



# QUARTERLY REPORT ON THE EURO AREA

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Highlights in this issue:

- Recent economic developments and short-term prospects
- Recent financial turbulence and the effect on the real economy
- Focus – Cross-border risk sharing: has it increased in the euro area?
- Focus – The resilience of the euro-area economy

**EUROPEAN  
COMMISSION**

**DIRECTORATE-GENERAL FOR  
ECONOMIC AND FINANCIAL AFFAIRS**



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## EDITORIAL

After five consecutive quarters of vigorous growth in the euro area, economic activity in the second quarter of 2007 slowed down to 0.3% - half of the rate projected in the Commission's spring 2007 forecast. The deceleration partly reflects temporary weather-related effects but it also signals that the euro-area business cycle may be maturing.

Growth in the second quarter was primarily driven by household consumption, which continued to be buttressed by a very robust labour market. On the other hand, investment growth came to a halt for the first time in five years, mostly due to a contraction in the construction sector. The contribution of net exports to growth turned positive on the back of still robust, although moderating, world trade.

Looking ahead, euro-area fundamentals continue to be strong, business and consumer confidence has softened but remain high and would support a pick up in growth during the second half of the year. Nevertheless, the downside surprise on growth in the second quarter and the recent turmoil in financial markets have led the Commission to revise its growth projection for 2007 marginally downwards. According to our September interim forecast, euro-area GDP should grow by 2.5% for the year as a whole, slightly down from the 2.6% projected in the spring. The inflation outlook has been revised upwards marginally from 1.9% to 2.0% mainly due to higher-than-expected rises in commodity prices.

Downside risks to the short-term outlook have recently increased substantially. Since the summer, global financial markets have been going through a period of serious unrest. We are witnessing a widespread and disorderly re-pricing of risk after a prolonged period of exceptionally benign financial conditions. Ample global liquidity and historically low risk premia encouraged excessive risk-taking by investors. One consequence of this situation has been an increase in borrowing for residential mortgages and a boom in housing markets in many parts of the globe.

The trigger for the re-pricing of risk was the downturn in the US housing market. As higher US interest rates began to bite, mortgage default rates have accelerated. Although the losses for the holders of the associated credit risk are likely to be relatively small in the context of the international financial system, investor confidence has been undermined by the emergence of exposures in unexpected locations. This contagion relates to the way in which credit risk has been securitised and distributed to investors via complex financial products. Sub-prime loans were sold by the originators into the secondary market, where they were sold on to international investors.

Securitisation is a financing technique that involves the conversion of usually illiquid assets into marketable securities. In principle, securitisation helps to better allocate credit risk and thereby contributes to financial stability and economic performance. However, the crisis has raised several issues linked to the distribution of risk and the associated lack of transparency.

The first issue relates to the measurement of the credit risk in a situation of ever-more complex financial instruments. It now seems that model-based valuations for these instruments may have underestimated the risks from exposure to sub-prime mortgages.

A second issue relates to the management of the credit risk linked to sub-prime mortgages. Investor uncertainty about the extent of exposures to this risk was compounded by the emergence of exposures in unexpected places. It has become evident that many US and European banks have exposures to the US mortgage market via special investment vehicles. This process has created uncertainty about counterparty risk among participants in the interbank markets. As a result, the crisis of confidence has spread to the interbank markets and central banks have been required to safeguard the functioning of these markets.

A third problem relates to transparency within the financial system. The intervention of central banks has stabilized the situation, but the

functioning of money markets has not yet returned to normal. With market participants unable to identify exposure to losses, there has been a generalised loss of investor confidence.

The evolution and duration of the current crisis is difficult to predict and will depend on the eventual scale and distribution of losses as they gradually emerge as well as on their impact on confidence. In any event, credit conditions will tighten as a result of the re-pricing of risk and this will have an impact on major economic actors in the euro-area economy in 2008. Downside risks to the short-term outlook will also depend on the extent of the economic slowdown in the US and possible contagion effects to the euro area via the trade and confidence channels.

When assessing the potential impact of these developments on growth, it is important to bear in mind that the fundamentals of the euro-area economy remain solid. In particular, strong earnings performance in recent years has provided euro-area banks with a significant financial buffer. Wage moderation has boosted the profitability of non-financial corporations. A strong labour market should continue to support consumer spending. Finally, as documented in this report, there are also signs that the euro-area economy has become somewhat more resilient to shocks, partly thanks to an improved macroeconomic framework. Overall, tighter credit conditions can be expected to slow economic growth somewhat next year, but the impact is expected to be moderate.

The recent financial turmoil should on no account be seen as undermining the rationale for financial integration in the euro area. Rather, it buttresses the case for strengthening financial supervision and transparency in the face of growing complexity of financial instruments. But the benefits that stem from financial integration should not be overlooked. There is ample theoretical and empirical evidence that shows a causal link between financial development and economic growth. As discussed in the focus section of this report, the euro area has a special stake in further financial integration as an integrated financial market can help the economy to function more smoothly

and to better adjust to country-specific economic shocks by increasing cross-border risk sharing among euro-area Member States.

In principle, the single currency has the potential to deepen financial integration and facilitate international risk sharing. Indeed, empirical evidence indicates that risk sharing has increased within the euro area in the last ten years. However, progress has been slow and uneven among euro-area Member States. Moreover, it still compares unfavourably with the adjustment role played by the financial sector in the USA. The composition of financial flows might be the main culprit: whereas cross-border bond holdings have expanded massively in the euro area, equity investments, which have a much greater potential for risk sharing, are still lagging behind. Therefore, further integration of financial markets, not least by a full implementation of the FSAP, should be decisively pursued.



Klaus REGLING  
DIRECTOR GENERAL



## I. Economic situation in the euro area

After five quarters of vigorous growth, GDP growth decelerated to 0.3% in the second quarter, well below the 0.6% growth projected in the Commission's spring 2007 forecast. Growth was primarily driven by household consumption which continued to be underpinned by a very robust labour market. Investment growth, however, came to a halt for the first time in five years, mostly due to a contraction in the construction sector. The deceleration of GDP in the second quarter may reflect exceptional weather and statistical effects but also indicates that the business cycle is maturing and may have passed its peak. Business confidence has softened but is still high and growth during the rest of the year will remain supported by sound fundamentals. According to the Commission's September interim forecast, GDP growth in the euro area is projected to average 2.5% in 2007. Nevertheless, downside risks have increased on the back of the recent financial market turbulence and the worsening growth outlook of the US economy.

Coming after a protracted period of exceptionally benign financial conditions, recent financial turbulence has shaken investor confidence and will probably cause tighter credit conditions. Looking into the effects of tighter credit conditions on the balance sheets of the main economic sectors, it seems that past earnings growth should provide an adequate buffer for banks. However, the re-pricing of risk is likely to impact both the performance of banks and their lending activity and is also likely to affect euro-area companies which will face rising debt ratios and debt-servicing costs. Despite the record levels of debt accumulated in recent years, the impact on the household sector, which is a net saver, is difficult to predict. However, housing markets are likely to be negatively affected by the change in the financial environment.

### 1. Recent economic developments and short-term prospects<sup>1</sup>

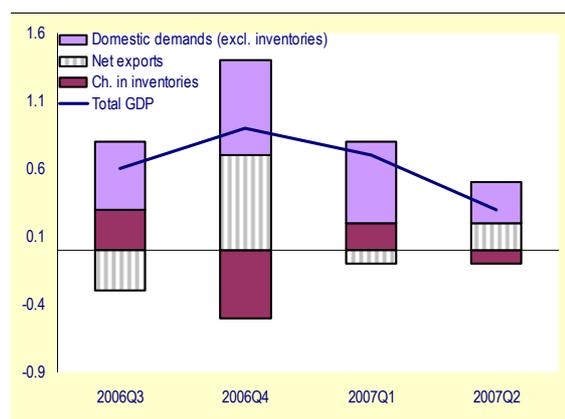
#### Growth surprises on the downside in the second quarter of 2007

Economic activity in the euro area, which had shown vigorous growth since the beginning of 2006, decelerated during the second quarter of 2007. Quarter-on-quarter GDP growth eased from 0.7% in the first quarter to 0.3% in the second quarter. This is well below the 0.6% growth projected in the Commission's spring 2007 forecast. The countries which surprised on the downside are France, Italy and the Netherlands. Growth in Germany and Spain, however, was in line with projections.

The deceleration in GDP growth in the second quarter should be interpreted with caution as several factors seem to have been at play. Production in the euro area has clearly been affected by weather conditions. Both the agricultural and construction sector experienced very strong growth in the first quarter of 2007 due to unusually mild winter weather and this spurt in activity was followed by a relapse in the second quarter. The downside surprise on GDP growth in the second quarter was also at odds with survey data which did not foreshadow any

substantial deceleration in activity. Upward revisions of the Q2 estimate in the forthcoming months cannot therefore be excluded. Nevertheless, besides statistical and weather effects, the disappointing second quarter outturn might also be an indication that the economy may have passed its cyclical peak.

Graph 1: Contributions to real GDP growth, euro area (q-o-q contributions in % points – 2006 Q3 to 2007 Q2)



Source: Commission services.

As regards the GDP components, the contribution of domestic demand (excluding inventories) weakened to 0.3%, compared to 0.6% in the previous quarter. The contribution of net trade, however, turned positive after mildly contracting in the previous quarter.

<sup>1</sup> The cut-off date for the statistics included in this issue was 28 September 2007.

Table 1: Euro-area growth components

	2006	2006	2007	2007	Carryover to 2007	Forecast (1)	
	Q3	Q4	Q1	Q2		2007 (2)	2008 (2)
<b>Percentage change on previous period, volumes</b>							
GDP	0.6	0.9	0.7	0.3	2.2	2.6	2.5
Private consumption	0.5	0.5	0.0	0.5	1.1	2.1	2.4
Government consumption	0.5	0.4	0.8	0.1	1.6	1.8	1.8
Gross fixed capital formation	0.7	1.7	2.0	-0.2	4.2	4.4	3.6
Changes in inventories (% of GDP)	0.3	-0.2	-0.1	-0.2	-0.2	0.7	0.5
Exports of goods and services	1.1	3.1	0.8	1.1	4.9	6.7	6.0
Imports of goods and services	1.9	1.6	0.9	0.6	3.9	6.7	6.2
<b>Percentage point contribution to change in GDP</b>							
Private consumption	0.3	0.3	0.0	0.3	0.6	1.2	1.3
Government consumption	0.1	0.1	0.2	0.0	0.3	0.4	0.4
Gross fixed capital formation	0.2	0.4	0.4	0.0	0.9	0.9	0.8
Changes in inventories	0.3	-0.5	0.2	-0.1	-0.2	0.1	0.0
Net exports	-0.3	0.7	-0.1	0.2	0.5	0.1	0.0

(1) Annual change in %. (2) European Commission spring 2007 forecasts.

Source: Commission services.

### Private consumption replaces investment as the main engine of growth

After a flat reading in the first quarter of 2007 due to VAT-related effects in Germany, private consumption increased by 0.5% in the second quarter, becoming the main engine of growth. Except for the VAT-related relapse in the first quarter of 2007, private consumption has been on a broad 2% growth path since the beginning of 2006.

In the last few quarters, household spending has clearly been buoyed up by continuous improvement in the labour market. The unemployment rate started declining in 2005 and is now at its lowest level since the series began in 1993. In July 2007, the unemployment rate stood at 6.9% of the labour force, almost a full percentage point lower than a year earlier. The ebbing of unemployment has been the result of rapid employment growth. Employment in the euro area increased by 0.5% (quarter-on-quarter) in the second quarter of 2007 and employment growth was revised upwards both in the first quarter (from 0.4% to 0.6%) and in the last quarter of 2006 (from 0.3% to 0.4%). These figures clearly suggest a very strong labour market with employment now expanding by 1.7% year-on-year. Looking ahead, employment expectations decreased somewhat in September in the services sector but remain very high,

indicating that the strong momentum will persist in the months to come.

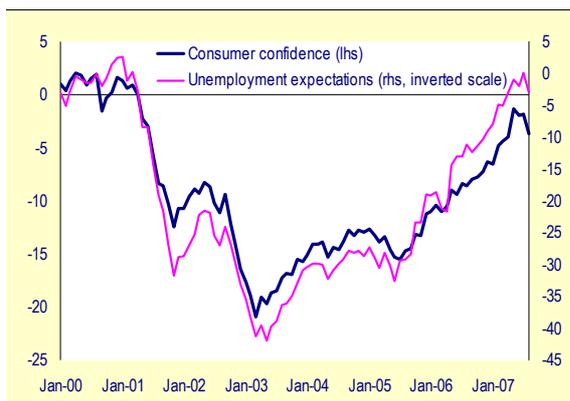
More recently, developments in households' disposable income have provided another positive note. While it failed to pick up in 2006, despite robust economic recovery, y-o-y growth in nominal disposable income accelerated from 3.3% to 4.5% during the first quarter of 2007 (last available data). This is the highest growth rate since 2001. The acceleration reflected a pick up in employees' compensation (likely due to an acceleration of the wage rate) as well as a lower growth in taxes. However, growth in disposable income exceeded growth in nominal consumption (3.2% y-o-y) in the first quarter of 2007, which resulted in higher savings. The euro-area savings ratio has been on an upward path since the beginning of last year and rose further from 14.1% in the last quarter of 2006 to 14.4% in the first quarter of 2007.

The few consumption-related indicators available for August or September point to continued although moderate growth in private consumption in the next few months. After reaching its highest level since 2001 in May 2007, consumer confidence softened somewhat over the summer while remaining at a high level. More worryingly, confidence among managers in the retail trade sector, after strengthening in August, declined sharply in September. The fall was due to a significant worsening in retailers'



assessment of both the present and expected business situation. The retail confidence indicator tends, however, to be relatively poorly correlated with private consumption growth and the fall should therefore be interpreted cautiously.

Graph 2: Consumer confidence, euro area  
(Balance in % – Jan 2000 to September 2007)



Source: Commission services.

Data on loans to the private sector provide a mixed picture with sustained, but moderating, growth in credit to households. The latest available MFI data from the ECB show sustained annual growth of loans to households in August, both for mortgages (8.1%) and for consumer credit (5.7%). Nevertheless, the annual growth rate of loans to households has been on a moderately decelerating path since the middle of last year with both lending for house purchase and consumer credit showing signs of softening. The trend continued in the second quarter of 2007 and, based on data for July and August, also at the beginning of the third quarter.

Recent price developments have also been supporting consumption. Annual HICP inflation remained below 2% in the second quarter (1.9% on average). In August, it even decreased to 1.7%. As oil prices rose strongly during the summer of 2006, favourable base effects in energy prices largely accounted for the limited increase in energy inflation in the past few months. However, unfavourable base effects have put some upward pressure on headline inflation as from September, where annual HICP reached 2.1%.

## Investment growth hit by construction weakness

After a long period of robust expansion, growth in gross fixed capital formation came to a halt in the second quarter of 2007 (-0.2% q-o-q). This is the first recorded contraction of investment in five years, albeit a modest one. A deceleration of investment was to be expected after the impressive growth registered in the first quarter (2% q-o-q). At the time, construction investments had been lifted by exceptionally mild winter weather and some correction was to be expected for the second quarter.

While the breakdown of investment spending by sector is not yet available for the second quarter of 2007, it appears that developments in construction investments are indeed the main reason behind the strong deceleration in gross fixed capital formation. Value added in the construction sector, which is a good proxy for spending in construction, contracted by 1.6% (q-o-q) in the second quarter of 2007, after 1.9% growth in the previous quarter. Except for Belgium, all euro-area countries for which data is available experienced a fall in construction value added.

The recent drop in construction is probably largely attributable to weather-related effects. However, it may also reflect a cooling-off of the housing market. Recent developments in residential construction are not easy to assess as the breakdown of total construction into residential and non-residential is only available up to the first quarter. Residential investment experienced a significant deceleration in the second half of 2006 but rebounded strongly in the first quarter of 2007. A clearer indication of the cooling-off of residential investment is provided by data on residential building permits which have been experiencing a substantial fall since January 2006 (Graph 3).

For the aggregate construction sector the picture provided by the most recent hard and soft data remains reasonably satisfactory. The European Commission's indicator of confidence in the construction sector, while trending slightly downwards, remains at a historically high level. Moreover, data on construction output for July suggest that the third quarter has not started on

Table 2: Selected euro-area and national leading indicators, 2006-2007

	SENT. IND <sup>1)</sup>	BCI <sup>2)</sup>	OECD <sup>3)</sup>	PMI Man. <sup>4)</sup>	PMI Ser <sup>5)</sup>	IFO <sup>6)</sup>	NBB <sup>7)</sup>	ZEW <sup>8)</sup>
Long-term average	100.4	-0.08	92.9	52.8	55.0	96.8	-6.9	25.8
Trough in latest downturn	89.3	-0.91	98.1	46.4	47.7	90.3	-26.5	-28.5
September 2006	108.9	1.37	107.0	56.6	56.7	99.0	5.0	-22.2
October 2006	110.0	1.34	107.3	57.0	56.5	99.3	2.4	-27.4
November 2006	109.9	1.48	107.4	56.6	57.6	100.2	4.1	-28.5
December 2006	109.8	1.54	107.5	56.5	57.6	102.5	2.4	-19.0
January 2007	109.2	1.34	107.5	55.5	57.9	103.2	1.1	-3.6
February 2007	109.7	1.51	107.6	55.6	57.5	102.6	2.0	2.9
March 2007	111.1	1.51	107.7	55.4	57.4	103.2	-1.0	5.8
April 2007	111.0	1.59	107.8	55.4	57.0	104.2	2.3	16.5
May 2007	112.1	1.50	108.0	55.0	57.3	104.7	3.9	24.0
June 2007	111.7	1.52	108.1	55.6	58.3	102.8	6.5	20.3
July 2007	111.0	1.33	107.9	54.9	58.3	101.7	4.5	10.4
August 2007	109.9	1.37		54.3	58.0	100.4	2.8	-6.9
September 2007	107.1	1.09		53.2*	54.0*	98.7	1.5	-18.1

1) Economic sentiment indicator, DG ECFIN. 2) Business climate indicator, DG ECFIN. 3) Composite leading indicator. 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) ZEW Indicator of Economic Sentiment, Germany

\*These are flash estimates

an overly weak note. Therefore, the downward trend in residential construction seems to be in part compensated by continued strong non-residential construction.

Graph 3: Residential building permits, euro area (Index 2000=100 – Jan 1999 – June 2007)



Source: Commission services.

Combining data on total investment with estimates of construction spending suggests that equipment investment (which accounts for half of total investment) grew healthily in the second quarter (about 1.2% q-o-q), though more moderately than in the first quarter (2.1%).

Recent loan data are suggestive of continued strength in corporate investment. The annual

growth rate of loans to non-financial corporations continued to increase in the second quarter and data for July and August indicate a further slight acceleration at the beginning of the summer (13.6% and 14.2% in August, up from 13.3% in June). Some caution is however necessary when assessing the implications of this data for investment during the second half of the year. First, there is some evidence that part of the recent acceleration in the demand for loans in the corporate sector is driven by merger and acquisition activity rather than by fixed capital investment. Second, the latest available loan data only cover the beginning of the recent financial turbulence and there is still much uncertainty as to the likely impact of this turbulence on credit demand and supply.

### World trade: still supportive but softening gradually

There were some further signs of a softening of world trade in the second quarter. According to the latest estimates of the CPB Netherlands Bureau of Economic Policy Analysis, world trade increased by 7.2% (y-o-y) in the second quarter of 2007, down from 7.8% in the previous quarter. While year-on-year growth remained strong, the lower momentum was clearly visible in the quarter-on-quarter data. Indeed, world trade in the second quarter



Table 3: **Real GDP growth**  
(Interim forecast September 2007)

	Quarterly GDP forecast (%, quarter-on-quarter)				Annual GDP forecast (%, year-on-year) 2007	
	2007/1	2007/2	2007/3	2007/4	Spring forecast May 2007	Interim forecast Sept. 2007
<b>Germany</b>	0.5	0.3	0.5	0.5	2.5	2.4
<b>Spain</b>	1.0	0.9	0.6	0.6	3.7	3.7
<b>France</b>	0.7	0.3	0.5	0.5	2.4	1.9
<b>Italy</b>	0.3	0.1	0.4	0.3	1.9	1.9
<b>Euro area</b>	0.7	0.3	0.5	0.5	2.6	2.5

(1) Data for 2007/1 and 2007/2 are estimates released by Eurostat. Where possible, the quarterly growth rates are working-day and seasonally-adjusted, whereas the annual projections are unadjusted.

*Source:* Commission services.

increased by a modest 0.6% (q-o-q), compared to 1.5% in the first quarter of 2007 and about 2.5% during the second half of 2006. The loss in momentum owes much to a contraction of US imports (-1% q-o-q in Q2 after 0.4% in Q1) but there is evidence that imports into emerging economies have decelerated as well.

Although on a downward trend, the momentum in world trade is still supporting growth in the euro area. Euro-area export growth accelerated in the second quarter (1.1% q-o-q, compared to 0.8% in the first quarter), while import growth decelerated (from 0.9% to 0.6%). As a result, the contribution of net exports to growth turned positive (+0.2%) after mildly contracting in the previous quarter. The fall in import growth was mainly the result of developments in Germany, where imports strongly decreased after a few quarters of buoyant growth.

Looking ahead, developments in the global economy will very much depend on the course of events in the US economy and in financial markets.<sup>2</sup> The financial market turbulence has taken place at a time of a strong, though moderating, global economy and of weakening household spending in the US. US GDP growth rebounded in the second quarter (0.8%) after a weak first quarter (0.2%). Personal consumption expenditure, however, decelerated sharply in the second quarter. Rising petrol prices in the spring were an important reason behind this, but the

continued weakening of the housing market may also have started to play a role. Residential investment continued to be a drag on US economic growth, although less so than in the first quarter. The downturn in the housing sector now seems to have become more protracted and to weigh more heavily on overall activity than previously thought. Therefore, GDP growth in the US should remain subdued for longer than expected in the Commission spring forecast.

Turning to the months ahead, recent survey indicators of the world economy point to a period of solid, though probably more moderate, growth than during the first half of the year. The July reading of the quarterly World Economic Survey indicates an improvement of expectations for the next six months. It should be noted, however, that this survey was conducted before the recent financial market turbulence. In contrast, the September Global Manufacturing PMI (released more recently) was somewhat less optimistic, pointing to a deceleration of growth in the global manufacturing sector in the third quarter and continued softening in the rate of expansion of new orders.

Overall, global economic growth seems a little less bright than in the previous quarter. As a result of the financial market turbulence, downside risks to the global economic outlook have clearly increased, but clearly more so for 2008 than for 2007. In the third quarter, world

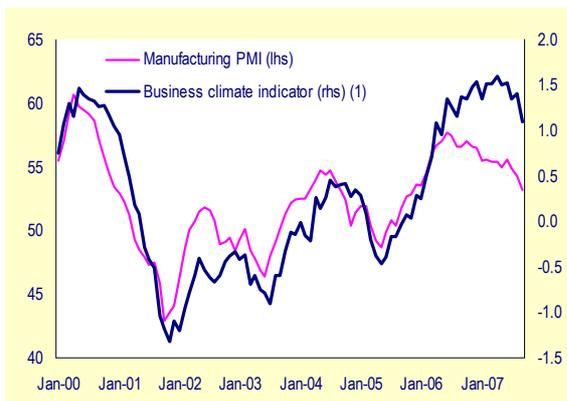
<sup>2</sup> See section I.2 on 'Recent financial turbulence and the effect on the real economy'.

trade should keep expanding at a healthy pace, though less rapidly than in previous quarters.

**Survey data: first signs of the knock-on effect of the financial crisis on sentiment?**

While remaining remarkably high, business confidence indicators have started showing some signs of weakening, reflecting the fact that the business cycle has become more mature and – possibly – the negative impact of recent financial turbulence on corporate sentiment. After a slight increase in August, the European Commission's Business Climate Indicator for the euro area fell significantly in September (Graph 4). This was the result of a less optimistic assessment of the past production trend and of order books. Managers' production expectations also deteriorated somewhat. The Reuters PMI index for manufacturing activity shows an even clearer turnaround. The flash estimate for September saw a further decline in the euro-area manufacturing PMI, reaching the lowest level since November 2005 (Graph 4). The September figure suggests an acceleration of the softening trend experienced since June.

Graph 4: **Business confidence in manufacturing, euro area** (Balance in % – Jan 2000 – September 2007)

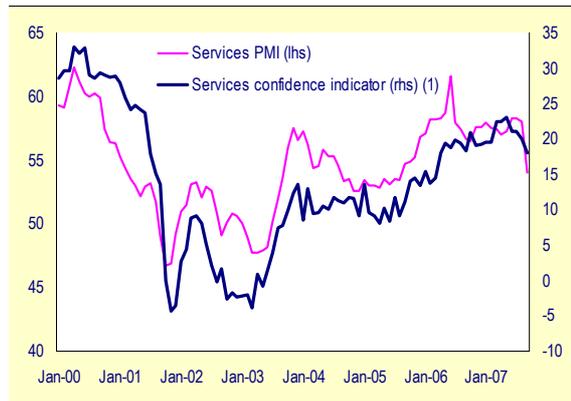


(1) Only available to August 2007.  
 Source: Commission services.

Regarding the service sector, the European Commission's survey showed another deterioration of managers' confidence in September (Graph 5). As a result, the indicator returned to its long-term average. The decrease of the indicator was broad-based, reflecting a weakening of both backward and forward looking components of the survey. According to

the latest flash estimate, Reuters Service Index also displayed a significant drop in September. The index is now back at the level last attained in August 2005.

Graph 5: **Business confidence in services, euro area** (Balance in % – Jan 2000 – September 2007)



(1) Only available to August 2007.  
 Source: Commission services.

Most national survey indicators (NBB and IFO) available for September at this stage have also registered sizeable declines. The IFO, for instance, while remaining high, declined from 105.8 to 104.2, the lowest reading since October 2005. The sector breakdown shows a deterioration in manufacturing, construction and even stronger in the retail sector. Both the business current conditions and expectations declined.

Overall, these developments suggest that while business confidence is still high, the business cycle is maturing and had probably passed its peak already before the onset of the recent financial turbulence. This is shown by the softening of sub-indicators related to past activity (as opposed to those related to expected future activity) in both the manufacturing and service surveys. It is indeed unlikely that financial turbulence had already begun to affect activity outside the financial sector in August and September. On the other hand, it is possible that the significant drop in the expectation components of business confidence registered in September reflects, at least in part, worries about the knock-on effects of the turbulence outside



the financial sector.<sup>3</sup> However, with just one month of observations available since the beginning of the financial turbulence, evidence from confidence surveys should be interpreted with caution.

### Short-term outlook and risks

According to the Commission services' interim forecasts released on 11 September, economic growth in the euro area is projected to average 2.5% for 2007 as a whole. This represents a 0.1 percentage point downward revision compared with the Commission services' spring 2007 forecasts. The revision is due to weaker-than-expected growth in the second quarter and to the turbulence in financial markets. In the third and fourth quarter of 2007, GDP is expected to grow at 0.5%.

Regarding prices, the forecast has been marginally revised upwards, with HICP inflation now projected to average 2.0% in 2007, i.e. 0.1 percentage point higher than in the spring 2007 forecast. The revision is mainly the result of higher-than-expected inflation in the second quarter and the projected impact of rising commodity prices towards the end of the year.

While growth is expected to remain supported by sound fundamentals and a still-favourable global environment, downside risks to growth have become more prominent. First, recent developments in the US housing and financial markets have increased the risks of a sharper slowdown in that country. While, so far, the euro area seems to have been fairly resilient against the deterioration of economic activity in the US, spillovers and contagion effects could become significantly stronger in the event of a more pronounced downturn. Second, as a result of the financial market turbulence, downside risks to the global economic outlook have clearly increased, particularly for 2008. These

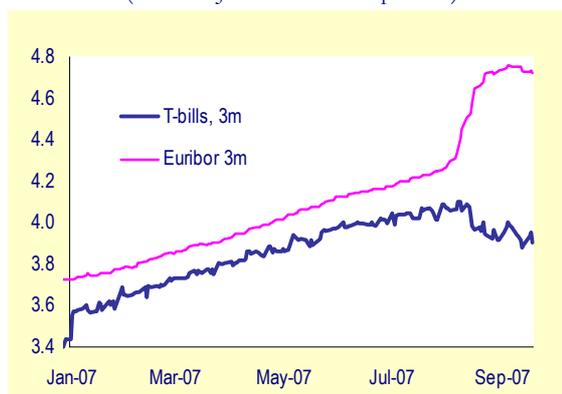
turbulences, if they continue for some time, will clearly lead to less favourable financing conditions and to tighter credit availability, reducing consumption and investment growth. Third, business and consumer confidence could be negatively affected if the crisis in the financial markets were to last for some time.

These risks, if they materialise, will mainly affect the real economy in 2008 and beyond, but could already have some effects this year. They would come on top of the risks identified in the previous issue of this report, particularly a further appreciation of the euro, which have already materialised to a large extent.

### Monetary and financial conditions

Monetary and financial conditions in the euro area have tightened since the onset of the crisis in financial markets in the summer (see Section I.2 in this issue for a more detailed analysis of the recent turmoil), but not substantially. The tightening has been driven mainly by the rise in the money market interest rates (3-month Euribor rate), and to a lesser extent by the correction in equity markets and a rise in corporate spreads, partially offset by a decline in long-term interest rates. Since mid-August, a new rally of the euro exchange rate has also contributed to the tightening of monetary and financial conditions.

Graph 6: Euro-area money market  
(in % – 1 Jan 2007 to 19 Sept 2007)



Source: Ecwin

<sup>3</sup> In any events, the drop in confidence about the short-term outlook is not restricted to the financial sector. The financial service sector is covered by the Reuters Service Index but not the Commission survey on services. This explains the much smaller drop in confidence reported in September in the Commission survey. The Commission has also begun to publish a survey of confidence in the financial services sector which showed a very steep drop in sentiment in that sector in September.

The tightening of monetary and financial conditions occurred without changes to the policy interest rates. Before the summer, the

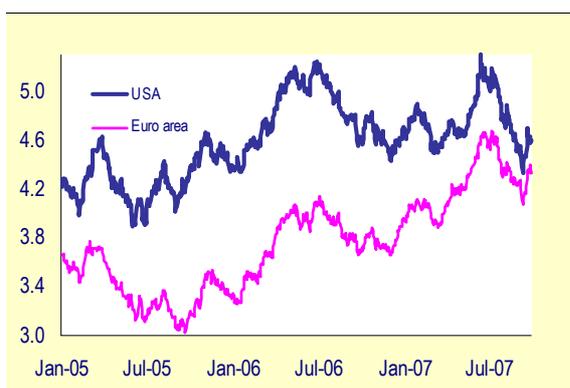
ECB was widely expected to increase its main policy interest rate by 25 basis points at the September meeting of the Governing Council. However, against the background of exceptional market uncertainty caused by the financial market turbulence, the ECB Governing Council decided to keep interest rates unchanged.

This market uncertainty is prominently visible in the euro money market where several segments have increasingly dried up. This can be witnessed, among other things, by the unusually wide spread between money market rates and 3-month treasury bills (Graph 6). This spread widely reflects the market's perception of the credit risk in the money market, and the current levels indicate that a normalisation is still a long way off. The commercial paper market remains almost shut down, preventing financial institutions from accessing short-term funds. As a consequence, central banks all over the world have frequently injected liquidity into money markets since early August and the Fed even cut interest rates – first only cutting its discount rate by 50 basis points in mid-August, but then cutting 50 basis points also off its main policy interest rates in mid-September.

around 80 basis points. The interest rate spread between the US and the euro area has thus narrowed to around 20 basis points, its lowest level since November 2004. The sharper decline of long-term government bond yields in the US during the financial market turbulence can be explained by changed market expectations about monetary policy and future GDP growth. In the second half of September, 10-year-government-bond yields rebounded against the backdrop of the Fed's rate cut and stock market increases.

In foreign exchange markets, the appreciation of the euro came to a temporary halt during the early stages of the financial market turbulences. Moreover, following a pattern that has become regular over recent months, jitters in other segments of global financial markets increased the risk aversion in foreign exchange markets and led to an unwinding of carry trades.<sup>4</sup> With the US economy slowing down, actual and expected interest rate differentials between the US and the euro area are narrowing. As a consequence, the euro has started a new rally against the US dollar since mid-August, reaching a new record high of USD/EUR 1.418 on 28 September.

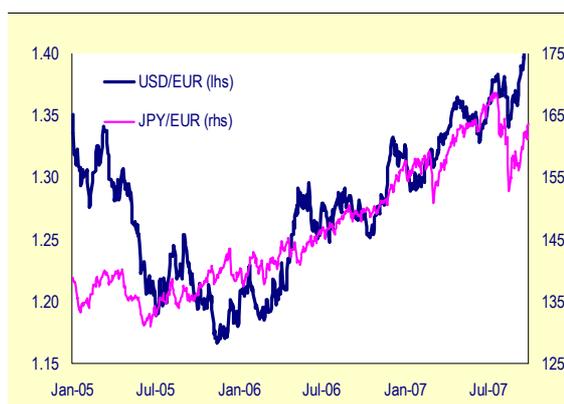
Graph 7: 10-year government bond yields  
(in % – 1 Jan 2005 to 28 Sept 2007)



Source: Ecowin

During the financial market turbulence, government bond yields in both the euro area and the US declined as investors looked for safe havens and changed their expectations about monetary policy. In the euro area, 10-year-government-bond yields declined by around 70 basis points between mid-July and mid-September. At the same time, 10-year-government-bond yields in the US dropped by

Graph 8: Euro exchange rates  
(1 Jan 2005 to 28 Sept 2007)



Source: Ecowin

<sup>4</sup> i.e. borrowing in low interest rate countries such as Japan to invest in high yielding countries such as New Zealand.



## ***2. Recent financial turbulence and the effect on the real economy***

### ***2.1. The recent turbulence***

#### **Benign conditions bred complacency...**

Over much of the past decade, the global economy has been characterised by robust economic growth and generally stable prices. In the absence of inflationary pressure, global liquidity has been ample and benchmark interest rates have remained at low levels. In circumstances of sustained economic growth and low default rates on borrowing, a decline in risk premia was to be expected. However, risk premia have been compressed to historically low levels as investors have assumed progressively higher amounts of risk in search of higher returns. This has led many to point to an increasing mis-pricing of risk and an implied excessive level of risk-taking by market participants.

#### **...manifested in global housing booms and sub-prime lending**

One specific consequence of favourable financing conditions has been an increase in borrowing for residential mortgages and a consequent boom in housing markets in many parts of the globe. Demand for housing has been further fuelled by a generalised relaxation of lending standards and by rapidly accelerating financial innovations that have made mortgage financing more accessible. In particular, the creation of a secondary market for mortgage loans in the United States has made access to mortgage financing possible for borrowers who were not previously deemed creditworthy due to either a lack of credit history or previous loan defaults. In both 2005 and 2006, lending to this so-called sub-prime segment of the market for residential mortgages represented about 20% of all US mortgage loan originations.

#### **Defaults rates in the sub-prime mortgage sector have picked up...**

A significant downside risk to this development was the potential for widespread default and

foreclosures among these marginal borrowers in the event of a deterioration in the broader economic and/or financial conditions – which materialised in the course of 2007. In response to a resurgence in US inflation, the Federal Reserve has tightened monetary policy since mid-2004 and default rates in the sub-prime mortgage sector have accelerated as interest rates have risen.

#### **...impacting on the international financial system via risk-spreading techniques**

Sub-prime mortgage lending is much less prevalent in Europe and other parts of the world than in the United States.<sup>5</sup> Nevertheless, problems in the US sub-prime lending sector have impacted on the international financial system because of the way in which the associated credit risks have been managed. Although the sub-prime mortgage loans were originated by US mortgage lenders and retail banks, these loans were sold on to other financial institutions in the secondary market, a process known as securitisation. These institutions bundled the sub-prime loans together with other loans – such as prime mortgage loans or loans raised by companies – to create collateralised debt obligations (CDOs). Each CDO was assessed by a credit rating agency, assigning different default probabilities, ranging from very high (junk) to very low (AAA), and sold on this basis to investors, including hedge funds, pension funds, insurance companies and banks. In this way, the credit risk associated with US sub-prime mortgage loans was distributed around the global financial system.

In principle, securitisation and CDOs were thought to be attractive instruments for both financial institutions and investors. Securitisation allows an institution to use its existing loan portfolio to raise additional funds through the market, which can then be used for additional lending activity. This technique is also a means to limit the concentration of credit, interest-rate and market risk on banks' balance sheets by transferring part or all of such risks to other willing investors. CDOs, in turn, typically offer a favourable trade-off between risk and return and

<sup>5</sup> There are known small sub-prime mortgage markets in the United Kingdom and in Ireland.

can be tailored to specified requirements. For these reasons, demand for CDOs has been high in recent years and the market for these instruments has expanded rapidly. On the other hand, the complexity and lack of standardisation in CDOs make this market opaque, relatively illiquid and difficult to value, in particular in times of market stress. Recent experience has shown that trading activity can even come to a complete halt in periods of serious market stress. The functioning of the CDO market is not widely understood and, while the market has weathered sporadic episodes of turbulence in the past, it had not previously been tested in conditions of generalised stress.

### **Immediate triggers...**

The immediate trigger for the current turbulence was the discovery that CDOs held by a Bear Sterns hedge fund – mainly exposed to high risk US mortgage loans – turned out to be worthless, in contrast with earlier model-based evaluations showing significant value. Investors realised that the hitherto unquestioned quantitative models typically used for valuing CDOs failed to reflect actual market prices, in particular in times of market stress. Consequently, the shaken confidence in subprime based CDOs spread to other sophisticated financial products, even those without any subprime exposure.

### **...and unpleasant surprises...**

The next surprise, at least for the broader public, came when it emerged that mainstream banks seemed to be much more exposed than was previously thought, often via bank-owned vehicles created for the very purpose of investing in CDOs. Even worse, the vehicles funded their respective investments via the money market, and the collapse of investor confidence led important segments of the money market to dry up as investors refused to buy asset-backed commercial paper and lower-rated commercial paper, two important segments of the money market.

Deprived of their usual funding sources, vehicles turned back to their mother banks for help, and tapped previously agreed credit lines. The resulting high liquidity demand from banks and

the related collapse of trust among banks led to disturbances in the interbank market and forced central banks to inject massive amounts of liquidity.

### **...are shaking investor confidence**

While the scale of losses arising from defaults in the US sub-prime market may be relatively small, the emergence of these losses in unexpected locations – such as in two second-tier German publicly owned banks – has triggered a reassessment of valuations in the CDO market as a whole. Many banks are known to be heavily involved in CDO markets through off-balance-sheet vehicles and have been unable to offer concrete reassurance to investors about the extent of their exposure. So far it would seem that more sophisticated larger banks have relatively small risk exposures – when compared to capital – while a few smaller banks that may have lacked sufficient capacity to control risk exposures overextended themselves with risky products. Meanwhile, there is a lingering concern that further losses – amplified by the use of leverage – may soon emerge within the hedge-fund industry. In conditions of such uncertainty, it is rational for financial market participants not to engage in those activities that are deemed to involve significant counterparty risk, but this causes significant segments of the financial market not to function normally.

## **2.2. Implications for financial institutions**

### **While past earnings growth provides a buffer for banks...**

Available data for the first half of 2007 indicates that euro-area bank profits have remained strong, supported by growth in trading income and also by a recovery in income from corporate lending after several years of weakness. Income from residential lending has remained high as well, but has come under some pressure amid intense competition for this business and a marked deceleration of growth rates of housing loan demand in several Member States. While costs have risen after several years of decline due to restructuring and other efficiency measures, cost-income ratios remain favourable overall, capitalisation high and solvency ratios sound.



### ...re-pricing of risk is likely to impact banks' performance and lending activity...

When the proper functioning of financial markets will be fully restored, the operating environment of banks is likely to have changed significantly. Increased risk aversion among investors implies higher financing costs for banks via the money markets and possibly reduced income from trading and loan-originating activities. To the extent that banks are exposed to durable valuation losses on their CDO exposures, there may also be a need for balance-sheet repair. While favourable capital and solvency ratios should limit the implications for the overall health of the banking sector, the deterioration in their operating environment can be expected to impact on lending behaviour, which might limit the hitherto widespread availability of credit. As credit risk is generally re-assessed within the financial system, higher lending rates and a tightening in lending standards are to be expected.

### ...and may also impact on insurance companies and pension funds

The financial situation of insurance companies and pension funds has been generally improving in recent years, but these institutions are known to have been active buyers of structured products in recent years. Although the absolute level of exposure to sub-prime mortgages and non-investment grade CDOs is generally low, larger multinational insurers may have a somewhat higher level of exposure than medium and smaller-sized regional insurers. Insurers' exposure to declining valuations in structured products (such as CDOs) may be reduced due to their predominantly buy-and-hold and longer-term investment strategies. However, they may be vulnerable to possible downgrades that would require forced sales at a time when valuations are low. On the other hand, a substantial share of those investments have been linked to products where the investment risk is borne by a policyholder (i.e. the final customer), therefore it would have a limited impact on solvency positions. Balance-sheet risks also arise from the decline in equity prices,<sup>6</sup> although these risks

<sup>6</sup> End of September, overall equity prices in the euro area had regained much of the losses incurred between mid-

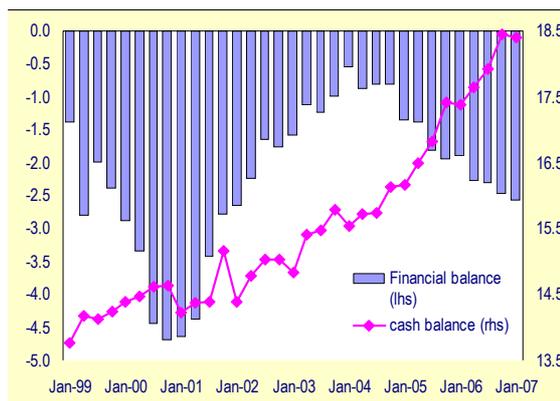
might be offset by changes in prices for government securities. Nevertheless, a protracted decline in the market value of corporate bonds and higher-rated structured credit products along with reduced liquidity may reduce insurers' own access to debt and equity funding and have negative implications for their financial flexibility. The impact of a re-pricing of risk on the term structure of interest rates will also be relevant for discounting future liabilities.

### 2.3. Implications for non-financial corporations

#### Tightening credit conditions will affect euro-area companies in a context of rising debt ratios

In August 2007, bank lending to the non-financial corporate sector in the euro area increased by a record 14.2% year-on-year, reflecting a corresponding expansion in investment activity but also high levels of M&A activity. The aggregate growth rate hides important differences between Member States, with lending up by almost 30% in Ireland, Spain and Slovenia and by only 3.2% in Germany.

Graph 9: Financial balances and cash balances, non-financial corporate sector, euro area (1) (2)  
(in % of GDP – 1999Q1 to 2007Q1)



(1) Financial balances are measured by subtracting corporate investments from corporate savings (4 quarter moving average).  
(2) Cash balances are measured as the stock of outstanding currency & deposits.

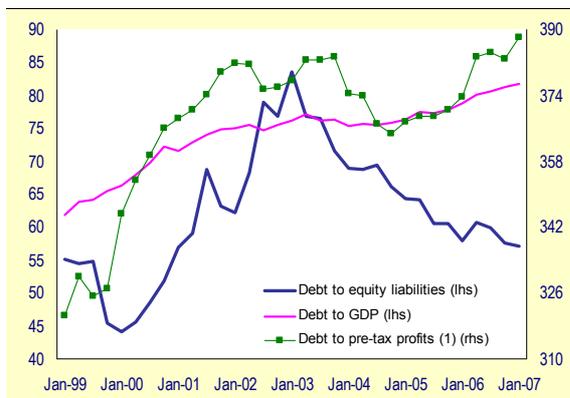
Source: Commission services.

July and mid-September. The rebound was however uneven, benefiting some sectors and some companies significantly more than others.

The generalised pick-up in bank lending to companies – after several years of subdued growth – has occurred despite evidence of strong internal cash balances within the corporate sector. As external financing has increased, the overall financial deficit (i.e. savings minus investments) of the euro-area corporate sector has widened to 2.5% of GDP in 2007 from less than 1% of GDP in 2004 (Graph 9).

Based on figures for the first quarter of 2007, the ratio of corporate debt to GDP in the euro area has exceeded 80% compared to around 60% in 1999. The ratio of debt to income (annual pre-tax profits<sup>7</sup>) has risen to about 390% from 320% over the same period. The debt-to-equity ratio has fallen over the period, in line with rising equity prices, although the recent correction may have partly reversed that trend (see Graph 10).

Graph 10: Non-financial corporate debt ratios, euro area (in % – 1999Q1 to 2007Q1)



(1) As approximated by entrepreneurial income in the European quarterly sector accounts (4-quarter moving average).

Source: Commission services.

As a consequence of higher debt levels and rising interest rates, debt-servicing costs have begun to rise, though they remain below the peak levels recorded in 2001.

While robust profitability in recent years will boost the resilience of companies as regards deteriorating external financing conditions, some reduction in their willingness and/or capacity to

<sup>7</sup> As approximated by entrepreneurial income in the European quarterly sector accounts.

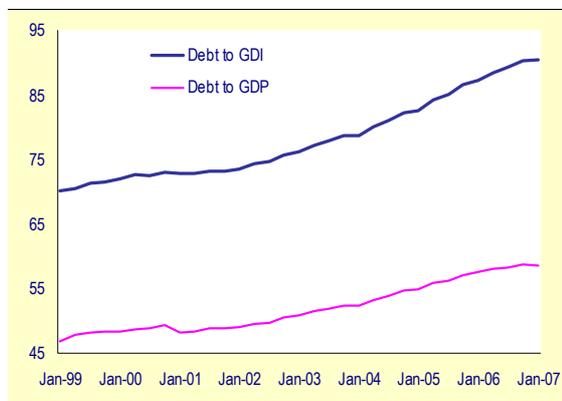
borrow would be expected in the face of tighter credit conditions, in particular as regards the roll-over of short-term debt. In contrast, a further rise in debt-servicing costs relative to income would seem tolerable on the basis of historical experience. Tighter credit conditions could, however, have a more severe impact on the performance of the corporate sector, if consumer demand were to deteriorate sharply as well.

#### 2.4. Implications for households

##### Although euro-area households have accumulated record levels of debt...

In the euro area, the ratio of household debt to (gross) disposable income has risen to 90% from roughly 70% in 1999, while the ratio to GDP has risen to 59% from about 45% over the same period (Graph 11).

Graph 11: Household sector debt ratios, euro area (in % – 1999Q1 to 2007Q1) (1)



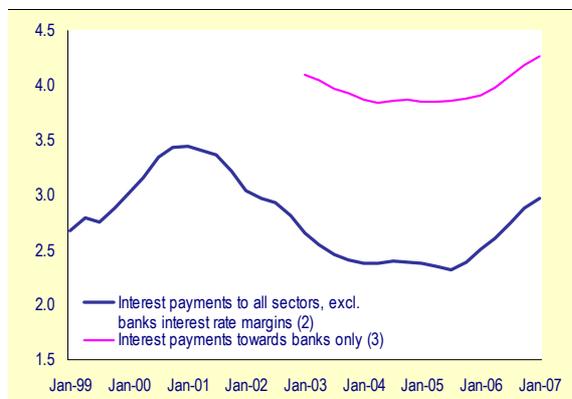
(1) Gross disposable income is based on a 2 quarter moving average.

Source: Commission services.

Household interest payments to banks represented about 4.3% of disposable income in the first quarter of 2007, which is the highest level since the start of the harmonised ECB interest rate statistics in 2003. However, a longer time series (based on Eurostat sectoral accounts) indicates that the current debt-servicing burden remains below levels recorded in the first quarter of 2000 (see Graph 12).



Graph 12: Household interest payments, euro area  
(in % of GDI – 1999Q1 to 2007Q1) (1)



(1) GDI series is based on a 2-quarter moving average.

(2) National account data. Despite broader sectoral coverage this estimate of interest payments is lower than the one restricted to banks because it excludes banks' margins.

(3) ECB data.

Source: Commission services, ECB.

### ... the impact of tighter credit conditions is difficult to predict

In principle, the household sector – as a net saver – might expect to benefit from higher interest rates associated with a reassessment of credit risk. However, the effect on household income could be more negative than expected if tighter credit conditions are reflected mainly in a widening of spreads between lending and deposit rates, so that the increase in debt-servicing costs of household borrowers significantly exceeds any increase in interest income. Moreover, any positive income effect on household demand could be outweighed by reduced access to credit because of tighter lending standards, negative wealth effects linked to declining asset values and a more generalised decline in consumer confidence. In this respect, the evolution of housing markets will be of key importance.

In the euro area, evidence suggests that the housing market had already begun to weaken in the first half of 2007, with a decline in building permits and a deceleration in mortgage lending. The growth rate in mortgage lending decelerated to 8.1% year-on-year in July and August, from more than 12% in June 2006 (see Graph 13). Growth rates in mortgage lending have decelerated particularly sharply in Slovenia and

Ireland, but also in Belgium, Greece, Spain, Italy and the Netherlands. In contrast to the United States, the euro area has only a limited market for sub-prime mortgages and the risk of mortgage default is much lower. However, the prevalence of variable-rate mortgages in some Member States with high household debt levels is a source of vulnerability as interest rates increase. Other concerns include the extent to which housing markets may already be substantially overvalued in some Member States and the implications of past general weakening in lending standards.

Graph 13: Loans for house purchase, euro area  
(y-o-y change in % - Jan. 2000 to Aug. 2007)



Source: ECB.

## 2.5. Conclusion

Coming after a protracted period of exceptionally benign financial conditions, recent financial turbulence has shaken investor confidence and will probably cause a tightening of credit conditions.

Looking into the effects of tighter credit conditions on balance sheets, it seems that all the main economic sectors will probably be affected. Past earnings growth should provide an adequate buffer for banks but the re-pricing of risk is likely to impact both their performance and their lending activity. Tighter credit conditions are also likely to affect euro-area non-financial companies which have experienced rising debt ratios in recent years and had seen an increase in debt-servicing costs already before

**Box 1: Impact of tighter financing conditions on GDP growth**

The impact of recent market turbulence will crucially depend on the time it takes financial markets to revert to an orderly functioning and on the extent to which the re-pricing of risk and tightening of credit conditions persist after the turbulence.

DG ECFIN has carried out a simulation with its global macroeconomic model QUEST to illustrate a possible impact of an increase in the risk premium. It assumes an increase in the risk premium of 0.5 pp in both the US and the euro area, and of 0.2 pp. in the rest of the world, which appears somewhat less exposed to losses stemming from the US sub-prime mortgage market. Via a dampening effect on private consumption and investment, real GDP growth is reduced by some 0.3 pp. compared to the baseline forecast in the first year (i.e. in 2008). In the following year (i.e. 2009), the impact of the endogenously assumed monetary policy response starts to counteract the impact of the higher risk premium and the GDP level is only some ¼ pp. lower than in the baseline (implying that GDP growth would be marginally higher than it would otherwise have been). In 2010, the GDP level would still be lower than it would have been without the shock, but the impact would be roughly halved.

the onset of the financial turbulence. Robust profitability should, however, help mitigate the negative impact of tighter credit conditions in the non-financial corporate sector. Despite the record levels of debt accumulated in recent years, the impact on households is difficult to predict as the sector is a net saver. However, households' wealth and savings also depend on house prices and housing markets are likely to be negatively affected by the change in the financial environment.

At this juncture, the overall effect of the financial turbulence on economic growth in the euro area is difficult to predict since the functioning of money markets has not returned to normal and the exposure of euro-area banks to CDO markets is not yet fully known. To illustrate the possible order of magnitudes involved, Box 1 presents the results of a simulation carried out with Commission's QUEST model according to which a 0.5 percentage point increase in risk premia would lower euro-area GDP by 0.3 percentage point in 2008 compared to a central scenario, the shock thereafter being counteracted in 2009 by a monetary policy response (taken as endogenous in the model).



## Focus

### II. Cross-border risk sharing: has it increased in the euro area?

*The growing integration of financial markets deepens the linkages between the economies of the euro area and has the potential, through better cross-border risk sharing, to raise the efficiency of the functioning of EMU and help economies to better adjust to macroeconomic shocks. Cross-border risk sharing has strong foundations at the micro level, since diversification delivers higher returns and lower risk for financial portfolios. From a macroeconomic point of view, provided that capital income is received in a diversified manner from countries with low output correlation, the ensuing smoother income is likely to make the economy more resilient to domestic shocks through less volatile consumption. The analysis of a wide range of data, including banking and balance-of-payments data, bears testimony to a rapid expansion of cross-border financial flows within the euro area. Estimations of risk sharing using aggregate national accounts data however point to mixed results. Risk-sharing through capital markets has increased in the euro area but remains small compared with the US and the size of estimates appears to be sensitive to the inclusion of smaller Member States with large financial sectors. One possible explanation for the still-low level of risk-sharing in the euro area involves asset composition. Whereas financial integration in bonds and other debt securities has made dramatic progress within the euro area in the space of a few years, it has not done so to the same extent for equities. Since the equity home bias seems still fairly entrenched in some euro-area countries, further financial market reforms would not only ensure a better performance of the European financial system, but would also reinforce the stabilising role of risk-sharing for the euro area.*

Since the beginning of the 1980s, international financial markets have become increasingly integrated. While global trade openness (as measured by the sum of exports and imports divided by GDP) has doubled over the last 20 years and now stands at 60% of the world's GDP, the share of gross international asset holdings in world GDP has seen an eightfold increase over the last 25 years to more than 130%.<sup>8</sup> In the same manner that trade creates interdependencies across borders, financial flows have the potential to enhance risk sharing and deepen ties between economic agents in neighbouring countries.

This focus analyses various aspects linked to risk-sharing within the euro area. Section 1 looks at the relevance of risk sharing for economic stabilisation. Section 2 shows that growing financial linkages within the euro area provide a favorable environment for risk sharing. In Section 3, we estimate aggregate figures, which indicate growing, but still limited, risk sharing patterns in the euro area. Section 4 proposes a tentative explanation for these mixed results involving asset composition.

#### 1. The relevance of risk sharing for economic stabilisation purposes

The financial sector fulfils key functions that are necessary for an efficient allocation of financial resources in time and space and allows real-sector activity to expand optimally. It is generally admitted that financial market reforms not only boost the performance of the financial sector, but also have a broader impact on the economy's potential output by allowing a better allocation of capital. In addition, financial integration also has the potential to increase cross-border risk sharing between euro-area Member States.

Risk sharing means that an entity acquires a claim on the future revenue streams of other entities which are not correlated with its own primary source of income, allowing it to smooth out fluctuations in the amount of goods and services it consumes over time. It can occur at several levels: directly between economic agents or mediated through the banking and insurance sectors (hence the role of savings and borrowing to smooth out consumption) or between economies in a regime of free capital movements.

From a micro perspective, the benefits of diversification have long been established in finance theory. Investors might want to increase

<sup>8</sup> 'The international financial architecture – Where do we stand?', Speech by J.-C. Trichet, Council on Foreign Relations, New York, 16 April 2007.

the performance of their savings beyond the risk-free rate, but higher performance generates also higher risk, deterring risk-averse investors from holding portfolios with high returns. However, by holding instruments which are not perfectly correlated, diversification allows investors to reduce portfolio risk while increasing overall returns. By increasing returns and lowering risk, the performance of a diversified portfolio moves toward the efficient frontier, defined in the standard Capital Asset Pricing Model (CAPM) as all the possible combinations of the portfolios with minimum risk and portfolios with maximum returns.

At the macro level, the benefits of risk sharing could be substantial. Within a given set of economies, country-specific shocks have the potential to significantly impact growth, unless the income from alternative foreign sources kicks in and smoothes private consumption. Access to international financial markets is weakening the link between domestic savings and domestic investments, whereas in a closed economy the only avenue available to households for smoothing consumption would come from other domestic sectors. Kalemli-Ozcan, Sorensen and Yosha (2004)<sup>9</sup> note that the more specific a country is (i.e. the more remote geographically or the more specialised it is), the more it could benefit from risk sharing. It would provide risk sharing opportunities for other countries, while being able to hedge against its domestic developments by investing in other countries.

Although risk patterns are likely to be observed for the EU as a whole, the introduction of the euro facilitates risk sharing between euro-area Member States by lowering four barriers to cross-border financial flows:

- Cross-border transaction costs are bound to decrease through stronger competition and policies aimed at streamlining financial infrastructures in the euro area, for instance clearing and settlement.
- Financial markets, spurred in the euro area by scale economies and competition, could lead

to deeper and more liquid markets, allowing market participants to hedge against a wider spectrum of risks.

- Risk is likely to be lower in the euro area as overall risks attached to cross-border investments would decrease through the elimination of exchange rate risks, leaving only issuer and country risk;
- The performance of the financial system and its capability to properly discharge its intermediation function should improve over time through stronger competition, and hence its ability to identify risk properly and price it accordingly.<sup>10</sup>

From a euro-area perspective, not only should the single currency facilitate risk sharing, but risk-sharing could also become more critical in an economic policy perspective. Without the help of traditional instruments of economic policy such as the exchange and interest rate, attention has been drawn to the capability of risk sharing to provide a market-based adjustment force for intra-euro-area adjustment via financial markets. Theoretically speaking, a two-way process could be envisaged between membership of the euro area and risk sharing: being in the euro area fosters risk sharing, which in turn enhances the cohesion of the euro area.

Governments could also contribute to the risk sharing process, since cross-border state transfers could counteract specific national developments through various instruments (emergency relief after natural disasters, means-dependant social transfers and infrastructure investments or EU subsidies to poorer regions). However, the impact of such transfers is bound to be relatively small in the euro area relative to the US, because of the small size of EU budget in comparison with the US federal budget.

<sup>9</sup> Kalemli-Ozcan S., B. Sorensen and O. Yosha (2004), 'Asymmetric shocks and risk sharing in a monetary union: Updated evidence and policy implications for Europe' CEPR discussion Paper No. 4463.

<sup>10</sup> Impacted by the decrease in bond returns caused by interest-rate convergence in the run-up to EMU, Italian retail investors were lured into investing in high-yield securities from Latin America, and especially from Argentina. In 2001, Latin America was prominent in the Italian bond portfolio, with a 17.4% share. The subsequent Argentinean default led to large losses for an estimated 450 000 households.



However, it might also be argued that international capital flows are not needed to share risk. A strand of corporate finance theory has stressed the importance for companies to use option-based techniques to structure their capital investment decisions. For instance, risk-adjusted parameters would be used in the decision to set up facilities abroad. Through these techniques, the flow of income originating from a global company would act as a natural hedge against country-specific developments. The globalisation of companies would lead to more intense cross-border foreign direct investment flows, while domestic investors would benefit from some form of risk sharing, even if investing solely in large 'national' companies. Therefore, for risk sharing purposes, it could be argued that trade and cross-border FDI has the potential to be a substitute for cross-border portfolio investment.<sup>11</sup>

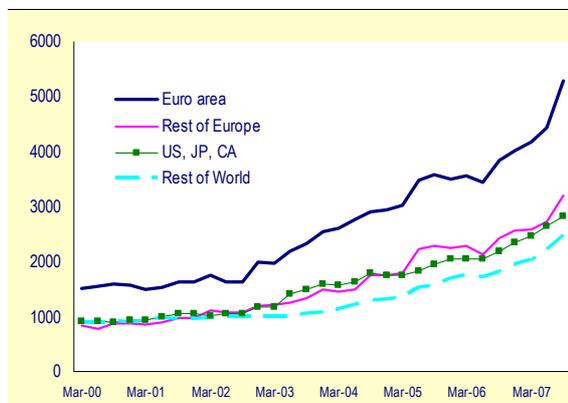
## 2. Statistical evidence points to ever-growing financial linkages within the euro area

### Cross-border bank claims have expanded swiftly

In the past decade, euro-area banks have rapidly expanded their operations abroad, adding ever-larger amounts of cross-border claims to their balance sheets. According to BIS data, these claims have strongly increased within the euro area. Intra-euro-area cross-border banking claims have risen from the equivalent of 23.8% of the euro-area GDP in March 2000 to 48.3% in March 2007. As a share of total cross-border claims by euro-area banks, these claims edged up marginally during the same period from 37.2% to 38.3%. The increase in the euro-area share is remarkable insofar as it has taken place against the background of globalisation and the increasing attractiveness of emerging markets and other developed economies.

<sup>11</sup> It might then be sound for a global company to spread production facilities in order to provide a 'built-in' hedge against risk, in whatever form it may take, beyond productivity considerations. Hence for instance the rationale for Japanese carmakers to set up facilities in the United States.

Graph 14: Cross-border consolidated claims of the euro-area banks towards various regions  
(in USD bn – June 1999 to March 2007)



Source: Bank for International Settlements.

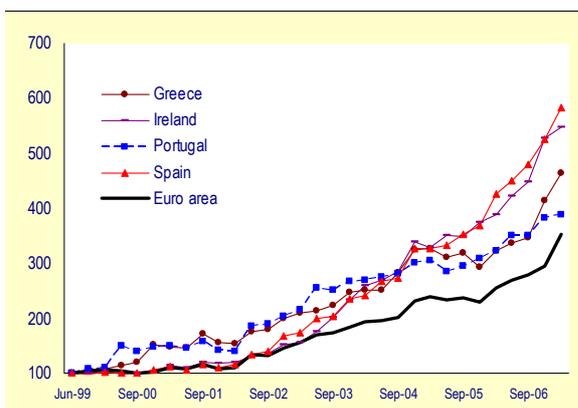
Greece, Ireland, Portugal and Spain have been among the main beneficiaries of this financial deepening process seen within the euro area since 1999 (see Graph 15). The case of Portugal illustrates the pattern. Spiegel (2004) shows that euro-area-related integration has tripled bilateral lending from other euro-area countries to Portugal, other parameters being controlled for.<sup>12</sup> As a result, the lending share of non-EU banks has shrunk dramatically, while the share of EU non-euro-area banks has remained broadly unchanged. The author finds two reasons for this shift. First, being in the euro area diminishes the overall level of risk through the elimination of currency risk. Second, enhanced trade connections mean that the reliability and viability of potential borrowers can be better assessed by businesses and banks. There would then be spillovers from trade into financial variables. Another explanation based on trade integration has been proposed by Blanchard and Giavazzi (2002).<sup>13</sup> Trade integration makes the demand for the country's goods more elastic, and hence lowers future potential terms of trade adjustment. Creditors then become more

<sup>12</sup> Spiegel, M., (2004), 'Monetary and financial integration: evidence from Portuguese borrowing patterns', FRBSF Working Paper No. 2004-07.

<sup>13</sup> Blanchard, O. and F. Giavazzi (2002) 'Current account deficits in the euro area: the end of the Feldstein-Horioka puzzle?', MIT Working Paper No. 03-05, (September 17).

confident in the ability of an affected economy to eventually repay its debts.<sup>14</sup>

**Graph 15: Cross-border consolidated claims of the euro-area banks (counterparties from selected euro-area countries)**  
(Base 100= June 1999 – June 1999 to March 2007)



Source: Bank for International Settlements.

BIS data also point to the increasing share of off-balance-sheet items. Off-balance-sheet claims represent potential claims in the form of credit commitments, guarantees extended and derivative contracts. This additional exposure represented the equivalent of 54.1% of the total cross-border claims of BIS banks against euro-area counterparties in September 2006, against 35% in June 2005. This expansion reflects the boom of new financial products such as credit derivatives. Since these new products reallocate and spread considerable amounts of credit risks, international financial linkages may be deeper than they seem. For instance, in the case of collateralised debt obligations (CDOs), individual claims are first pooled through securitisation, then structured into rated tranches, enabling these risks to be transferred to market participants worldwide with different horizons, asset/liability securities and risk appetite.<sup>15</sup>

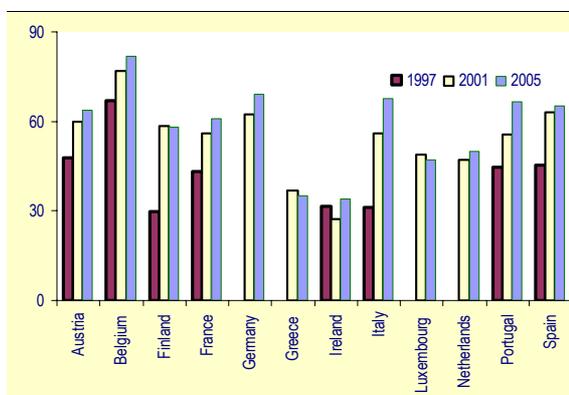
<sup>14</sup> However, this positive impact of EMU on adjustment patterns might have been somewhat overstated at the time. See Blanchard (2006) for a reappraisal, looking at the case of Portugal. Blanchard, O. 'Adjustment with the euro. The difficult case of Portugal'. MIT Working Paper No. 06-04.

<sup>15</sup> Much depends however on the ability of the institutions which structure and rate those products to assess and price risk adequately. Otherwise, risk might be merely transferred from the banking sector to other, potentially less experienced, investors.

**Portfolio investment witnessed a jump in the run-up to EMU**

Data on portfolio investments have been markedly improved through the conduct, under the patronage of the IMF, of the Comprehensive Portfolio Investment survey (CPIS) since 1997.<sup>16</sup> The share of intra-euro-area portfolio investments within the euro area has risen significantly in a short period of time.

**Graph 16: Intra-euro-area share of total cross-border portfolio investments**  
(in % – 1997, 2001 and 2005)



Source: IMF CPIS. Germany, Greece and Luxembourg did not report in 1997.

Between 1997 and 2005, the share of the euro area in the world portfolio of euro-area countries increased markedly (in particular for Italy, +36.5 percentage points, Finland, +28.2 pp, and Portugal, +22.2 pp). The bulk of the shift materialised between 1997 and 2001 (Graph 16). In 1997, only one country (Belgium) held a majority of its portfolio assets within the euro area. In 2005, eight euro-area Member States did so (Austria, Belgium, Finland, France, Germany, Italy, Portugal and Spain).

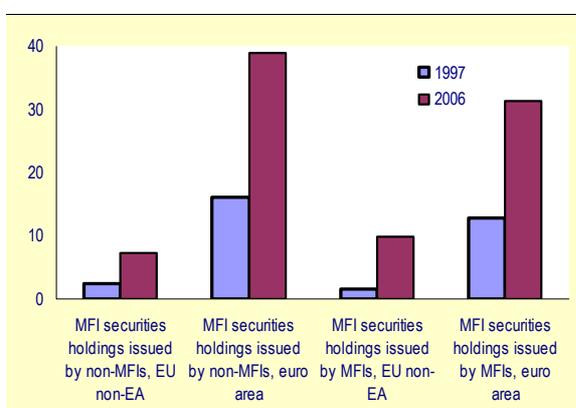
Holdings of debt securities increased significantly and formed the bulk of the increase within the euro area. Available statistics show that the proportion of euro-area debt securities held in other euro-area countries almost trebled in less than ten years. It represented between 30 and 40% of outstanding debt in 2006, compared to a range of 12 to 16% less than ten years ago. This

<sup>16</sup> Other capital flows recorded in the capital account include mainly foreign direct investment flows and other investment flows (trade credits and loans and deposits).



expansion has been particularly marked for securities issued by non-banks, notably government bonds. Holdings of euro-area debt securities held in other EU non-euro-area countries provide a "control group" to determine whether euro-area specific effects are at work. It appears that the expansion of cross-border holdings in non-euro-area EU countries has been less dynamic, which confirms that the euro has indeed had a specific impact.

Graph 17: Euro-area debt securities held by counterparts in other euro-area countries / in other non-euro-area EU countries (in% – as a proportion of the outstanding debt)



Source: European Central Bank. Excluding holdings of central banks. MFI: Monetary Financial Institutions.

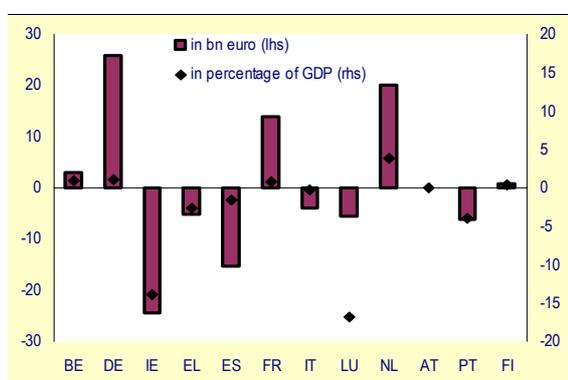
Cross-border inter-bank loans within the euro area have also increased in recent years. However, inter-bank loans between the euro area and the rest of the EU are expanding as fast, arguably due to the role of London as a major financial hub for euro-area banks. Cross-border loans to non-financial agents from other euro-area countries remained very limited (less than 4% of the loans outstanding in 2006), which illustrates the difficulty of conducting retail lending operations remotely, due to residual hindrances of an either legal or practical nature.<sup>17</sup>

<sup>17</sup> However, such hindrances could be bypassed through direct investment in financial institutions from other euro-area countries through mergers and acquisitions. The rapid increase in such operations in recent years shows that the cross-border consolidation of the sector has been set in motion and euro-area financial institutions are gaining a foothold in neighbouring foreign markets.

### Aggregate financial amounts paid and received from foreign countries remain moderate for larger euro-area countries

Economic agents' capacity to share risk internationally can be approximated by looking at the difference between Gross National Income (GNI) and Gross Domestic Product (GDP) over time, since GNI includes factor income received and paid to abroad (see Box 2 for a methodological discussion).

Graph 18: Net factor income for euro-area countries (2006)

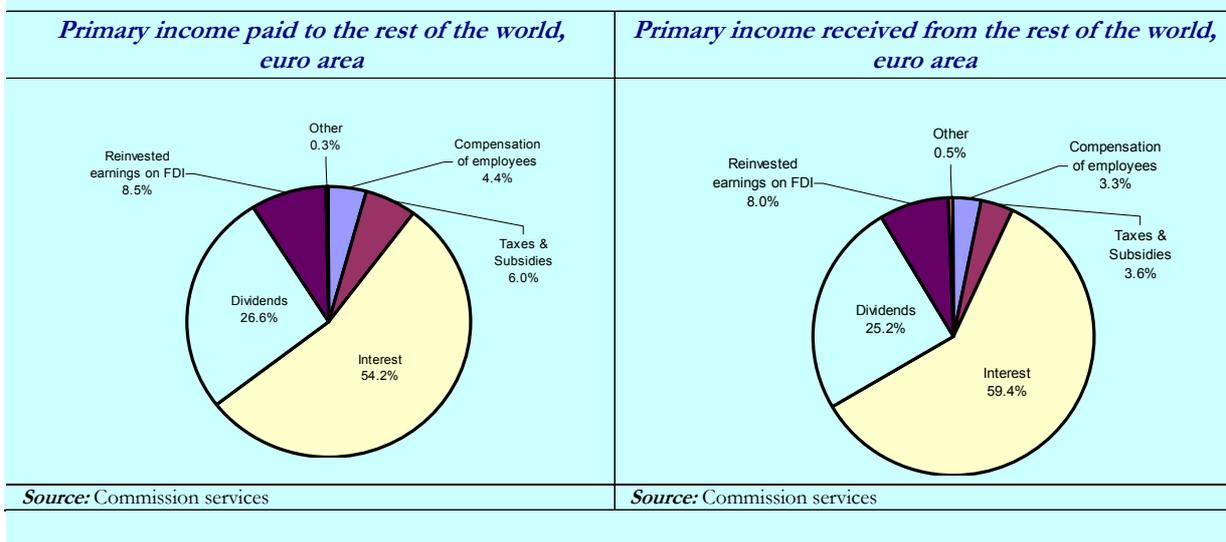


Source: Commission services.

In most countries, net receipts of property income account for most of the difference between GDP and GNI. The size of income flows can vary widely from one euro-area country to another, depending on the size of the economy, its specialisation in financial services and the respective returns on assets and liabilities abroad. Other factors may impact the size and contribution of external sources of income to GNI, such as the existence of tax shelters and price-transfer strategies of companies. Income received from abroad represents the equivalent of less than 5% of GDP in Germany, but 22% in Ireland and 221% in Luxembourg. In general, the difference between GDP and GNI for most euro-area countries remains relatively small, except for Ireland and Luxembourg, for which the difference is equal to respectively 13.9% and 16.8% of GDP. Since most cross-border income flows take place within the euro area, they cancel each other out in consolidated euro-area GNI figures. GNI was only higher than GDP for the euro area by the equivalent of 0.2% of GDP in 2006.

**Box 2: Gross domestic product (GDP) and Gross National Income (GNI)**

To correct GDP into GNI (formerly known as GNP in ESA 1978), it is necessary to add primary income (compensation of employees, taxes less subsidies and property income) received by residents from abroad and deduct primary income created by production in the country but transferred to entities residing abroad. Wages and salaries from abroad are those that are earned by residents, that is, by persons who essentially live and consume inside the economic territory but work abroad, or persons who live and work abroad for only short periods (seasonal workers) and whose centre of economic interest thus remains in their home country. Property income from abroad includes interest, dividends and all or part of the retained earnings of foreign enterprises owned fully or in part by residents. Income flows with the rest of world might suffer from data limitations. Most countries use surveys on direct investment and apply estimated returns to determine income from investment abroad. In addition, and for consistency with balance-of-payments data, income from direct investment includes estimated retained earnings of foreign enterprises owned fully or in part by residents. Retained earnings may not actually return to the residents or may do so only after a lag; their inclusion in property income and eventually GNI could be questioned since they do not directly impact the residents' disposable income. Finally, data on households' assets abroad (and the income thereof) might have to be computed indirectly, especially for holdings of securities issued abroad.



**3. Estimating the scale of risk sharing in the euro-area**

Asdrubali, Sorensen and Yosha published a seminal paper on quantification of risk sharing in 1996.<sup>18</sup> Their methodology aims to identify three different channels for risk sharing within an economy.

- First, risk could be shared via cross-ownership of productive assets (capital market channel). The existence of a deep and efficient capital market would be a prerequisite for the channel to function properly.

- Second, the tax-transfer system of a federation's central government is a potentially significant vehicle for income smoothing (fiscal channel). This has to do with the traditional stabilisation role of public finance identified by Musgrave in his classical distinction of the roles of public finance. This channel matters most when federal taxes and spending are significant, as they are in the United States.

- Third, economic agents within a union or a federation may smooth their consumption through borrowing and lending on national (or foreign) credit markets, thus unlocking liquidity constraints (credit market channel). A well-functioning financial system would help intermediate between lenders and borrowers.

<sup>18</sup> Asdrubali F., B. Sorensen and O. Yosha (1996), 'Channels of interstate risk sharing: United States 1963-1990', *The Quarterly Journal of Economics*, November.



### Box 3: Quantifying the extent of risk sharing in the euro area

This box presents the results of an econometric exercise aimed at estimating the extent of risk-sharing among euro-area Member States (excluding Slovenia due to data limitations). As a matter of comparison, it also provides estimates of risk-sharing among EU15 Member States and a group of OECD countries (EU15 plus the US, Japan, Canada, Switzerland, Norway, Australia and New Zealand).

The methodology used hereafter was first developed and applied to the US by Asdrubali, Sorensen and Yosha in 1996. In their paper, Asdrubali at al. identified three channels of risk-sharing, namely smoothing through capital markets ( $\beta_K$ ), international transfers ( $\beta_F$ ) and credit markets ( $\beta_C$ ). The first channel measures the share of income fluctuations that is smoothed through portfolio diversification with international assets and is reflected in the difference between GDP and GNI. The second channel covers the share of income fluctuations that is smoothed through international transfers or fiscal transfers at a fiscal federation level (in the case of the US). The last channel is a more complex one and includes two main elements: the income smoothing achieved through national government transfers and the consumption smoothing achieved through changes in households net asset positions (borrowing, lending or sales of assets). The risk-sharing decomposition also includes a residual ( $\beta_U$ ) that measures the share of risk that cannot be insured against.

At the euro-area level the main smoothing channel is expected to be the capital market, as the second one will be lower due to the lack of fiscal federation. The third channel is likely to be significant but difficult to interpret due to its heterogeneity.

The following regressions are estimated in a panel data. The  $v_{K,t}$ ,  $v_{F,t}$ ,  $v_{C,t}$  and  $v_{U,t}$  variables capture time-fixed effects in each equation.

$$\Delta \log gdp_{t,i} - \Delta \log gni_{t,i} = v_{K,t} + \beta_K \Delta \log gdp_{t,i} + u_{Kt,i}$$

$$\Delta \log gni_{t,i} - \Delta \log dgni_{t,i} = v_{F,t} + \beta_F \Delta \log gdp_{t,i} + u_{Ft,i}$$

$$\Delta \log dgni_{t,i} - \Delta \log pc_{t,i} = v_{C,t} + \beta_C \Delta \log gdp_{t,i} + u_{Ct,i}$$

$$\Delta \log pc_{t,i} = v_{U,t} + \beta_U \Delta \log gdp_{t,i} + u_{Ut,i}$$

$$1 = \beta_K + \beta_F + \beta_C + \beta_U$$

The analysis is carried out for the periods 1970-2006 and 1999-2006. The indicators used are the GDP, GNI, disposable gross national income (DGNI) and private consumption (PC) in per capita terms and in national currency. As in Sorensen and Yosha (1998), all the series are transformed into constant prices with the private consumption deflator as the objective is to assess the risk-sharing in terms of real consumption. The results of this analysis are presented in the tables below for the period 1999-2006.

Estimated risk-sharing in the euro area, EU15 and OECD for the period 1999-2006						
	Euro area	Euro area 9 (excluding Ireland, Luxembourg and Portugal)	EU15	OECD	US	
$\beta_K$	21.2% (3.72) R <sup>2</sup> - 0.21	5.4% (3.99) R <sup>2</sup> - 0.8	18.1% (3.42) R <sup>2</sup> - 0.15	8.7% (2.58) R <sup>2</sup> -0.07	55%* (14) 39%** (13)	
$\beta_F$	6.3% (2.6) R <sup>2</sup> -0.12	3.9% (4.4) R <sup>2</sup> -0.32	4.3% (1.66) R <sup>2</sup> -0.02	1.7% (1.02) R <sup>2</sup> -0.02	13%** (13)	
$\beta_C$	15.3% (2.20) R <sup>2</sup> - 0.22	$\beta_{CG}$ 14.6% (1.52) R <sup>2</sup> -0.49	13.3% (2.01) R <sup>2</sup> -0.14	43% (7.56) R <sup>2</sup> -0.30	23%** (4)	
		$\beta_{CC}$ -11.4% (-1.20) R <sup>2</sup> -0.25				
$\beta_U$	57.1% (10.57) R <sup>2</sup> -0.66	86.5% (10.86) R <sup>2</sup> -0.68	62.7% (11.46) R <sup>2</sup> - 0.60	42.9% (4.74) R <sup>2</sup> -0.47	25%** (4)	

\* Estimates shown in Kalemli-Ozcan, Sorensen and Yosha O (2004) for the 1991-1998 period.

\*\* Estimates shown in Asdrubali, Sorensen and Yosha (1996) for the 1964-1990 period.

The table shows a comparison between the risk-sharing through the three channels in the euro area, EU15, OECD and US. The capital market smoothing in the euro area is similar to the one in EU15 and higher than in the OECD but much lower than available estimates for the US. However, the result for the euro area changes

substantially when Ireland and Luxembourg are excluded from the sample. The risk-sharing through this channel for the remaining 10 countries is only 7.6%.

The second channel is smaller due to the fact that the euro area is not a fiscal federation and this smoothing is achieved mostly through the structural and economic cohesion policy. Due to this aspect, when Spain, Ireland, Greece and Portugal are eliminated from the sample the coefficient becomes statistically insignificant.

The third channel is much higher in the OECD than in the euro area. In order to better understand the low level of risk-sharing through this channel in the euro area, the  $\beta_C$  was decomposed in  $\beta_{CG}$  (smoothing through national government transfers and taxes) and  $\beta_{CC}$  (smoothing through private credit market). The results are presented in the second column for only 9 countries due to lack of data for real gross disposable income of households and NPISH for other Member States. According to these results, government taxes and transfers are indeed providing some cushion against income fluctuations but their impact is relatively small. The estimate for the private credit market channel is negative, a result which is in line with the observation that developments in the saving ratio have been pro- rather than counter-cyclical in the latest downturn, aggravating the slump in disposable income rather than offsetting it.

Overall, the extent of risk-sharing against income fluctuations (whatever its form) appears to be much lower in the euro area than in the US as indicated by a much higher  $\beta_U$  coefficient.

The table below presents the results from the same set of equations but computed for the entire 1970-2006 period and using a dummy for the existence of the euro. The right column for each of the region presents the final results (the sum of the two coefficients, while the t statistic is the one for the dummy coefficient). According to these results, the size of the capital market channel increased (and became meaningful) after 1999. This was also the case for the OECD as a whole but to a much more limited degree. In contrast, the credit channel seems to have lost importance after 1999 in the euro area but not in the OECD as a whole. It is worth stressing that tests with dummies for alternative years show some increase in the size of the capital market channel already in the first half of the 1990s but the  $\beta_K$  coefficient reaches its maximum with the 1999 dummy. This suggests that, in addition to global financial integration, the rising importance of the capital market channel in the euro area is related both to European financial integration and the euro.

Estimated risk-sharing in euro area and OECD for the period 1970-2006 (using a dummy for the period 1999-2006)				
	Euro area		OECD	
	Before 1999	After 1999	Before 1999	After 1999
$\beta_K$	2.1% (2.02) R <sup>2</sup> - 0.14	21.2% (3.32)	1.8% (2.18) R <sup>2</sup> - 0.07	8.7% (1.98)
$\beta_F$	-1.4% (-1.59) R <sup>2</sup> -0.125	6.3% (2.88)	-0.7% (-1.24) R <sup>2</sup> -0.03	1.77% (1.35)
$\beta_C$	51.9% (16.75) R <sup>2</sup> - 0.55	15.3% (-4.85)	46% (18.9) R <sup>2</sup> - 0.45	43% (-0.45)
$\beta_U$	45.6% (15.75) R <sup>2</sup> -0.65	57.2% (1.87)	52.7% (23) R <sup>2</sup> -0.58	42.9% (-2.45)

The dummy takes value 1 for the period 1999-2006 and 0 in rest.

The column "After 1999" presents the total coefficient, whereas the t statistic in the brackets is the value for the dummy coefficient only.

In conclusion, although the levels of risk-sharing in the euro area are much lower than those found by Asdrubali, Sorensen and Yosha in 1996 for the US, there has been a clear increase in risk-sharing through the capital market channel in the 1990s which is probably partly related to the euro and European financial integration. There is, however, clearly scope for further risk-sharing within the euro area, particularly regarding the credit channel.

**References:**

Asdrubali P., B. Sorensen and O. Yosha (1996), 'Channels of interstate risk sharing: United States 1963-1990', *The Quarterly Journal of Economics*, (November).  
 Sorensen B. and O. Yosha (1998), 'International risk sharing and European monetary unification', *Journal of International Economics*, vol. 45, pp. 211-238.  
 Kalemli-Ozcan S., B. Sorensen and O. Yosha (2004), 'Asymmetric shocks and risk sharing in a monetary union: updated evidence and policy implications for Europe', CEPR discussion Paper No. 4463.



Both the credit and the capital market channels would benefit from deeper financial integration although they work differently: risk sharing through capital markets should be conducted through the setting-up of an asset position before shocks occur, while risk sharing through credit markets can be carried out after a given shock.

To quantify risk sharing, the authors developed a methodology based on the decomposition of the cross-sectional variance in Gross State Product for the fifty US States. Risk sharing would dictate that shocks to output should be followed by smaller shocks to income, then again by smaller shocks to disposable income and eventually by smaller shocks to consumption.

Over the period 1964-1990, the federal government smoothed 13% of shocks, whereas 39% were smoothed by capital markets and 23% by credit markets. 25% of shocks remained unsmoothed. The estimates calculated by Asdrubali et al. also highlighted the large and growing role of capital markets in smoothing economic fluctuations in comparison with other well-known channels such as the federal government or domestic credit.<sup>19</sup>

This methodology is used to estimate risk sharing for the euro area, the EU and the OECD in recent years (see Box 3 for further methodological details). For the period 1999-2006, the share of shocks smoothed through cross-border financial flows is higher in the euro area than in the OECD (21.2% versus 8.7%). It also rose very significantly in the 1990s, pointing to the substantial positive impact of European financial integration and EMU. However, the coefficient is highly dependant on the inclusion of a few smaller, outward-oriented countries. Without Luxembourg and Ireland, the share of shocks thus smoothed is only 7.6%.

Not surprisingly, smoothing through international fiscal transfers is low in the euro area (6.3%). A more puzzling development is that smoothing through developments in credit markets have been much lower in the period 1999-2006 than in the period before 1999, as the evolution of the savings ratio has recently been pro-cyclical, amplifying rather than cushioning

swings in disposable income. All in all, overall risk sharing in the euro area remains well below the equivalent US figures, which explains why the unsmoothed share of shocks to output is much higher in the euro area (45.6% versus 25%).<sup>20</sup>

While suggesting that risk sharing through capital market and cross-border portfolio flows has increased in euro-area Member States, the estimations presented in Box 3 should be interpreted with caution because of the large influence of a few outward-oriented economies within the euro area. The assessment should recognise the still-limited time span available for the estimations.

#### *4. The still-incomplete risk sharing patterns might relate to asset composition*

##### **Debt instruments to be followed by equity as main vehicle for risk sharing**

As noted in Section 2, debt securities played a decisive role in the first wave of cross-border financial flows in the run-up to EMU and the first years of the euro. Investors took advantage of residual bond spreads in expected members of the euro area to expand their cross-border investments ('convergence play'), while the level of country risk was perceived to have largely disappeared. Through this significant expansion of cross-border debt, the potential for income enhancement through bonds has now been almost entirely exhausted since countries' spreads have been compressed since 1999 and price correlation in euro-area government bonds is now close to unity.

As a result of this convergence, investors may be less tempted to hedge against risk through investments in other euro-area Member States. However this apparent paradox will not necessarily push risk sharing back to its previous levels. As the overall level of risk diminishes within the euro area, investors are likely to shift their strategic portfolio allocation and invest in riskier products, such as venture capital and equities instead of bonds. Preferences regarding issuers might also shift, with more appetite for riskier corporate securities at the expense of

<sup>19</sup> Capital markets smoothed 48% of shocks in the last period measured, 1981-1990.

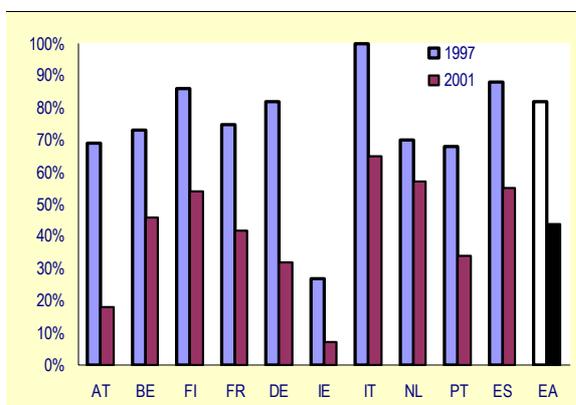
<sup>20</sup> US figures covers the 1964-1990 period.

government bonds, with a positive impact on the effective level of risk sharing. Whereas a buy-and-hold bondholder usually gets a fixed cash flow and would be affected by downward risk on the principal of his investment (through a "credit event"), equity investment allows full risk sharing, both on the upside and on the downside.

**Cross-border equity flows still have considerable room for development**

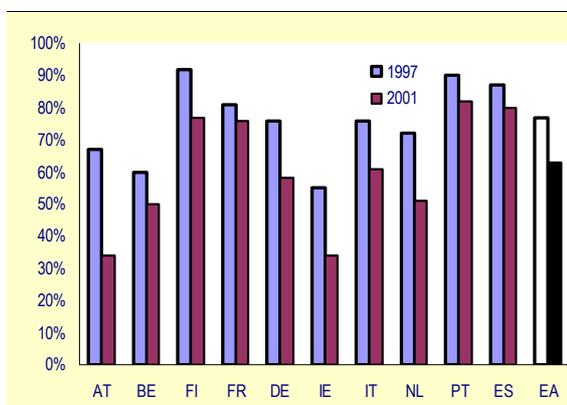
De Santis and Gérard (2006) measure the extent to which the observed share of foreign assets diverges from the theoretical share of foreign assets in an "optimal" borderless portfolio.<sup>21</sup> This allows them to estimate the extent of the so-called home bias in portfolio allocation. Results show that whereas the home bias has been almost halved for bonds from 1997 to 2001 in the euro area, the decline in the equity home bias has been less marked (see Graphs 19 and 20).<sup>22</sup>

Graph 19: Fixed income home bias, euro-area Member States (Share in % – 1997-2001) (1)



(1) The fixed income home bias measure is computed as one minus the actual share of foreign fixed income assets in the total country fixed income portfolio divided by the optimal share of foreign fixed income assets in total fixed income economy holdings. The optimal fixed income share invested abroad is estimated as one minus the country market weight in the world fixed income index. **Source:** De Santis and Gérard (2006).

Graph 20: Equity home bias, euro-area Member States (Share in % – 1997-2001) (1)



(1) The equity home bias measure is computed as one minus the actual share of foreign equity assets in the total country equity portfolio divided by the optimal share of foreign equity assets in total economy equity holdings. The optimal equity share invested abroad is estimated as one minus the country market weight in the world equity index. **Source:** De Santis and Gérard (2006).

Another interesting feature is that the decrease in the fixed-income home bias has been somewhat stronger in countries where it was originally highest (such as in Italy). In contrast, the equity home bias has decreased more in countries where it was already low (see Graph 21). As a result, equity home bias differences within the euro area have widened in this period.

Portes and Rey (2005) show that cross-border equity flows are negatively related to distance, just like physical trade in goods.<sup>23</sup> To explain this puzzle, the authors find evidence that distance is a proxy for information: additional variables representing more directly proxies for information, such as telephone call traffic, the number of branches in a given countries, and an index of insider trading, work as a substitute for distance. Cross-border equity flows within Europe obey the same principle, even when the equations control for large intra-European trade flows. Therefore the authors conclude that the theory-driven rationale for diversification and risk sharing in equities is still neutralised by risk-aversion caused by information asymmetries. It might indeed be argued that access to timely and highly specific information is critical for the proper monitoring of an equity portfolio.

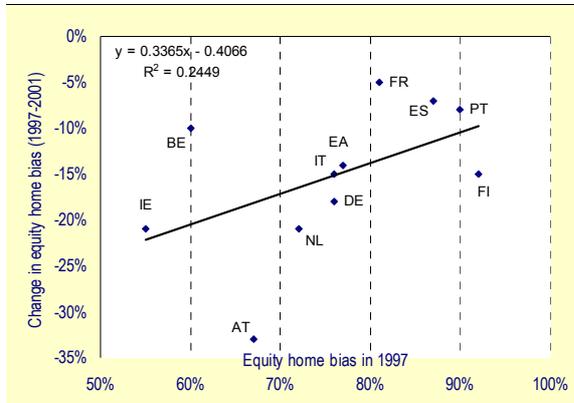
<sup>21</sup> De Santis, R. and B. Gérard. (2006), 'Financial integration, international portfolio choice and the European Monetary Union', ECB Working Paper No 626, (May).

<sup>22</sup> However small it was, the decrease in the euro-area equity home bias may be related to the euro, since the UK and US respective biases barely changed during the period.

<sup>23</sup> Portes, R. and H. Rey (2005), 'The determinants of cross-border equity flows', *Journal of International Economics*, Vol. 65, pp. 269-296.



Graph 21: Change in equity home bias for euro-area Member States (in %)



Source: Commission services.

## 5. Conclusion

Risk sharing has increased in the euro area according to econometric evidence. The capital market channel has seen the biggest impact, and the euro area has developed specific features in this regard distinguishing it from patterns observed between other OECD countries. However, channels to smooth out economic shocks remain much weaker than in the United States, which benefits from a large federal budget and fully integrated credit and capital markets. Current estimations need to be interpreted with caution and the analysis would benefit from further refinement as sufficient retrospective data become available.

While quite substantial, the deepening of cross-border financial flows within the euro area has been asymmetric, with much progress in debt securities and less in equities. This could explain why the increase in risk sharing within the euro area has been slow. There is therefore still a large untapped potential for risk sharing derived from stronger cross-border equity flows. Reforms aimed at achieving full and effective financial integration in the euro area should be pursued. They should not only cover approximation of banking and financial market legislation, but should also tackle other dimensions of the financial system performance, including aspects of transparency and how financial information is disseminated, corporate governance and the protection of minority shareholders, effective and rapid enforcement of contracts, effective application of competition and anti-trust principles and, last but not least, homogeneous financial supervision across euro-area countries. Full and consistent implementation of the Financial Services Action Plan measures would contribute to this objective in the coming years.

## *Focus*

### III. The resilience of the euro-area economy

*This focus section sheds light on the resilience of the euro-area economy, i.e. its capacity to weather adverse economic shocks. Over the past four decades, the euro-area economy has seen four major downturns which, with the notable exception of the recession of the 1970s, were followed by a protracted period of considerable underutilisation of resources as gauged by the persistence of large negative output gaps. Recoveries have also tended to be slower in the euro area than in the US. However, this seeming lack of resilience should be put in its proper perspective. First, there are indications that the trend decline in the volatility of growth is pursuing its course, resulting in milder downturns. Second, there have been signs of improved resilience in some segments of the economy in the latest downturn, with business investment and employment performing better than in the recessions of the 1980s and 1990s. Third, while the euro area and the US may have differed in the pace of their recoveries from major previous downturns, they typically suffered similar cumulated losses in the output gap.*

*One important source of the euro-area's increased resilience since the inception of EMU has been an improved macroeconomic framework. Stable inflation expectations, low real interest rates and stable nominal intra-area exchange rates have supported domestic demand in the latest downturn. There is also some evidence that fiscal policy has become less pro-cyclical in bad times than in the past, although insufficient consolidation during the good times of the late 1990s constrained the room for manoeuvre in the subsequent downturn in several Member States.*

*Despite ongoing structural reforms, the euro-area economy still suffers from excessive rigidities in a number of areas. However, while these rigidities are clearly weighing on the economy's production potential, their impact on the economy's resilience seems to depend both on the nature of the shocks and the type of rigidities considered. For instance, there is some evidence that price rigidities may reduce economic resilience in the face of supply shocks but the relation does not hold for other types of rigidities and shocks. Differences in price rigidities may partly help explain why the US economy returned to potential faster than its euro-area counterpart after the downturn of the early 2000s, but other factors, particularly a stronger contribution to growth by technology in the US, have probably played a more significant role.*

#### 1. Introduction

This focus section seeks to shed some light on the resilience of the euro-area economy. Resilience is here defined in broad terms as the capacity of the economy to adjust to adverse economic shocks. The concept therefore covers two dimensions: the degree to which the economy can dampen the initial impact of a shock and the speed with which it returns to trend after the shock.

From a policy perspective, efforts to better understand the factors that govern the response of an economy to shocks and, ultimately, the determinants of cyclical fluctuations can be justified on at least two grounds. First, business cycle fluctuations have welfare implications. Whereas early work by Robert Lucas<sup>24</sup> tended to downplay the welfare costs of the business cycle, more recent work, in particular by Galí et al., has emphasised its possible significant effect on welfare in economies characterised by price and

wage rigidities and other frictions.<sup>25</sup> Second, protracted periods of growth below potential may engender hysteresis effects, particularly in terms of unemployment, and thereby weigh on the economy's long-term growth performance.

This focus examines the resilience of the euro-area economy by means of a two-pronged approach combining a descriptive analysis of the euro-area business cycle with model simulations. Section 2 sets the stage by identifying some stylised facts of the euro-area business cycle. This is achieved by comparing the latest cycle both to its predecessors of the 1980s and 1990s and to the US business cycle. Fluctuations of activity around potential depend on the nature and the strength of the shocks affecting the economy, but also on the structure of the economy (e.g. the degree of price and wage rigidity or of employment flexibility) and the response of macroeconomic policies. Section 3

<sup>24</sup> Lucas, R. (1987), 'Models of business cycles', Oxford University Press.

<sup>25</sup> Galí, J., M. Gertler and J.D. López-Salido (2007), 'Markups, gaps, and the welfare costs of business fluctuations', *Review of Economics and Statistics*, February, Vol. 89(1), pp. 44-59.



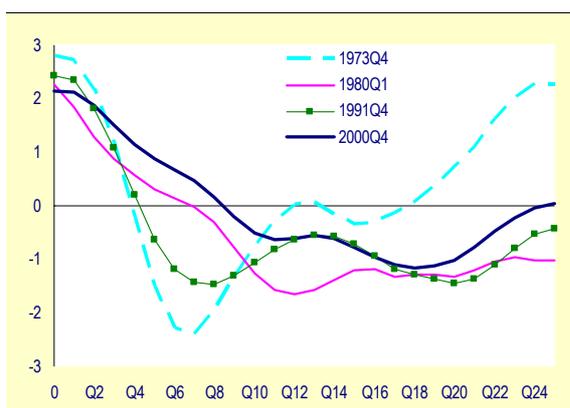
takes a first (mostly descriptive) look at the respective roles of these three factors in explaining the specificities of the latest euro-area cycle in relation both to the past and to the US. The contributions of economic structures and macroeconomic policies can, however, only be properly disentangled in an econometric model. Section 4 therefore presents simulations of the response of the euro-area and US economies to various shocks based on an estimated DSGE model. Section 5 concludes.

## 2. The latest downturn and recovery in perspective

### The latest euro-area cycle shares similarities with previous cycles...

This section compares the response of the euro-area economy to the latest downturn with previous ones and the US cycle.<sup>26</sup> This is done by extracting the business cycle from quarterly GDP with an HP filter. According to the output gap series thus obtained, the euro-area economy has experienced four major downturns over the past four decades. These downturns followed cyclical peaks in, respectively, 1973Q4, 1980Q1, 1991Q4 and 2000Q4.

Graph 21: Output gap developments during major downturns, euro-area (in %) (1)



(1) Four major downturns were identified with an HP filter for the 1970-2006 period. Successive cyclical peaks are 1973Q4, 1980Q1, 1991Q4 and 2000Q4.

Source: Commission services.

Graph 21 compares the developments of the euro-area business cycle during these major downturns by depicting developments in the output gap following the cyclical peak for a period of 24 quarters (i.e. the time elapsed since the latest peak in 2000Q4). With the exception of the recession of the 1970s, the last three major downturns clearly share strong similarities. All of them were characterised by a long period of output gap deterioration, aborted pick-ups in activity and delayed recoveries and, altogether, protracted periods of output below potential. Moreover, a look at the components of GDP shows that the pattern of recovery was fairly similar, with exports being the first component of GDP to pick up, followed by investments and finally by consumption.

### ... but the downturn of the early 2000s was milder than its predecessors

While the most recent cycle is similar to its two predecessors on a number of accounts, the downturn of the early 2000s was significantly less pronounced than its predecessors, with the cyclical trough less deep and the negative gap absorbed faster. While in the previous two cycles output remained below potential for 26 quarters, only 16 quarters were needed to close the output gap in the most recent cycle (Table 4). As a result, the cumulated losses in the output gap totalled 3% of GDP in the downturn of the early 2000s against 6-7.5% in the two previous cycles.

The moderation of losses in activity in the latest downturn compared with its predecessors is in line with a well-documented trend decline in business cycle volatility in industrialised countries. While previous analysis has shown that the biggest fall in the volatility of output growth in the euro area took place in the 1970s and 1980s, developments in the most recent cycle suggest that the trend decline in volatility is pursuing its course.<sup>27</sup> This could be an indication that the negative shocks hitting the euro-area economy have been milder than in the past. However, it could also be evidence of improved resilience.

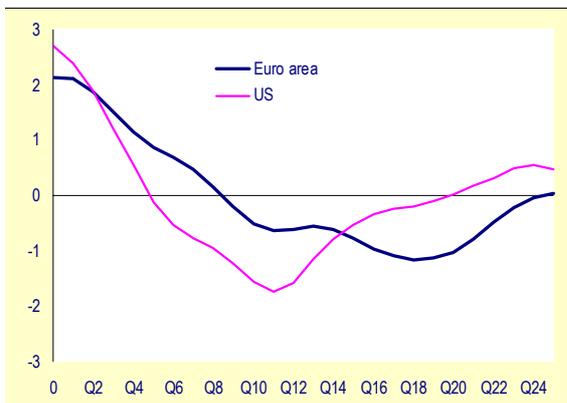
<sup>26</sup> An important caveat should be noted here: caution should be exercised in comparing cycles over time for the euro area as a whole since it only really existed during the latest cycle.

<sup>27</sup> See Focus Section on 'The reduced volatility of output growth in the euro area', Quarterly Report on the Euro Area, Vol. 6, No 1 (2007).

**The euro-area and US business cycles are more similar than generally thought**

Graph 23 compares output gap developments after the latest cyclical peak in the euro area (2000Q4) and the US (2000Q2). Some differences are conspicuous and well-known. The fall in the output gap was sharper and significantly more rapid in the US than in the euro area. The trough of the cycle was reached much earlier in the US than in the euro area and was followed by a stronger recovery. The US cycle was not subject to 'false dawns', which appear to be a feature of the euro-area cycle.

Graph 23: Output gap developments after the cyclical peak of 2000, euro-area and US (in %) (1)



(1) Business cycle peaks are respectively 2000Q4 for the euro area and 2000Q2 for the US.  
 Source: Commission services.

Beyond these differences, however, the euro-area and US cycles share a number of similarities. Table 4 shows that both the cumulated losses in the output gap and the number of consecutive quarters with a negative gap in downturns have converged over time: the cumulated output gap losses in the two economies were actually very close during the latest downturn. So, while losses have typically been somewhat higher in the US, the difference narrowed significantly in the downturn of the early 2000s. Similarly, the two economies experienced periods of negative output gaps of similar length in the previous two downturns. Overall, this suggests that, although the US benefits from faster and stronger recoveries than the euro area, in terms of overall losses in activity, this advantage tends to be offset by a more pronounced downturn following negative

shocks. This illustrates the complexity of the concept of resilience and suggests that there may be a trade-off between its two dimensions: the capacity of the economy to dampen the initial impact of shocks and its capacity to recover swiftly thereafter.

Table 4: Two indicators of the severity of downturns (1)

	1980s	1990s	2000s	Average
<b>Number of consecutive quarters with a negative gap</b>				
EA	26	26	16	23
US	11	27	15	18
<b>Sum of consecutive negative output gaps (in % of GDP)</b>				
EA	-7.6	-5.8	-2.7	-5.4
US	-8.5	-7.1	-3.0	-6.2

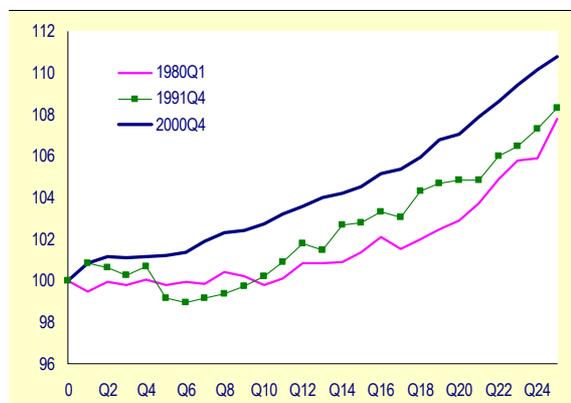
(1) Downturns following peaks in, respectively, 1980Q1, 1991Q4 and 2000Q4.

Source: Commission services.

**Investment was a source of resilience in domestic demand in the latest cycle...**

While trade developments in the euro area were relatively similar in the past three downturns, domestic demand was clearly more resilient in the downswing of the early 2000s (Graph 24), as growth in final domestic demand (excluding inventories) decelerated less markedly in the early 2000s than at similar stages of previous cycles and was also faster to recover.

Graph 24: Domestic demand after the cyclical peak, euro area (index 100 at cyclical peak) (1)



(1) Excluding inventories.

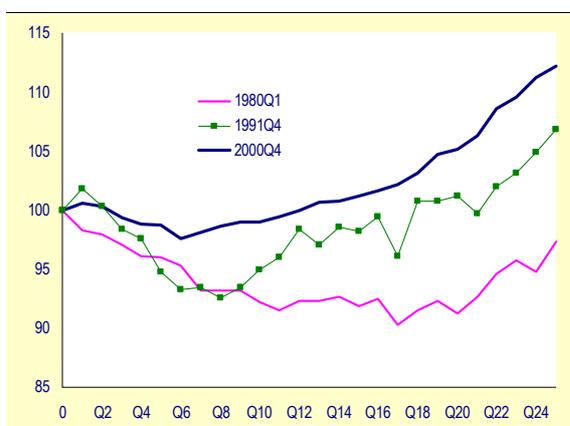
Source: Commission services.



This apparent increase in the resilience of final domestic demand can be entirely traced back to investment. Capital formation was less severely affected in the contraction phase of the cycle than in similar stages of previous cycles. It also recovered faster, and growth during the upturn was stronger and more stable (Graph 25). Unlike in other cycles, investment during the latest cycle recovered from the downturn as fast as exports. It also posted a considerably less brutal cyclical downturn as a share of GDP in the euro area than in the US, a gain which the sluggishness of the recovery did not entirely cancel out.<sup>28</sup>

The relative buoyancy of investment in the latest cycle can be attributed to non-residential investment (i.e. investment in equipment and in non-residential construction) rather than residential. This contrasts with the US where residential investment has been a major driver of capital formation since the early 2000s.

Graph 25: Investment after cyclical peaks, euro area  
(index 100 at cyclical peak)



Source: Commission services.

A factor which has contributed to the relative strength of capital formation in the latest downturn is the resilience of public investment. Reflecting needs to consolidate public finances, spending on public investment contracted markedly during the recessions of the 1980s and 1990s. For instance, public investment as a share of GDP dropped from 3.2% in 1991 to 2.6% in 1995, contributing for more than a fourth to the fall in the total investment share during that period – public investment only represents 15%

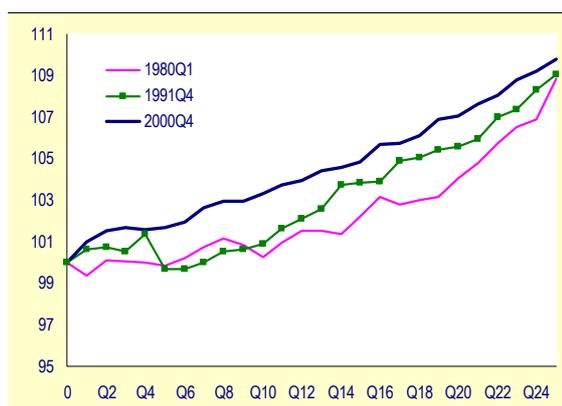
<sup>28</sup> In 2006, the investment share was back at its 2000 peak in the euro area, but still below its 2000 peak in the US.

of total capital formation. In contrast, reflecting a healthier overall position of public finances, the share of public investment in GDP remained broadly stable in the early 2000s.

### ... consumption, however, was disappointing

Consumption also behaved somewhat differently during the latest cycle in the euro area. Growth in household spending was slightly stronger during the early stages of the downturn than during similar stages of previous cycles. However, the opposite holds for the upturn and, six years after the cyclical peak, average consumption growth looks very similar for the three cycles (Graph 26).

Graph 26: Consumption after cyclical peaks, euro area  
(index 100 at cyclical peak)

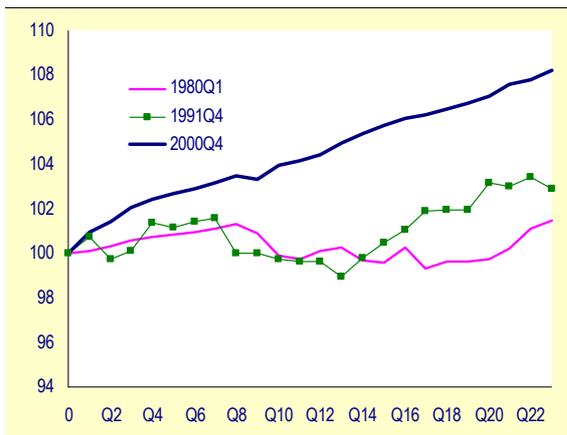


Source: Commission services.

This is striking in view of the comparatively buoyant growth in household disposable income and employment over the latest cycle in comparison with its predecessors (Graph 27). However, positive developments in disposable income were offset by a pro-cyclical rise in the households savings ratio in the early 2000s. Hence, despite the ongoing deepening and integration process in European financial markets, the degree of consumption smoothing as measured by fluctuations in the savings ratio was actually lower in the latest cycle than during its predecessors. Estimated consumption functions suggest that traditional determinants of consumption (disposable income and wealth) do not fully account for the weakness of private

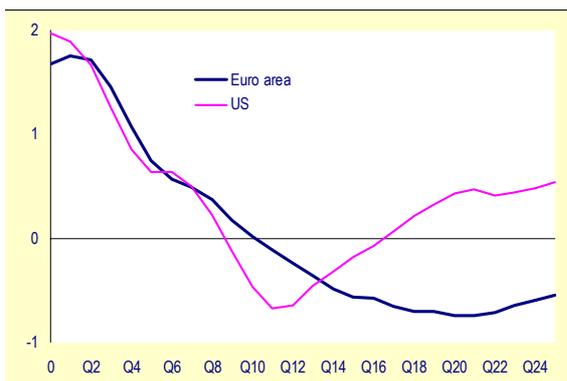
consumption in the early 2000s.<sup>29</sup> A possible alternative explanation is that concerns about the sustainability of pension systems or declining productivity may have led households to reassess their income prospects, leading to a negative consumption shock that aggravated the downturn of the early 2000s.

Graph 27: Household real disposable income after cyclical peaks, euro area (index 100 at cyclical peak)



Source: Commission services.

Graph 28: Cyclical component of consumption after cyclical peaks in 2000, euro area and US (in %) (1)



(1) Cyclical peaks on the basis of output gaps: 2000Q4 for the euro 2000Q2 for the US. Consumption is detrended with an HP filter.  
Source: Commission services.

In the latest cycle, euro-area consumption was also weak compared to the US. Graph 28 compares developments in private consumption

<sup>29</sup> See for instance 'Explaining the weakness of private consumption in the euro area', Quarterly Report on the Euro Area, Vol. 3, No. 1 (2004).

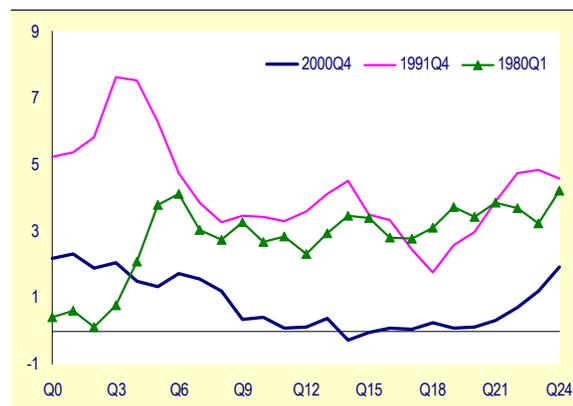
in the two regions after the cyclical peak of 2000. To facilitate comparison, the graph displays the cyclical component of consumption in both regions.<sup>30</sup> The consumption downturn was more protracted in the euro area than in the US where the cyclical trough was reached much earlier. Consumption in the US was also much faster to recover and has now been above its trend level for some time. In contrast, consumption in the euro area has still not yet fully recovered from the downturn.

### 3. A first look at the role of policies, shocks and structures

#### A more supportive policy mix than in previous downturns...

One element which has helped dampen output losses in the euro area in the latest downturn compared with its predecessors is a substantially more supportive policy mix. Although this may partly reflect more global developments such as the so-called great moderation, it is also clearly a benefit of the EMU macroeconomic framework.

Graph 29: Real short-term interest rates during major downturns, euro area (in %) (1)



(1) 3-month interest rate deflated by the consumption deflator.  
Source: Commission services.

The ECB's success in anchoring inflation expectations has been conducive to a particularly favourable monetary stance in the latest downturn with short-term real interest rates

<sup>30</sup> This is obtained by extracting the cycle from quarterly consumption data with an HP filter.



about 2 to 3 pp lower than during the recession of the 1980s and the 1990s (Graph 29).<sup>31</sup> A similar, although slightly smaller, gap was registered for long rates. In addition, the positive effect of supportive financial conditions on domestic demand was reinforced by the stability of intra-area nominal exchange rates brought about by the single currency. Intra-area exchange rate stability has allowed to avoid the pro-cyclical rises in interest rates that were necessary in some Member States in the past to fend-off speculative attacks on currencies.

More supportive financial conditions and stable intra-area nominal exchange rates could be one explanation for the comparative resilience of investment noted in the previous section. This would also be in line with a well-documented stylised fact according to which investment is the main transmission channel of monetary policy in the euro area.<sup>32</sup>

To a lesser degree, fiscal policy was also more supportive in the latest downturn. The two recessions of the 80s and 90s took place in a period of significant (in some countries two-digit) deficits. Hence, in order to control a spiralling situation of increasing deficit and debt levels, fiscal policy was practically forced to turn contractionary while the downturns were unfolding and output gaps turned negative. Graph 30 shows the clear pro-cyclical development of the discretionary component of fiscal policy during the recessions of the early 1980s and early 1990s. In contrast, discretionary fiscal policy was mildly counter-cyclical in the early stages of the latest downturn. The comparative resilience of public investment in the latest downturn is another indication of an improved fiscal stance.

The observation that the fiscal stance was somewhat better in the latest downturn than during its predecessors is also in line with empirical studies showing that fiscal policy has tended to be frequently pro-cyclical in euro-area Member States over the past decades but that budgetary corrections became less common in bad times after the completion of EMU.<sup>33</sup> Nevertheless, notwithstanding this progress, budgetary policy has so far tended to remain pro-cyclical in good time since the inception of the euro. In some Member States, insufficient consolidation during the good times of the late 1990s thus constrained the room for manoeuvre in the subsequent downturn.

Graph 30: **Discretionary fiscal policy in major downturns, euro area**  
(cyclically adjusted primary balance in %) (1)



(1) Y0 corresponds to the year of the cyclical peak preceding the downturn.

Source: Commission services.

### ... but the policy easing in 2001-03 was less pronounced in the euro area than in the US

In both the euro area and the US, the macroeconomic policy stance was clearly counter-cyclical during the downturn of the early 2000s, though the fiscal and monetary stimuli were smaller in the euro area. Between 2000 and 2003, budget balances deteriorated by 6.5 pp in the US and 3.1 pp in the euro area. Over the same period, real short-term rates dropped by more than 500 basis points in the US and only 300 basis points in the euro area.

<sup>31</sup> Estimates of monetary conditions combining developments in short-term real interest rates and in the real exchange rate yield a similar favourable picture of monetary conditions in the latest downturn.

<sup>32</sup> See Angeloni, I., A. K. Kashyap, B. Mojon and D. Terlizzese (2003), 'The output composition puzzle: a difference in the monetary transmission mechanism in the euro area and US', *Journal of Money, Credit and Banking*, Vol. 35, pp. 1265-1306.

<sup>33</sup> See European Commission (2006), 'Public finance in EMU', *European Economy* No. 3.

These differences in macroeconomic stimulus should however be put in their proper perspective.

The more aggressive easing of macroeconomic policies in the US in the early 2000s was partly justified by a much sharper deterioration in the output gap in the early stages of the downturn than in the euro area.

Regarding fiscal policy, the deterioration in the US government budget mostly reflected a set of tax cuts enacted in the early 2000s. Unlike in the euro area, automatic fiscal stabilisers played only a limited role in the drop in fiscal balances.<sup>34</sup> It is worth stressing, however, that the large discretionary fiscal stimulus in the US was largely a 'happy coincidence' reflecting tax measures that had been planned before the downturn and were not specifically designed to be counter-cyclical. It also vindicates some of the objections traditionally raised against the use of fiscal activism, since this stimulus did in fact cause a large deterioration of the US fiscal position that has proved difficult to reverse. After several years of a positive output gap, the US budget balance is still clearly negative and accumulated deficits have led to a substantial increase in the level of public debt. The lack of a solid surplus position will seriously limit future room for manoeuvre in the event of an economic downturn.

Regarding monetary policy, four points are worth stressing.

First, the more muted response of short-term interest rates in the euro area than in the US was justified by differences in economic conditions. To a large extent, the sharper monetary loosening by the Fed represents a response to a sharper cyclical loss in output and more favourable inflation developments in the early 2000s. This conclusion is backed by econometric

evidence, discussed in the next section, which shows that differences in interest rate developments between the euro area and the US cannot be explained by differences in monetary reaction functions.<sup>35</sup>

Second, nominal and real short-term rates were significantly higher in the US than in the euro area at the peak of the cycle in 2000. If nominal rates had been cut in the euro area by the same degree as in the US between 2000 and 2001, they would have entered negative territory.

Third, a distinction should be made between developments in short-term interest rates and overall financial conditions. The response of short rates to deteriorating cyclical conditions at the beginning of the decade was sharper in the US than in the euro area but the gap was significantly smaller for overall financial conditions as real long-term interest rates have followed broadly similar paths in the two regions.

Finally, although monetary reaction functions are probably broadly similar in the two regions, there is some evidence that US monetary policy has benefited from a more powerful housing transmission channel in recent years. The comparative strength of housing investment and private consumption in the US relative to the euro area in the latest cycle provides some support for this conclusion. There is also evidence that housing wealth effects are stronger in the US than in the euro area and that housing equity withdrawal provided a considerable boost to US consumption in the early 2000s.<sup>36</sup> The strength of the housing transmission channel could be related to a number of factors, including the degree of liberalisation of mortgage markets, tax systems and land supply.<sup>37</sup>

<sup>34</sup> Fiscal stabilisers tend to have a bigger cyclical smoothing role in the euro area than in the US. Empirical estimates suggest that automatic stabilisers are significantly larger in the euro area than in the US. According to OECD estimates, the elasticity of the budget balance to the output gap is 0.48 in the euro area and only 0.34 in the US (see Girouard, N. and C. André (2005), 'Measuring cyclically adjusted budget balances for OECD countries', OECD Economics Department Working Paper No. 434.).

<sup>35</sup> A similar conclusion is reached in Sahuc, J.G. and F. Smets (2006), 'Differences in interest rate policy at the ECB and the Fed: an investigation with a medium-scale DSGE model', forthcoming in *Journal of Money Credit and Banking*.

<sup>36</sup> See Catte, P., N. Girouard, R. Price and C. André (2004), 'Housing markets, wealth and the business cycle', OECD Economics Department Working Paper No. 394 (7 December).

<sup>37</sup> For a discussion of these factors see Hoeller, P. and D. Rae (2007), 'Housing markets and adjustment in monetary union', OECD Economic Department Working Paper No. 550 (April).



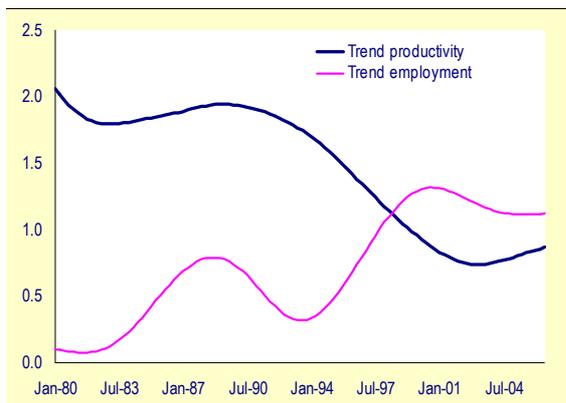
Nevertheless, the recent US experience suggests that a stronger housing channel may also raise the risk of housing booms, house-price imbalances and financial turbulence.

### A cycle partly shaped by two major structural shocks

The response of the euro-area economy to the latest downturn must be understood against the background of two powerful structural shocks (one positive, one negative) which began to affect the economy already in the 1990s.

On the positive side, the economy benefited from a sharp pick-up in employment and labour supply as past structural reforms and wage moderation began to bear fruit (Graph 31).

Graph 31: **Trend growth in productivity and employment, euro area**  
(y-o-y growth in %, 1980Q1 to 2006Q4)



Source: Commission services.

On the negative side, the euro-area economy experienced a well-documented slowdown in trend productivity which began around the mid-1990s and, despite some possible signs of improvement in the past two years, now leaves the economy with still only a moderate pace of productivity growth compared to historical trends.

These structural shocks have affected the economy in a number of ways. Employment has proved to be much more resilient in the current cycle than previous ones with unemployment showing only a modest increase during the downswing. The strength of employment

growth was also the main cause of comparatively stronger growth in household real disposable income. In the meantime, the deteriorating productivity performance weighed on real wage growth and may have led households to reassess their long-term income prospects, thereby contributing to the comparatively less supportive developments in the savings ratio during the latest cycle.

### What role for labour and product market rigidities?

Standard macroeconomic theory predicts that differences in the level of regulation of goods and labour markets have a clear impact on the level of output and employment. However, economic theory is ambiguous regarding the impact of rigidities in labour and product markets on the response to shocks. Some forms of rigidities may dampen the initial impact of a shock but lengthen the ensuing adjustment phase.<sup>38</sup> In this case, the trough will be less pronounced than in a more flexible economy but the period of negative output gap will be longer, leading to either smaller or larger cumulated output losses than in a more flexible economy.

Econometric panel analysis provides some backing for a link between resilience and economic structures, particularly those features of financial markets that have a bearing on monetary policy transmission.<sup>39</sup> However, it is not easy to disentangle the respective roles of differences in labour and product market rigidities, macroeconomic policies and economic shocks in explaining cyclical differences between the euro area and the US. The next section will seek to do so on the basis of a set of simulations carried out with DSGE models.

<sup>38</sup> For example, strict employment protection may delay the response of employment to a shock, thereby mitigating the initial impact of the shock on consumption while delaying the necessary adjustment process. See Duval, R., J. Elmeskov and L. Vogel (2007), 'Structural policies and economic resilience to shocks', a paper presented at the workshop on 'Structural reforms and economic resilience: evidence and policy implications', OECD, 14 June 2007.

<sup>39</sup> See Duval, R. et al. (2007).

Table 5: Main estimated structural parameters in the euro-area and the US DSGE models

	Euro area	US
<b>Nominal rigidities:</b>		
Avg. duration between price adjustments (in quarters)	5	1.6
Avg. wage contract length (in quarters)	5.6	5.8
<b>Real rigidities:</b>		
Labour adjustment cost (in % of total additional wage costs)	18	10
Labour supply elasticity	0.34	1.25
Capital adjustment cost	23	33
Investment adjustment cost	16	12
<b>Consumption:</b>		
Share of liquidity constrained consumers (in %)	63	76
<b>Coefficients in monetary policy reaction functions:</b>		
Lagged interest rate	0.86	0.90
Inflation	0.32	0.50
Output gap	0.03	0.04
Output gap(-1)	0.16	0.19

*Source:* Commission services.

#### 4. Analysing the role of shocks and economic structures with a DSGE model

##### Significant differences in nominal and real rigidities between the euro area and the US

Simulations shown in this section are based on two DSGE models for the euro area and the US. The models were estimated over the same sample period (1978Q1 to 2006Q1).<sup>40</sup>

The models embody significant structural differences between the two economies (see Table 5). In particular:

- US firms adjust prices more often than their euro-area counterparts. The average duration over which euro-area firms keep prices fixed is about 5 quarters, while US firms adjust prices on average every 1.6 quarters.
- Nominal wage rigidities as measured by the average length of wage contracts are similar in the US and in the euro area. There are, however, significant differences in the elasticity of labour supply. A significantly higher elasticity in the US translates into a

smaller response in US wages to changes in employment.<sup>41</sup>

- Labour adjustment costs are higher in the euro area than in the US. Administrative costs related to a rise in employment amount to about 18% of total additional wage costs in the euro area and only 10% in the US.
- There is little evidence of differences in capital adjustment costs and financial market frictions (as measured by the share of liquidity constrained households).
- The estimated monetary reaction functions do not point to sizeable differences in monetary policy behaviour in response to inflation and activity.

##### But the link between these rigidities and resilience is complex

Simulations with the DSGE model show that the link between the degree of real and nominal rigidities on the one hand and resilience of the economy to shocks is complex (see Box 4). No general conclusions can be drawn as the results seem to be highly shock-specific and dependent on the type of rigidity considered. In particular,

<sup>40</sup> For a detailed description of the models, see Ratto, M., W. Roeger and J. in't Veld. (2006), 'Fiscal policy in an estimated open economy model for the euro area', European Commission, Economic Papers, No. 303.

<sup>41</sup> This is consistent with DG ECFIN's Phillips curve estimates which also show a stronger response of wages to unemployment in the euro area than in the US.



**Box 4: How do structural rigidities affect adjustment to shocks?**

The DSGE models can be used to analyse how differences in rigidities in the euro area affect its adjustment to shocks. This can be achieved by simulating the response of the euro-area to shocks and comparing these base simulations with those resulting from a modified model where structural parameters are set sequentially to their (less rigid) US values. The simulation exercise focuses on labour market and price rigidities because these are the areas where important differences between the US and the euro area were identified during the estimation process. The three main rigidities analysed are: (i) differences in labour adjustment costs; (ii) differences in labour supply elasticity; and (iii) differences in price rigidity. In order to illustrate the role played by these rigidities, simulation experiments are conducted for stylised TFP and world demand shocks (taken as prototypical for supply and demand shocks).

The simulation experiments show that differences in *labour adjustment costs* mainly affect the response of employment and real wages but have little impact on the size and speed of adjustment of GDP. For example a positive productivity shock reduces employment temporarily. Employment falls more when adjustment costs are smaller. On the other hand, real wages increase more with lower adjustment costs. Therefore the net effect on consumption is similar and there is no significant difference in the GDP response. In the case of an increase in world demand, employment will be affected positively. This effect will be stronger with lower labour adjustment costs. Also real wages will be higher with lower adjustment costs. Both effects lead to a slightly stronger rise in domestic demand when labour demand is less rigid and therefore to slightly higher GDP. Overall, however, differences in labour adjustment costs only entail modest differences in the impact of world demand shocks on GDP.

Real wages in an economy with *high labour supply elasticity* such as the US economy respond less to a productivity shock. However, the accompanying reduction in employment is not any smaller than it would be if the labour supply elasticity were lower. On the contrary, employment decreases more in the case of a higher labour supply elasticity because the more muted increase in real wages leads to a more muted increase in consumption. However, lower real wage growth increases investment and compensates the shortfall in consumption. The net effect on GDP is negligible. In the case of a world demand shock, a higher labour supply elasticity results in wage inflation responding more strongly to the change in employment. However, the effect is small and does not show up in GDP.

In contrast to the other rigidities, differences in *price rigidity* can potentially generate differences in adjustment patterns in the case of supply/productivity shocks. A fast price reaction can indeed cushion the negative employment response and therefore allow the supply shock to be more expansionary on impact. A rapid fall in prices leads to a faster increase in real wages which in turn supports an increase in aggregate demand. With higher nominal rigidities, the adjustment of employment is delayed since it takes longer for prices to decline to their new equilibrium level, leading to a shortfall of aggregate demand over the transition period.

Euro-area GDP response to a TFP shock: euro area versus US price rigidity (deviations from baseline in %) (1)	Euro-area GDP response to a world demand shock: euro area versus US price rigidity (deviations from baseline in %) (1)
<p>(1) Price rigidity is measured in terms of average duration between price adjustments. See Table 5. <b>Source:</b> Commission services.</p>	<p>(1) Price rigidity is measured in terms of average duration between price adjustments. See Table 5. <b>Source:</b> Commission services.</p>

As shown in the first graph, when the euro-area coefficient of price rigidity (as measured by the average duration between price adjustments) is replaced by its US values, the initial GDP gains from the TFP shock are higher. The economy also becomes more resilient in the sense that output returns to baseline more rapidly and cumulated output deviations are smaller (6.6% of GDP vs. 5.4% of GDP). However, as shown in the second graph, this response pattern is confined to productivity shocks. In the case of demand shocks, higher price flexibility can help cushion the initial impact of these shocks although at a cost of a slower return to baseline.

the premise that a less rigid economy responds both more strongly and faster to shocks does not, in general, find support in these simulations. An important exception, however, is the response of GDP to technology shocks. In this case, an economy with more flexible prices clearly responds faster and shows a higher degree of resilience: output growth returns to trend more rapidly and cumulated deviations of output from trend are smaller. The better response to shocks, however, is only observed for supply shocks. In the model, nominal price rigidities do not seem to affect significantly differences in response to demand shocks.

Overall, it seems that the link between structural rigidities and dynamics is not as strong or clear-cut as the link between structural rigidities and the level of output and employment. Nevertheless, some rigidities, particularly nominal rigidities, may have an impact on adjustment dynamics.

### Technology shocks are key to explaining differences in resilience between the euro area and the US

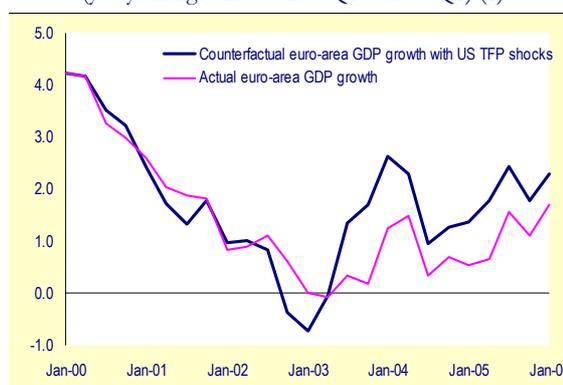
These model simulations reveal that one factor which may partly explain why the US economy recovered faster than its euro-area counterpart from the 2001 downturn is the US economy's better response to a negative TFP shock. Both the US and the euro area experienced a sharp decline in TFP after 2000, but the greater price flexibility in the US may partly explain why it recovered faster.

Nevertheless, a more critical factor in explaining the faster recovery in the US is the difference in the TFP growth profile between the US and the euro area since the beginning of the decade. TFP growth in the US has been more robust and recovered more quickly after the slowdown, while the euro area experienced a prolonged period of subdued TFP growth after 2001.

Graph 32 shows the importance of these differences in TFP profile by comparing the actual GDP growth in the euro area over the 2000-06 period with the growth which would have occurred (according to the model) if the euro area had benefited from the more

favourable TFP developments registered in the US. This simulation shows that technology shocks go a long way towards explaining the relative sluggishness of the euro-area recovery. Additional simulations (not shown here) were also carried out in which the shocks to external demand and monetary policy registered in the US were applied to the euro area. These show that neither differences in shocks in world demand nor differences in monetary policy shocks have contributed significantly to growth differentials between the euro area and the US since the beginning of the decade.

Graph 32: Euro-area GDP growth – actual and assuming US TFP developments  
(y-o-y changes in % –2000Q1 to 2006Q1) (1)



(1) Counterfactual growth is obtained by simulating the euro-area DSGE model with US TFP shocks for the 2000Q1 to 2006Q1 period.

Source: Commission services.

## 5. Conclusion

Over the past four decades, the euro-area economy has experienced four major downturns which, with the notable exception of the recession of the 1970s, share strong similarities: relatively protracted falls in output gaps, sluggish recoveries marked by relapses and, overall, drawn-out periods of negative output gaps. Recoveries have tended to be much slower in the euro area than in the US (although downturns have generally been less pronounced in the euro area). This, a priori, points to a relatively weak capacity to respond to economic shocks. This conclusion should, however, be nuanced as there have also been signs of improved resilience in recent years. First, output gap losses in the latest downturn were



substantially smaller than in the past. Second, there have been some signs of improved resilience in some segments of the economy in the present decade, with business investment and employment performing better than in previous downturns. Third, differences between the US and the euro area should not be overemphasised as the two regions also share important features. In particular, total output gap losses and the total duration of sub-par activity appear to be broadly similar in the US and the euro area. This reflects the fact that although the US economy tends to recover from negative shocks more rapidly than the euro area, their initial impact also tends to be stronger.

Cyclical differences either across time or across countries depend on a number of factors, including some differences in macroeconomic policies, in labour and product market rigidities and in the nature of economic shocks.

In the current decade, the euro area has benefited from an improved macroeconomic framework. This is particularly clear for monetary policy which has been more supportive to growth in the latest downswing than in previous ones. Furthermore, thanks to the fiscal adjustment taken during the 90s, euro-area fiscal policy was somewhat less pro-cyclical in the latest downturn than during the recessions of the 1980s and the 1990s although insufficient consolidation in the period of good times of the late 1990s constrained room for manoeuvre in some Member States.

Notwithstanding some progress in structural reforms, the euro-area economy remains less flexible than its US counterpart. While rigidities clearly weigh on the euro-area economy's production potential, their impact on the economy's resilience is less clear-cut and depends on their nature and the nature of shocks. Model simulations suggest that, while nominal rigidities clearly hamper the resilience to supply shocks, the relation is less clear-cut in the case of other forms of rigidities or other types of shocks.

Finally, model simulations also suggest that differences in TFP shocks have been an important source of differences in growth profiles between the US and the euro area since the beginning of the decade. While both regions suffered from a TFP slowdown in the early 2000s, the US's faster TFP recovery has contributed to a faster recovery of its overall economy. Hence, milder technology shocks could be the main explanation for the US economy's relatively fast return to potential compared with the euro area after the downturn of the early 2000s.

## IV. Recent DG ECFIN publications

### 1. Policy documents

EUROPEAN ECONOMY. No. 5. 2007

**Annual report on the euro area - 2007**

[http://ec.europa.eu/economy\\_finance/publications/annual\\_report\\_on\\_the\\_euro\\_area\\_en.htm](http://ec.europa.eu/economy_finance/publications/annual_report_on_the_euro_area_en.htm)

EUROPEAN ECONOMY. No. 6. 2007

**2007 Convergence Report on Cyprus and Malta**

[http://ec.europa.eu/economy\\_finance/publications/convergencereports\\_en.htm](http://ec.europa.eu/economy_finance/publications/convergencereports_en.htm)

EUROPEAN ECONOMY. OCCASIONAL PAPERS. No. 31. June 2007

**2006 Pre-accession Economic Programmes of candidate countries**

[http://ec.europa.eu/economy\\_finance/publications/occasional\\_papers/2007/occasionalpapers31\\_en.htm](http://ec.europa.eu/economy_finance/publications/occasional_papers/2007/occasionalpapers31_en.htm)

EUROPEAN ECONOMY. OCCASIONAL PAPERS. No. 32. June 2007

**2006 Economic and Fiscal Programmes of potential candidate countries**

[http://ec.europa.eu/economy\\_finance/publications/occasional\\_papers/2007/occasionalpapers32\\_en.htm](http://ec.europa.eu/economy_finance/publications/occasional_papers/2007/occasionalpapers32_en.htm)

EUROPEAN ECONOMY. OCCASIONAL PAPERS. No. 33. June 2007

**Main results of the 2007 fiscal notifications presented by the candidate countries**

[http://ec.europa.eu/economy\\_finance/publications/occasional\\_papers/2007/occasionalpapers33\\_en.htm](http://ec.europa.eu/economy_finance/publications/occasional_papers/2007/occasionalpapers33_en.htm)

EUROPEAN ECONOMY. OCCASIONAL PAPERS. No. 34. June 2007

**Guiding principles for product market and sector monitoring**

[http://ec.europa.eu/economy\\_finance/publications/occasional\\_papers/2007/occasionalpapers34\\_en.htm](http://ec.europa.eu/economy_finance/publications/occasional_papers/2007/occasionalpapers34_en.htm)

EUROPEAN ECONOMY. ENLARGEMENT PAPERS. No. 29. 2006

**Progress towards meeting the economic criteria for accession: the assessments of the 2006 Progress Reports**

[http://ec.europa.eu/economy\\_finance/publications/enlargement\\_papers/elp29\\_en.htm](http://ec.europa.eu/economy_finance/publications/enlargement_papers/elp29_en.htm)

EUROPEAN ECONOMY. ENLARGEMENT PAPERS. No. 30. 2006

**Western Balkans in Transition**

[http://ec.europa.eu/economy\\_finance/publications/enlargement\\_papers/elp30\\_en.htm](http://ec.europa.eu/economy_finance/publications/enlargement_papers/elp30_en.htm)

### 2. Analytical documents

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 277.

Fabio Balboni (University of Bologna), Marco Buti, Martin Larch (Directorate-General for Economic and Financial Affairs)

**ECB vs Council vs Commission: Monetary and fiscal policy interactions in the EMU when cyclical conditions are uncertain**

[http://europa.eu.int/comm/economy\\_finance/publications/economic\\_papers/economicpapers277\\_en.htm](http://europa.eu.int/comm/economy_finance/publications/economic_papers/economicpapers277_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 278.

Peter Tillmann (University of Bonn)

**Robust Monetary Policy with the Cost Channel**

[http://europa.eu.int/comm/economy\\_finance/publications/economic\\_papers/economicpapers278\\_en.htm](http://europa.eu.int/comm/economy_finance/publications/economic_papers/economicpapers278_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 279.

Michael Neugart (Wissenschaftszentrum Berlin für Sozialforschung - WZB)

**Provisions of the welfare state: employment protection versus unemployment insurance**

[http://europa.eu.int/comm/economy\\_finance/publications/economic\\_papers/economicpapers279\\_en.htm](http://europa.eu.int/comm/economy_finance/publications/economic_papers/economicpapers279_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 280.

Giuseppe Carone, Jan Host Schmidt (European Commission, Directorate-General for Economic and Financial Affairs) and Gaëtan Nicodème (European Commission, Directorate-General for Economic and Financial Affairs, ECARES - ULB and CEB - Solvay Business School)



**Tax revenues in the European Union: Recent trends and challenges ahead**

[http://ec.europa.eu/economy\\_finance/publications/economic\\_papers/2007/economicpapers280\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_papers/2007/economicpapers280_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 281.

Alfonso Arpaia (Directorate-General for Economic and Financial Affairs) and Karl Pichelmann (Directorate-General for Economic and Financial Affairs, Associate Professor, Institute d'Etudes Européennes, Université Libre de Bruxelles)

**Nominal and real wage flexibility in EMU**

[http://ec.europa.eu/economy\\_finance/publications/economic\\_papers/2007/economicpapers281\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_papers/2007/economicpapers281_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 282.

Alfonso Arpaia, Werner Roeger, Janos Varga, Jan in 't Veld and Alexandr Hobza (Directorate-General for Economic and Financial Affairs) and Isabel Grilo and Peter Wobst (Directorate-General for Enterprise and Industry)

**Quantitative assessment of Structural Reforms: Modelling the Lisbon Strategy**

[http://ec.europa.eu/economy\\_finance/publications/economic\\_papers/2007/economicpapers282\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_papers/2007/economicpapers282_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 283.

Jan in 't Veld (Directorate-General for Economic and Financial Affairs)

**The potential impact of the fiscal transfers under the EU Cohesion Policy Programme**

[http://ec.europa.eu/economy\\_finance/publications/economic\\_papers/2007/economicpapers283\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_papers/2007/economicpapers283_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 284.

Björn Döhring and Aurora Mordonu (Directorate-General for Economic and Financial Affairs)

**What drives inflation perceptions? A dynamic panel data analysis**

[http://ec.europa.eu/economy\\_finance/publications/economic\\_papers/2007/economicpapers284\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_papers/2007/economicpapers284_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 285.

Sven Langedijk and Martin Larch (Directorate-General for Economic and Financial Affairs)

**Testing the EU fiscal surveillance: How sensitive is it to variations in output gap estimates?**

[http://ec.europa.eu/economy\\_finance/publications/economic\\_papers/2007/economicpapers285\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_papers/2007/economicpapers285_en.htm)

EUROPEAN ECONOMY. ECONOMIC PAPERS. No. 286.

Christian Buelens, Gaëlle Garnier, Roderick Meiklejohn (Directorate-General for Economic and Financial Affairs) and Matthew Johnson (U.K. Office of Fair Trading)

**The economic analysis of state aid: Some open questions**

[http://ec.europa.eu/economy\\_finance/publications/economic\\_papers/2007/economicpapers286\\_en.htm](http://ec.europa.eu/economy_finance/publications/economic_papers/2007/economicpapers286_en.htm)

### ***3. Regular publications***

**Euro area GDP indicator** (Indicator-based forecast of quarterly GDP growth in the euro area)

[http://europa.eu.int/comm/economy\\_finance/indicators/euroareagdp\\_en.htm](http://europa.eu.int/comm/economy_finance/indicators/euroareagdp_en.htm)

**Business and Consumer Surveys** (harmonised surveys for different sectors of the economies in the European Union (EU) and the applicant countries)

[http://europa.eu.int/comm/economy\\_finance/indicators/businessandconsumersurveys\\_en.htm](http://europa.eu.int/comm/economy_finance/indicators/businessandconsumersurveys_en.htm)

**Business Climate Indicator for the euro area** (monthly indicator designed to deliver a clear and early assessment of the cyclical situation)

[http://europa.eu.int/comm/economy\\_finance/indicators/businessclimate\\_en.htm](http://europa.eu.int/comm/economy_finance/indicators/businessclimate_en.htm)

**Key indicators for the euro area** (presents the most relevant economic statistics concerning the euro area)

[http://europa.eu.int/comm/economy\\_finance/indicators/key\\_euro\\_area/keyeuroarea\\_en.htm](http://europa.eu.int/comm/economy_finance/indicators/key_euro_area/keyeuroarea_en.htm)

**Monthly and quarterly notes on the euro-denominated bond markets** (looks at the volumes of debt issued, the maturity structures, and the conditions in the market)

[http://europa.eu.int/comm/economy\\_finance/publications/bondmarkets\\_en.htm](http://europa.eu.int/comm/economy_finance/publications/bondmarkets_en.htm)

**Price and Cost Competitiveness**

[http://europa.eu.int/comm/economy\\_finance/publications/priceandcostcompetitiveness\\_en.htm](http://europa.eu.int/comm/economy_finance/publications/priceandcostcompetitiveness_en.htm)

## V. Key indicators for the euro area

<b>1 Output</b>		2004	2005	2006	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Industrial confidence <sup>1.1</sup>	Balance	-4.7	-7.3	2.3	6.0	6.6	5.8	6.1	5.0	4.9
Industrial production <sup>1.2</sup>	mom % ch	2.1	1.3	4.0	0.6	-0.9	1.0	-0.1	--	--
		2004	2005	2006	06Q1	06Q2	06Q3	06Q4	07Q1	07Q2
Gross domestic product <sup>1.3</sup>	Qtr. % ch	2.0	1.5	2.8	0.9	1.0	0.6	0.9	0.7	0.3
<b>2 Private consumption</b>		2004	2005	2006	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Consumer confidence <sup>2.1</sup>	Balance	-13.9	-13.8	-9.0	-4.4	-4.0	-1.3	-1.9	-1.8	-3.1
Retail sales <sup>2.2</sup>	mom % ch	1.5	1.2	2.0	0.6	-0.1	-0.8	0.6	0.1	--
		2004	2005	2006	06Q1	06Q2	06Q3	06Q4	07Q1	07Q2
Private consumption <sup>2.3</sup>	Qtr. % ch	1.5	1.5	1.8	0.7	0.4	0.5	0.5	0.0	0.5
<b>3 Investment</b>		2004	2005	2006	06Q1	06Q2	06Q3	06Q4	07Q1	07Q2
Capacity utilization <sup>3.1</sup>	%	81.6	81.3	83.0	82.0	82.5	83.6	83.9	84.4	84.8
Gross fixed capital formation <sup>3.2</sup>	Qtr. % ch	1.9	2.8	5.3	0.6	2.7	0.7	1.7	2.0	-0.2
Change in stocks <sup>3.3</sup>	% of GDP	0.1	0.2	--	0.0	0.3	0.2	--	--	--
<b>4 Labour market</b>		2004	2005	2006	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Unemployment <sup>4.1</sup>	%	8.8	8.6	7.9	7.1	7.0	7.0	6.9	6.9	--
		2004	2005	2006	06Q1	06Q2	06Q3	06Q4	07Q1	07Q2
Employment <sup>4.2</sup>	Ann. % ch	0.9	0.8	1.4	1.1	1.5	1.5	1.5	1.4	--
Shortage of labour <sup>4.3</sup>	%	2.4	2.3	3.8	2.8	3.1	4.4	5.0	5.0	6.1
Wages <sup>4.4</sup>	Ann. % ch	2.3	2.6	2.6	2.9	2.7	2.6	2.3	2.2	--
<b>5 International transactions</b>		2004	2005	2006	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Export order books <sup>5.1</sup>	Balance	-13.2	-15.6	-1.1	5.0	5.0	6.0	5.0	4.0	4.0
World trade <sup>5.2</sup>	Index	146.2	157.0	172.3	181.1	177.8	182.6	--	--	--
Exports of goods <sup>5.3</sup>	Bn. EUR	1148.3	1241.0	1382.0	122.4	122.6	122.7	--	--	--
Imports of goods <sup>5.4</sup>	Bn. EUR	1075.1	1224.4	1394.0	117.3	119.4	119.6	--	--	--
Trade balance <sup>5.5</sup>	Bn. EUR	73.1	16.6	-12.1	5.1	3.1	3.0	--	--	--
		2004	2005	2006	06Q1	06Q2	06Q3	06Q4	07Q1	07Q2
Exports of goods and services <sup>5.6</sup>	Qtr. % ch	6.9	4.3	8.0	3.1	1.6	1.1	3.1	0.8	1.1
Imports of goods and services <sup>5.7</sup>	Qtr. % ch	6.7	5.1	7.7	2.2	1.3	1.9	1.6	0.9	0.6
		2004	2005	2006	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Current account balance <sup>5.8</sup>	Bn. EUR	60.8	-1.8	-9.7	6.0	-1.6	-7.8	5.9	--	--
Direct investment (net) <sup>5.9</sup>	Bn. EUR	-68.6	-210.0	-158.7	-5.9	-24.5	-13.4	-44.8	--	--
Portfolio investment (net) <sup>5.10</sup>	Bn. EUR	72.9	146.1	263.5	65.6	15.6	5.0	70.2	--	--
<b>6 Prices</b>		2004	2005	2006	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
HICP <sup>6.1</sup>	Ann. % ch	2.2	2.2	2.2	1.9	1.9	1.9	1.9	1.8	1.8
Core HICP <sup>6.2</sup>	Ann. % ch	2.1	1.5	1.5	1.9	1.9	1.9	1.9	1.9	--
Producer prices <sup>6.3</sup>	Ann. % ch	1.9	3.5	4.4	2.6	2.3	2.4	2.3	1.8	--
Import prices <sup>6.4</sup>	Index	97.2	104.8	112.9	111.8	112.7	112.7	--	--	--
<b>7 Monetary and financial indicators</b>		2004	2005	2006	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07
Interest rate (3 months) <sup>7.1</sup>	% p.a.	2.0	2.1	2.9	3.8	3.8	3.9	4.0	4.0	4.0
Bond yield (10 years) <sup>7.2</sup>	% p.a.	4.1	3.4	3.8	4.0	4.2	4.3	4.6	4.5	4.3
ECB repo rate <sup>7.3</sup>	% p.a.	2.0	2.0	2.8	3.6	3.8	3.8	3.9	4.0	4.0
Stock markets <sup>7.4</sup>	Index	2804.6	3207.1	3793.3	4070.5	4337.0	4445.4	4470.2	4449.0	4220.6
M3 <sup>7.5</sup>	Ann. % ch	5.8	7.4	8.5	11.0	10.3	10.6	10.9	11.7	--
Credit to private sector (loans) <sup>7.6</sup>	Ann. % ch	6.0	8.1	11.0	10.6	10.4	10.4	10.8	11.0	--
Exchange rate USD/EUR <sup>7.7</sup>	Value	1.2	1.2	1.3	1.3	1.4	1.4	1.3	1.4	1.4
Nominal effective exchange rate <sup>7.8</sup>	Index	1.2	1.2	1.3	115.0	116.0	116.1	115.5	116.2	115.7



Number	Indicator	Note	Source
<b>1</b>	<b>Output</b>		
1.1	Industrial confidence indicator	Industry survey, average of balances to replies on production expectations, order books, and stocks (the latter with inverted sign)	ECFIN
1.2	Industrial production	Volume, excluding construction, wda	Eurostat
1.3	Gross domestic product	Volume (1995), seasonally adjusted	Eurostat
<b>2</b>	<b>Private consumption</b>		
2.1	Consumer confidence indicator	Consumer survey, average of balances to replies on four questions (financial and economic situation, unemployment, savings over next 12 months)	ECFIN
2.2	Retail sales	Volume, excluding motor vehicles, wda	Eurostat
2.3	Private consumption	Volume (1995 prices), seasonally adjusted	Eurostat
<b>3</b>	<b>Investment</b>		
3.1	Capacity utilisation	In percent of full capacity, manufacturing, seasonally adjusted, survey data (collected in each January, April, July and October).	ECFIN
3.2	Gross fixed capital formation	Volume (1995 prices), seasonally adjusted	Eurostat
3.3	Change in stocks	In percent of GDP, volume (1995 prices), seasonally adjusted	Eurostat
<b>4</b>	<b>Labour market</b>		
4.1	Unemployment	In percent of total workforce, ILO definition, seasonally adjusted	Eurostat
4.2	Employment	Total employment, domestic concept, seasonally and working day adjusted	Eurostat
4.3	Shortage of labour	Percent of firms in the manufacturing sector reporting a shortage of labour (unfilled job openings) as a constraint to production, seasonally adjusted	ECFIN
4.4	Wages	Wages and salaries. Labour cost index, industry and services (excluding public administration), nominal, working day adjusted	ECFIN
<b>5</b>	<b>International transactions</b>		
5.1	Export order books	Industry survey; balance of positive and negative replies, seasonally adjusted	ECFIN
5.2	World trade	Volume, 1998=100, seasonally adjusted	CPB
5.3	Exports of goods	Bn. EUR, excluding intra euro-area trade, fob	Eurostat
5.4	Imports of goods	Bn. EUR, excluding intra euro-area trade, cif	Eurostat
5.5	Trade balance	Bn. EUR, excluding intra euro-area trade, fob-cif	Eurostat
5.6	Exports of goods and services	Volume (1995 prices), including intra euro-area trade, seasonally adjusted	Eurostat
5.7	Imports of goods and services	Volume (1995 prices), including intra euro-area trade, seasonally adjusted	Eurostat
5.8	Current account balance	Bn. EUR, excluding intra euro-area transactions; before 1997 partly estimated	ECB
5.9	Direct investment (net)	Bn. EUR, excluding intra euro-area transactions	ECB
5.10	Portfolio investment (net)	Bn. EUR, excluding intra euro-area transactions	ECB
<b>6</b>	<b>Prices</b>		
6.1	HICP	Harmonised index of consumer prices	Eurostat
6.2	Core HICP	Harmonised index of consumer prices, excluding energy and unprocessed food	Eurostat
6.3	Producer prices	Without construction	Eurostat
6.4	Import prices	Import unit value index for goods, 2000=100	Eurostat
<b>7</b>	<b>Monetary and financial indicators</b>		
7.1	Interest rate	Percent p.a., 3-month interbank money market rate, period averages	Ecwin
7.2	Bond yield	Percent p.a., 10-year government bond yields, lowest level prevailing in the euro area, period averages	Ecwin
7.3	ECB repo rate	Percent p.a., minimum bid rate of the ECB, end of period	Ecwin
7.4	Stock markets	DJ Euro STOXX50 index, period averages	Ecwin
7.5	M3	Seasonally adjusted moving average (3 last months)	ECB
7.6	Credit to private sector (loans)	MFI loans to euro-area residents excluding MFIs and general government, monthly values: month end values, annual values: annual averages	ECB

7.7	Exchange rate USD/EUR	Period averages	ECB
7.8	Nominal effective exchange rate	Against 13 other industrialised countries, double export weighted, 1995 = 100, increase (decrease): appreciation (depreciation)	ECFIN

**Contributors to this issue are:**

Recent economic developments and short-term prospects

*C. Brzeski and, L. González*

Recent financial turbulence and the effect on the real economy

*C. Walkner*

Focus – Cross-border risk sharing: has it increased in the euro area?

*G. Tournemire and R. Ipate*

Focus – The resilience of the euro-area economy

*L. González, D. Grenouilleau, and W. Roeger*

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