



I. Economic situation in the euro area

The latest reading of the national accounts for the euro area showed slower, albeit continuously solid, growth in the third quarter, confirming that the recovery is broadly based and sustainable. Growth was driven primarily by domestic demand and in particular by household consumption, which was underpinned by robust job creation and high consumer confidence. Business confidence indicators have been upbeat, suggesting a healthy corporate sector. All these developments are consistent with a sustained expansion in the fourth quarter. Looking further ahead, some deceleration in growth is expected in 2007, reflecting temporary effects of the VAT increase in Germany and a certain easing in global demand, stemming mainly from the US. According to the European Commission's autumn 2006 forecast, GDP growth is projected to stay around potential in 2007.

The long-anticipated US slowdown is now clearly under way. The US and euro-area economies are interlinked through various channels (in particular through trade, financial markets and confidence effects) and their business cycles show considerable co-movement. Moreover, there is evidence that the US business cycle leads the euro-area cycle, which could suggest a transmission of US shocks to the euro area. However, the historical pattern partly reflects the occurrence of common shocks, such as past oil price hikes and the bursting of the asset price bubble. Therefore, it is not, a priori, clear whether the current slowdown in the US, which is domestically generated, will affect the euro-area economy in the same way and to a similar extent as in the past. Moreover, the euro area is now in a significantly better position to withstand a US slowdown.

The level of structural unemployment as measured by the non-accelerating wage rate of unemployment (NAWRU) has been on a declining trend since 1997 for the euro area as a whole. From a peak of 9.2% of the labour force in 1997, the NAWRU decreased by 1.4 percentage point to 7.8% in 2006 and projections point to a further decrease in 2007 and 2008. However, the decline is uneven across Member States, reflecting the varying intensity of national policies to tackle structural unemployment. According to estimates of the relationship between unemployment and wage inflation, a decrease of the unemployment gap of one percentage point pushes up wages by 0.7 percentage point in the euro area as a whole.

1. Recent economic developments and short-term prospects¹

Growth levelled off in the third quarter, but remains robust

Euro-area GDP growth in the third quarter slowed down to 0.5% (quarter-on-quarter), i.e. 0.1 percentage point lower than projected in the European Commission's autumn 2006 forecast. This followed strong growth in the first half of the year, which was revised upwards by Eurostat, with GDP growth for the second quarter now estimated at 1% instead of 0.9%. As a consequence, the average annualised growth rate for the first three quarters of 2006 was 2.6% and the carryover for annual GDP growth in 2006 was revised upward to 2.5%. The underlying growth momentum, as measured by the year-on-year growth rate, marginally edged down from 2.8% in the second quarter to 2.7% in the third quarter.

The third-quarter growth in the euro area was largely influenced by the sharp deceleration in France, with growth falling from 1.2% in the second quarter to zero in the third quarter.² Growth in Italy also weakened in the third quarter (0.3%). Conversely, GDP growth remained strong in Spain (0.9%) and healthy in Germany and the Netherlands (0.6%).

Domestic demand remains the main engine of growth

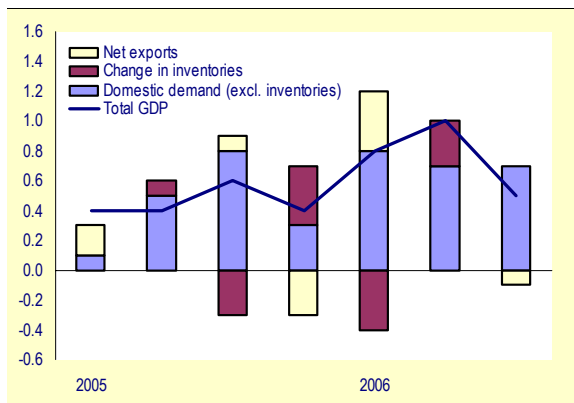
Though slower growth was observed in the third quarter, a much brighter picture emerges when looking at the different GDP components. Indeed, growth in the third quarter continued to be fuelled primarily by domestic demand, which contributed 0.7 percentage points to growth in the third quarter. The slower GDP growth in the third quarter can be mainly attributed to external demand, which was a drag on growth, and to

¹ The cut-off date for the statistics included in this issue was 7 December 2006.

² The stagnation of France's GDP follows the very strong growth in the second quarter (1.2%), which was probably overstated due to working day adjustment problems.

inventory developments, which were neutral (Graph 1).

Graph 1: Contributions to real GDP growth, euro area (quarter-on-quarter % point contributions)



Source: Commission services.

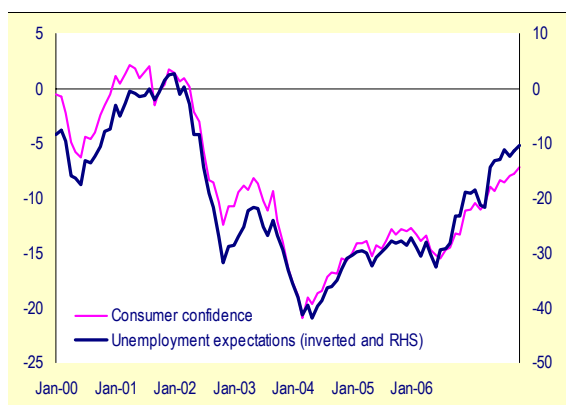
After a disappointing reading in the second quarter (0.3%), private consumption growth rebounded to 0.6% in the third quarter, becoming the main driver of growth. The volatility in consumption was mainly caused by developments in Germany, where private consumption rebounded by 0.7% in the third quarter after a contraction of 0.2% in the second quarter. The consumption increase was recorded across all euro-area countries. It is now increasingly clear that consumer spending has been gaining momentum this year after a sluggish performance in previous years.

The growth of household borrowing, though still at very high rates, has shown some deceleration in the third quarter compared to the second one. Available data for October show a deceleration in both lending for house purchase and consumer credit. Past withdrawal of monetary stimulus by the ECB seems to be weighing on mortgage borrowing and consumer credit. This signals a normalisation of monetary conditions in the euro area after a period of strong credit growth.

Despite the deceleration in household borrowing, the improvement in household consumption is expected to continue, mirroring mainly the improved performance in the labour market. Employment growth accelerated to 0.4% (quarter-on-quarter) in the second quarter. At the same time, unemployment continued its

downward trend. In October, unemployment decreased to 7.7% of the labour force. This is the lowest rate since the start of the Eurostat series in 1993. The drop was driven by significant improvements in Germany and France. According to the European Commission's business and consumer survey, employment expectations in the manufacturing and service sectors improved further in November. In line with these developments, consumer confidence picked up again in November and households' unemployment expectations were more optimistic (Graph 2).

Graph 2: Consumer confidence, euro area (balance in % – Jan 2000 to Nov 2006)



Source: Commission services.

Though decelerating from the remarkable 2.3% increase in the previous quarter, gross fixed capital formation continued to grow at a sustained pace in the third quarter (0.8%). The strong deceleration of gross fixed capital can mainly be attributed to developments in German investments. After an exceptional 4.4% increase in the second quarter, investment slowed down to 0.8% in the third quarter. Given the strong volatility of quarterly data, figures for the third quarter should be analysed in conjunction with those for the second quarter.

The breakdown of investment spending by sector is not yet available for the third quarter. But available data for the second quarter showed that the contributions of construction and equipment investment in the euro area were comparable; both increased strongly compared to the previous quarter (2.2% and 2.1% respectively). For the construction sector, this was the highest rate in almost ten years.



Table 1: Euro-area economic growth components

	2005	2006	2006	2006	Carryover to 2006	Forecast (1)	
	Q4	Q1	Q2	Q3		2006 (2)	2007 (2)
Percentage change on previous period, volumes							
GDP	0.4	0.8	1.0	0.5	2.5	2.6	2.1
Private consumption	0.1	0.7	0.3	0.6	1.8	2.0	1.6
Government consumption	0.4	0.9	0.1	0.8	2.1	2.0	1.4
Gross fixed capital formation	0.6	1.0	2.3	0.8	4.6	4.3	3.0
Changes in inventories (% of GDP)	0.4	0.0	0.3	0.2	0.0	0.2	0.4
Exports of goods and services	0.7	3.8	1.1	1.7	8.0	7.9	6.0
Imports of goods and services	1.6	2.8	1.1	2.1	7.9	7.5	5.7
Percentage point contribution to change in GDP							
Private consumption	0.1	0.4	0.2	0.4	1.0	1.1	0.9
Government consumption	0.1	0.2	0.0	0.1	0.4	0.4	0.3
Gross fixed capital formation	0.1	0.2	0.5	0.2	1.0	0.9	0.6
Changes in inventories	0.4	-0.4	0.3	0.0	0.0	-0.1	0.1
Net exports	-0.3	0.4	0.0	-0.1	0.2	0.3	0.2

(1) Annual change in %. (2) European Commission Autumn 2006 Forecasts.

Source: Commission services.

The continued investment dynamism was reflected in loan developments in the corporate sector. Loans to the non-financial corporate sector continued to grow very strongly, reaching annual rates above 12% in the third quarter. In October, corporate loans were particularly impressive, reaching 12.9%, the highest rate seen since the early 1990s. The ECB's October 2006 Bank Lending Survey suggests that financing needs are strongly related to the strengthening of economic activity. In particular, the need to increase fixed capital investments and working capital has become the main driver of corporate loan demands. It is also particularly interesting to note that, for the first time since the survey began (April 2003), the growth rate of corporate loans for capital spending has now exceeded that for M&A and debt restructuring.

These developments seem to suggest that liquidity conditions continue to be favourable and support the ongoing corporate expansion. Looking ahead, a solid pace of investment growth should be maintained in the coming quarters. This follows from improved balance sheets, benign financial conditions, steady increases in capacity utilisation and solid output. According to the European Commission's business survey, capacity utilisation rose to 83.9% between July and October, the highest rate since the year 2000. Higher profit margins also encourage ongoing corporate expansion and are supported by the continued pick-up in

activity and still fairly moderate wage developments. Moreover, recent developments in labour productivity in the euro area have surprised on the upside. Annual labour productivity averaged 2% in the first half of 2006, compared with an average rate of 0.7% during the past decade. It is hard to tell, at this juncture, how much of this productivity pick-up reflects a genuine structural improvement. However, the analysis in Box 1 suggests that the downward trend of labour productivity appears to have halted towards the end of 2002 and to have reversed since.

Trade has remained unexpectedly robust

While growth in euro-area exports decelerated sharply in the second quarter, it rebounded in the third quarter (1.7%), thereby defying expectations of a further deceleration in conjunction with the US slowdown. This can be explained by different factors.

Firstly, so far, spillover effects from the decelerating housing market in the US to the rest of the US economy seem to be limited.³ For instance, the US Quarterly National Accounts show a 2.3% (quarter-on-quarter) increase in imports of goods in the third quarter.

³ See Section I.2 for a discussion on the impact of the US slowdown on the euro-area economy.

Table 2: Selected euro-area and national leading indicators, 2005-2006

	SENT. IND ¹⁾	BCI ²⁾	OECD ³⁾	PMI Man. ⁴⁾	PMI Ser ⁵⁾	IFO ⁶⁾	NBB ⁷⁾	ZEW ⁸⁾
Long-term average	101.2	-0.00	2.77	52.5	54.7	96.5	-8.2	29.6
Trough in latest downturn	88.1	-1.25	-0.77	42.9	46.7	87.3	-26.5	-10.4
November 2005	100.2	0.10	3.4	52.8	55.2	98.4	-5.6	38.7
December 2005	101.1	0.30	3.6	53.6	56.8	100.4	-0.8	61.6
January 2006	101.8	0.30	3.9	53.5	57.0	103.9	-4.4	71.0
February 2006	103.2	0.60	4.4	54.5	58.2	104.8	1.6	69.8
March 2006	104.0	0.80	4.4	56.1	58.2	105.6	0.3	63.4
April 2006	106.4	1.10	4.8	56.7	58.3	105.4	6.4	62.7
May 2006	107.4	1.00	4.9	57.0	58.7	103.9	1.4	50.0
June 2006	107.8	1.40	4.4	57.7	60.7	104.1	10.6	37.8
July 2006	108.6	1.30	3.6	57.4	57.9	102.6	5.6	15.1
August 2006	108.5	1.20	3.2	56.6	57.4	101.4	3.3	-5.6
September 2006	109.3	1.40	2.7	56.6	56.7	98.9	5.0	-22.2
October 2006	110.4	1.40		57.0	56.5	99.2	2.4	-27.4
November 2006	110.3	1.50		56.6	57.6	100.1	4.1	-28.5

1) Economic sentiment indicator, DG ECFIN. 2) Business climate indicator, DG ECFIN. 3) Composite leading indicator, six monthly change. 4) Reuters Purchasing Managers Index, manufacturing. 5) Reuters Purchasing Manager Index, services. 6) Business expectations, West Germany. 7) National Bank of Belgium indicator for manufacturing. 8) Business expectations of financial market analysts, Germany.

Secondly, according to the latest estimates of the CPB Netherlands Bureau of Economic Policy Analysis, world trade growth has not decelerated. Rather, it seems to have stabilised, increasing by 2.5% or more (quarter-on-quarter) since the last quarter of 2005.⁴

Thirdly, euro-area exports to the US have been declining since 1999. Today, the share of euro-area exports to the US is 15% for goods and 20% for services compared with, respectively, 17% and 23.5% in 1999.

The prospects for euro-area exports are thus fairly bright. According to the European Commission's business surveys, the assessment of current export-order books improved in November while export-volume expectations in the manufacturing industry remained constant in the fourth quarter, albeit at a very high level.

Euro-area imports also rebounded in the third quarter (2.1%), reflecting robust domestic demand in the euro area. The strong inflow of imports offset export growth, resulting in a slightly negative contribution of net trade. However, the picture is rather different across

Member States. For example, in France, net trade continued to contribute negatively to growth (-0.2%) while in Germany net trade contributed strongly (0.4%) to quarter-on-quarter growth.

Business surveys reaching record high levels

Business confidence indicators in general are remarkably high. Since mid-2005, they have increased sharply and reached record heights lately. In November, the European Commission's Business Climate Indicator continued to increase, reaching the highest level ever (Graph 3). These results were fully in line with other surveys.

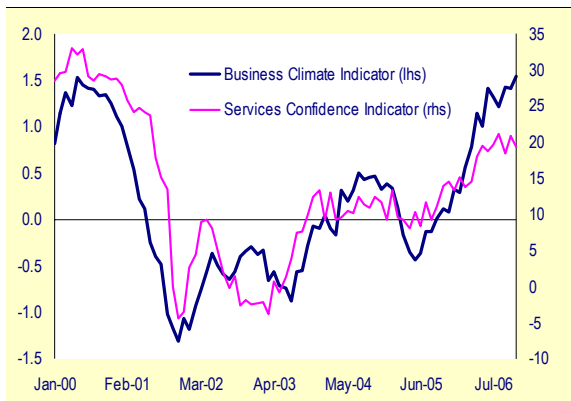
The German Ifo index also rose further in November, reaching much higher than expected levels. The index measuring current economic conditions hit its highest level since German reunification. Business expectations also increased, seemingly unaffected by the forthcoming VAT increase on 1 January 2007. The Belgian manufacturing index also rebounded in November, remaining quite high, well above the long-term average. Managers' production expectations for the months ahead continued to increase. The French INSEE business indicator remained steady, staying close to the five-year highs reached earlier this year (in March). The

⁴ Except in the second quarter of 2006 when world trade increased only by 1.3%. This was mainly the result of the 1.8% decrease in April compared to March, which was partly due to working-day effects.



euro-area manufacturing PMI also rose further in October. This was particularly encouraging in the light of declines in the US, Japanese, Chinese, and UK PMI. However, at odds with most national surveys, the euro-area PMI decreased in November, dragged down by Italy.

Graph 3: Business confidence indicators, euro area
(Balance in % – Jan 2000 – Nov 2006)



Source: Commission services.

The business surveys message is thus very clear: confidence remains high in the euro area. This is consistent with recent robust growth, which should remain strong or even accelerate in the fourth quarter.

In spite of these strong results, industrial production was down by 1% in September, after the strong 1.7% increase in August. However, it is important to keep in mind the quite substantial volatility in monthly data. In any case, on a quarterly basis, euro-area industrial production growth showed some stabilisation. It increased by about 1% in the third quarter compared to the 1.2% increase in the second quarter. In this context and as long as business confidence remains high, fluctuations in monthly production are not unduly worrying.

Various factors explain the recent business optimism: (i) robust domestic demand in the euro area; (ii) declining oil prices; (iii) ongoing gains in the stock market; (iv) improved balance sheets; (v) benign financial conditions and; (vi) higher profit margins. Most of these factors should continue supporting business confidence in the coming months.

The service sector surveys also point to a solid pace of economic activity. After four months of consecutive fall, the services PMI rebounded strongly in November. The European Commission's Survey indicator, though slightly decreasing in November, still remains well above its long-term average (Graph 3).

Short-term outlook and risks

After the slight moderation in growth in the third quarter, business surveys clearly point to either a stabilisation at a high level in the fourth quarter, or to some acceleration.

The European Commission's autumn 2006 forecast projected growth to reach 0.6% in the last quarter of 2006. For 2006, GDP growth is expected to reach 2.6%. Looking ahead, some deceleration in growth is expected for 2007, reflecting a certain easing in global growth and, in particular, in US growth. Nevertheless, the outlook is still for robust euro-area growth at around potential (2.1% for 2007), driven primarily by domestic demand.

Overall, the risks to the outlook are fairly balanced. On the domestic side, on the one hand, the VAT increase in Germany will have temporary adverse effects on consumer consumption. On the other hand, the labour market performance in the euro area could improve more than expected, boosting consumer consumption.

Risks stemming from the international side include developments in oil prices. Fundamentals suggest that they could fall further. However, it cannot be ruled out that oil prices may increase again due to geopolitical tensions. A disorderly correction of global imbalances also remains one of the main downside risks. Finally, a sharper-than-expected US slowdown could have a negative impact on the euro area.

Nevertheless, the confirmation of domestic demand as the main engine of growth, as well as the good health of the corporate sector, should help the euro area to maintain robust growth.

Box 1: Are we witnessing a structural improvement in labour productivity?

As a key determinant of long-run economic growth, productivity constitutes a core economic indicator. There are two generally accepted measures of productivity: labour productivity and total factor productivity. Whereas labour productivity measures economic output per unit of labour, total factor productivity relates output to the combined usage of factor inputs, namely, labour and capital. In a standard decomposition of a production function, there is a clear relationship between the two concepts in that changes in labour productivity are composed of capital input, labour input and total factor productivity. The concept of labour productivity is of significant policy relevance, as a driving force of competitiveness, living standards and potential output.

Recent developments in labour productivity growth

Recent developments in labour productivity in the euro area have surprised on the upside. Labour productivity in the euro area averaged 2% (annualised) in the first half of 2006, compared with an annual average rate of 0.7% during the past decade. However, as the acceleration of labour productivity is fairly recent, a pick-up of the long-term trend is difficult to disentangle from the current cyclical upswing.

The acceleration in labour productivity between the second half of 2005 and the first half of 2006 appears to be broadly based across sectors, even though labour productivity growth in the labour-intensive market services sectors and construction sectors was slower than in the more capital-intensive industrial sectors. Specifically, labour productivity (measured in terms of value added per person) in the private business sector (i.e. the whole economy excluding agriculture and public administration) expanded at an annualised pace of 2.6% in the first half of 2006, up from 0.8% in the previous six months, which equals the average growth rates observed in the decade 1995-2005. Within the private business sector, labour productivity growth strengthened in industry, largely reflecting a capital deepening. Across the larger Member States, productivity gains have been particularly large in the first half of 2006 in Germany. This surge is reflected in the sharp increase in labour productivity in industry, which more than doubled the average growth rate observed in the past decade. The private services sector has also performed remarkably well in Germany. Labour productivity gains have been significant in France and Spain, although more moderate than in Germany as far as the private business sector as a whole is concerned. Spain appears to be reducing the gap in the services sector. The picture is less rosy in Italy. Long-term labour productivity growth has been fairly low in Italy over the last ten years across the main sectors of the economy and recent developments appear to be at odds with the rest of the euro area. In the case of both Spain and Italy however, figures are partly distorted to the downside due to the regularisation of immigrants.

Labour productivity growth (1), euro area (annual change in %.)				Labour productivity growth, larger Member States (annual change in %.)		
	1995-2005 (2)	2005H2 (3)	2006H1 (3)	1995-2005 (1)	2006H1(2)	
Whole economy	0.7	0.7	2.0			DE Private business sector
Private business sector, of which	0.8	0.8	2.6			of which:
Private services sector	0.2	-0.3	1.6			- Industry (excl. construction)
Public administration	0.0	-0.1	0.2			- Private services sector
Breakdown of private business sector into main branches:						FR Private business sector
Industry (excl. construction)	2.3	3.6	5.6			of which:
Construction	-1.0	1.1	1.0			- Industry (excl. construction)
Trade & transport	0.8	1.4	2.2			- Private services sector
Finance and business	-1.1	-2.5	0.8			IT Private business sector
						of which:
						- Industry (excl. construction)
						- Private services sector
						ES Private business sector
						of which:
						- Industry (excl. construction)
						- Private services sector

(1) Measured in terms of value added per person.
(2) Average y-o-y growth rates.
(3) Annualised semester-on-semester growth rates.
Source: Commission services.

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Source: Commission services.

Assessing the structural component of labour productivity growth

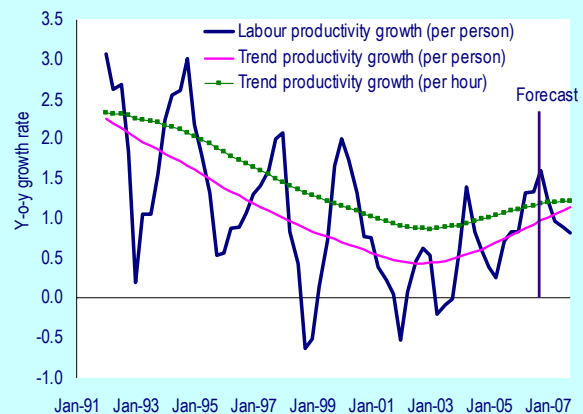
Productivity growth is partly a cyclical phenomenon. Productivity changes are known to be pro-cyclical, picking up strongly in the early stages of an economic upturn and tending to weaken in a downturn. This reflects the lagged response of employment to output changes. Yet labour productivity growth is also subject to long-run dynamics and the long-run dimension is typically captured by trend patterns. Ten-year averages show labour productivity growth in



the euro area to have been on a declining trend during the last fifty years. The main factors behind this long-term decline are low capital accumulation and deteriorating total factor productivity growth. According to several recent studies, from a sectoral perspective, industries that neither produce nor use ICT appear most responsible for the decline in average labour productivity growth since the mid-1990s.*

In order to analyse the latest labour productivity developments, the trend was extracted from a quarterly sample. The downward trend of labour productivity growth in the private business sector appears to have halted towards the end of 2002 and to have been reversed since then. Trend labour productivity growth bottomed out at 0.5% (year-on-year) in 2002Q4 accelerating to 0.8% in 2006Q2. One drawback of measuring labour productivity per person is that it is affected by the declining trend in the number of average hours worked per person. However, as shown in the chart, correcting for the trend in hours worked seems to make little difference other than a level shift in the overall trend of labour productivity. A similar rising trend in labour productivity is visible in most sectors of the economy (see table below). This is particularly the case for the private services sector. Labour productivity growth in this sector started declining in the early nineties, to bottom out in the last quarter of 2001. Since then, however, it has accelerated to stand at 0.4% in the second quarter of 2006.

Actual and trend labour productivity growth, euro area (private business sector) (in%)



Source: Commission services.

Trend labour productivity growth by sector, euro area (1)
(y-o-y growth rates in %)

	at latest trough (2)	2006Q2
Whole economy	0.5 (2002Q4)	0.8
Private business sector, of which	0.5 (2002Q4)	0.8
Private services sector	-0.1 (2001Q4)	0.4
Breakdown of private business sector in main branches:		
Industry (excl. construction)	1.9 (2002Q1)	3.1
Trade and transport	0.5 (2003Q2)	1.0
Finance and business	-1.8 (1999Q3)	-0.5

(1) Trend extracted using a Hodrick-Prescott filter.

(2) Latest trough within brackets.

Source: Commission services.

Overall, the acceleration in productivity gains in the services sector since 2002 is higher than the improvement observed for the euro area as a whole, highlighting the role of the services sector as the key driver of the labour productivity surge. It is worth noting that the contribution of the services sector to the acceleration of overall labour productivity growth since 2002 is now as large as that of industry. Looking at labour productivity developments in other sectors of the economy (manufacturing, trade and transport, finance and business), the overall picture of an interruption in the declining trend of the nineties and the subsequent reversal remains valid.

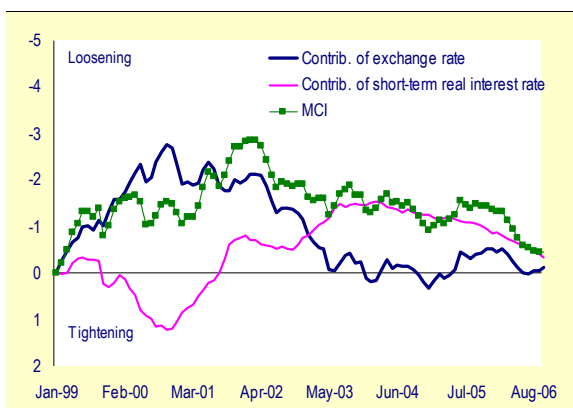
(* European Commission (2006), 'Long-term labour productivity and GDP projections for the EU25 Member states: a production function framework', *European Economy*, Economic Papers, No 253/2006

Monetary and financial conditions

On 7 December, the ECB continued its normalisation of interest rates when it hiked its policy rates for the sixth time since December 2005. The ECB's key policy rate currently stands at 3.5 percent. The interest rate increases were motivated by upside risks to price stability over the medium term, as identified by the ECB's analysis, both economic and monetary. It should help ensure that medium- to longer-term inflation expectations in the euro area remain solidly anchored at levels consistent with price stability.

Although interest rates are still at relatively low levels, the policy rate hikes combined with an exchange-rate appreciation have led to some further tightening of monetary conditions in the euro area as measured by a Monetary Conditions Index (MCI).

Graph 4: Euro-area MCI and its contributors
(index Jan 1999=100 – Inverted scale – Jan 99 to Oct 06)



Source: Commission services.

After a weakening of the euro exchange rate at the beginning of the fourth quarter 2006, the euro has been on an appreciating trend since mid-October. Between 16 October and 8 December, the euro gained some 6% against the US dollar and about 2.5% against the Japanese yen, though in nominal effective terms the appreciation was more muted. The recent weakening of the US dollar can be explained by different factors. The US is in the late stages of the business cycle, there is evidence suggesting a

slowdown of productivity growth and of the medium-term growth potential, while the current account deficit remains high. At the same time, economic growth in the euro area has accelerated, and the expected interest-rate differential (based on futures contracts) with respect to the US has decreased by around 90 basis points over the last seven months.

Table 3: Exchange rate developments
(in %, 8 December 2006)

	USD/ EUR	JPY/ EUR	NEER euro area (1)	REER euro area (2)
Change relative to				
1 Jan. 06	12.5	10.3	4.9	1.7
Avg 2005	7.0	12.4	2.4	-1.0
Level compared with 1995-2005 average				
	18.8	20.8	16.2	2.2

(1) Nominal Effective Exchange Rate (reference group of 41 countries).

(2) Real Effective Exchange Rate (reference group of 41 countries).

Source: Commission services, EcoWin.

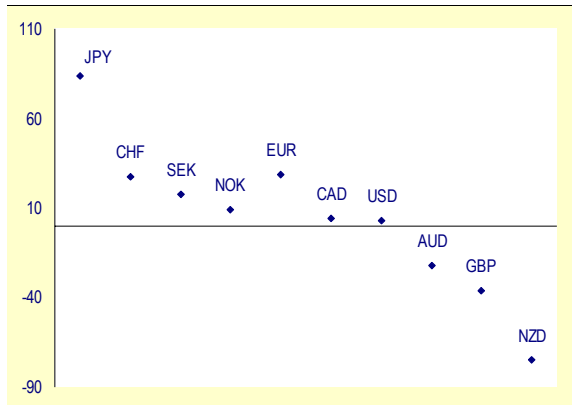
The cyclical decoupling between the euro area and the US has also been reflected in government bond markets. Overall, 10-year government bond yields temporarily increased some 20 basis points in the course of October in both the US and the euro area. In November, bond yields remained relatively stable in the euro area at around 3.7% but lost some 10 basis points in the US where they currently stand slightly below 4.5%. As a result, the interest-rate differential at both sides of the Atlantic declined further to around 80 basis points over the last months. This could be interpreted as a sign that market participants are increasingly differentiating between the US and the euro-area economy. Some differentiation was already noticeable earlier at the short end of the yield curve, where the differential for 2-year government bonds declined from 180 basis points in June to currently slightly above 90 basis points.

Both the euro area and the US are experiencing flat or flattening yield curves. Flat yield curves today seem to be a phenomenon common to



most industrialised countries. Nine out of ten selected yield curves show an absolute spread of less than 50 basis points between the 2-year and the 10-year maturity segment (swaps) (Graph 5).

Graph 5: **Flattering of the yield curve**
(10y-2y interest rate swaps spreads in bp as of
8 December 2006)



Source: Commission services.

2. Will the effects of a US slowdown spill over to the euro area?

The long anticipated US slowdown is now clearly under way. US GDP growth decelerated to an annualised rate of 2.6% in the second quarter and to 1.6% in the third quarter. The slowdown is so far mainly concentrated in the housing sector. Home sales have fallen by 10% since the last quarter of 2005, while residential investment contracted in the third quarter at an annualised rate of 17.4% compared to the preceding quarter, the sharpest decline since the 1990-1991 recession. In October, housing starts dropped by 14.6% compared to September, to the lowest level in more than six years. Year-on-year, housing starts are now 27% lower while building permits declined for the ninth consecutive month. The appreciation of house prices has also slowed sharply and some local markets have experienced price declines. However, significant spillover effects on other parts of the US economy are not yet discernible in the data. Consumer spending (3.2%) and business fixed investment (8.6%) both rebounded to post solid growth in the third quarter.

At the same time, the euro-area economy is growing strongly. The Commission's autumn 2006 forecast projects that this year's economic growth will reach 2.6% in the euro area, i.e. more than 1 percentage point above last year's. Domestic demand, which is the main driver, is set to maintain a steady pace.

The US and euro-area economies are interlinked through various channels (in particular through trade, financial markets and confidence effects) and their business cycles show considerable co-movement. There is also evidence that the US business cycle leads the euro-area cycle, which could be indicative of a transmission of US shocks to the euro area. A more severe downturn in the US economy could therefore also lead to a deterioration of the outlook for the euro area.

Spillover effects through trade linkages...

A US slowdown will directly affect the euro-area economy through a decline in euro-area exports to the US. Euro-area exports of goods (in

nominal USD values⁵) to the US, which in 2005 were 2.3% of GDP, have increased by almost 60% between 1999 and 2005. This rapid growth notwithstanding, the share of the US in euro-area exports of goods (excluding intra-euro-area trade) declined by 1½ pp. to 15½% in 2005 (Table 4). This decline is comparable with the evolution for the other industrialised economies, reflecting, in particular, the enhanced importance of emerging markets in world trade. In particular, the recently acceded Member States (RAMS), the candidate countries and emerging Asia have become important destinations for euro-area exports.

Table 4: Share of extra euro-area exports in total euro-area exports of goods (%)

	1999	2001	2003	2005
Industrialised non-EA	59.1	57.2	54.8	51.6
DK, SE, UK	27.1	25.6	25.1	23.1
USA	17.1	17.6	16.3	15.4
Other (1)	14.9	14.0	13.4	13.0
RAMS (2)	10.0	10.3	11.5	11.8
Candidate countries (3)	3.7	3.6	4.7	5.4
CIS (4)	2.3	3.3	3.9	4.9
Dev. Countries	24.9	25.6	25.1	26.4
MENA (5)	8.0	7.9	8.0	8.5
Sub-Saharan Africa	2.8	2.9	2.9	2.9
Latin America	5.3	5.1	4.0	4.2
Asia	8.8	9.7	10.2	10.8

(1) Japan, Canada, Norway, Switzerland, Iceland, Australia, New Zealand.

(2) Recently-acceded Member States of the EU.

(3) Bulgaria, Croatia, Romania, Turkey.

(4) Commonwealth of Independent States

(5) Middle East and North Africa

Source: IMF.

Given that the slowdown in the US is likely to affect consumer goods more than other goods, the share of consumer goods in overall goods exports to the US may also be important. This share amounts to 30% for the euro area as a whole. Combining the figures for the share of exports of goods to the US in overall goods exports and the share of consumer goods in goods exports to the US, about 5% of total euro-area exports would be more-or-less strongly affected by a US downturn.

⁵ Exports by destination are only available in values.

Available data on international trade for services show similar trends to those for goods. Between 2002 and 2004, euro-area services exports (excluding intra-euro-area trade) shifted towards emerging economies. The falling share of exports to industrialised countries over this period is, however, solely due to the declining share going to the US, which dropped by more than 4 pp.⁶ Despite this fall, the US share in total euro-area services exports remains above the corresponding share for goods exports. In terms of GDP, services exports to the US accounted for 0.9% of euro-area GDP in 2004.

Taking goods and services exports together, exports to the US account for about 3% of euro-area GDP. Assuming that a drop in US imports affects euro-area exports in a proportional manner, a 1% decline would reduce euro-area exports by an amount worth 0.03% of GDP.⁷ However, in order to gauge the impact on euro-area GDP itself, multiplier effects would have to be taken into account, including a reduction in import growth.

The slowdown in the US will have not only a direct but also an indirect impact on euro-area exports. Euro-area exports to third countries will be affected by the impact of the US slowdown on those countries' economic activity, though the magnitude of the impact will depend on the extent of their trade relations with the euro area. It might be significant, as seen from the US trade shares of some industrialised trading partners of the euro area. For instance, the United Kingdom – the euro-area's largest individual export market (one-sixth of extra-euro-area exports) – ships one-seventh of its own exports to the US.

An important question will be to what extent the emerging-market economies in Asia would be affected by a downturn in the US. The importance of the US as a destination for Asian exports remains high, albeit declining. Exports to the US represented about 20% of total Asian

⁶ Preliminary data suggests that the share of euro-area services exports to the US saw a further significant drop in 2005.

⁷ According to econometric estimates of the link between euro-area exports and US import demand on the basis of quarterly data, the long-run elasticity of euro-area exports to the US with respect to a change in US imports is 0.93, a near-proportional effect.



exports in 2005, compared to 25% in 2000. Due to the growing Asian trade integration, the importance of intra-Asian exports has increased. However, a large part of intra-Asian trade consists of intermediate goods which are assembled in Asia before being shipped to the US. For this reason, intra-Asian trade is likely also to be affected by a US slowdown.

...but also through financial market linkages and confidence effects

The magnitude of the trade-channel effects depends also on how the dollar-euro exchange rate responds to the US slowdown. If the US economy were to slow down more sharply than expected, market expectations of changes in the interest differential between the US and the euro area might lead to a depreciation of the dollar. This could be reinforced should there also be an upward shift in the risk premium foreign investors require for investing in the US.

Any depreciation of the dollar would exacerbate the negative effect of a US slowdown on the euro-area economy via direct trade effects. Moreover, the strength of any ensuing indirect trade effects would also crucially depend on the exchange-rate policy of Asian countries. However, given the euro area's strong trade links with other European countries, developments in its overall competitiveness will also very much depend on how those countries' currencies evolve.

While lower export demand, in particular for consumer goods, would tend to lead to lower investment growth, this would be somewhat offset by lower interest rates due to higher US savings and reduced inflationary pressures. In fact, simulations carried out with DG ECFIN's Quest model suggest that the net effect of the slowdown on investment could even be positive, leading to higher GDP in euro area in the long-run.

Exchange-rate movements would also have significant direct effects through the changes in the valuation of euro-area holdings of US assets, affecting in particular corporate balance sheets.⁸

⁸ According to ECB statistics, at the end of 2005 the euro area held (gross) assets in the United States worth more

Recent estimates suggest that the net claims in US dollars of the euro area amounted to 16.8% of GDP in 2005.⁹ While this is significant, it was found to be roughly half the exposure of Japan and China.

The US slowdown may also have spillover effects through corporate and financial linkages other than the channels already considered. The US activities of euro-area firms are considerable. In 2003, sales through affiliates of euro-area companies amounted to 7.5% of euro-area GDP.¹⁰ A slowdown in the US would therefore have an impact in that it would make these activities less profitable. And there could be some impact on euro-area production to the extent that production by US affiliates affects the production and investment decisions of euro-area parent companies. Furthermore, the US slowdown could also affect production decisions by US entrepreneurs in the euro area.

Financial linkages could also lead to spillover effects through financial asset prices due to the impact of the slowdown on investor sentiment. Financial markets currently seem to be predicting a soft landing of the US economy, in line with the Commission's autumn 2006 forecast. A stronger-than-expected slowdown could therefore have an impact on US asset markets. Given the interdependence of international financial markets, with widespread cross-border holdings of assets, there could be an additional spillover effect on investor confidence globally. Currently, the degree of co-movement of stock prices in the US and the euro area is quite high (Graph 6) and an adjustment of stock market valuations could easily spread across major markets (as it did during May this year). Global risk premia are very low by historical standards and a reassessment of investors' appetite for risk could lead to synchronised rise in risk premia. However, this might be somewhat

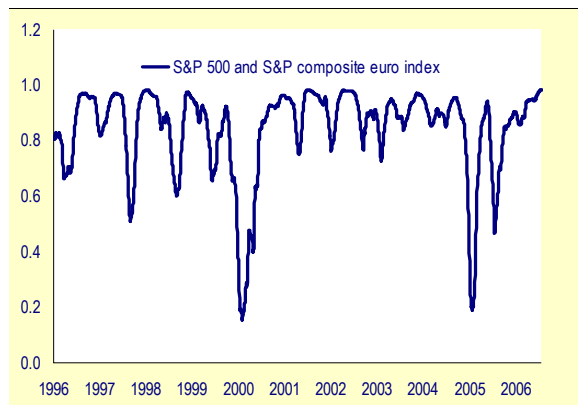
than 2.3 trillion euro (1.3 trillion euro in portfolio assets, 0.5 trillion euro for direct investment and 0.5 trillion euro for other assets).

⁹ Lane and Milesi-Ferretti (2005), 'Europe and Global imbalances', paper presented at the IMF's 7th Jacques Polak annual research conference, November 9-10, 2006.

¹⁰ Domestic sales exclude imports from the euro-area parent group, as these are included in euro-area exports.

counterbalanced by a possible shift in relative risk premia in favour of euro-area assets.

Graph 6: Correlation of euro and US equity indices (6 months)



Source: Commission services.

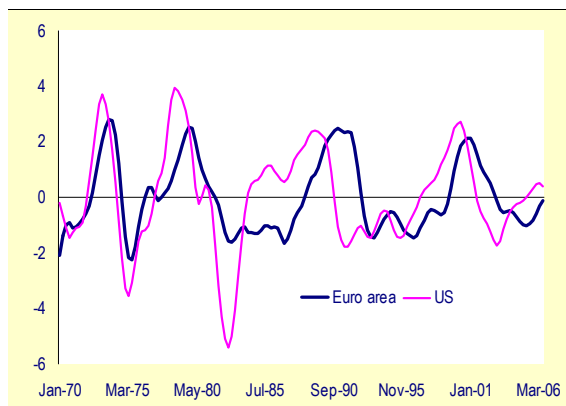
Finally, there may be spillover effects on business and consumer confidence in general.¹¹ Historically, there is evidence of a correlation between business and consumer confidence in the US and the euro area over and above what would be expected from the impact through the channels that have been considered so far.¹² However, in the current context of an idiosyncratic slowdown in the US resulting from a slowdown in the housing market, such spillovers may be smaller than seen in the past.

Correlation between the euro area and US business cycles has been high since the 1970s...

Since the US and euro-area economies are interlinked through various channels, their business cycles show considerable co-movement. Over the last 35 years, the euro-area and the US business cycles have posted a significant degree of co-movement, with a clear lead for the US

cycle (Graph 7).¹³ On average, the US cycle led the euro-area cycle by 3 quarters for a coincident correlation of about 47% (the correlation rises to 67% when the euro-area cycle is lagged by 3 quarters) (Table 5).¹⁴ However, the degree of synchronisation is very different depending on the sub-periods considered. If the sample is restricted to the period from 1990, the correlation falls to 25%.

Graph 7: GDP business cycles, euro area and US (Output gap in % – 1970Q1-2006Q3)



Source: Commission services.

Table 5 displays the correlations between the detrended euro-area and US GDP series for different periods. The first three periods correspond broadly to the last three euro-area cycles (1970-1985, 1986-1996 and 1997-2006). A strong correlation is found in the seventies as well as in the current cycle and hardly any correlation in the early nineties. This can be partly explained by the German unification which boosted euro-area growth while the US was falling into recession. It was only after the US was well on its way to recovery that the euro area fell into recession.

¹¹ See also the discussion in the Quarterly Report on the Euro Area, December 2003, Vol 2, No 4, pp. 16.

¹² See Anderton et al, 'Understanding the impact of the external dimension on the euro area: Trade, capital flows and other international macroeconomic linkages', ECB Occasional Paper, No 12, April 2004.

¹³ The euro-area and US business cycles were extracted from respectively, the euro-area and US GDP series using the Hodrick-Prescott filter.

¹⁴ In the current cycle, the highest correlation is reached when the US cycle is lagged by 5 quarters. This is quite short compared with the 1986-1996 period during which the euro-area cycle was lagging the US cycle by more than two years (9 quarters) but relatively long compared to the 1970-1985 period (2 quarters).



Table 5 : GDP cycles correlations, euro area and US

	Correlation	Highest correlation (lag)
1970Q1 – 1985Q4	70%	84% (2)
1986Q1 – 1996Q4	6%	80% (9)
1997Q1 – 2006Q4	42%	89% (5)
1970Q1 – 2006Q4	47%	67% (3)
1990Q1 – 2006Q4	25%	87% (7)
2003Q1 – 2006Q4	-20%	79% (8)

Source: Commission services.

... but this was mainly the result of common shocks

A high degree of correlation may be the consequence of common shocks hitting both regions at the same time or of a shock hitting one country and being transmitted rapidly to the other via contagion effects. The high co-movement observed here seems to reflect mostly the former (i.e. common shocks) for two reasons.

Firstly, if transmission through the different channels identified above was the main cause of the high correlation during the past 35 years, contagion effects would be found in euro-area investment rather than consumption. In this case, a higher correlation would be found between the euro-area and US for investment cycles than for consumption cycles. However, this is not the case and the correlation between consumption cycles is high.

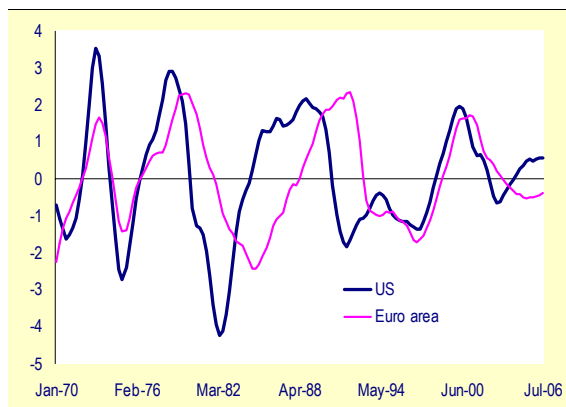
Second, three out of the four major slowdowns in the US over the last 35 years (1973, 1979 and 2000) were clearly followed by a euro-area slowdown. The key common element to these downturns is that they were all caused by common shocks which hit all different parts of the world at the same time. These include the large hikes in oil prices (in 1973 and 1979) and the bursting of the stock market bubble (2000-2001). These common shocks have synchronised not only the euro-area and US business cycles, but the international business cycle in general. As already mentioned, in the case of the US slowdown in the early nineties, the euro area was boosted by German unification.

This begs the crucial question, why does the US seem to lead the euro-area economy when

common shocks hit all parts of the world at the same time? The answer lies in the greater flexibility of its economy, which means that its response to shocks is markedly faster than the euro area's. Thus a common shock which hits both economies at the same time will result in a sharper and faster downturn in the US and also in an earlier and faster recovery. Therefore, the slower euro-area response to common shocks is not a sign of dependence on the US but rather a delayed response to shocks due to a less flexible economy.

Since the high correlation between the two cycles in the past seems to reflect common shocks rather than a dependence on the US, today's US slowdown, which is driven by its housing sector, should have a limited impact on the euro area. This should be true unless a sharper US slowdown triggers strong spillovers through balance sheets, equity markets and confidence channel and through a fall in the value of the dollar. Box 2 describes the impact of different simulations of a sharper slowdown in the US on the euro area.

Graph 8: Euro area and US consumption cycles (Gap in % – 1970Q1-2006Q3)



Source: Commission services.

An encouraging picture also emerges when looking at the most recent period (2003-2006). Indeed, since 2003, there seems to be no correlation between the euro-area and the US cycles (Table 5). The pick-up in activity in the US since 2003 was not followed by a similar upswing in the euro area until mid-2005. Moreover, the correlation between the consumption cycle in the euro area and the US has come down significantly from the high levels reached in the

Box 2: A harder-landing scenario for the US economy

This box presents the results of three QUEST II model simulations of a sharper slowdown in the US economy. The baseline scenario (the softer-landing scenario) of the European Commission's autumn 2006 forecast assumes a 10% fall in the level of house prices and a moderate decline in residential construction until the third quarter of 2007. A sharper correction could see house prices coming down by 20% and residential construction following a more pronounced downturn similar to the one experienced in the 1990/1991 recession. In the three sharper slowdown scenarios presented in this box, US GDP is reduced by 2.5% in 2008 compared to the baseline projection (annual growth in 2007-2008 is reduced by about 1¼ pps. each year). In all three scenarios, the US slowdown is triggered by a cooling of the housing market and the effect this has on residential construction and private consumption.

In the first scenario, the slowdown in US domestic demand leads to a small improvement in the US trade balance of ½% of GDP. As to the effects on the euro area, only trade effects are assumed to be at work, with lower demand in the US reducing EU exports. Indirect effects via other trading partners reinforce this negative trade impact. In addition, the increase in US savings reduces global real interest rates, leading to a small increase in euro-area investment. The overall effect on euro-area GDP is a small negative spillover, reducing GDP growth by about 0.2 pp. in 2007 and by 0.1 pp. in 2008. This scenario is relatively benign with spillover effects only coming through lower export demand (and partly compensated by a lower global interest rate).

QUEST simulations: impact of a harder-landing scenario in the US

(Level deviations from baseline in %)

	Euro area			US		
	GDP	Investment	Consumption	GDP	Investment	Consumption
Scenario 1: Only trade channel (both direct and indirect)						
2007	-0.2	0.3	0.0	-1.1	-4.1	-0.9
2008	-0.3	0.6	0.0	-2.5	-5.9	-2.7
Scenario 2: Trade channel + balance sheets, equity markets and confidence channel						
2007	-0.3	0.0	0.0	-1.1	-4.1	-0.9
2008	-0.5	0.0	-0.1	-2.5	-5.9	-2.7
Scenario 3: Trade channel + confidence effects + financial market linkages						
2007	-0.5	0.7	0.3	-1.3	-5.4	-1.5
2008	-0.8	1.6	0.4	-2.5	-8.2	-3.4

Source: Commission services.

A sharper slowdown in the US could, however, trigger further spillovers through the balance sheets, equity markets and confidence channels. Scenario 2 includes an additional negative shock to investment in the euro area which offsets the positive impact of lower global real interest rates on investment. Consumption and, in particular, investment growth would be less buoyant than in the first scenario. This would almost double the overall GDP effect on the euro area, reducing growth by 0.3 pp. in the first year and by 0.2 pp. in the second.

The possibility of a fall in the value of the dollar cannot be ruled out. Scenario 3 assumes that, in addition to the effects underlying scenario 2, the dollar depreciates by 10% vis-à-vis the euro (risk premium shock). The scenario assumes further that Asian currencies maintain a peg relative to the US currency, leading to depreciation of the dollar of around 6% in real effective terms. The real effective appreciation for the euro area is less than 3%. As before, it is assumed that this accompanied by a negative confidence-related spillover effect impacting on investment in the euro area. The slowdown in US domestic demand and the dollar depreciation lead to a sizeable improvement in the US trade balance of more than 1 pp. There are several partly offsetting channels through which the euro area is affected. The appreciation of the euro and lower demand in the US reduces EU exports and raises imports. On the other hand, the appreciation lowers import prices, boosting consumption and investment spending. The increase in US savings also reduces global interest rates. In addition, the risk premium shock to the dollar implies a shift in investors' preferences, benefiting the euro, reducing interest rates and boosting domestic demand in the euro area. However, this is partly offset by a negative shock to investment reflecting lower confidence and stock market repercussions. This leads to a smaller positive effect on domestic demand in the euro area and the negative trade effect dominates. GDP growth is reduced by 0.5 pp. in the first year and 0.3 pp. in the second year.



late nineties (Graph 8).¹⁵ In addition, the consumption outlook for the euro area is increasingly optimistic with a clear improvement in employment growth.

Overall assessment

The euro-area economy will evidently be directly affected by a US slowdown through a decline in euro-area exports to the US. Furthermore, there will also be an indirect trade effect, depending on the extent to which the US growth slowdown will impact on third countries' economies and on those countries' trade relations with the euro area. The implications of the slowdown for euro-area trade will also depend on possible exchange rate movements. The US slowdown may in addition have spillover effects through corporate and financial linkages as well as through business and consumer confidence.

However, while the risks of contagion stemming from linkages should not be ignored, neither should we exaggerate them. The current slowdown in the US is country-specific and not sparked by a common adverse shock across world regions as was the case in previous downturns. Therefore, it is not, a priori, clear whether it will affect the euro-area economy in the same way and to the same extent as in the past.

Moreover, the euro area is now in a better position than in the past to decouple from the US slowdown. Indeed, euro-area growth is anticipated to be increasingly based on domestic demand over the next two years. While the overall macro-economic policy stance is likely to be somewhat less accommodative than in previous years, financing conditions remain fairly favourable. Good employment growth and increasing profitability on the back of moderate wage increases, coupled with a rise in productivity growth, will be the main driving forces of domestic demand. This domestic-demand-driven growth should help reduce the euro area's reliance on exports. Moreover, in

view of the diminishing share of the US in euro-area exports, euro-area exports should not worsen dramatically.

Company balance sheets have improved since the dot-com bubble burst. This makes companies less vulnerable to a worsening of financial-market conditions. In addition, companies in the euro area should be less affected via the financial-market channel due to current stock market valuations, which are more in line with fundamentals in than they were at the height of the dot-com bubble.

¹⁵ The particularly high correlation of consumption in the two regions from the late 1990s until 2003 reflects the importance of the succession of common shocks during this period. See 'Business cycle linkages between the euro area and the USA', Quarterly Report on the Euro Area, Vol. 2, No. 4 (2003).

3. The non-accelerating wage rate of unemployment (NAWRU) in the euro area

When it comes to the measurement of structural unemployment, the non-accelerating wage rate of unemployment (NAWRU) has long been part of the analyst's toolkit for a better understanding of the interplay between the functioning of the labour market and inflationary pressures in the economy. This section presents the concept and its current modelling at DG ECFIN and outlines a number of observations that can be derived from the indicator.

The origin of the concept

The starting point for the reflections that would eventually lead to the emergence of NAWRU as a concept was written in 1958 by A.W. Phillips, who was the first to note the trade-off between wage inflation and unemployment in data covering the United Kingdom.¹⁶ He observed that wage inflation tends to be high when unemployment is low and low when unemployment is high. Data was found to fit well along a specific pattern that became to be known as the Phillips curve. This concept gave rise to policies exploiting that relationship. They concluded that some degree of economic stimulation leading to an acceleration of inflation could lower the unemployment rate. This interpretation was refuted thereafter by prominent economists, including E. Phelps, 2006 Nobel prize winner, and the late M. Friedman, Nobel prize winner in 1976.¹⁷ Employment gains brought by higher wage inflation can only be of a temporary nature as they are driven by the money illusion of workers. Persistent policy stimulus leads to higher inflation but labour market benefits disappear as the Phillips curve shifts upwards and is ultimately vertical over the long term. Ample evidence derived from the

stagflation of the seventies in industrialised countries came to the support of these objections: any short-term improvements relative to the NAWRU resulting from stimulatory policy actions were reflected in progressively higher rates of inflation without a durable decrease in unemployment.

However, although discredited as a direct policy tool, the Phillips curve and its associated NAWRU can still provide some information to economists and policy-makers alike. Provided the NAWRU is successfully isolated, the unemployment rate can be broken into a cyclical and a structural component. The structural rate of unemployment (NAWRU) reveals how well the labour market performs in matching employment supply with demand, especially as data on vacancies, another potential indicator for the same purpose, has proven to be less reliable. For its part, the cyclical unemployment component reflects the effect of temporary macroeconomic shocks. If properly identified, the NAWRU can also provide evidence on whether output and unemployment changes are sustainable or not and serve as a yardstick to gauge inflationary pressures for monetary policy purposes. It has labour-market policy implications as well. Reducing the NAWRU component of unemployment requires structural reforms, whereas the policy mix can only have a bearing on cyclical unemployment.

Potential factors influencing the level of the NAWRU

The level of the NAWRU may depend on a wide range of institutional and economic parameters. Frictional unemployment might be considered largely incompressible, although new techniques as Internet job searching or improvements in the functioning of public or private placement agencies could lower its level. Beyond frictional unemployment, structural unemployment can be inflated by the mismatch of supply and demand in periods of rapid technological change or reallocation of demand between sectors. Education and training have a key role to play here in ensuring that the labour market works smoothly, especially for more the vulnerable segments of the workforce, namely the young and the unskilled. Labour market institutions have also recently been highlighted as having

¹⁶ Phillips, A.W. (1958), 'The relation between unemployment and the rate of change of money wage rates in the United Kingdom', 1861-1957, *Econometrica*, 25, pp. 283-299.

¹⁷ Phelps, E. (1968), 'Money-Wage Dynamics and Labor-Market Equilibrium', *Journal of Political Economy*, vol. 76, Part 2, p. 678-711 and Friedman, M. (1968), 'The role of monetary policy', *American Economic Review*, Vol. 58, pp 1-17.



potentially adverse effects on structural unemployment. Wage bargaining structures, employment protection regulations and the statutory level of unemployment insurance could, if not properly designed, lead to significant wage rigidities which hamper adjustment and could thus be detrimental to growth and employment. In such an environment, macroeconomic shocks could generate cyclical unemployment that would later coalesce into structural unemployment, as the employability of the jobless drops over time, effectively excluding them from the labour market. Finally a large tax wedge could also lift the NAWRU upwards by widening the gap between take-home pay for the employee and labour costs for the employer. All these factors combine to explain the persistence of unemployment in Europe, even long after the impact of the successive shocks has subsided.¹⁸ Within that conceptual framework, the high level of unemployment in the eighties and nineties went hand-in-hand with a gradual increase of structural unemployment.

Measurement issues and DG ECFIN's specifications

It is by definition hard to measure structural unemployment since it is not directly observable and may vary over time. Several indicators can be used, notably those based on price inflation (NAIRU), wage inflation (NAWRU) or even the rate of capacity utilization (NAIRCU). Estimation methods also differ. Structural methods model price- or wage-setting behaviour, while statistical methods focus on the actual unemployment rate and split it into trend and cyclical components. DG ECFIN has developed NAWRU indicators for the whole of the euro area and its member States (see Box 3 for methodological aspects).¹⁹

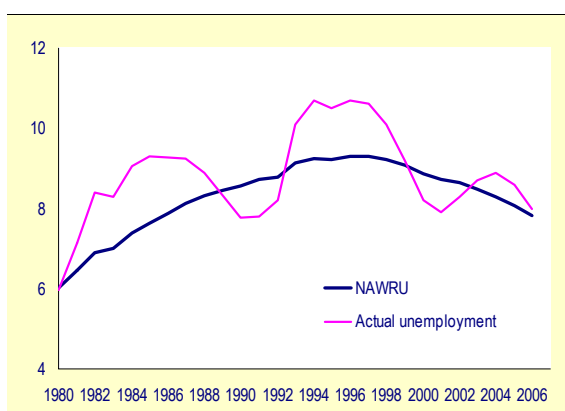
¹⁸ Blanchard O. (2006), 'European unemployment: the evolution of facts and ideas', *Economic Policy*, Vol. 21, No. 45, pp. 5-59 (January).

¹⁹ These indicators are consistent with the methodology used for the determination of output gaps that was discussed and approved by the EU's Economic Policy Committee and the Ecofin Council. See Denis C., Grenouilleau D., Mc Morrow K. and W. Röger (2006); 'Calculating potential growth rates and output gaps – A revised production function approach', *European Economy*, Economic Papers, No. 247 (March).

Results and lessons drawn from the NAWRU in the euro area

Following a steady increase after the first oil price shock of the early seventies, the level of the NAWRU has been on a declining trend since 1997. From a peak of 9.2% of the labour force in 1997, the NAWRU decreased by 1.4 pp. to 7.8% in 2006 (latest estimate from the Commission's autumn 2006 forecasts).

Graph 9: Unemployment rate and NAWRU in the euro area (in % of labour force – 1980 to 2006)



Source: Commission services.

The reversal in the trend since 1997 is not the result of dramatic measures being implemented but rather appears to be the outcome of a series of incremental reforms launched in various Member States that eventually delivered benefits, albeit sometimes with a significant lag. It is worth noting that the decline in the level of the NAWRU persisted even during the recent period of soft growth.

Other ways of depicting the recent positive trend yield similar results. The depiction of the wage-unemployment relationship shows successive shifts downwards, starting from 1996-1997, which would suggest that the functioning of the euro-area labour market has become less rigid (Graph 10).

A similar picture emerges from the examination of the Beveridge curve, with a positive evolution that takes shape in a leftward drift, though at a slightly later point in time (Graph 11).

Box 3: Estimating structural unemployment in the euro area

Structural unemployment can be determined by removing the cyclical component from the observed unemployment rate. The cyclical component can be identified via a Phillips curve in accordance with well-established theory. The Phillips curve specification used by DG ECFIN is a reduced form which is derived from a standard wage-setting curve and a labour-demand equation.

As regards wage setting, it relates nominal wages demanded by workers to price expectations, to the level of the reservation wage, to the expected productivity, and to the unemployment rate. According to the neoclassical model, wages are largely determined by the reservation wage, whereas wage-bargaining models attribute a larger role to productivity developments. DG ECFIN's chosen specification allows both theoretical strands to be covered. It is assumed that price and productivity expectations are backward-looking. The reservation wage, which would – according to theory – be a function of labour taxation and the unemployment replacement rate, is not observed. It is rather considered a permanent component of the wage equation which is implicitly estimated by a Kalman filter.

For its part, the labour-demand equation depends on the level of productivity and labour-demand shocks, the latter triggering shifts in labour demand. These labour-demand shocks could drive a wedge between productivity and real wages and comprise a cyclical component, which derives from labour hoarding, and a permanent component, which covers sectoral shifts or changes in mark-ups. Temporary labour-demand shocks are approximated by a first difference in the growth rate of the wage share and enter the Phillips curve.

Rearranging the wage-setting curve and the labour-demand equation gives an estimation of structural unemployment. It is also possible to derive the change in wage inflation (w_t), which is modelled as a function of labour productivity (pr_t), the wage share (ws_t), and the deviation of unemployment from structural unemployment ($u_t - u_t^*$). Terms of trade (tot_t) have been added as an explanatory variable as nominal wages can respond positively to a possible wedge between consumer prices and GDP inflation.

$$\Delta^2 w_t = \phi^{pr} \Delta^2 pr_t + \phi^{ws} \Delta^2 ws_t + \phi^{tot} \Delta^2 tot_t - \beta(u_t - u_t^*) + v_t^w$$

Phillips curve estimates (based on annual data, 1965-2006)

	$U_t - U_t^*$	$\Delta^2 PR_t$	$\Delta^2 WS_t$	$\Delta^2 TOT_t$	$\Delta^2 TOT_{t-1}$	R ²	Q-Statistic
Euro area	-0.69(-3.1)	0.82(4.7)	0.99(6.0)	0.03(0.2)	0.31(1.7)	0.52	0.85
Germany	-0.53(-2.6)	0.86(7.2)	1.20	–	0.22(1.6)	0.81	0.23
France	-0.45(-2.2)	0.82(3.8)	0.93(6.8)	0.23(1.7)	0.48(3.6)	0.67	0.90
Italy	-0.50(-0.4)	0.68(2.4)	0.72(3.7)	–	0.74(1.6)	0.28	0.36
Spain	-0.39(-2.9)	0.47(2.5)	0.56(3.4)	–	0.61(2.6)	0.39	0.59

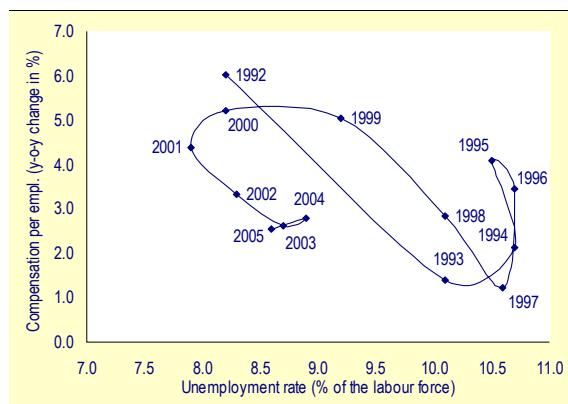
T-Statistics in brackets. See for methodology Denis, C. Grenouilleau, D., McMorro, K. and W. Röger, (2006), 'Calculating potential growth rates and output gaps – A revised production function approach', *European Economy*, No 247. The Commission's autumn 2006 forecasts were used to construct 2006 data.

Source: Commission services.

Wage inflation remains sensitive to the unemployment gap once additional parameters are added to the equation to control for other factors: one additional point of unemployment depresses wage inflation by 0.69 point in the euro area, although the sensitivity is lower (0.4-0.5) for bigger euro-area countries. The influence of productivity is noticeable even across large euro-area countries (0.82), which provides support to wage bargaining theories. The lagged impact of terms of trade, measured by the difference between consumer and GDP prices, is also significant, although less so for Germany. Finally, it is found that wages respond to labour-demand shocks, approximated by changes in the wage share. Its impact is somewhat proportional to labour productivity.

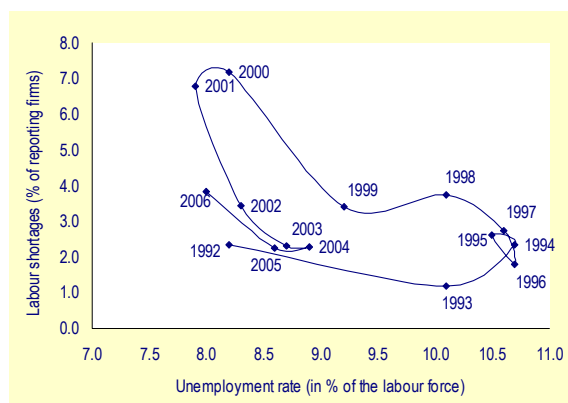


Graph 10: Unemployment rate and wage growth in the euro area (1992-2005)



Source: Commission services.

Graph 11: Beveridge curve in the euro area (1992-2005)



Source: Commission services.

While structural unemployment has been on a downward path in the euro area as a whole since the late 1990s, the labour-market performance has varied significantly across individual Member States, reflecting the fact that there are still twelve different labour markets, governed by national regulations and institutions. Figures point to a decrease in the NAWRU in the period 2001-2005 compared to 1996-2000 in seven euro-area Member States. In particular, Finland, Spain and Italy have recorded significant progress. But structural unemployment has still been increasing in Austria, Germany, Greece, Luxembourg and Portugal. Uneven progress between member States suggests that there is still scope for further improvements in the functioning of the labour market in many euro-area Member States.

In particular, estimates of the NAWRU point to a persistently high level of structural employment in Germany, with no improvement recorded thus far. It would, however, be too early to draw any conclusion on the effectiveness of the recent Hartz reforms, since the impact of reforms usually takes a long time to make itself felt in aggregate data.

Table 6: Estimation of NAWRU in the euro area (1)

	(in %)			Forecasts (2)	
	Average level			2006	2008
	1991-1995	1996-2000	2001-2005		
BE	8.3	8.0	7.9	7.9	8.0
DE	7.0	7.9	8.3	8.3	8.2
EL	8.0	9.3	9.6	9.4	9.1
ES	15.2	13.8	10.6	8.3	6.9
FR	9.9	10.3	9.5	9.0	8.6
IE	13.7	8.1	4.2	4.0	4.4
IT	9.7	10.0	8.6	7.5	7.0
LU	2.2	2.6	3.5	4.2	4.5
NL	5.7	4.1	3.0	3.2	3.0
AT	3.6	3.9	4.4	4.9	5.1
PT	5.3	5.2	5.9	6.7	7.4
FI	11.2	11.9	8.1	7.1	7.0
Euro Area	8.9	9.1	8.3	7.8	7.4
US	5.7	5.2	5.2	5.1	5.1

(1) Data in percentage of the labour force.

(2) Commission autumn 2006 forecasts.

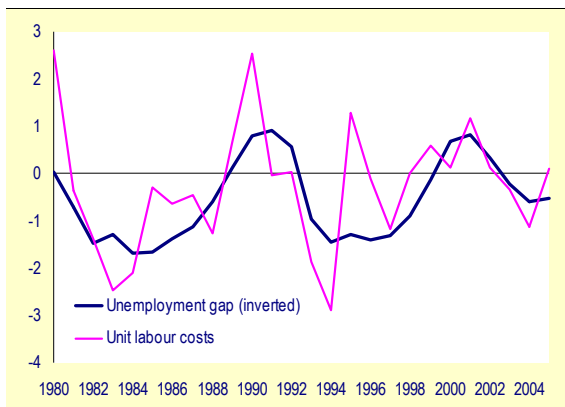
Source: Commission services.

Assessing wage elasticity through the NAWRU

The NAWRU model also provides information on the elasticity of wages to labour market conditions. For the euro area, the elasticity to the unemployment gap, measured by the difference between headline unemployment and the NAWRU, amounts to -0.7, which means that a one percent decrease in unemployment would increase, in the short run, wage inflation by 0.7 percent. Estimates differ, however, significantly between euro-area countries, ranging from -0.4 for Finland to -1.3 for Austria.

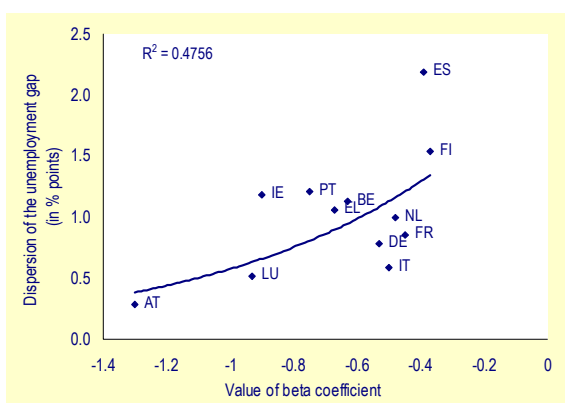
The evolution of unit labour costs in the euro area fits well with the unemployment gap, although some overshooting can be observed at times on account of the productivity cycle (Graph 12).

Graph 12: Unemployment gap and unit labour costs (annual change) in the euro area (1980 to 2005)



Source: Commission services.

Graph 13: Sensitivity of wages to the unemployment gap and dispersion of the unemployment gap (1)



(1) The unemployment gap measures the distance to NAWRU, dispersion has been calculated over the 1965-2006 period. The beta coefficient measures the sensitivity of wage inflation to the unemployment gap (estimated NAWRU equations).

Source: Commission services.

The elasticity of wage inflation to the unemployment gap can inform on the capability of the labour market to smooth cyclical developments. A higher elasticity would signal that the labour market has a better capability to adjust quickly to the slack in the economy. In countries with labour market rigidities, the unemployment would have to deviate significantly from its natural rate in order to trigger counter-balancing wage pressures. On the contrary, countries with flexible labour markets would see their wages adjusting quickly, with low unemployment fluctuations as a result. Evidence from Graph 13 is mixed. A positive correlation

between wage elasticity and the dispersion of unemployment gap exists among euro-area Member States, but it is a rather weak one. Other factors, such as the design of wage bargaining schemes in some countries, might also have an influence on the wage-unemployment relationship.

Conclusion

Though its calculation remains dependent on many theoretical assumptions and uncertainties, the NAWRU is an important indicator for measuring structural unemployment and assessing the impact of labour markets reforms. As the direct estimation of the impact of individual labour market reforms is often far from being straightforward, it is necessary for policy-makers to get an overview of the aggregate reaction of the labour market. This is all the more necessary as reforms are staggered and often deliver benefits with a substantial lag. The NAWRU can also provide valuable indications on the slack in the economy.

Evidence suggests that the NAWRU has substantially declined in the euro area as a whole since 1997. This testifies to the improved resilience of the euro area to adverse macroeconomic shocks. However structural unemployment remains high and there is scope for further reforms, especially in countries where structural unemployment has not yet decreased. It is, in particular, crucial to avoid that cyclical improvements in the labour market are captured by labour market insiders through wage claims that would not be commensurate with medium-term productivity developments. The reintegration of a portion of the workforce that has been excluded from the labour market is at stake. Other advanced industrialised countries have proved that a further reduction of structural unemployment is possible, provided the pace of reform is not slowed down and experiences and lessons learnt are effectively shared between euro-area Member States.