companies fulfil these requirements, this would mean significant amounts of profits being used to fill pension deficits rather than being used for investment. Indeed some companies such as BAE and Boots have already decided to make large one-off short-term payments to clear significant parts of their deficits. Others may be delaying investment decisions until they decide what to do about these pension shortfalls. It is therefore not surprising that business investment has been slow recently.

Profitability and the UK economic outlook

A major driver of business investment is expectation of future profitability and the outlook for the UK economy. Levels of corporate profitability have been easing – the February Bank of England Inflation Report notes the slowdown in profit growth in non-oil companies^{viii}. The report also notes that more companies issued profit warnings in 2005 than in any year since 2001. Moreover, recent British Chambers of Commerce business surveys show that profit expectations in the service and manufacturing sectors have been trending downwards since early 2004^{ix}.

There have also been some developments that have made and continue to make the outlook for the economy somewhat uncertain, reducing profit expectations and thereby weighing against the decision to invest. These factors include:

- The oil market – nominal oil prices have more than doubled over the last two years, thereby increasing costs to firms. Perhaps more important is the fact that oil prices are currently very volatile and difficult to forecast (see section 6). This combination of high oil prices with increased uncertainty means companies are more likely to cut back on spending money on equipment, thereby reducing business investment.
- Weak domestic household demand growth – uncertainty about future demand in particular has affected company decisions to invest.
- The growing tax and regulatory burden – this has been increasing costs, reducing profitability and therefore may be a factor in companies deciding not to invest.

HM Treasury and the Bank of England have been relying on business investment picking up the slack left by the recent slowdown in consumer spending^x. The above discussion seems to indicate a more subdued trajectory for business investment. As a result, rather than an investment-led recovery, the MPC are now expecting GDP growth to come from a more familiar source, namely consumption. The MPC has also suggested that given the robust growth in the world economy, net exports may fill the gap^{xi}.

However, the Treasury remains optimistic about business investment, expecting it to grow strongly in late 2006, 2007 and 2008, citing substantial reserves of liquidity in the corporate sector and the historically low cost of capital. In addition, as more comprehensive data becomes available business investment figures are frequently revised, usually upwards, opening up the possibility that actual trends in business investment are better than are currently reported.

3.3 The world economy

The global economy has remained robust led by a strong performance in the US, India and China. Growth did nonetheless slow slightly in 2005 to 4.8 per cent compared with over 5 per cent in 2004. The IMF^{xii} forecasts growth of 4.9 per cent in 2006, which is above the trend of the last three decades. Most commentators also expect the global economy to remain robust in 2006.^{xiii}

Over the last couple of years the strong rate of growth in the world economy through higher oil demand has contributed to the sustained increase in oil prices (see Supplement in section 6). Supply disruptions have added additional uncertainty to oil prices, particularly given tight supply conditions, however this has so far not led to significant increases in underlying inflation. Long-term interest rates are at historically low levels in most major economies in both real and nominal terms.

World trade is projected to increase at almost 8 per cent in 2006^{xiv}, and non-OECD economies are estimated to contribute around half of this growth. Indeed the Asia-Pacific region has contributed around 40 per cent to world trade growth over the past three years.^{xv} Part of this growth is due to increased import demand of the OPEC countries following the large oil price windfall gains accrued over the past two years.^{xvi}

Growth in the **OECD area** has remained robust despite increasing energy prices. The OECD^{xvii} forecasts that these countries will grow by 2.9 per cent in 2006.

The **US** economy remains reasonably strong despite a slowdown in the last two quarters of 2005. In the second half of 2005 real GDP is estimated to have grown at an annualised rate of 3.75 per cent and the OECD forecasts growth of 3.5 per cent in 2006.^{xviii} Unemployment has fallen to a four and a half year low. However, a boom in house prices (rises of almost 13 per cent in 2005^{xix}), fuelled by low long-term interest rates in recent years, is a risk to inflation. The Federal Reserve continued to tighten monetary policy, increasing interest rates to 4.75 per cent in March. This was the fifteenth consecutive quarter point increase, taking US rates above UK interest rates for the first time in over five years. Further rate rises are still possible. Ben Bernanke took over as head of the Federal Reserve in February. Known to be an advocate of inflation targeting unlike his predecessor Alan Greenspan, this could mark a change in US monetary policy in the medium term.

The large federal assistance pledged to rebuild the southern economies in the US following hurricanes Katrina and Rita are likely to have contributed to an increase in government spending and a wider federal deficit, at a time when the budget deficit is

already growing rapidly. The US trade deficit remained very high in 2005 and is projected to exceed 7 per cent of GDP in 2007^{xx}, although this continues to be financed by foreign investors purchasing US assets.

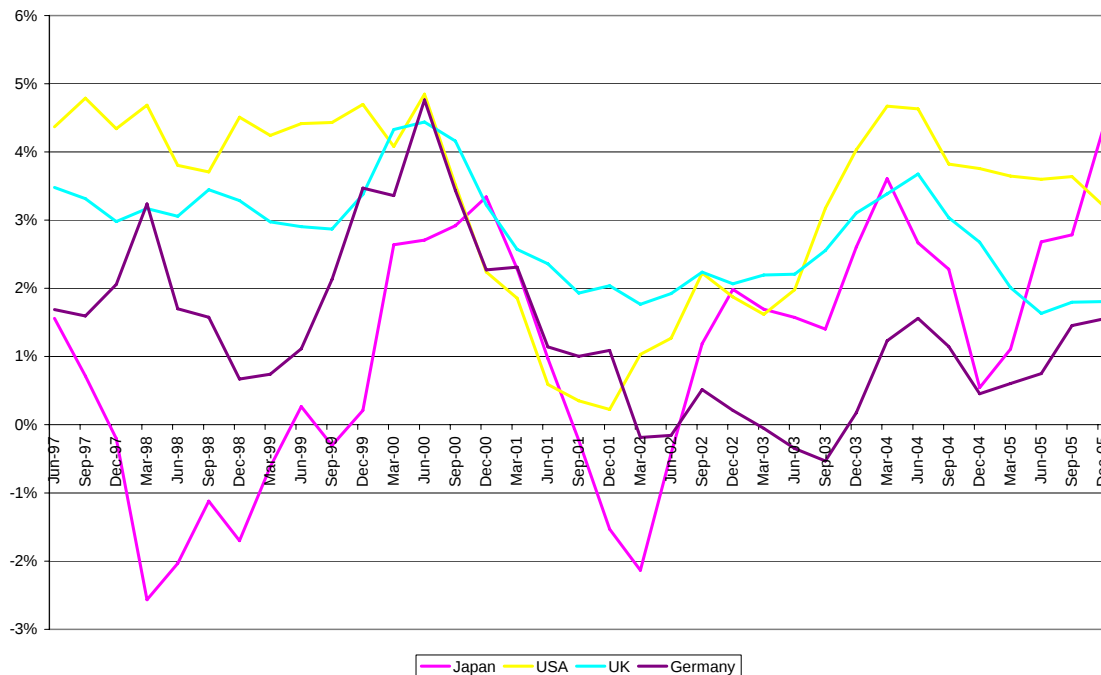
The **euro area** is showing signs of improvement due to robust export performance and stronger industrial production, although variations exist across countries. Spain has shown the strongest performance with growth at around 3.4 per cent in 2005, an increase on 3.1 per cent in 2004.^{xxi} There are signs of recovery in France, Germany and Italy. Nonetheless, German consumer spending remains weak despite increased business confidence and falling unemployment.

The European Central Bank (ECB) is predicting eurozone growth of 1.9 per cent in 2006 compared with 1.4 per cent last year. In response to perceived inflationary pressures, the ECB has increased interest rates to 2.5 per cent. Some commentators would argue that interest rate rises have come too soon, while others argue that these economies are already approaching their new lower trend growth levels.

The Eastern European economies that joined the EU in 2004 have a healthy outlook. Average real growth rates are around double the Western European average projected for 2006.^{xxii}

Figure 3.8: GDP growth in selected industrialised countries

Real GDP, annual % change



Source: Ecwin

After almost a decade of deflation, **Japan's** economy is recovering, with a potentially sustainable return of steady growth and positive, albeit very low, inflation. Corporate investment has picked up, as has domestic demand. The OECD forecasts that Japan will grow at 2 per cent in 2006 and 2007, having grown at 2.8 per cent in 2005.^{xxiii}

Following this upturn, the Japanese central bank has announced that its ultra loose monetary policy, known as 'quantitative easing' (i.e. the pumping in of money into the economy by the central bank in an effort to halt deflation), will come to an end now that there has been a return to positive growth in consumer prices. This policy was designed to pull Japan out of deflation after the cutting of interest rates failed to have much effect (due to a 'liquidity trap'). Japanese interest rates are now expected to rise slowly from zero. This monetary policy change could impact on the financing of the US trade deficit which is discussed below.

3.4 Emerging market economies

Emerging market economies continue to grow strongly. Asia remains the fastest growing region led by China. A report by PriceWaterhouseCoopers projects that seven emerging economies (China, India, Brazil, Russia, Indonesia, Mexico and Turkey) could be around 25 per cent larger than the current G7 economies when measured in dollar terms by 2050.^{xxiv} Moreover, PWC project that India has the potential to be the fastest growing large economy in the world over the same period. India is projected to have GDP in 2050 of close to 60 per cent of that of the US at market exchange rates; meanwhile China is projected to be at around 95 per cent of US GDP.

While some commentators interpret this as a threat to established OECD economies, the rise of the emerging economies should benefit average OECD income levels through creating new market opportunities.

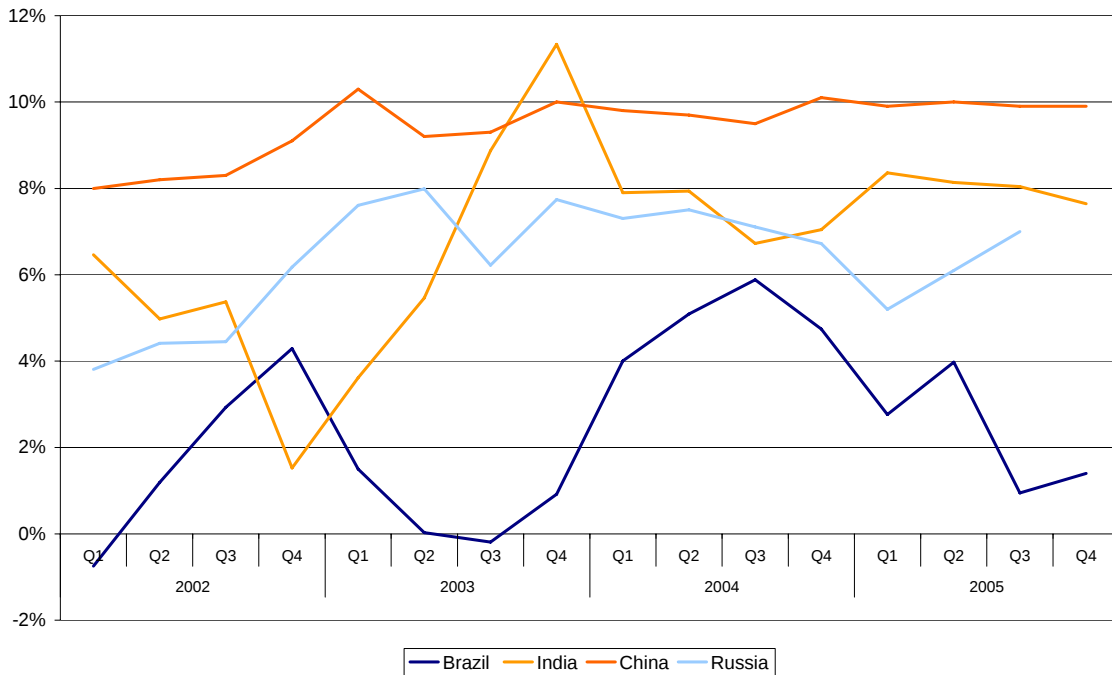
China is taking an increasingly large role in world trade, now accounting for 6 per cent.^{xxv} Economic growth continued at a rapid pace of over 9 per cent in 2005.^{xxvi} The OECD expects this rate of growth to be sustainable for some time to come.^{xxvii} Private consumption growth remains strong, as does investment. Private sector capital formation has risen strongly since the Chinese government clarified that private investment is free from administrative controls. Strong growth in exports has in part resulted from the initial liberalisation of international trade in textiles and clothing.^{xxviii}

China's current account surplus increased markedly in 2005 to almost 8 per cent of GDP^{xxix}. High savings both by households and businesses drives China's surplus, the saving to GDP ratio has soared from a stable 40 per cent in 2000 to 50 per cent in 2004.^{xxx} This reflects the limited access to credit for households and fears over ageing in the absence of an adequate social safety net.^{xxxi} Also under developed financial markets induce Chinese businesses to retain earnings.

Despite a small appreciation in the effective exchange rate during 2005, the current account surplus is unlikely to fall relative to GDP. A further appreciation would ease the current account surplus and reduce the likelihood of inflation. The governor of China's central bank has recently indicated that it is likely to widen the +/-0.3 per cent band within which the Yuan is allowed to fluctuate on a daily basis in the future^{xxxii}. This will be welcomed by the US in terms of easing its current account deficit.

Figure 3.9: GDP growth in selected emerging market economies

Annual % change



Source: Ecowin

In **Russia** preliminary official data on real GDP showed a slowing of growth from 7.2 per cent in 2004 to 5.9 per cent in 2005.^{xxxiii} This was primarily due to reduced growth in fixed investment and a sharp slowdown in export growth. However, domestic consumption is driving growth, supported by rising real incomes and expansion of consumer credit. OECD projects growth of around 6 per cent in 2006.^{xxxiv}

Similarly, in **Brazil** private consumption has been fuelled by expansion in consumer credit and investment is also picking up. Following strong growth in 2004, the economy slowed at the beginning of 2005 but has recovered slightly. The OECD Economic Outlook projects growth of 3.7 per cent in 2006.^{xxxv}

India continued to grow strongly at around 8 per cent in the second half of 2005. Consumer price inflation remains steady at 4 per cent.^{xxxvi} Although inflation remains under control, inflationary pressure is a potential challenge for India.

India is competing successfully in the global economy, particularly in information technology services and outsourcing, although the IMF believes India needs to take action in terms of reducing tariffs, liberalising foreign direct investment and increasing labour market flexibility, as currently it remains a relatively closed economy. A step in the right direction was announced as part of India's March 2006 Budget in which it was indicated that India would begin easing capital controls.

3.5 Risks to the world economy

Risks to the economic outlook of the world economy include a further rise in energy prices which could feed into inflation and cause further widespread monetary tightening. Although the world economy is less dependent on oil than it was in the 1970s, an increase in oil and gas prices is still a downside risk to economic growth and an upside risk to inflation. Uncertainty about future oil prices may also undermine confidence.

Furthermore, the US current account deficit, which is financed to a large extent by surpluses in China, Japan, Germany and OPEC countries, poses a risk. Financial globalisation has relaxed the constraints on countries financing their savings and investment balances, allowing larger imbalances to be sustained for longer. However, as noted by Rachel Lomax, Deputy Governor of the Bank of England^{xxxvii} debtor nations face greater uncertainty about when credit constraints will begin to tighten. A sudden unwillingness to hold US assets could prompt a fall in asset prices and the US dollar. Any sudden collapse of the dollar could be a threat to the world economy by undermining confidence. An orderly rebalancing of these current account imbalances (large surpluses as well as large deficits) will require domestic economic and exchange rate policies that are supportive of more sustainable trade and financial flows.

Another concern that has been in the headlines recently is the risk of an increasing protectionist sentiment. The competitive challenge of the emerging economies could encourage protectionist sentiment, particularly in the EU and US. This is a risk since trade is important for global growth and human welfare.

A further risk to the world economy is the possibility of a global pandemic if avian flu became able to spread from one human to another. The potential impacts of such a pandemic are extremely difficult to predict, but some commentators estimate that it could reduce world economic growth by 2 to 6 percentage points.^{xxxviii} The immediate economic impact would be a negative supply side shock as there would be a high level of absenteeism as people either fell ill or just stayed away from work. Travel restrictions could also be introduced leading to a decline in international tourism. The IMF also predicts that there could be a sharp increase in the demand for cash, and a decline in consumer spending and trade. Government budgets could also come under pressure as spending on healthcare would increase.

3.6 Summary

London economic growth in 2005 exceeded that of the UK as a whole for the first time since 2000. This was in part driven by robust growth in the financial and business services sector which is important to the London economy. This sector has remained buoyant at the beginning of 2006, as demonstrated by rising equity markets. Overall, the outlook for the London economy over the medium term is positive. UK inflation, despite having increased briefly above its target in 2005 in response to rising oil prices, appears to remain under control, so UK interest rates are likely to stay at their historically low levels over the next couple of years. This should support UK growth.

The world economy remains robust and is expected to continue growing at a reasonably strong rate over the near term driven by China and India, but also accompanied by strong growth in the US and a more gentle recovery in both the eurozone and Japan. Although the global economy has thus far shown resilience to high oil prices, further increases in, as well as uncertainty surrounding, energy prices remain a downside risk.

Moreover, uncertainties remain over the medium-term in the form of a potential sharp adjustment of the US's current account deficit and the possibility of a global flu pandemic.

4. Review of independent forecasts

What the forecasts provide

The main forecast reports on four indicators: workforce employment, real output, private consumption (household expenditure) and household income in London. The consensus reports on the first three of these, since most forecasters do not yet provide forecasts of household income. Both annual growth rates and 'standardised' absolute levels (see following) are reported.

Both the consensus and GLA Economics' own forecasts also provide predictions of growth rates for employment and output in six broad sectors:

- manufacturing
- construction
- transport and communications
- distribution, hotels and catering
- finance and business services
- other (mainly public) services.

Output

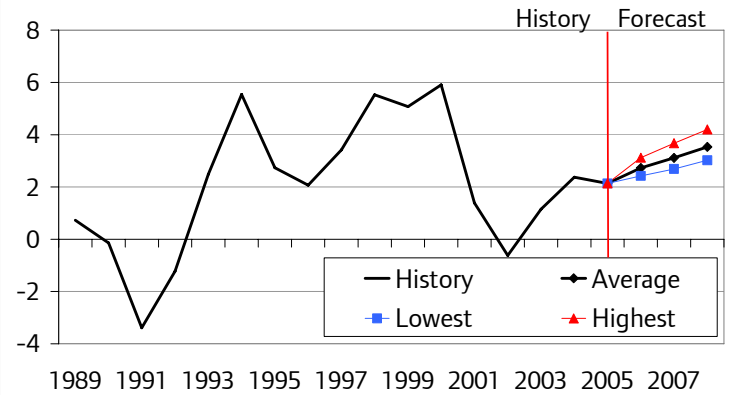
(London GVA, constant year 2002, £ billion)

Despite the slowdown in GVA growth in 2005 to 2.1 per cent, stronger growth is now expected.

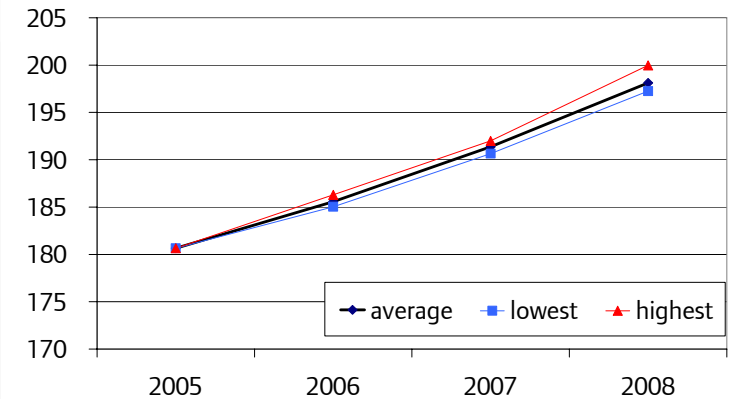
The consensus is that the growth rate will rise between 2006 and 2008. The average of independent forecasters for growth is 2.7 per cent in 2006, increasing to 3.1 per cent in 2007 and 3.5 per cent in 2008.

The spread of predicted GVA levels for 2008 is small, indicating broad agreement by the forecasters.

Annual growth (per cent)



Level (constant year 2002, £ billion)



Annual growth (per cent)			
	2006	2007	2008
Average	2.7	3.1	3.5
Lowest	2.4	2.7	3.0
Highest	3.1	3.7	4.2

Level (constant year 2002, £ billion)			
	2006	2007	2008
Average	186	191	198
Lowest	185	191	197
Highest	186	192	200

History: Annual growth (per cent)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0.7	-0.1	-3.4	-1.2	2.5	5.5	2.7	2.1	3.4	5.5	5.1	5.9	1.4	-0.6	1.2	2.4	2.1

History: Level (constant year 2002, £ billion)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
129.2	129.0	124.6	123.1	126.1	133.1	136.8	139.6	144.4	152.3	160.1	169.5	171.9	170.8	172.8	176.9	180.7

Employment

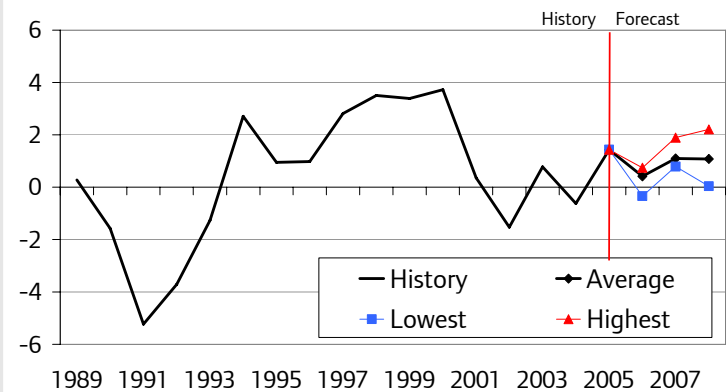
(London workforce jobs)

London's labour market showed a recovery in 2005 with employment growth standing at 1.4 per cent.

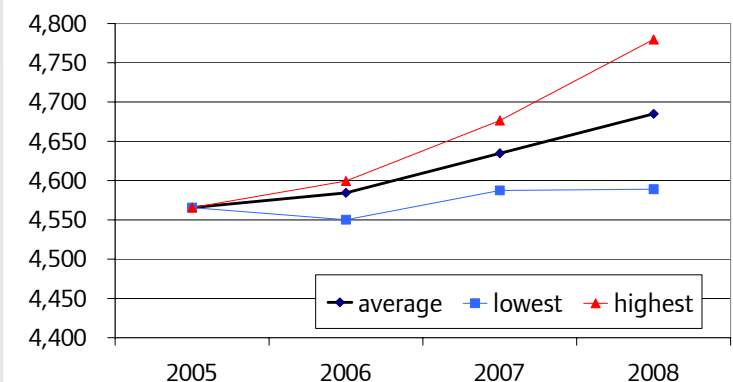
The lowest forecast is for growth to become negative in 2006 (-0.3 per cent). However, the consensus is that employment growth will be 0.4 per cent in 2006, followed by a rise to 1.1 per cent in 2007 and 2008.

The spread of forecasts for total London jobs by 2008 range from 4.59 million to 4.78 million.

Annual growth (per cent)



Level (thousands)



Annual growth (per cent)			
	2006	2007	2008
Average	0.4	1.1	1.1
Lowest	-0.3	0.8	0.0
Highest	0.7	1.9	2.2

Level (thousands)			
	2006	2007	2008
Average	4,580	4,640	4,690
Lowest	4,550	4,590	4,590
Highest	4,600	4,680	4,780

History: Annual growth (per cent)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0.3	-1.6	-5.2	-3.7	-1.3	2.7	0.9	1.0	2.8	3.5	3.4	3.7	0.4	-1.5	0.8	-0.6	1.4

History: Level (thousands)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
4,290	4,230	4,000	3,860	3,810	3,910	3,950	3,990	4,100	4,240	4,390	4,550	4,560	4,500	4,530	4,500	4,570

Household expenditure

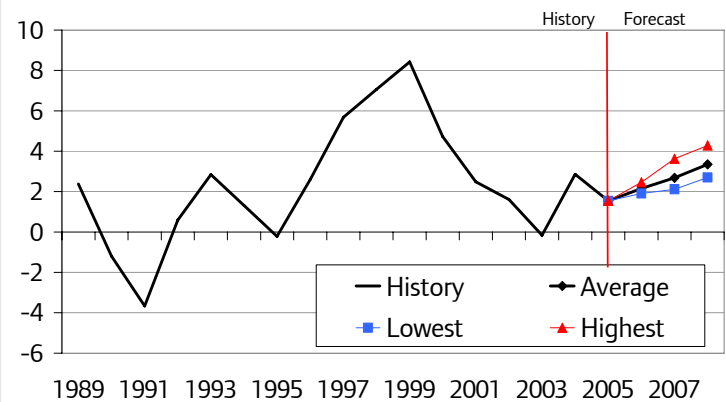
(London household spending, constant year 2002, £ billion)

Growth in household expenditure was 1.5 per cent in 2005.

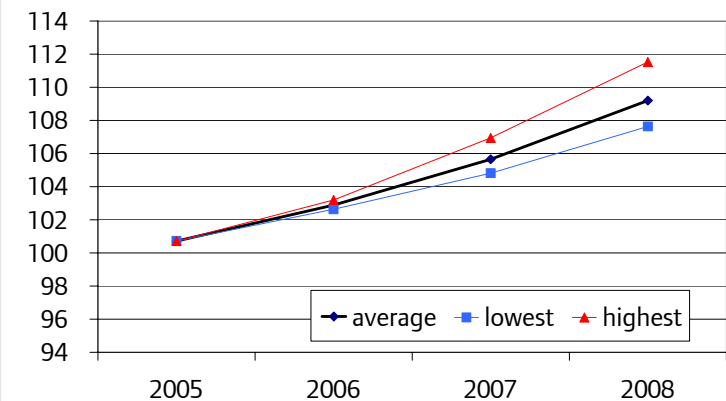
The average of independent forecasters is for stronger household expenditure, with growth rising to 2.2 per cent in 2006, 2.7 per cent in 2007 and 3.3 per cent in 2008.

In 2008, the spread of forecasts for household spending levels is between £108 billion and £112 billion in constant 2002 prices.

Annual growth (per cent)



Level (constant year 2002 £ billion)



Annual growth (per cent)			
	2006	2007	2008
Average	2.2	2.7	3.3
Lowest	1.9	2.1	2.7
Highest	2.5	3.6	4.3

Level (constant year 2002, £ billion)			
	2006	2007	2008
Average	103	106	109
Lowest	103	105	108
Highest	103	107	112

History: Annual growth (per cent)

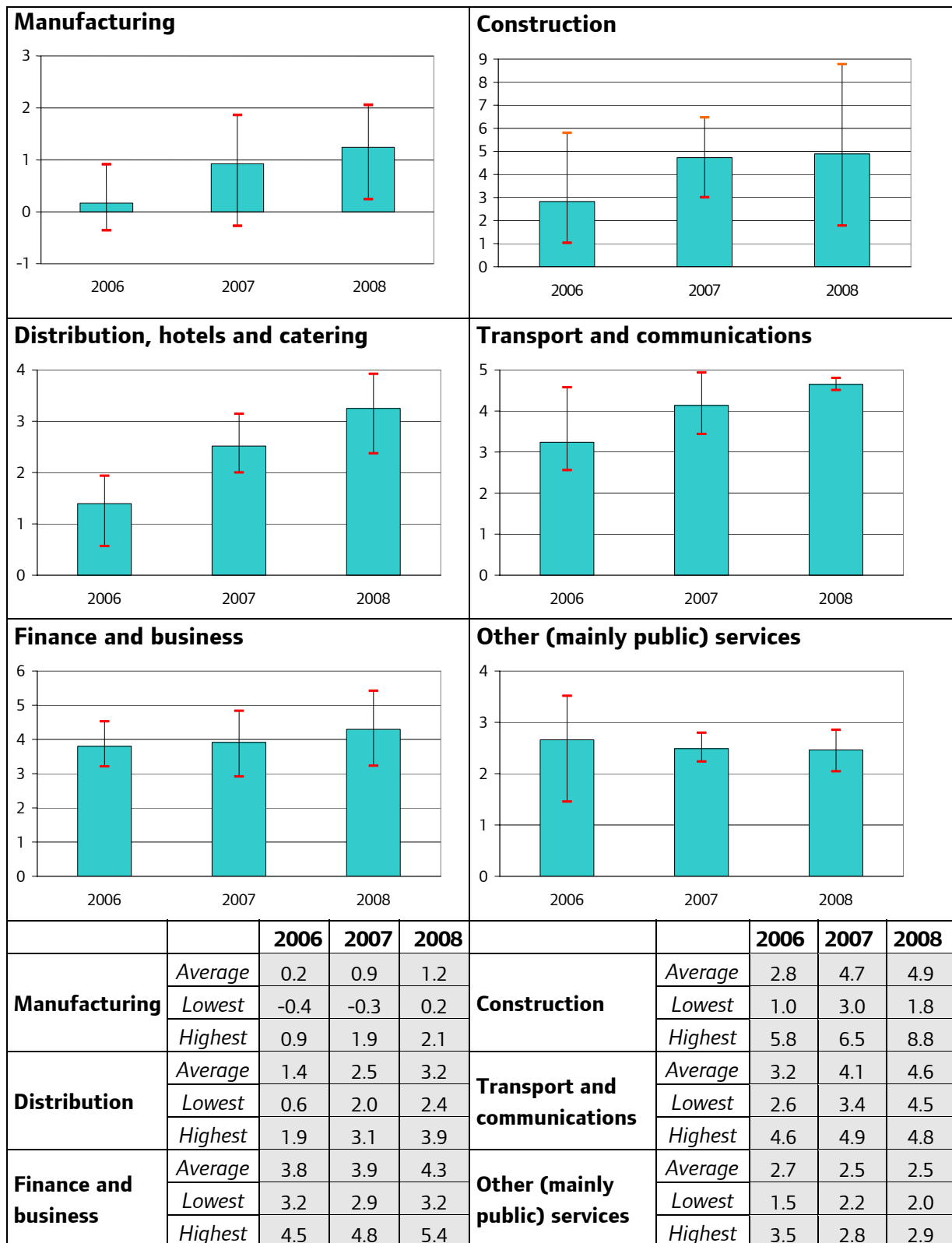
1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
2.4	-1.2	-3.7	0.6	2.8	1.3	-0.2	2.6	5.7	7.1	8.4	4.7	2.5	1.6	-0.2	2.9	1.5

History: Level (constant year 2002, £ billion)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
70.7	69.9	67.3	67.7	69.6	70.5	70.4	72.2	76.3	81.7	88.6	92.8	95.1	96.6	96.4	99.2	100.7

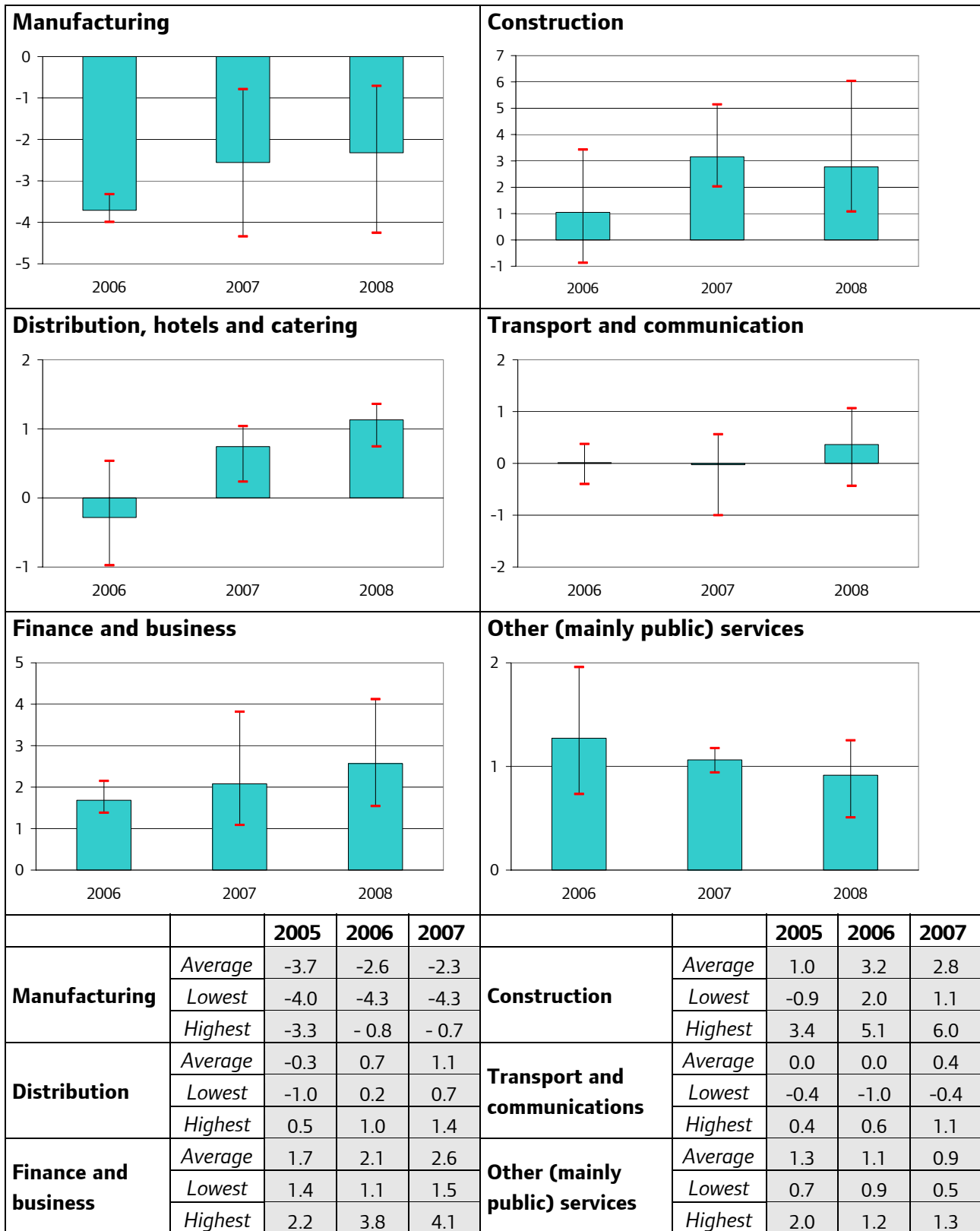
Output growth by sector (per cent annual change)

Growth is expected in all sectors over 2006 – 2008 but manufacturing is expected to have the slowest growth. Construction, transport and communications, and finance and business services are forecasted to have the fastest growth.



Employment growth by sector (per cent annual change)

Forecasted employment growth shows a more mixed picture across the sectors than for forecasted output growth. Financial and business services are forecasted to see the strongest employment growth, while manufacturing is forecast to have declines.



5. The GLA Economics forecast

5.1 Assumptions and methods

This forecast combines GLA's long-term trend projections for employment and population with medium-term assumptions about the growth of the UK economy derived from HM Treasury's comparison of independent forecasts.

The model is constrained for the year 2020 to London-based employment projections derived from the long-term growth rate of London's workforce. The UK assumptions comprise the medium-term growth rates of UK total output. The GLA's long-term employment projections for London have been updated from those underlying the *London Plan* and the updated projections were published in December 2005^{xxxix}.

5.2 Detailed assumptions for the UK

Table 5.1 shows the assumptions adopted by the GLA for its forecast and compares them to HM Treasury's Budget 2006 forecast. Note that the GLA forecast is based on assumptions up to 2020, though the forecast itself only goes up to 2008.

Table 5.1: UK economic assumptions

		2006	2007	2008
GLA forecast ^{xi}	GVA	2.2	2.5	2.6
	Consumption	1.9	-	-
Budget 2006	GVA	2-2½	2¾-3¼	2¾-3¼
	Consumption	2-2½	2¼-2¾	2½-3

GLA Economics has adopted consensus growth estimates throughout. These estimates, when applied to EBS's UK model, generate UK growth rates for manufacturing and non-manufacturing which impact on the London forecast, since London has a higher share of non-manufacturing production than the UK average. These growth rates are shown below in Table 5.2.

Table 5.2: Implicit UK growth rates

	2006	2007	2008
Manufacturing output	0.8	2.2	1.3
Non-manufacturing output	2.8	3.0	3.2

Source: EBS's UK forecast using GLA Economics assumptions on UK GDP growth

5.3 Projections and forecasts

It is necessary to distinguish carefully between the GLA's long-term employment projections and this forecast which contains GLA's medium-term planning projections. Trend projections, by definition, do not incorporate cyclical variations and constitute estimates of jobs and output at comparable points in the cycle. The actual course of output and employment will vary around this trend. Trend projections are essential for planning to provide capacity (such as office space, housing and transport) to accommodate the needs of the economy throughout and at the peak of the cycle, not just at its low points. For business planning (for example, in deciding the timing of

investments and the likely course of revenue) estimates of actual numbers of jobs and actual output at any point in time are required. The medium-term planning projections provide these estimates.

As time progresses and more data become available, it becomes possible to identify whether underlying trends are continuing or whether new trends are being established. While the forecast is calibrated to the GLA's employment projections for 2020, it provides early warnings of significant deviations from these projections because it accounts for the most recent data and incorporates the latest estimates of UK growth rates.

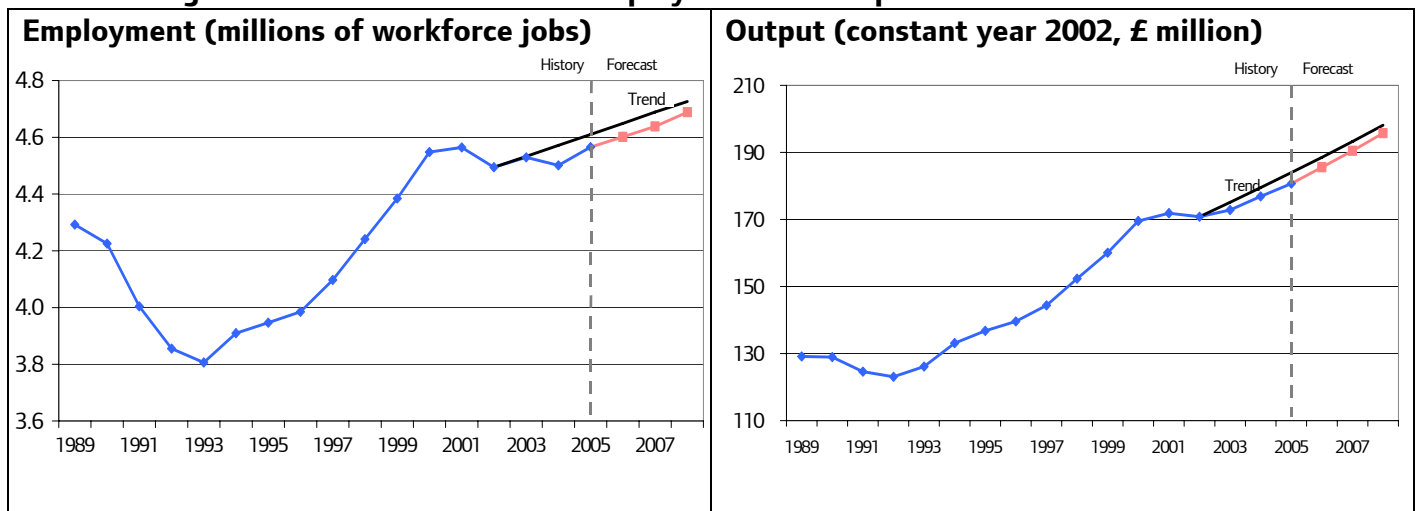
In 2002 the GLA commissioned new employment projections from Volterra Consulting which now form the trend projection on which the medium-term forecast is based. For this reason 2002 is taken as the start point for all trend (long-term) projections, as a basis for comparisons. For comparison purposes, absolute (level) trend projections are derived by applying the trend growth rates to the historical data for 2002 currently available and may therefore differ from the absolute levels for GVA, employment and household expenditure published elsewhere as a result of revisions to historical data as better information becomes available.

5.4 Results

Output is expected to grow slightly above the long-term trend rate of 2.5 per cent per year throughout 2006-2008^{xli}. Employment is forecast to continue growing steadily, close to trend employment growth in 2006 and 2007 and above the trend rate in 2008.

Following the interest rate rises in 2004, there was a slowdown in household spending growth in 2005. Since the quarter point reduction in mid-2005, interest rates have been stable. Forecasted household spending is expected to recover slowly. Household spending growth is forecast to increase to 1.9 per cent in 2006, 2.2 per cent in 2007 and 2.9 per cent in 2008.

Figure 5.1: Trend and forecast employment and output



Source: EBS

Table 5.3: Forecast and historical growth rates

Annual % change

	2000	2001	2002	2003	2004	2005	2006	2007	2008
GVA	5.9	1.4	-0.6	1.2	2.4	2.1	2.7	2.6	2.8
Workforce jobs	3.7	0.4	-1.5	0.8	-0.6	1.4	0.8	0.8	1.1
Household spending	4.7	2.5	1.6	-0.2	2.9	1.5	1.9	2.2	2.9
Household income	8.5	3.7	0.2	3.8	0.4	2.4	1.0	1.9	2.6

Table 5.4: Forecast and historical levels

(constant year 2002, £ billion except jobs)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
GVA	169.5	171.9	170.8	172.8	176.9	180.7	186	190	196
Workforce jobs (millions)	4.55	4.56	4.49	4.53	4.50	4.57	4.6	4.6	4.7
Household spending	92.8	95.1	96.6	96.4	99.2	100.7	103	105	108
Household income	102.8	106.6	106.9	110.9	111.4	114.1	115	117	120

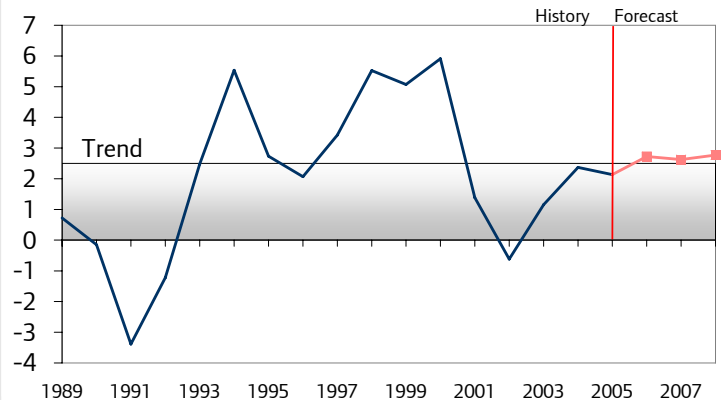
Output

(London GVA, constant year 2002, £ billion)

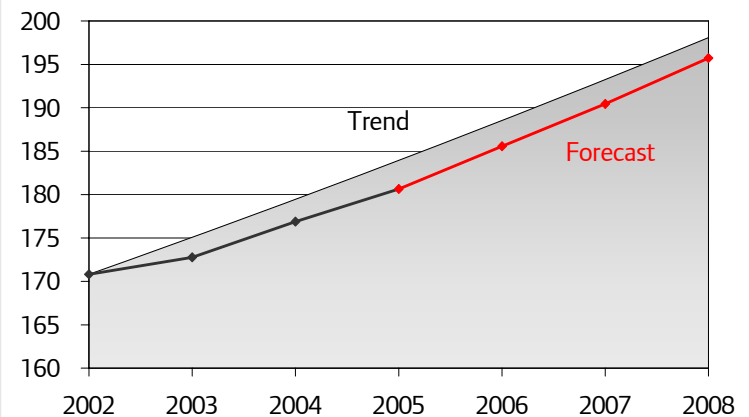
London GVA growth is forecast to be just above trend throughout 2006-2008. Growth is forecast to be 2.7 per cent in 2006, then 2.6 per cent in 2007 followed by a rise to 2.8 per cent in 2008.

This places the GLA forecast below the average of independent forecasts for 2007 and 2008.

Annual growth (per cent)



Level (constant year 2002, £ billion)



Growth (annual per cent)				
	2005	2006	2007	2008
GLA	2.1	2.7	2.6	2.8
Consensus		2.7	3.1	3.5

Level (constant year 2002, £ billion)				
	2005	2006	2007	2008
GLA	181	186	190	196
Consensus		186	191	198

History: Annual growth (per cent)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0.7	-0.1	-3.4	-1.2	2.5	5.5	2.7	2.1	3.4	5.5	5.1	5.9	1.4	-0.6	1.2	2.4	2.1

History: Level (constant year 2002, £ billion)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
129.2	129.0	124.6	123.1	126.1	133.1	136.8	139.6	144.4	152.3	160.1	169.5	171.9	170.8	172.8	176.9	180.7

Employment

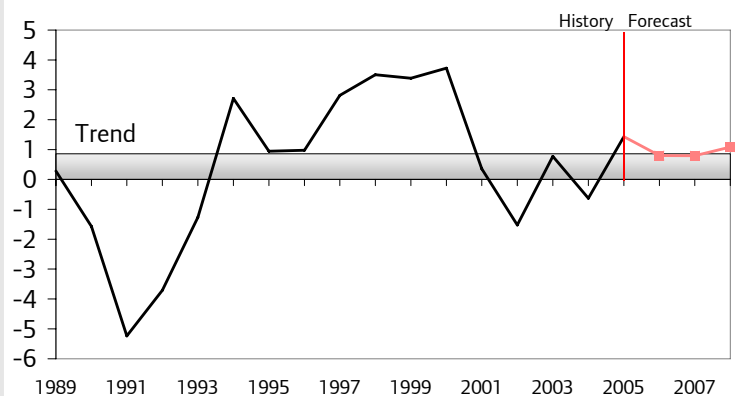
(London workforce jobs)

London's employment is forecast to grow steadily from 2006 through to 2008. Employment growth of 0.8 per cent is forecast in 2006 and 2007, rising to 1.1 per cent in 2008.

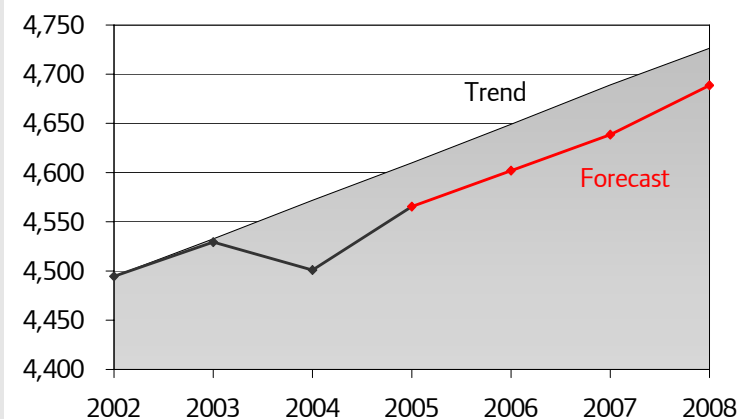
For 2006, the GLA forecast for employment growth is above the average of independent forecasters, but it is lower in 2007 and the same in 2008.

By 2008, London is expected to have 4.69 million workforce jobs.

Annual growth (per cent)



Level (thousands of workforce jobs)



Growth (annual per cent)				
	2005	2006	2007	2008
GLA	1.4	0.8	0.8	1.1
Consensus		0.4	1.1	1.1

Level (thousands of workforce jobs)				
	2005	2006	2007	2008
GLA	4,570	4,600	4,640	4,690
Consensus		4,580	4,640	4,690

History: Annual growth (per cent)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
0.3	-1.6	-5.2	-3.7	-1.3	2.7	0.9	1.0	2.8	3.5	3.4	3.7	0.4	-1.5	0.8	-0.6	1.4

History: Level (thousands)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
4,290	4,230	4,000	3,860	3,810	3,910	3,950	3,990	4,100	4,240	4,390	4,550	4,560	4,500	4,530	4,500	4,570

Household expenditure

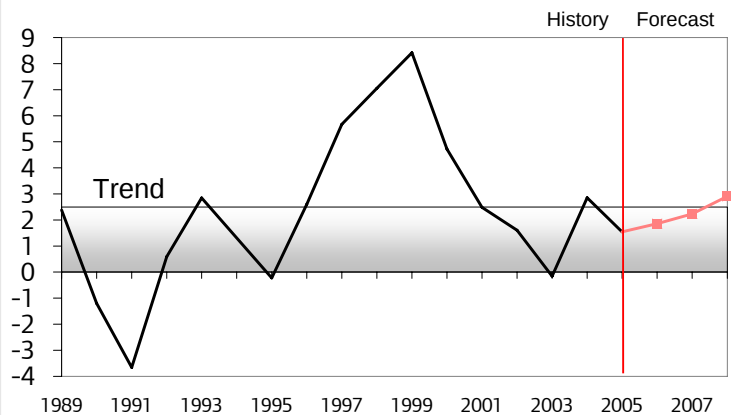
(London household spending, constant year 2002, £ billion)

Growth in London household spending is expected to remain below GVA growth during 2006 and 2007, but is forecast to grow slightly faster than GVA in 2008 at 2.9 per cent.

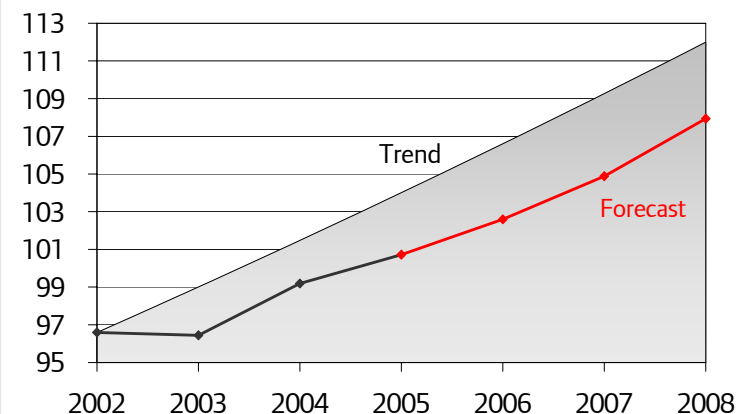
The GLA forecast is for growth in household spending at 1.9 per cent in 2006, 2.2 per cent in 2007 and 2.9 per cent in 2008.

This places the GLA forecast below the average of independent forecasters during 2006–2008.

Annual growth (per cent)



Level (constant year 2002, £ billion)



Growth (annual per cent)				
	2005	2006	2007	2008
GLA	1.5	1.9	2.2	2.9
Consensus		2.2	2.7	3.3

Level (constant year 2002, £ billion)				
	2005	2006	2007	2008
GLA	101	103	105	108
Consensus		103	106	109

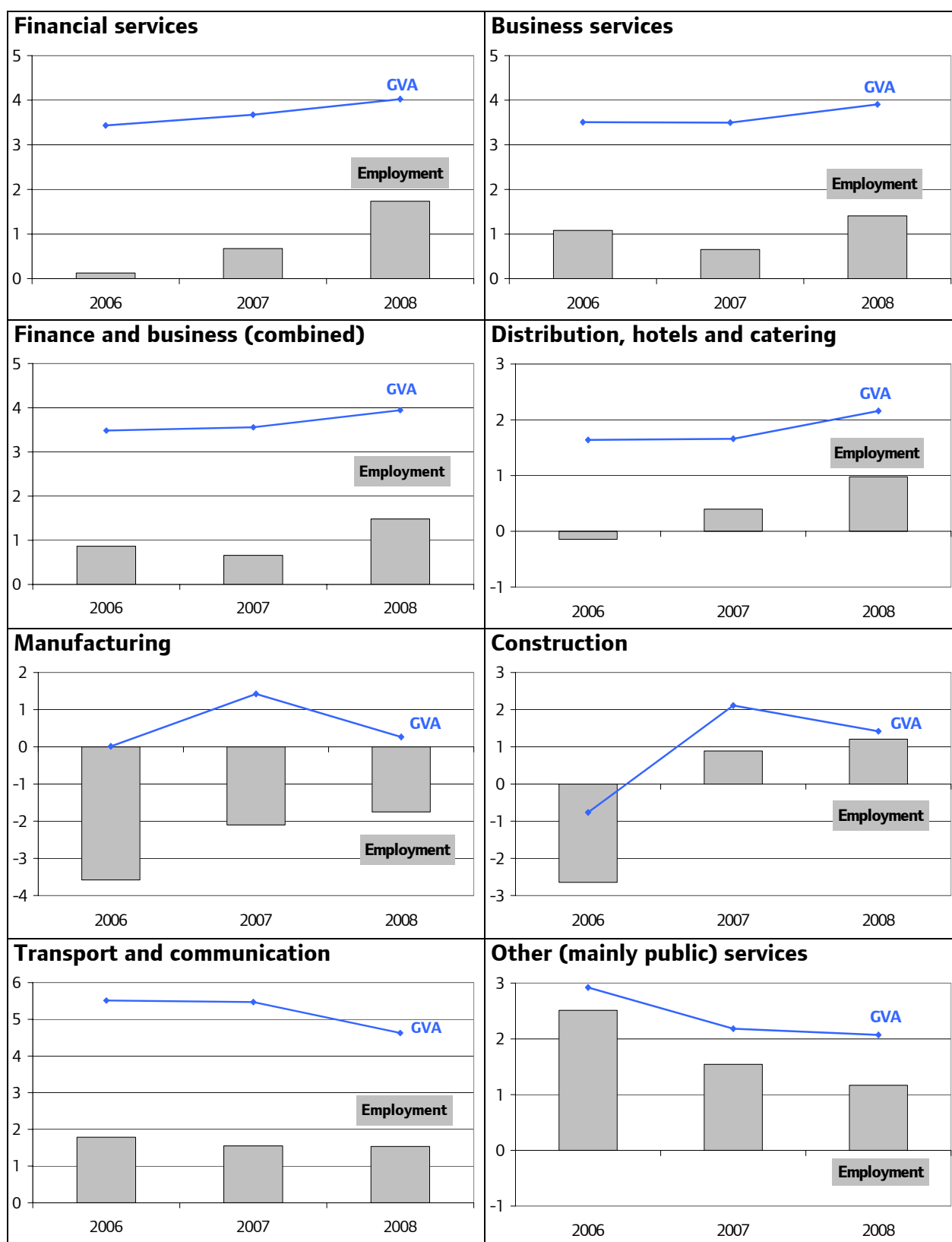
History: Annual growth (per cent)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
2.4	-1.2	-3.7	0.6	2.8	1.3	-0.2	2.6	5.7	7.1	8.4	4.7	2.5	1.6	-0.2	2.9	1.5

History: Level (constant year 2002, £ billion)

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
70.7	69.9	67.3	67.7	69.6	70.5	70.4	72.2	76.3	81.7	88.6	92.8	95.1	96.6	96.4	99.2	100.7

Output and employment growth by sector (per cent annual change)



Output and employment growth by sector (per cent annual change)

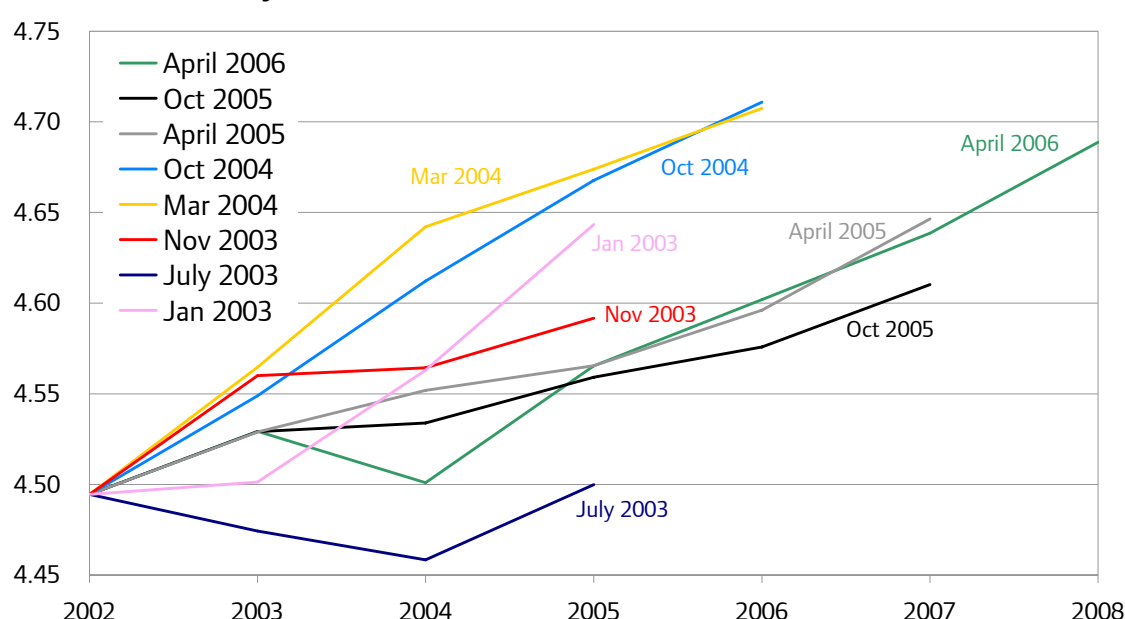
	2006	2007	2008
Financial services			
Output	3.4	3.7	4.0
Employment	0.1	0.7	1.7
Business services			
Output	3.5	3.5	3.9
Employment	1.1	0.7	1.4
Financial and business services combined			
Output	3.5	3.6	3.9
Employment	0.9	0.7	1.5
Distribution, hotels and catering			
Output	1.6	1.7	2.2
Employment	-0.1	0.4	1.0
Transport and communications			
Output	5.5	5.5	4.6
Employment	1.8	1.5	1.5
Other (mainly public) services			
Output	2.9	2.2	2.1
Employment	2.5	1.5	1.2
Manufacturing			
Output	0.0	1.4	0.3
Employment	-3.6	-2.1	-1.7
Construction			
Output	-0.8	2.1	1.4
Employment	-2.6	0.9	1.2
<i>(Memo: non-manufacturing)</i>			
Output	3.1	3.1	3.2
Employment	1.0	1.0	1.2

5.5 Comparison with previous forecasts

This section compares the current forecast with previous forecasts in this series. Since the base years for the forecasts change and the base data is continuously revised, the forecasts have been rebased into a common base year for the comparison in Figures 5.2 and 5.3.

The most significant change in this forecast (April 2006) from the last forecast (October 2005) is that employment and GVA growth for 2006 are now expected to be 0.8 per cent and 2.7 per cent respectively, rather than the 0.4 per cent and 2.3 per cent in the previous forecast.

Figure 5.2: Employment – latest forecast compared with previous forecasts
(millions of workforce jobs)



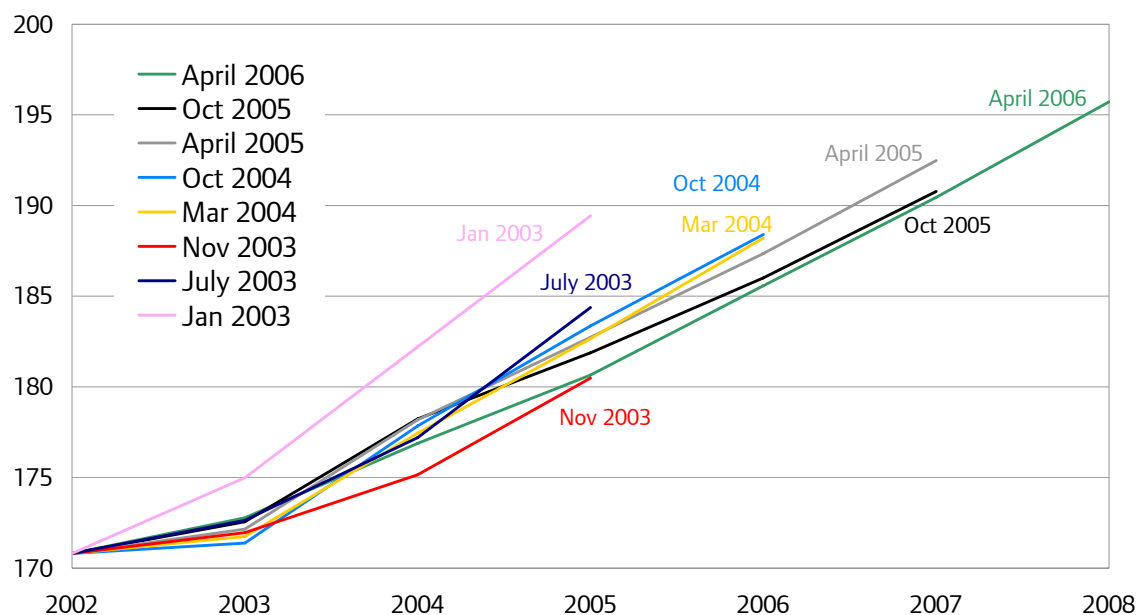
Source: Various London's Economic Outlooks

Table 5.5 Comparisons with previous published forecasts
(London workforce jobs, per cent annual growth)

Forecast	2003	2004	2005	2006	2007	2008
April 2006				0.8%	0.8%	1.1%
Oct 2005			0.6%	0.4%	0.8%	
April 2005			0.3%	0.7%	1.1%	
Oct 2004		1.4%	1.2%	0.9%		
Mar 2004		1.7%	0.7%	0.7%		
Nov 2003	1.5%	0.1%	0.6%			
July 2003	-0.5%	-0.4%	0.9%			
Jan 2003	0.2%	1.4%	1.8%			

Figure 5.3: Output – latest forecast compared with previous forecasts

(constant year 2002, £ billion)



Source: Various London's Economic Outlooks

Table 5.6 Comparisons with previous published forecasts

(London GVA, per cent annual growth)

Forecast	2003	2004	2005	2006	2007	2008
April 2006				2.7%	2.6%	2.8%
Oct 2005			2.0%	2.3%	2.6%	
April 2005			2.6%	2.5%	2.7%	
Oct 2004		3.8%	3.1%	2.7%		
Mar 2004		3.3%	2.9%	3.0%		
Nov 2003	0.7%	1.9%	3.0%			
July 2003	1.1%	2.6%	4.1%			
Jan 2003	2.4%	4.1%	4.0%			

6. Oil prices – Past, present and future prospects

Since the 1998 low of \$10 per barrel, Brent crude oil prices have surged ahead increasing to just over \$70 in April 2006. This has prompted much discussion about the effect of these price rises on the economy and about the likely trajectory for future oil prices.

This supplement examines

- The driving forces behind this price rise (part 2).
- The nature and effect of the recent price rise in comparison to previous oil shocks (part 3).
- An alternative approach to looking at the prospects for oil prices (part 4).

6.1 The driving forces behind recent oil price rises

Recent years have seen oil prices rising sharply. Since the end of 2003 prices have doubled, while since their lows at the end of 1998 they have risen by around 600 per cent (see figure 6.1).

Figure 6.1: Brent crude oil prices, 1998 – present

Latest data point 20/04/2006



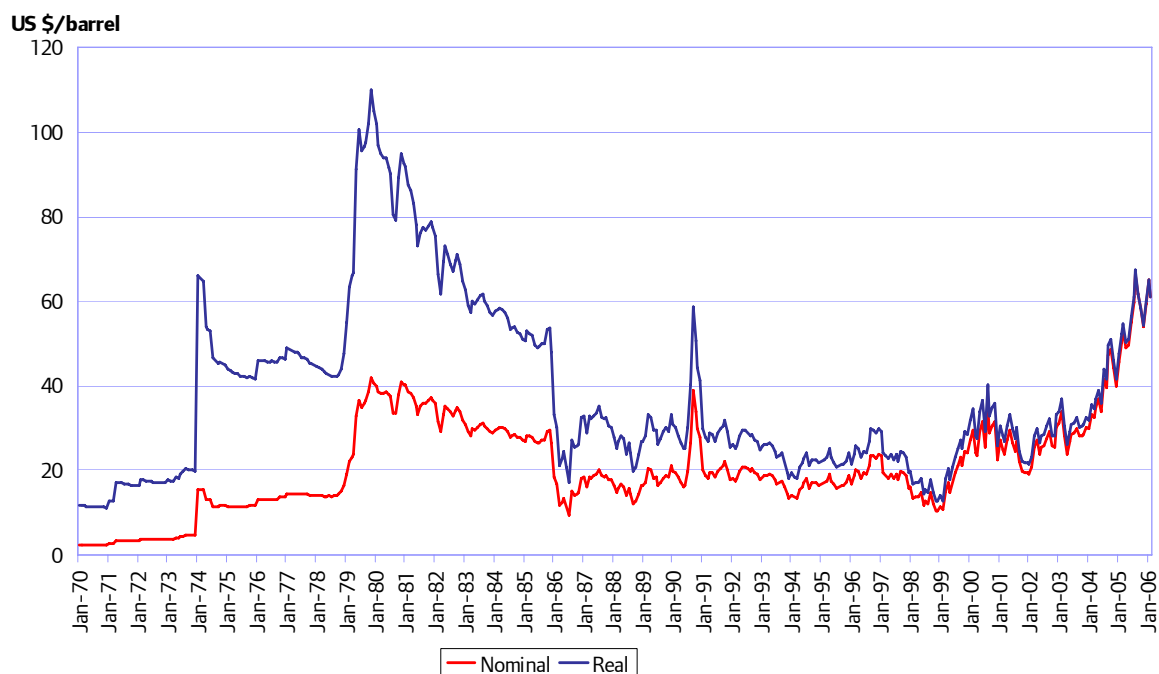
Note: There are a variety of Crude oil prices, depending on the market that oil is traded in, its quality and where it comes from. Most of this supplement uses the Brent crude oil price; the other commonly used price is the World Texas Intermediate (WTI), which is used in part 4. These two prices move very closely together over time, although the WTI price is often a few dollars above the Brent price. However, during the 1973-74 and 1979-1981 oil shocks the Brent price was sometimes more than \$20 above the WTI price in real terms.

Source: Ecwin

In real terms, current oil prices have not matched one previous peak. As shown in Figure 6.2, current oil prices are below the peak in the 1979-1981 period when real oil prices rose above \$100 per barrel (in February 2006 dollars).

Figure 6.2: Nominal and real Brent crude oil prices, 1970 – present

Real price in February 2006 dollars. End-month prices. Last data point end-Feb 2006



Source: Ecowin

The primary driving force behind recent price rises is a sustained increase in world demand for oil. Table 6.1 shows that in 2004, global world demand increased by 3.8 per cent, well above the 1-2 per cent annual growth since 1999, and according to The Economist this was the fastest rate in over 25 years^{xlii}. Figures for 2005 indicate that the rate of growth of world consumption of oil may be slowing, but global oil demand remains robust despite high prices.

Consumption in the US, the biggest consumer of oil (accounting for 25 per cent of world consumption) continues to grow steadily. China has been a major contributor to oil demand growth – close to a half of world oil demand growth in 2003 and more than a quarter of world oil demand growth in 2004 came from China. Moreover, China's consumption of oil rose by 15.2 per cent in 2004 compared to 2003. Oil consumption in India has also increased significantly – annual oil consumption growth was close to 7 per cent in 2003 and 2004.

Table 6.1: World demand – consumption of oil, millions of barrels per day (mpbd)

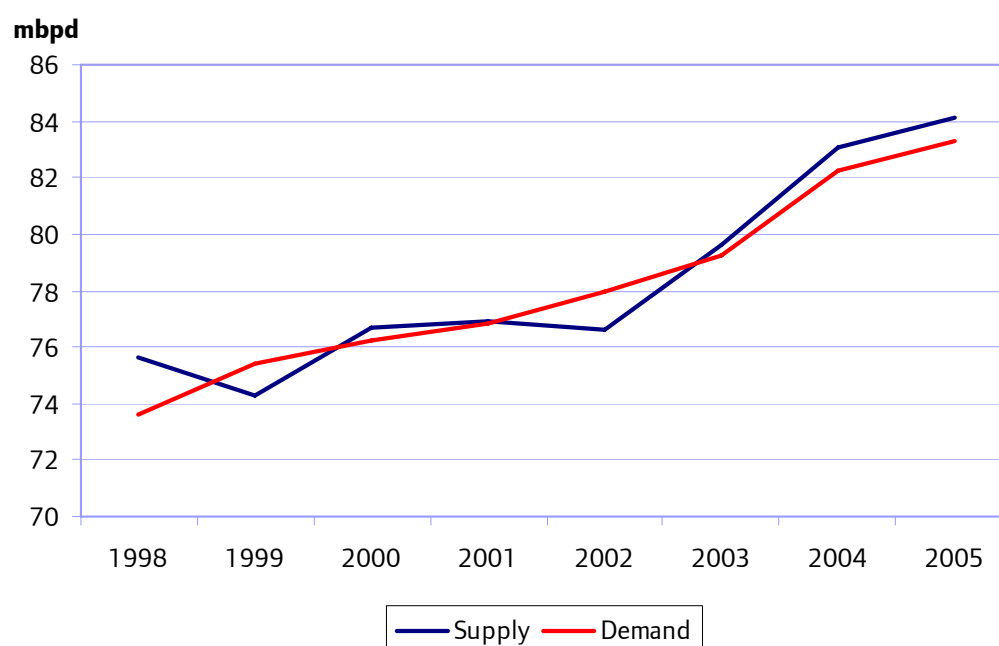
	1998	1999	2000	2001	2002	2003	2004	2005
US				19.65	19.76	20.03	20.73	20.77
China	4.2	4.5	4.6	4.67	4.97	5.58	6.43	6.60
India				2.27	2.32	2.47	2.64	2.63
OPEC	6.5	6.9	7.2	7.48	8.06	8.00	8.43	8.81
FSU	3.7	3.6	3.7	3.65	3.45	3.59	3.76	3.81
Rest				39.08	39.37	39.54	40.24	40.68
Total	73.6	75.4	76.2	76.80	77.93	79.21	82.23	83.30

Note: OPEC oil demand is not officially provided; in this table it has been estimated as Middle East and Africa oil demand.

Source: International Energy Agency - Monthly Oil Market Reports (January 2002, January 2003, June 2004, January 2005, February 2006)

As shown in Figure 6.3, world supply (as measured by production) has also been rising, but it has struggled to keep up with demand. OPEC, whose production accounts for 40 per cent of total world supply, largely governs the trend in world supply, including the 1999 and 2002 cutbacks. Data for specific producers shows that oil production in the US has been trending downwards, leaving the Former Soviet Union (FSU) to take up much of the slack of non-OPEC production – FSU production has increased significantly from 9.7 per cent of world production in 1998 to 14 per cent in 2005.

Figure 6.3: World demand and supply of oil



Source: International Energy Agency - Monthly Oil Market Reports (January 2002, January 2003, June 2004, January 2005, February 2006)

The difficulty of supply keeping up with demand is reflected in the reduction in the spare capacity for world oil production. The availability of spare capacity in world oil production is important because it allows for a smoothing of prices, particularly in the event of shocks to demand and supply. According to the Energy Information

Administration (EIA), world oil spare production capacity averaged 1.4 mbpd in 2003–2005, down from the 4.2 mbpd average for 1998–2002^{xliii}. The EIA also reports that OPEC's spare capacity for February 2006 only ranged between 1.1–1.6 mbpd.

It can therefore be seen that the upward trend in oil prices in recent years have largely been a result of market fundamentals, characterised by strong demand and tight supply, particularly in the last two years. As noted by the IMF^{xliiv}, the 30 per cent rise in oil prices in 2004 was well explained by market fundamentals – an unexpected rapid growth in consumption with inelastic short-run demand for oil, coupled with near-to-capacity OPEC production creating a close-to-vertical supply curve. The IMF also notes that while the almost 45 per cent rise in oil prices in 2005 can be similarly explained by the fundamentals, it is likely that in addition 'they reflect the uncertain environment and expectations about future tightness in the market'.

This indicates that market fundamentals are not the only determinants of oil prices. Uncertainty about future market conditions cloud the expectations of market participants and speculators, resulting in price movements not warranted by fundamentals. Sources of uncertainty that feed into expectations and therefore price movements include geopolitical developments, extreme weather and uncertainty about the world economy. Therefore, along with fundamentals, the sharp rises in 2005 largely reflect the uncertainty caused by Hurricanes Katrina and Rita and political developments in Iraq. Current market uncertainties exist following the recent attacks on Nigerian oil facilities as well as developments in Iran, which are contributing to current high prices.

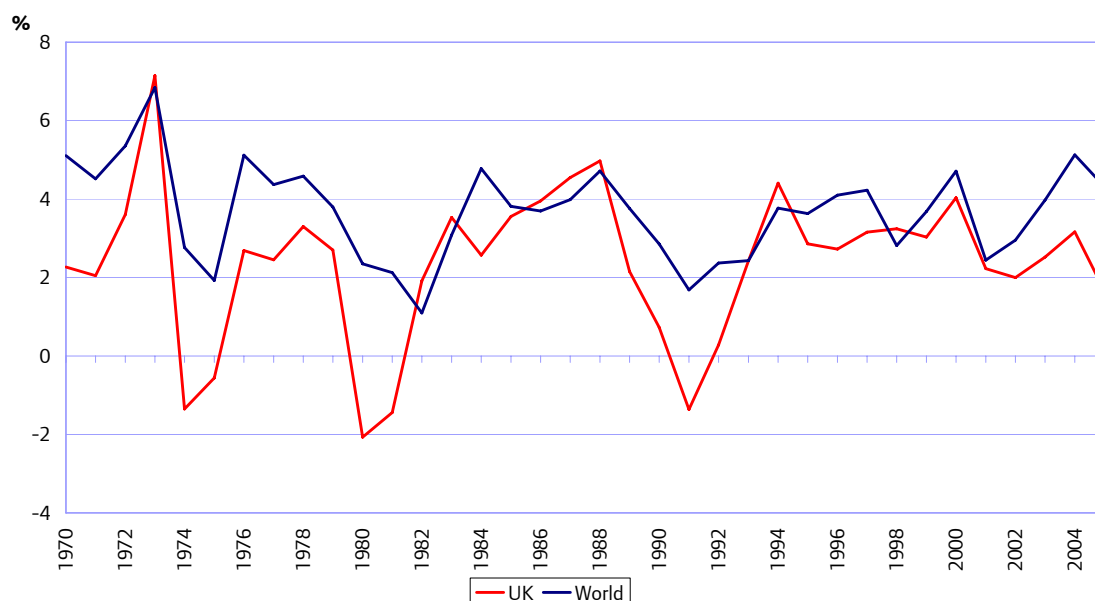
6.2 Comparison with previous oil price shocks

There are two aspects to look at when comparing the recent price rises with previous oil price shocks. Differences exist firstly in the nature of the 'shock' itself and secondly in the behaviour of the economy.

Looking at Figure 6.2, three periods previous to the recent price upturn have seen marked rises in the price of oil, these being 1973–74, 1979–80 and 1990. The nature of previous oil price hikes was more sudden and resulted from significant disruptions in oil supply caused by armed conflicts in the Middle East. In contrast, as mentioned in part 2, the recent price rises have largely resulted from growing world demand for oil, thereby exhibiting less shock-like characteristics and taking longer to evolve.

The impacts of the oil shocks on the economy have also been markedly different (see Figure 6.4). Previous oil shocks were all associated with global downturns, while the current oil price upturn has been accompanied by robust economic growth in the world economy. One of the reasons for this is the aforementioned difference in the nature of the shock. Because the recent price rise has been less shock-like, any effects of the price rises have been much more gradual. More specifically, there has not been the panic and psychological impact that was associated with the previous sharp price hikes.

Figure 6.4: UK and World real GDP growth, annual percentage change

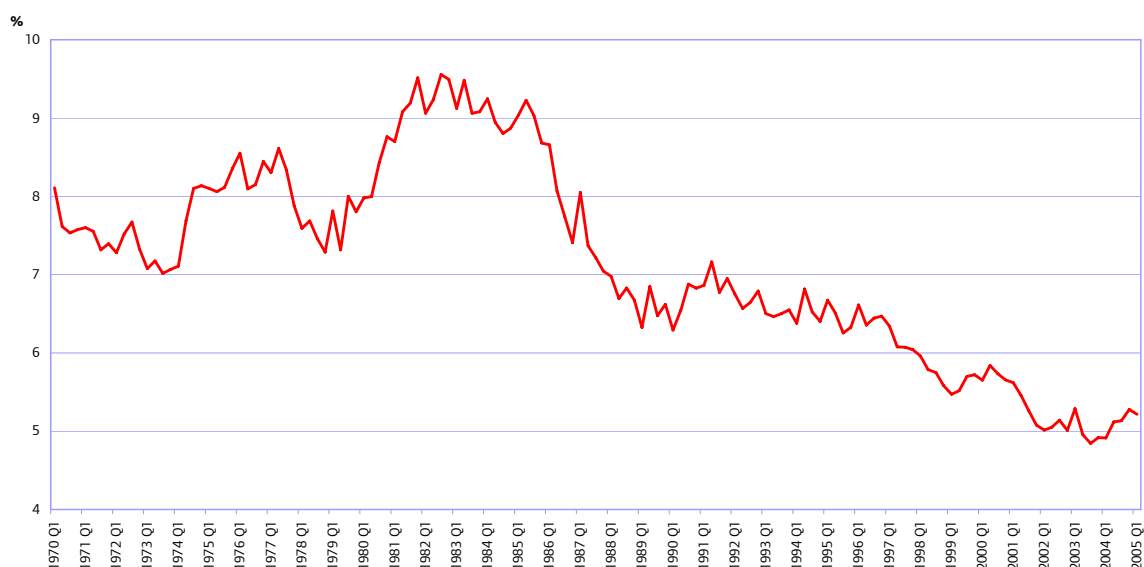


Source: UK data from Ecwin (OECD Economic Outlook), World data from IMF World Economic Outlook

As noted by David Walton of the Monetary Policy Committee^{xlv}, there are a number of other reasons for the relatively small impact observed in UK inflation and the real economy during the recent oil price upturn:

- i. In 2003, energy use in the UK stood at approximately 1.5 per cent of non-oil final expenditure, which is approximately half the 1975-1985 average. Moreover, there has been a strong downward trend in the share of household spending on fuels since the early 1980s (see figure 6.5 below). This reduces the capacity for oil price changes to affect real incomes and the economy in general. It is noteworthy that London is even more insulated from an oil shock, given its service-intensive economy and hence less reliance on oil.
- ii. The size of the output gap in the economy prior to and at the time of the shock is also important. The existence of excess demand means the economy is operating above its potential, thereby increasing inflationary pressure. Oil shocks act to exacerbate and accentuate these pressures, as well as the subsequent economic downturns. David Walton presents evidence from CBI surveys showing high capacity utilisation and skilled labour shortages in the run-up to the 1973-74 and 1990 oil shocks. Moreover, as shown in figure 6.6, he notes that the oil shocks of 1973-74, 1979-80 and 1990 were characterised by periods where output was well above trend. In contrast, in recent years the economy has been operating close to potential capacity, thereby exhibiting much less inflationary pressure.

Figure 6.5: Household spending on fuel as a percentage of total consumption



Note: Household spending on fuel is made up of motor fuels and household energy bills; total consumption excludes non-profit institutions serving households.

Source: ONS

Figure 6.6: UK output gap



Note: The output gap is measured as the percentage difference between actual GDP in constant prices, and estimated potential GDP. Estimates of the output gap can be misleading if there are significant data revisions or when the trajectory of the economy differs from the recent past. Therefore estimates for the output gap for the most recent period should be treated with extra caution.

Source: Ecowin (OECD Economic Outlook)

- iii. Government policy also matters, particularly those affecting inflation expectations, wage bargaining and labour market flexibility. The introduction of an incomes policy in 1973 and the significant public sector pay increases in 1979, as well as high unionisation meant that oil shocks accentuated wage-price spirals. It also meant that firms could not reduce real wages in response to

the increase in firms' costs following the oil price rises; hence in order to maintain profit share, employment had to fall. In contrast, recent years have not had such real wage rigidities and labour markets are much more flexible. Furthermore, the inflation-targeting framework has been a very effective nominal anchor for inflation expectations, reducing the so-called second round effects of oil price shocks on wage bargaining.

These last two points suggest that although they happened at the same time, previous oil price shocks were not the primary cause of the economic downturns in the UK that followed; they simply increased inflation and accentuated the downturns. This has led some commentators such as David Smith of the Sunday Times to suggest that the main cause of the downturns were the policies of the day, rather than the oil shocks *per se*^{xlvi}. Research by Lutz Kilian of the University of Michigan/CEPR^{xlvi} on the effects of oil supply shocks suggests that the inflation path in the G7 countries would have been very similar to the actual path observed even without the oil supply shocks. This cannot be said so definitively for the evolution of output, but he does find that the effect on output is considerably less than is commonly expected, particularly following the 1973-1974 oil shock.

6.3 Future direction of oil prices

In order to see where prices may be heading, a good place to start is the futures market. Futures prices reveal the market's best 'guess' for the trajectory of oil prices using industry knowledge. The rise in oil prices in recent years has been accompanied by a rise in futures prices, both for near-term delivery contracts and more recently, for delivery further in the future. This means that the markets clearly expect that high oil prices are here to stay. In March 2006, the spot price for Brent crude oil averaged \$61.6, while the price of a futures contract for delivery in one year averaged \$66.

However, research by the Federal Reserve Bank of San Francisco shows that oil futures prices are not necessarily the best predictor of future oil prices^{xlvi}. In their Economic Letter, Tao Wu and Andrew McCallum compare the predictive power of four different models in forecasting the price of oil over the period 1987-2005. They found that:

- Models based solely on futures prices, while providing low average forecast errors, produce errors that are quite large over time.
- Incorporating information on the relationship between futures and spot prices into the model improves forecasts.

However, they conclude that prediction errors are still substantial and 'accurately predicting the future price of oil seems as elusive as ever'.

Given the difficulty of providing accurate point-forecasts for future oil prices, an alternative approach is to examine the likelihood of various scenarios occurring. A research paper produced by Volterra Consulting for this supplement takes this approach. Box 6.1 below presents this research.

Volterra Consulting points out that historical data on real oil prices shows that each year's price is highly correlated with the previous year's price. This implies that if this year's price is high (as is currently the case), there is a high probability that the next year's price will also be high. However, predicting the price change and therefore the actual price next year cannot be done accurately. Instead, information on yearly price changes can be used to compute probabilities for various scenarios, each one being defined by the future price crossing and remaining above/below certain specified thresholds.

Box 6.1: Research paper on oil prices by Volterra Consulting

Economic prediction is hazardous at the best of times. The track record on forecasting over many years confirms this. This is particularly true of financial markets, where a vast literature confirms the fact that there are no reliable rules at all for predicting future prices.

Commodities, of which oil is one, are traded in markets that are extremely similar to financial ones. And the principle of inherent lack of predictability applies in these markets just as much as it does in markets for equities, bonds and currencies.^{xlix}

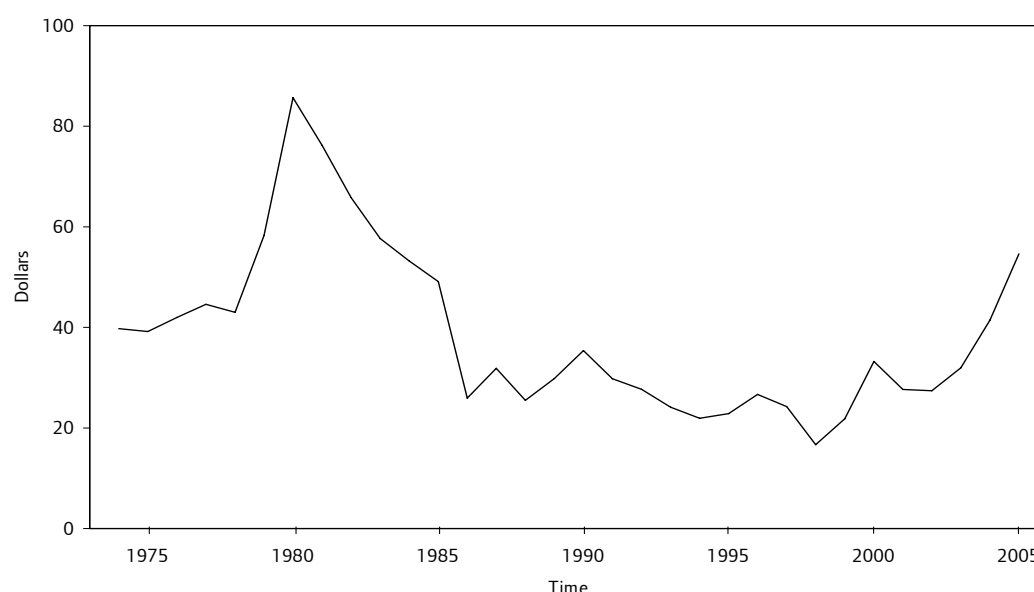
Econometric models exist which attempt to explain the movements in the demand for oil over the past, relating it to factors such as the growth rate of the world economy. Separate estimates exist of the potential supply of oil. So if estimates exist of both demand and supply, why is there so much uncertainty around future oil prices?

One obvious point is that the econometric models, no matter how carefully they are tested over the past, may still not be the 'true' model. Even more to the point, they may break down in the future. Any practical forecaster knows that this sort of thing happens all the time. And the estimates of supply are just that, estimates rather than certainties.

But even if changes in the demand for oil, say, could be explained perfectly over the past, this does not necessarily mean that they can be predicted with any degree of systematic accuracy in the future. There is widespread misunderstanding of this point. Explanation over the past is not at all the same thing as predicting the future. A simple example can illustrate this point. You sit down with a glass of water and a true dice. You roll the dice, and if a 6 appears you take a sip, otherwise you do not. You build up a data series, recording the number rolled and whether or not you took a drink. A model can be built which gives a perfect explanation over the past of when you drink: only when a 6 is thrown. But clearly it is useless for predicting in the future exactly when you will take a drink, because the outcomes of the roll of a dice are purely random.

Figure 6.7 shows the oil price since 1974, in the dollar prices of 2004. In other words, the nominal price is adjusted to allow for the overall level of inflation^l. The massive peak in the early 1980s following the second oil shock in the late 1970s is clear, as is the recent rapid rise.

Figure 6.7: WTI Crude Oil price in 2004 dollars, 1974-2005, annual average



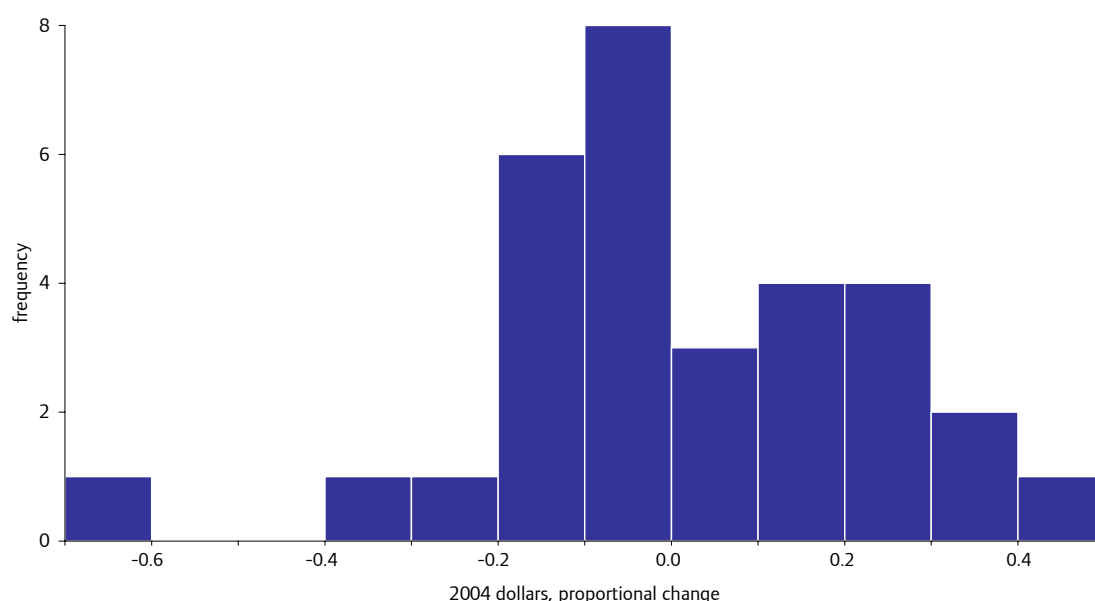
Source: Volterra Consulting

Given the inherent uncertainty about forecasting commodity prices mentioned above, how can we best think about prospects for the future?

The first thing to note is that there is a large amount of inertia in the *level* of the oil price. This year's price tends to be very similar to last year's - the simple correlation between the price and the price in the previous year is 0.85. This means that if oil is around \$50, say, then it is very likely that it will remain between \$40 and \$60 next year, whilst it is very unlikely that it will be either \$10 or \$90 next year. Similar statements can be made for the price beyond one year because this inertia in the price level exists beyond one year, so that for example, the correlation between this year's price and the price five years earlier is also relatively high. We can therefore use information on previous price levels to work out the probability that the future price will be above/below a certain *level*.

However, this is as far as we can go. It is the actual *changes* which are unpredictable because the high correlations observed in the price *level* over time do not exist for price *changes*; *ie*: the change in price this year is not at all correlated with the change in previous years. Therefore, we cannot predict systematically the *change* that will actually happen.

The methodology will now be outlined. Figure 6.8 plots the proportionate^{li} annual changes in the oil price over the period 1975-2005.

Figure 6.8: Annual proportionate change in the oil price, 2004 dollars, 1975-2005

Source: Volterra Consulting

Most observations lay in the range of (approximately) plus or minus 20 per cent, with the occasional much larger rise or fall.

We can manipulate the data in Figure 6.8 in a more formal manner by computing the probability density. This enables us to estimate the probability that the change will be either above or below any specified number. For example, out of the total of 31 observations, the proportionate change was greater than 0.2 (approximately 20 per cent) in 7 of the years. So as an approximation there is a 7/31, or 22.6 per cent, chance that the proportionate increase will be greater than 0.2 in any given year. The formal calibration of the probability density function gives an estimate very similar to this, namely 23.1 per cent.

The same exercise can also be carried out for changes over more than one year, such as five year changes.

Table 6.1: Probability (per cent) that the oil price (2004 dollars) will be either above or below a given price in 2006 and 2010ⁱⁱⁱ

Probability of price being	2006	2010
Below \$20	<0.01	2
Below \$30	1	11
Below \$40	5	24
Below \$50	18	38
Above \$60	50	48
Above \$70	29	37
Above \$80	14	30
Above \$90	5	23

The slightly higher probabilities in 2010 than in 2006 for nearly all price levels reflects the fact that the 5-year changes in price exhibit a greater spread than the annual changes, and the chances of a large change over a 5-year period are usually greater.

Table 6.1, in Box 6.1, enables us to consider the following scenarios:

- We may be entering a new era of sustained high real oil prices, as the global economy continues on its robust growth path, leading to even stronger demand for oil, all this under tight-supply conditions. The probability of such a scenario is high, with a 50 per cent and 48 per cent likelihood that real prices remain above \$60 over the next year and next five years respectively.
- Current high real oil prices may reduce growth in real incomes or increase a drive towards more efficient or even alternative energy-use. Along with a possible slowdown in the global economy, these could lead to a fall in demand for oil, reducing the pressure on supply and causing a gradual fall in real oil prices. The probability that real oil prices will fall below \$50 over the next year and next five years is 18 per cent and 38 per cent respectively.

We can also examine scenarios that are less likely but would be higher-impact:

- A major geopolitical development could result in a supply shock causing a real price hike to the levels observed in the early 1980s. The likelihood of the real oil price rising above \$80 in the next year is 14 per cent, while the likelihood that it will surpass the 1980s levels is significantly smaller (5 per cent for over \$90). Note however that these price thresholds are not so unlikely when looking five years ahead.
- An economic development such as an unexpected crash in financial markets could send real oil prices to 1998 levels, where they dropped below \$20. This price correction is the least likely of the scenarios - the likelihood of such a price change over the next year is less than 0.01 per cent and is only 2 per cent over the next five years.

6.4 Concluding remarks

The driving force behind the recent upturn in oil prices has been a sustained increase in global demand for oil, combined with tight supply. Uncertainties caused by geopolitical developments have also contributed to price movements, although in terms of their influence on the price of oil, these are more important for short-term movements.

Differences exist between this upturn in oil prices and previous oil shocks, most notably in the driving forces. As mentioned, the recent price hike has resulted from rising world oil demand reflecting a robust global economy, while previous oil shocks have been a result of significant disruptions in supply. This difference in type and therefore nature of the shock could be one of the reasons as to why the economy has come out relatively unscathed so far this time around. Other important factors include lower energy intensity, lower general inflationary pressures and more favourable economic policy frameworks.

Indeed, these last two factors have been suggested as reasons to challenge the conventional wisdom that oil price shocks have material effects on output and inflation. Proponents of this view argue that the downturns that accompanied previous oil shocks were not a result of the oil shocks, but rather they were a result of the prevailing economic circumstances of the time. The most likely conclusion is that the trajectory for the economy during an oil price shock is largely governed by the type and speed of the shock, the stage of the economic cycle along with the economic policies of the day and that the oil shock *per se* acts to accentuate any existing downward trends in the economy.

The remainder of this supplement looked at an alternative approach to forecasting the future price of oil. Given that point forecasts of the future spot price are not accurate, another approach is to examine different scenarios and attach probabilities to their likelihood of occurring. The most likely scenario is that real oil prices will remain high over the next five years, which is plausible given the current robust growth in the world economy. A further surge to levels seen in the early 1980s is less likely and is very much dependent on geopolitical developments. The least likely scenario is a collapse of real oil prices to their 1998 levels. This alternative approach gives a useful indication and perspective to the prospects for oil prices while at the same time accounting for their inherent unpredictability.

Appendix A: Explanation of terms and some sources

Definitions, differences, and revisions

Forecasting organisations use varying definitions of the regional indicators they supply. It is not therefore always possible to assign a completely consistent meaning to the terms used.

Throughout this report, as far as is compatible with the individual definitions applied by the forecasters, 'employment' refers to 'workforce employment' as defined in the GLA Economics' article, *Labour Market Trends* in *London's Economic Outlook* 3 (November, 2003). The GLA's *Workforce Employment Series* provide a more detailed explanation of this term.

Forecasters' definitions are broadly compatible with this but in some cases differences arise from the treatment of small items such as participants in government training schemes or the armed forces. The GLA uses civilian workforce employment throughout.

Output refers to GVA, a term introduced by the 1995 revision of the European System of Accounts (ESA95). Some forecasters still estimate GDP which can differ slightly from GVA. Imputed rental income from the ownership of property is included in some cases but not in others. GLA Economics' *London's Economic Outlook: December 2003*^{liii} provides a more detailed explanation of this term.

All forecasters now produce estimates of real output which are weighted to the year 2002, following the publication, by the ONS, of chain-linked and reweighted estimates of UK output.

Estimates of nominal regional GVA are available up to 2004 from the ONS. No official estimates of real regional GVA are available because of the difficulties in producing authoritative regional price deflators, although the ONS has now produced regional price indexes for the year 2004^{liv}. Most regional forecasters supply their own estimates of London's real GVA. The real London GVA figures used in the GLA Economics' forecast are supplied by EBS.

GVA estimates are less reliable than employment estimates because there is no independent source of information from which to judge the size of total sales by London-based agents. ONS estimates are calculated by the factor incomes method, beginning from wages paid to people with workforce jobs located in London. Profits are imputed on the basis of these earnings estimates from knowledge of national sectors of employment. Most regional forecasters adopt a variant of this technique.

Consumption refers to private consumption, otherwise known as household expenditure; in some cases the expenditure of non-profit organisations is included and in other cases it is not.

'Distribution' refers to Retail, Hotels and Catering. 'Other (mainly public) Services' refers to Defence, Health, Education and Other Services. All other sectors have their standard meaning.

Appendix B: Glossary of acronyms

ABI	Annual Business Inquiry
BBA	British Bankers' Association
BCC	British Chamber of Commerce
bn	Billion
BP	British Petroleum
CBI	Confederation of British Industry
CE	Cambridge Econometrics
CEBR	The Centre for Economic and Business Research
CIPS	The Chartered Institute of Purchasing and Supply
CPI	Consumer Price Index
DTI	Department of Trade and Industry
EBS	Experian Business Strategies
ECB	European Central Bank
EIA	Energy Information Administration
EU	European Union
FDI	Foreign Direct Investment
FSU	Former Soviet Union republics
FT	Financial Times
GDP	Gross Domestic Product
GLA	Greater London Authority
GVA	Gross Value Added
HBOS	Halifax Bank of Scotland
HM Treasury	Her Majesty's Treasury
IEA	International Energy Agency
ILO	International Labour Organisation
IMF	International Monetary Fund
IPS	International Passenger Survey
LEO	London's Economic Outlook
LFS	Labour Force Survey
LHS	Left Hand Scale
LRC	London Retail Consortium
mbpd	Million Barrels Per Day
mn	Million
MPC	Monetary Policy Committee
NIESR	National Institute of Economic and Social Research
ODPM	Office of the Deputy Prime Minister
OECD	Organisation for Economic Co-operation and Development

OEF	Oxford Economic Forecasting
ONS	Office for National Statistics
OPEC	Organisation of Petroleum Exporting Countries
PESA	Public Expenditure Statistical Analysis
PMI	Purchasing Managers' Index
PPP	Purchasing Power Parity
PSNB	Public Sector Net Borrowing
PwC	PricewaterhouseCoopers
Q2	Second Quarter
RHS	Right Hand Scale
RICS	Royal Institution of Chartered Surveyors
RPIX	Retail Price Index (excluding mortgage interest payments)
RPI	Retail Price Index
RTI	Retail Traffic Index
TfL	Transport for London
TIER	Tourism Industry Emergency Response
UK	United Kingdom
UKCS	UK Continental Shelf
UNCTAD	United Nations Conference on Trade and Development
US	United States of America
w/c	Week commencing

Appendix C: Bibliography

Bank of England, 2006, Agents Summary of Business Conditions, March 2006

Bank of England, 2005, Inflation Report May 2005

Bank of England, 2005, Inflation Report February 2006

Bank of England, 2006, Minutes of the Monetary Policy Committee, 8/9 February and 8/9 March

BBC, 2006, US house prices power on in 2005
<http://news.bbc.co.uk/1/hi/business/4763940.stm>

BBC, 2006 China considering currency move
<http://news.bbc.co.uk/1/hi/business/4776522.stm>

Berkmen P, Ouliaris S and Samiei H, 2005, The Structure of the Oil Market and the Causes of High Prices, IMF Research paper, September 2005,
<http://www.imf.org/external/np/pp/eng/2005/092105o.htm>

British Chambers of Commerce, 2002-2005, Quarterly Economic Surveys

Cambridge Econometrics, 2006, Regional Economic Prospects

Centre for Economic and Business Research, 2005, Quarterly Business Forecasts for London

Deloitte and Touche (2005), UK Pensions deficit eases to £100 billion, News Release, 18 July 2005
http://www.deloitte.com/dtt/press_release/0,1014,sid%253D2834%2526cid%253D88657,00.html

The Economist, 2005, Oil in troubled waters, 28 April 2005

Energy Information Administration, 2006, Short-term Energy Outlook, March 2006

Experian Business Strategies, 2006, Regional Forecast

Fenwick D and Wingfield D, 2005, Relative Regional Consumer Price Levels in 2004, Economic Trends No. 615, ONS, February 2005

GLA Economics, 2003, London's Economic Outlook: The GLA's medium-term planning projections, December 2003

HM Treasury, 2005 and 2006, Forecasts for the UK Economy: A comparison of independent forecasts, November 2005, January 2006 and March 2006

HM Treasury, 2006, Statement and Budget Report, Chapter B: The Economy, Budget 2006, 22 March 2006

International Energy Agency, 2002-2006, Monthly Oil Market Reports

IMF, 2005, World Economic Outlook, September 2005

IMF, 2006, World Economic Outlook, April 2006

IMF Survey, (2006), Country Focus: Italy's growth gloom requires domestic reforms, Vol 35 No 5, 13 March 2006

Kilian L, 2005, The Effects of Exogenous Oil Supply Shocks on Output and Inflation: Evidence from the G7 countries, University of Michigan and CEPR, November 2005

Lomax R (Deputy Governor of the Bank of England), 2006, Remarks given at Chatham House Conference on Global Financial Imbalances, 24 January 2006

OECD, 2005, Economic Outlook, December 2005

OECD, 2005, Economic survey of China 2005: Key Challenges for the Chinese economy

OECD, 2006, What is the economic outlook for OECD countries? An interim assessment by Jean-Philippe Cotis (Chief Economist), 6 March 2006

Oxford Economic Forecasting, 2006, Regional Economic Outlook

The Pensions Regulator, 2005, 'Consultation Document: How the Pensions Regulator will regulate the funding of defined benefits', October 2005

Price Waterhouse Coopers, 2006, UK Economic Outlook, March 2006

Price Waterhouse Coopers, 2006, The World in 2050: How big will the major emerging market economies get and how can the OECD compete? March 2006

Smith D, 2006, Economic Outlook, The Sunday Times, 5 March 2006

Toronto Star, 2006, Pandemic could shave world GDP, 14 March 2006

Walton D (Monetary Policy Committee Member), 2006, Has Oil lost the capacity to shock? Speech given to the University of Warwick Graduates' Association Senior Directors' Forum, 23 February 2006

Wu T and McCallum A, 2005, Do oil futures prices help predict future oil prices? Federal Reserve Bank of San Francisco Economic Letter, December 2005

Footnotes

- ⁱ The forecast was commissioned by GLA Economics and prepared by Experian Business Strategies.
- ⁱⁱ RPIX = Retail price index excluding mortgage interest payments. Although not part of the GLA Economics forecast for London, for reader information the forecaster's view of the UK inflation rate is reported. Up to December 2003, the Bank of England's symmetrical inflation target was annual RPIX inflation at 2.5 per cent.
- ⁱⁱⁱ CPI = Consumer Price Index. Although not part of the GLA Economics forecast for London, for reader information the forecaster's view of the UK CPI inflation rate is reported. Since December 2003 the Bank of England's symmetrical inflation target has been annual CPI inflation at two per cent.
- ^{iv} Bank of England, Inflation Report, February 2006 p 30
- ^v Bank of England, Inflation Report, February 2006 p 30
- ^{vi} Bank of England Agents Summary of Business Conditions, March 2006
- ^{vii} See 'Consultation Document: How the Pensions Regulator will regulate the funding of defined benefits', The Pensions Regulator, Oct 2005; and Deloitte and Touche, News Release, 18 July 2005
- ^{viii} Bank of England Inflation Report, February 2006, page 10
- ^{ix} The British Chambers of Commerce, Quarterly Economic Surveys, National Totals summary tables (Q2 2004 to Q4 2005)
- ^x See Bank of England Inflation Report, May 2005 page iii, and HMT, Financial Statement and Budget Report, Chapter B: The Economy, Budget 2006, 22 March 2006 page 233
- ^{xi} See Minutes of the MPC Meeting, 8/9 February and 8/9 March
- ^{xii} IMF, World Economic Outlook, April 2006
- ^{xiii} PWC UK Economic Outlook, March 2006 – quoting Consensus Economics
- ^{xiv} HMT, Financial Statement and Budget Report, Chapter B: The Economy, Budget 2006, 22 March 2006.
- ^{xv} HMT, Financial Statement and Budget Report, Chapter B: The Economy, Budget 2006, 22 March 2006
- ^{xvi} OECD Economic Outlook, No.78, December 2005
- ^{xvii} OECD Economic Outlook No.78 Preliminary edition, Editorial
- ^{xviii} OECD Economic Outlook, No.78, December 2005
- ^{xix} US house prices power on in 2005, BBC – quoting Office of Federal Housing Enterprise Oversight, <http://news.bbc.co.uk/1/hi/business/4763940.stm>
- ^{xx} OECD Economic Outlook, No.78, December 2005
- ^{xxi} Banco De Espana, 11 April 2006, <http://www.bde.es/infoest/sindi11e.pdf>
- ^{xxii} UK Economic Outlook, PriceWaterhouseCoopers, March 2006
- ^{xxiii} OECD, What is the economic outlook for OECD countries? An interim assessment, Jean-Philippe Cotis, Paris, 6 March 2006
- ^{xxiv} The World in 2050, How big will the major emerging market economies get and how can the OECD compete?, PWC, March 2006

^{xxv} HMT, Financial Statement and Budget Report, Chapter B: The Economy, Budget 2006, 22 March 2006. p237

^{xxvi} OECD Economic Outlook, No.78, December 2005, p119

^{xxvii} OECD, 2005, Economic survey of China 2005: Key challenges for the Chinese economy

^{xxviii} OECD Economic Outlook, No.78, December 2005, p119

^{xxix} OECD Economic Outlook, No.78, December 2005, p119

^{xxx} OECD Economic Outlook, No.78, December 2005, p12

^{xxxi} OECD Economic Survey of China, Paris 2005

^{xxxii} China considering currency move, BBC <http://news.bbc.co.uk/1/hi/business/4776522.stm>

^{xxxiii} OECD Economic Outlook, No.78, December 2005, p121

^{xxxiv} OECD Economic Outlook, No.78, December 2005, p122

^{xxxv} OECD Economic Outlook, No.78, December 2005, p118

^{xxxvi} IMF Survey, March 13, 2006, Vol 35, No.5

^{xxxvii} Chatham House Conference on Global Financial Imbalances, Rachel Lomax, Deputy Governor of the Bank of England, January 24 2006

^{xxxviii} Toronto Star, "Pandemic could shave world GDP" 14/03/06

^{xxxix} GLA Economics, December 2005, Working Paper 14: Working Future – Employment projections for London by sector

^{xl} For 2006: the median of new forecasts from HM Treasury, January 2006, Comparison of Independent Forecasts. For 2007 onwards: the average of medium-term forecasts from HM Treasury, November 2005, Comparison of Independent Forecasts.

^{xli} This can be seen in the second chart in Figure 5.1 where there is a slight narrowing of the gap between the trend and forecast growth lines over the forecast period.

^{xlii} Oil in troubled waters, The Economist, April 28 2005

^{xliii} Short-term Energy Outlook, Energy Information Administration, March 2006

^{xliv} The Structure of the Oil Market and the Causes of High Prices, IMF <http://www.imf.org/external/np/pp/eng/2005/092105o.htm>

^{xlv} Has oil lost the capacity to shock? Speech given to the University of Warwick Graduates' Association Senior Directors' Forum, 23 February 2006

^{xlvi} Economic Outlook, David Smith, The Sunday Times, 5 March 2006

^{xlvii} The Effects of Exogenous Oil Supply Shocks on Output and Inflation: Evidence from the G7 countries, Lutz Kilian, University of Michigan and CEPR, November 2005

^{xlviii} Do oil futures prices help predict future oil prices? Tao Wu and Andrew McCallum, Federal Reserve Bank of San Francisco Economic Letter, December 2005

^{xlix} A simple manifestation of this lack of predictability is very rapid decay of the autocorrelation function of price changes. The real oil price data analysed here has exactly this property – each year's price is

highly correlated with last year's price but the price change this year is not correlated with previous years' price changes. As a result, we cannot use historical data on price changes to forecast future price changes.

ⁱ Any differences in the data in this figure and figure 6.2 arise because this figure uses the World Texas Intermediate price and each data point is an annual average and is expressed in 2004 prices, while figure 6.2 presents the end-monthly Brent price and is in February 2006 prices.

ⁱⁱ For small changes, the proportionate and the percentage change are virtually identical, the proportionate change being the difference of the natural logs of the price in successive years.

ⁱⁱⁱ The starting point is February 2006, where the price was \$60.1 (in 2004 dollars). Strictly speaking, the probabilities are not for the years 2006 and 2010 but rather 1 year and 5 years from February 2006.

ⁱⁱⁱⁱ GLA Economics, December 2003, London's Economic Outlook: The GLA's medium-term planning projections

^{liv} Fenwick D and Wingfield D, 2005, Relative Regional Consumer Price Levels in 2004, Economic Trends No. 615, ONS, February 2005