



II. Economic and financial situation in the euro area

The financial crisis has deepened further during the past three months. Extraordinary policy measures in the form of massive liquidity provisions by the ECB and agreement on an EU rescue package for banks have prevented a meltdown in the financial sector and have brought some improvements in the functioning of money markets since the second half of October. Nevertheless spreads on money and capital markets remain elevated and volatile and banks have considerably tightened their lending conditions both for corporations and households. The financial crisis has gradually taken its toll on the real economy and in the third quarter euro-area GDP registered its second consecutive drop (0.2%). The main source of contraction in activity was a fall in euro-area net exports. Gross fixed capital formation also contracted in the third quarter, at an annualised rate of 2-3%, under the combined effects of a sharp correction in housing markets and some weakness in business investment. Household consumption remained sluggish and its short-term prospects are hampered by continued deterioration on the labour market although the recent ebbing of inflation, which dropped to 2.1% in November, should provide some support. Business and consumer confidence, which had already been on a downward trajectory since the summer of 2007, have experienced an unprecedented deterioration since July 2008, which suggests a further weakening of activity in the months ahead.

The global financial crisis has entailed a significant increase in financing costs for the euro-area private sector. To better assess the magnitude of these rises, the report presents two composite financing cost indicators (CFCIs) for non-financial corporations and households which were recently constructed by the Commission. According to the indicators, the financing costs of non-financial corporations have increased by a substantial 160 bps since the summer 2007. The rise has been smaller for households at about 50 bps.

Banks are key players in the euro-area financial system. The impact of the financial crisis via the banking sector on the euro-area real economy could therefore be substantial. The effect of the financial crisis on bank lending depends inter alia on the exposure of euro-area banks to toxic assets, recapitalisation rates, and changes in risk appetite. Econometric estimates suggest that changes in loan supply can have a significant impact on short-term economic growth in the euro area. A downsizing of banks' balance sheets could exert a significant drag on economic growth, with estimated effects ranging between 0.5 and 6.5% of GDP depending on the assumed size of the balance sheet adjustment. Bank recapitalisation is therefore of crucial importance to avoid serious consequences for the real economy.

Productive investment is facing a sharp downswing under the combined effects of the ongoing economic downturn and, in a more medium-term perspective, a general re-pricing of risk. In the short run, the cyclical correction in investment is likely to be much sharper than in the previous downturn of the early 2000s as the corporate sector faces a marked risk of a credit retrenchment due to a weakened banking sector. In the medium term, the financial turmoil is likely to lead to a general re-pricing of risk that will weigh on equity values and push the cost of capital durably up. This will further impact investment demand both through the capital cost and the balance sheet channels.

1. Recent economic developments and short-term prospects³

The financial crisis has deepened further over the past three months. Extraordinary policy actions in the form of massive liquidity provisions by the ECB and agreement on an EU rescue package for banks (see Box 2 for a review of the various national rescue packages for the financial sector) have prevented a meltdown in the financial sector and have brought a progressive improvement in the functioning of money markets since the second half of October. Nevertheless, spreads on money and capital markets remain elevated and

volatile. The broad-based deterioration in financial market conditions has also impaired the transmission mechanism of monetary policy to output and inflation. Together with a marked deterioration in the global economy, this paves the way for a sharp cyclical downturn in the euro area.

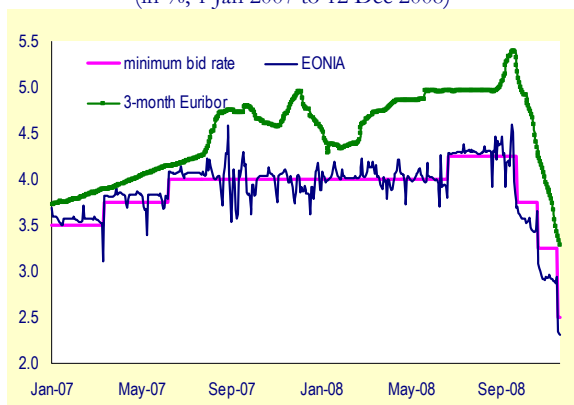
Money markets still characterised by high uncertainty

The intensification of the financial turmoil has had a crucial influence on the pass-through from policy rates to other interest rates, such as short- and long-term bank rates and capital market rates. In normal periods, there is no significant

³ The cut-off date for the statistics included in this issue was 12 December 2008.

difference between overnight rate and term rates, such as the 3-month rate. Hence, by controlling the overnight rate with short-term (i.e. weekly) refinancing operations, central banks usually control longer-term money market rates as well. However, this mechanism has been hampered by the financial market turmoil. Uncertainty about banks' own future liquidity needs and uncertainty about counterparty risk (since the creditworthiness of banks is unclear) has led to a very low willingness to lend and high risk premia in unsecured money market rates. Since the start of the financial turmoil in July 2007, the increased risk premium has caused a high and varying spread between money market term interest rates and the overnight rate (the spread was up to 150 bps in mid-October). More recently, tensions on money markets have eased somewhat following the implementation of the national rescue packages and the intensification of central banks' support for liquidity. The 3-month Euribor declined to 3.28% on 12 December but is still elevated given the 175 bps cut to 2.5% in the ECB main policy rate since October and future monetary policy loosening that is already priced in by the financial markets (Graph 1).

Graph 1: Money market rates, euro area (in %, 1 Jan 2007 to 12 Dec 2008)



Source: EcoWin.

The persistently high degree of uncertainty on money markets has real economic consequences because term money market rates are 'closer' to aggregate demand than the overnight rate. They determine banks' funding costs and are crucial for banks' short-term lending activity. Changes in short-term money market rates spill over into changes of non-banks' short-term borrowing costs because the lending conditions of a large share of short-term lending contracts with the

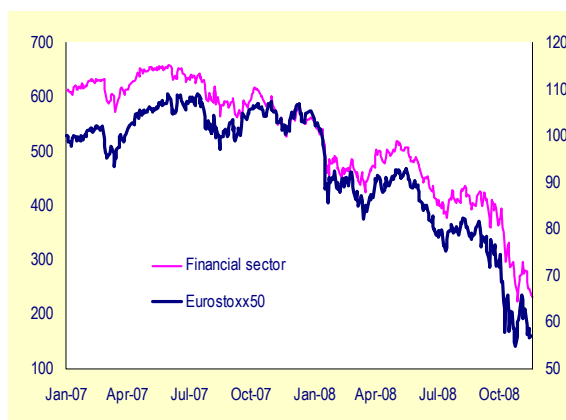
non-bank sector are linked to the 3-month money market rate. Furthermore, the costs of other sources of bank funding have also increased. Banks now pay higher spreads on their securities and they have raised rates on deposits to attract customers. In addition, as a consequence of the past months' sharp declines euro-area banks' stock prices, the costs of raising equity capital have risen considerably since mid-2007.

Tighter financing conditions for households and corporations

Disruptions in the money markets have led banks to tighten their lending conditions for both corporations and households. This has taken the form of increases in lending rates but also tightened non-price conditions (e.g. size of loan, collateral requirements, etc.). In normal times, corporate borrowers can react to the tightening in lending standards by switching to market-based instruments of funding. The availability of alternative sources of funding has however also been disrupted.

Equity prices have weakened sharply on the back of deteriorating earnings and recession fears. In Europe, the Eurostoxx50 has declined by around 45% so far this year. While these losses can partly be explained by the collapsing prices of some troubled financial stocks, the fall in equity prices has been broad-based across sectors (Graph 2).

Graph 2: Equity prices, euro area (Jan 2007 = 100 – 2 Jan 2007 to 12 Dec 2008) (1)



(1) Equity prices are measured by the Eurostoxx50 index. Source: EcoWin.



Box 2: Rescue packages of euro-area Member States

In response to the financial crisis, EU Member States agreed in October on a coordinated approach to support systemic financial institutions and to restore confidence in the markets. Member States are committed to coordinate closely their national schemes/rescue packages and to take into consideration potential cross-border effects of national decisions. Coordination is crucial as it is unlikely that the impact of the overall EU package can be optimised if the measures contained in national plans are not adequately aligned on a cross-border basis. Inconsistencies – particularly in respect of lending guarantees – could distort the functioning of credit markets and interfere with liquidity management by central banks. Moreover, to avoid opportunities for 'rescue arbitrage' and so fragment the Internal Market for financial services and to guarantee the level playing field between beneficiaries and non-beneficiaries, the Commission played from the outset a decisive role in clarifying the application of state aid rules to measures taken to support financial institutions during the crisis.⁽¹⁾ In particular, beginning of December, the Commission issued a set of recommendations aimed at establishing an appropriate framework for the recapitalization operations.⁽²⁾

The national plans comprise various elements, including: state-backed guarantees for bank liabilities, increased access to liquidity from central banks (in some case covered by state guarantee) and/or capital injections into financial institutions. Almost all Member States have announced an increase in the level of minimum deposit insurance (Deposit Guarantee Scheme). Since the beginning of October, fourteen plans (eleven for the euro area) - comprehensive or a sub-selection of components - have been endorsed by the Commission. Some Member States have not yet notified the full scale of their national interventions.

	Recapitalisation	Guarantee on bank liabilities (short and medium term, including blanket guarantee)	Liquidity support (via central bank, possibly with state guarantee)	Deposit Guarantee Scheme
Belgium	Fortis: €4.7bn ** Dexia: €3bn ** Ethias: €1.5bn * KBC: €3.5bn **	Guarantee Fortis: €150bn (contingent) ** Guarantee Dexia: €150bn (contingent) ** Possibility to extend to other banks	Liquidity support by the central bank for Dexia ** and Fortis **	€100.000
Germany	Stabilization fund: €80bn ** BayernLB (€10bn)** and Commerzbank (€8.2bn) applied for recapitalization Previously: West LB * IKB ** Sachsen LB **	Stabilization Fund €400bn (contingent, €20bn budgeted for possible loss on guarantee) ** BayernLB (€4.8bn)**, Hypo and Commerzbank applied for guarantee Previously €50bn guarantee for Hypo **		100%
Greece	Recapitalization: €5bn ** Bond loan scheme: €8bn **	Guarantee on medium to long-term bank borrowing: €15bn (contingent) **		€100.000
Spain	Asset purchase: Fund for acquisition of Financial assets €30bn expandable to €50bn **	Guarantee, including interbank €100bn *		€100.000
France	Dexia: €1bn ** Fund for recapitalization: €40bn ** 6 main banks applied for a total amount of €10.5bn	Refinancing: SRAEC: Société de refinancement des activités des établissements de crédits: €265bn **		€70.000
Ireland	Possible (not confirmed, €16bn ?)	"Blanket" guarantee: no amount specified (estimated €400bn contingent) **		€100.000

Italy	Subscription for capital raising by banks (€30bn, to be confirmed)	Guarantee scheme (various modalities including swap operation), no amount specified **	Guarantee for refinancing provided by the central bank: €40bn **	
Luxembourg	Fortis: €2.5bn ** Dexia: €376m **			
Malta				€100.000
The Netherlands	Fortis: €16.8bn * Fund for recapitalization: €20bn of which ING: €10bn ** Aegon: €3bn ** SNS Reaal: ? *	Guarantee on bank liabilities: €200bn **		€100.000
Austria	Recapitalization Fund: €15bn ** Erste Bank applied for €2.7bn	Guarantee for interbank, possibly via swap: € 85bn **	Establishment of clearing house for liquidity (€180m in equity + €4bn contingent guarantee) **	100%
Portugal	Recapitalization: €4bn * of which BPN (nationalization) *	Guarantee: Short and medium term debt: €20bn (contingent) **		€100.000
Slovenia		Guarantee scheme (€12bn) **		100%
Finland	Capital injection scheme *	Guarantee scheme: €50bn (contingent) ** Kaupthing Bank *		€ 50.000

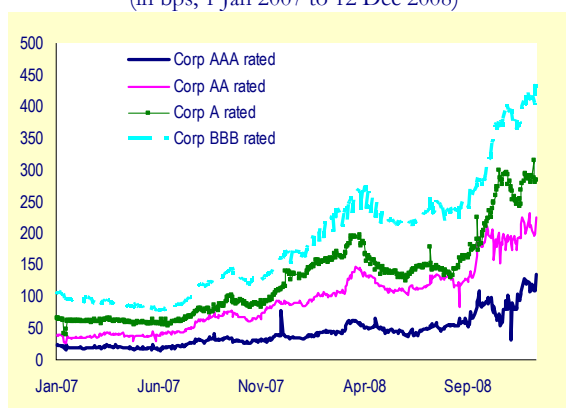
Note: ** indicate that the decision has been adopted by the Commission, * indicates the public intervention has been notified and/or is under assessment.

- (1) [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52008XC1025\(01\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52008XC1025(01):EN:NOT)
- (2) http://ec.europa.eu/competition/state_aid/legislation/recapitalisation_communication.pdf

In addition to the increase in the cost of equity capital, corporations have faced a sharp rise in the cost of bond financing. An important reason for the difficulties in market-based funding stems from the impact of financial market tensions on households' and corporations' assets. Due to asymmetric information on credit markets, agents' ability to borrow depends on the value of their collateral. The financial market turmoil has altered the valuation of those assets that borrowers pledge as collateral. Sharp corrections in housing markets and stock markets have put households and corporations' (both financial and non-financial) balance sheets under additional financial strains and led to a deterioration in borrowing conditions. Moreover, weakened balance sheets have contributed to higher corporate default probabilities. Credit markets have reacted with significant increases in corporate bond spreads. The spread on 10-year BBB-corporate bonds is currently above 400 bps,

whereas the spread on A-corporate bonds is above 300 bps, thus far above the levels seen before the outbreak of the financial turmoil in July 2007 (Graph 3).

Graph 3: Corporate bond spreads, euro area (in bps, 1 Jan 2007 to 12 Dec 2008)



Source: EcoWin.



The higher risk aversion and the corresponding 'flight to quality', together with the large actual and contingent liabilities assumed by the public sector in the bank rescue packages, have also resulted in a widening of spreads for government bonds within the euro area. These spreads, which were negligible in the pre-crisis period, are now in the range of 50 bps (France) to more than 220 bps (Greece), reflecting higher perceptions of credit risk and to some extent increases in liquidity premia against the backdrop of expectations of higher future borrowing needs. It should, however, also be noted that the financing costs have not increased to the same extent given that the underlying reference rate, the German Bund, has decreased by more than 135 bps since the beginning of the year. In particular, the negative growth outlook and expectations of interest rate cuts have weighed on yields.

A puzzling development has been that the financial market turbulences did not have a prominent impact on credit data for a long time. While distorted interbank and money markets may have complicated banks' cash management, banks were able to provide additional lending to their customers, although at a decreasing rate of growth. More recently, however, the impact of the financial market turmoil has started to show clearly on monetary developments. Money and credit growth in the euro area has been moderating over recent quarters, though it has not collapsed. The annual growth rate of the broad M3 money aggregate is currently at 8.6%, having steadily decreased from 12.3% in October 2007. Loans to non-financial corporations in particular are still in demand, however, and are continuing to grow at double-digit though moderating annual rates across all maturities. One factor that may explain the resilience of bank financing is that corporations made use of pre-committed credit lines and thus banks have had no option but to keep on lending. Overall, evidence from the ECB bank lending survey shows that banks have already tightened lending conditions substantially and plan to continue to do so in the coming months. It is likely that loan growth rates will decline significantly in the coming months on account of weaker economic activity and tighter credit conditions (see Section 3, 'Bank lending and transmission to the real economy', for a further discussion).

While it is still too early to assess from the data whether the deteriorating economic and financial circumstances will lead to a credit crunch (i.e. constrained credit supply to objectively profitable investment projects) or 'only' to credit rationing (i.e. constrained credit supply because formerly profitable investment projects are no longer considered profitable by the lender), the risk of a credit crunch is clearly higher now. In a context of heightened risk aversion and balance-sheet repair, it may be rational for each individual bank to be more cautious than necessary and cut lending, but such behaviour would turn into a deeper recession and a self-fulfilling prophecy of high default rates. As discussed further in Section 3, shifts in bank-loan supply can have a substantial impact on economic growth in the euro area. The emergence of a full-blown credit crunch will therefore largely depend on the extent to which euro-area banks manage to offset the balance sheet losses incurred on US sub-prime markets with fresh capital injections.

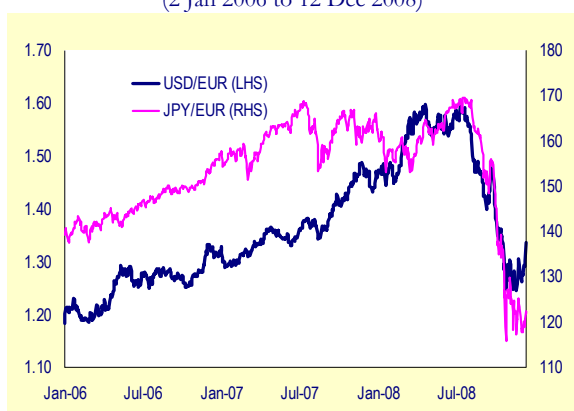
Exchange rates with high volatility

The financial crisis has also led to significant exchange-rate moves and high volatility. In addition to traditional determinants like growth and interest rate differentials, movements in exchange rate markets have recently been driven by large portfolio shifts as a result of the financial crisis and changes in the price of risk. In the wake of the crisis demand for risky assets has diminished, so that large and liquid currencies have acted as safe havens, while smaller currency areas have seen waning demand and capital flight. Although the current crisis emanated from the US mortgage market, the US dollar seems to be retaining its safe-haven status.

Since late summer 2008 the euro has incurred significant losses against the US dollar. Growth projections for the euro area have deteriorated sharply, also relative to growth projections for the US, and markets' expectations of euro-area policy interest rates have declined. This has led to a significant depreciation of the euro against the US dollar. This trend was given further momentum by the decline in oil prices which reduced the US's need for capital to finance its still-high current account deficit. Since reaching a record high of slightly above 1.60 against the US dollar in mid-July, the euro has fallen back to

around 1.30 before regaining some ground to around 1.40 in mid-December. The euro-yen rate also fell to 116 in October from a peak of 170 at the end of July as interest rate expectations shifted in favour of the yen and investors unwound carry trades that were funded using low-interest rate currencies. Recently, the yen has stopped its appreciation trend following speculation that the Japanese government would prevent an excessive appreciation of the currency.

Graph 4: Euro, dollar and yen exchange rates
(2 Jan 2006 to 12 Dec 2008)



Source: EcoWin.

In real effective terms, the euro has depreciated by close to 4% since the beginning of the year. The financial crisis implies a high risk of further large exchange rate moves.

The euro-area economy has entered recession territory

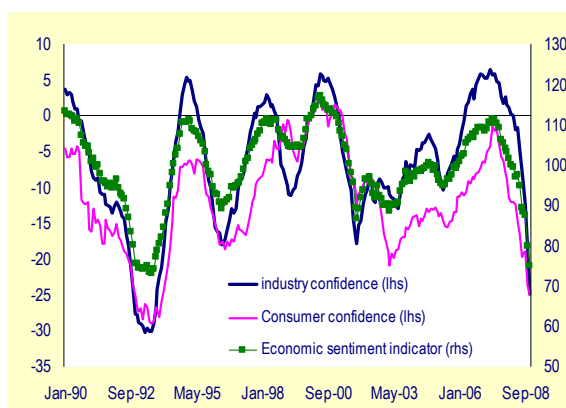
The financial crisis is gradually taking its toll on the real economy. In the third quarter, euro-area GDP was down by 0.2% compared to the second quarter. This was the second consecutive quarter of negative growth. Euro-area activity was dragged down by the contraction in both investment and net exports. The drop in the third quarter was the result of declines in GDP of 0.5% in Germany and Italy and of 0.2% in Spain. Countries such as Austria, Belgium and France still experienced marginally positive growth (0.1%).

Available hard and soft data point to a further weakening of activity in the last quarter of 2008. Industrial production has been on a downward

trajectory since the spring but the pace of contraction accelerated in September and October, bringing the y-o-y decline to 5.4%. Business and consumer confidence have been in a weakening mode since summer 2007 but since July 2008 the pace of deterioration has picked up sharply. In October, the Commission's Economic Sentiment Indicator registered its fastest contraction since the launch of the indicator in 1985. During the past 18 months, sentiment has deteriorated more abruptly in the euro area than during any similar period over the past two decades. In November (last available figure), confidence remained somewhat above the trough reached during the 1992-93 recession but seemed to approach it rapidly.

The deterioration of confidence in recent months has been broad-based across the main subsectors, although households and construction have been affected somewhat less severely than manufacturing and services. Manufacturing confidence is still somewhat above its 1992-93 trough but, in November, the indicator recorded the sharpest fall in its history. Manufacturers have reported a marked deterioration in both the backward- and forward-looking components of sentiment. But, ominously for the short-term outlook, production expectations for the next few months have now reached their lowest level ever.

Graph 5: Consumer and business confidence indicators, euro area
(balances in % – Jan 1990 to Nov 2008)



Source: Commission services.

Households have also become very pessimistic, particularly concerning the general economic situation and prospects for the labour market. More positively, consumers now expect prices to



Table 1: Euro-area growth components

	2007 Q4	2008 Q1	2008 Q2	2008 Q3	Carryover to 2008
Percentage change on previous period, volumes					
GDP	0.3	0.7	-0.2	-0.2	1.1
Private consumption	0.2	0.0	-0.2	0.0	0.3
Government	0.3	0.3	0.8	0.8	1.9
Gross fixed capital	1.0	1.4	-0.9	-0.6	1.7
Exports of goods and	0.4	1.7	-0.1	0.4	3.4
Imports of goods and	-0.3	1.6	-0.4	1.7	3.1
Percentage point contribution to change in GDP					
Private consumption	0.1	0.0	-0.1	0.0	0.2
Government	0.1	0.1	0.2	0.2	0.4
Gross fixed capital	0.2	0.3	-0.2	-0.1	0.4
Changes in inventories	-0.3	0.2	-0.1	0.3	0.3
Net exports	0.3	0.1	0.2	-0.5	0.1

Source: Commission services.

ease in the coming months. Improved price expectations helped contain the deterioration of household sentiment in November after the sharp drop registered in October.

Strong headwinds for fixed capital formation

After a first contraction in the second quarter – the first one since 2003 – gross fixed capital formation fell again in the third quarter (0.6% q-o-q) under the combined effect of a sharp correction in housing markets and signs of weakness in business investment.

Investment in construction contracted by 1.6% q-o-q in the second quarter, spearheaded by a sharp (2.9%) drop in housing investment. The breakdown of investment is not yet available for the third quarter but data on construction output shows that the correction in housing markets is pursuing its course. Total construction activity (as measured by value added in the national accounts) dropped by 1.4% in the third quarter, with a particularly strong fall in Spain (2.8% q-o-q). Data on building permits in the euro area have also continued their sharp downward trend, pointing to a further decline in housing construction in the months to come. In July, building permits reached their lowest level since the series began in 1994.

While the downturn in the housing market began in the first half of 2007 – and therefore preceded the onset of the financial turmoil – recent developments in business investment have tended to follow the deepening of the financial crisis. As discussed further in Section 4 ('Prospects for non-residential investment in the euro area'), corporate investment faces two types of headwinds: a strong cyclical correction and a likely medium-term reassessment of risk premia. In the short run, the cyclical correction in investment is likely to be much sharper than in the previous downturn of the early 2000s both because leading indicators foreshadow a sharper slump in economic activity and because the corporate sector faces a marked risk of a credit retrenchment due to a weakened banking sector. Given the dominant role of banks in corporate finance in the euro area, business investment would be highly vulnerable to a breakdown of the bank lending channel. In the more medium term, the financial turmoil is likely to lead to a general re-pricing of risk that will weigh on equity values and push the financing cost of capital up for the foreseeable future. This will further impact investment demand through the traditional capital cost channel – although estimates show that this channel plays out only slowly. It will also weigh on corporate balance sheets (lower equity prices raise the share of debt in total liabilities) and thereby on firms' borrowing capacity and investment. According to econometric evidence this balance sheet channel

Table 2: Selected euro-area and national leading indicators, 2007-2008

	SENT. IND ¹⁾	BCI ²⁾	OECD ³⁾	PMI Man. ⁴⁾	PMI Ser	IFO ⁶⁾	NBB ⁷⁾	ZEW ⁸⁾
Long-term average	100.3		85.3	52.8	55	96.8	-9.5	26.5
Trough in latest downturn								
November 2007	104.1	1.03	110.4	52.8	54.1	98.3	-0.5	-32.5
December 2007	103.4	0.88	110.4	52.5	53.1	98.2	-1.8	-37.2
January 2008	101.7	0.76	110.3	52.8	50.6	99.0	-0.8	-41.6
February 2008	100.2	0.71	110.2	52.3	52.3	98.0	0.5	-39.5
March 2008	99.6	0.80	109.9	52	51.6	98.2	1.1	-32
April 2008	97.1	0.43	109.6	50.7	52	96.5	-7.4	-40.7
May 2008	97.6	0.59	109.2	50.6	50.6	97	0	-41.4
June 2008	94.8	0.15	108.7	49.2	49.1	94.4	-6.4	-52.4
July 2008	89.5	-0.19	108.0	47.4	48.3	89.8	-8.1	-63.9
August 2008	88.5	-0.26	107.2	47.6	48.5	86.9	-5.6	-55.5
September 2008	87.5	-0.80	106.4	45.0	48.4	86.4	-15.8	-41.1
October 2008	80.0	-1.34	105.5	41.1	45.8	81.4	-14.9	-63.0
November 2008	74.9	-2.14		35.6	42.5	77.6	-27.1	-53.5

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

may feed through more rapidly than the capital cost channel.

At this stage, it remains difficult to say, however, whether the observed contraction of business investment so far is an early sign of a possible credit crunch or related to more traditional cyclical factors such as falling capacity utilisation (now below its long-term average), deteriorating profitability or increased uncertainty about the economic outlook.

Households facing high uncertainty

Consumption growth in the euro area remained flat during the third quarter under the combined effects of high commodity prices, sluggish disposable income growth and a slow and progressive rise in unemployment. The unemployment rate increased from 7.2% in 2008Q1 to 7.4% in Q2 and 7.5% in Q3.

In line with the sluggish consumption growth, the annual growth rate of loans to households continued on its downward trend to stand at 3.95% in the third quarter of 2008, down from 4.8% in the second quarter. This moderation was driven by both consumer credit (the annual growth rate of which declined to 4.7% in Q3 from 5.6% in Q2) and lending for house purchase (down to 4.3% in Q3 from 5.4% in

Q2). Sectors which had long benefited from household credit financing, such as the automotive sector, already started to feel this impact. The demand for new passenger cars in the euro area decreased strongly during the third quarter of 2008 (-5.5% q-o-q).

Looking ahead, household consumption is expected to remain weak in the next few quarters for several reasons. First, available data for the fourth quarter clearly points in that direction. The annual growth rate of loans to household fell further, to 3.5% in October from 3.9% in September. Data for October on new passenger car registrations fell even more sharply in October (by 17% y-o-y compared to 10% in September). The strongest falls were recorded in Ireland (-54.6% y-o-y) and Spain (-40% y-o-y). Also, the labour market continued to deteriorate. Unemployment increased further, to 7.7% in October. The sharpest increase was recorded in Spain where the unemployment rate reached 12.8% in October, up from 8.5% a year before. The labour market has thus now become a source of uncertainty for households and its deterioration will inevitably weigh further on household spending.

Second, the sharp declines in stock prices in recent months should affect household consumption through the wealth channel. Box 3 presents an estimation of the impact of a fall in



Box 3: Assessing the impact of changes in stock prices on household consumption

The current financial crisis has led to a substantial fall of stock prices in the euro area, of about 45% since the end of 2007. A fall in stock prices may affect household consumption via wealth effects. As discussed in the previous issue of the QREA (*), households in the euro area seem to take an increase in their financial wealth as a substitute for personal saving. Therefore, a marked fall in financial asset prices has the potential to trigger a compensatory increase in their saving rate, leading to a slowdown in household consumption. The aim of this box is to quantify the impact of the recent drop in equity prices on household consumption.

In order to determine this impact, in a first step, a simple OLS equation linking the change in stock market indices and household net financial wealth is estimated. The dependent variable is the change in household real net financial wealth which is here defined as financial assets minus financial liabilities other than mortgages. The exogenous variable is the real change of Eurostoxx50 index. The analysis is carried out for the euro area as a whole and for the period 1980Q1-2008Q1.

OLS equation: elasticities of changes in household real financial wealth (1)		Co-integration equation: Long-run elasticities of household savings (2)	
Variable	Estimated elasticity	Variable	Elasticity estimated (3)
Change in real stock prices	0.202***	Net financial wealth/Yd	0.63
Long-term real interest rates	0.0008	Constant	1.38
Constant	0.006***	Error-correction term	- 0.23
(1) All variables are in logs; ***, ** and * denote respectively statistical significance at 1, 5 and 10%. <i>Source:</i> Commission services.		(2) All variables are in logs and are non-stationary. Johansen approach used to test for cointegration and to estimate the equation. (3) All estimated coefficients are significant at 1%. <i>Source:</i> Commission services.	

The estimated OLS equation is presented in the left-hand table. As expected, stock prices are found to be an important determinant of financial wealth. In contrast, changes in long- and short-term interest rates do not seem to impact household wealth significantly. A 1 pp decrease in stock prices leads to a 0.2 pp decrease in household net financial wealth. Therefore, the 45% decrease in stock prices experienced since the end of 2007 implies a decrease of 9% in net financial wealth.

To estimate the impact of this change in financial wealth on household consumption, the long-term equation estimated in the previous issue of the QREA is used. This equation establishes a long-term link between financial wealth and household savings rate (right-hand table). The estimated cointegration equation suggests that a 1% increase in net financial wealth (as a share of disposable income) would lead to a decrease of 0.6% in the household savings rate in the long run. Therefore, the 9% decrease in net financial wealth would translate into an increase of 5.7% in the saving rate. Given that the current level of the savings ratio is 14.7%, this would mean an increase of the households saving ratio of about 1 pp. The impact on the savings ratio through wealth effects thus appears to be very limited. Moreover, it would be spread over 5 quarters due to the relatively slow adjustment towards the long-run equation implied by the error-correction term of -0.23. The impact on the level of consumption can easily be deduced and shows that real household consumption would decrease by 1.4 % in the long run.

(*)Quarterly Report on the Euro Area (2008), Vol. 7 N°3, 'Household consumption: what are the risks attached to falling house prices and high debt?'

stock prices on consumption via wealth effects. The impact is found to be, however, relatively small. The 45% decrease in stock prices since the end of 2007 is estimated to lead to an increase of 1pp in the savings ratio and a 1.4% decrease in household spending in the next 5 quarters. In 2008Q2, the household savings rate had already increased to 13.9%, up from 13.7% in Q1.

Third, household consumption is likely to be negatively affected by the high level of household debt. As already discussed in the previous issue of the QREA⁴, the level of euro-area household debt may have somewhat overshoot its

⁴ QREA, Vol 7 N°3 (2008), 'Household consumption: what are the risks attached to falling house prices and high debt?'

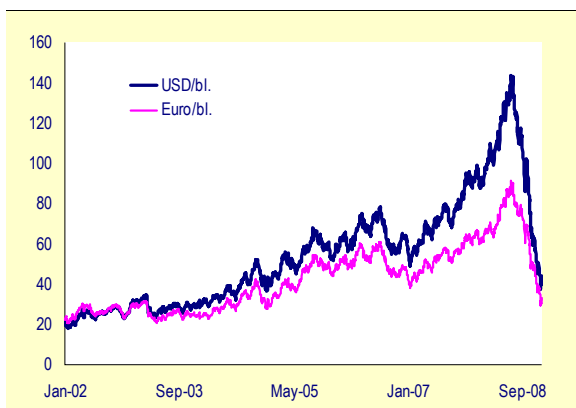
fundamental value during the past two years and its correction should be associated with a reduction in household spending.

Finally, as already discussed, consumer confidence is at its lowest level since 1993.

Falls in commodity prices provide some relief to the consumer

The only bright spot in this gloomy picture is the recent falls in commodity prices which should lend support to household disposable income and somewhat encourage household consumption. After reaching a peak of 4% in July, headline inflation has come down steadily to 3.6% in October and 2.1% in November.

Graph 6: Oil price developments
(1 Jan 2002 to 12 Dec 2008)



Source: EcoWin.

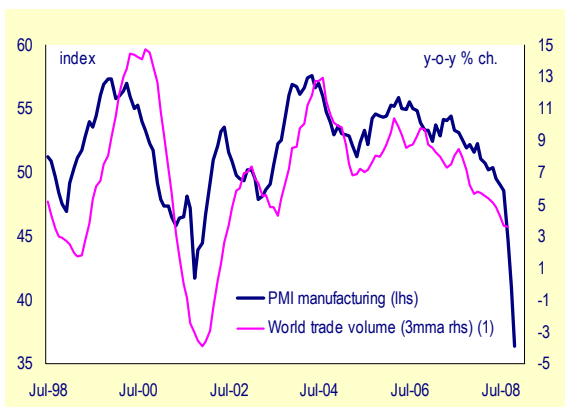
Movements in oil prices and base effects have been the main source of disinflation in recent months. The intensification of the financial crisis and the prospects of contagion of the real economy have led to a strong reduction in oil prices over the past five months. On December 12, a barrel of Brent crude oil was trading at round EUR 32 (USD 42.7, down from a peak of USD 143.3 in July). As a result, energy inflation fell sharply from 13.5% in September to 9.6% in October and the contribution of energy prices to overall HICP inflation fell considerably, from 1.3pp to 0.9pp. Unprocessed and processed food inflation is also showing signs of easing although on a more modest scale. Unprocessed food inflation decreased from 3.6% to 3.4% in October while processed food inflation came down from 6.2% to 5%. In contrast, services

inflation remained stable at 2.6% and that of non-energy industrial goods increased from 0.9% to 1% in October.

World growth set to fall back further

Recent data for major non-EU advanced economies are not encouraging. After having been boosted by a sizeable but temporary macroeconomic stimulus in the second quarter, GDP growth in the US contracted in the third quarter. The contraction – the first since 2001 – was, however, modest at -0.1% q-o-q. The decrease was due to a decline in domestic demand. Leading indicators suggest that prospects for the US remain very weak. For instance, the November reading of the US Manufacturing PMI was the lowest since 1982. The Japanese economy experienced its second consecutive quarter of negative growth in the third quarter (-0.1% q-o-q after -0.9% in Q2) and has thus entered into a technical recession.

Graph 7: World trade and global PMI
(July 1998 to Nov 2008)



(1) World trade data covers the period from July 1998 to Sept 2008. Source: CPB Netherlands Bureau for Economic Policy Analysis and Reuters.

Recent survey indicators of the world economy all seem to point to a global recession for the next few quarters. The November reading of the quarterly World Economic Survey continued to worsen, falling to its lowest level in more than twenty years. The decline was the result primarily of a deterioration of the assessments of the current economic situation but also of the expectations for the next six months. The survey also shows that the cooling off is no longer



restricted to the US, the euro area and Asia but is now also spreading to Australia, Central and Eastern Europe, Russia and Latin America. The Global Manufacturing PMI gives a very similar picture. In November, the index fell to a record low.

Following the ongoing retrenchment of global demand, world trade growth continues its downward trend. According to estimates by the CPB Netherlands Bureau of Economic Analysis, world trade growth decelerated further in the third quarter with y-o-y growth of world imports at about 4% (compared to 8% a year earlier). The weakening of world trade was also visible in euro-area trade figures. Euro-area net trade contracted in the third quarter (driven by a strong growth in imports) and was the main negative contributor to growth.

Short-term outlook and risks

The message from business and consumer surveys is clear: confidence is extremely low and the euro-area economy has entered recession territory. The European Commission's autumn 2008 forecast projected euro-area GDP to contract by 0.1% q-o-q in the fourth quarter of 2008 and by 0.1% in 2009 as a whole. However, due to the exceptional uncertainty and rapid deterioration of the economic situation, this now appears to be on the optimistic side and a more pronounced retrenchment in the last months of

2008 as well as in 2009 appears likely. Both domestic demand – primarily investment – and external demand will weaken further in the next few quarters.

While important measures have been taken to stabilise financial markets (Box 2), the situation in financial markets remains very fragile. Downside risks to the growth outlook are therefore significant. First, deteriorating conditions in the real economy could adversely affect, even more than currently anticipated, the already weak conditions in financial markets and vice versa, possibly fuelling a negative feedback loop. Second, the ongoing correction of some euro-area housing markets could be even stronger than anticipated. Third, abrupt shifts in risk preferences cannot be ruled out. Countries with sizeable external deficits and/or debts could face more serious difficulties in securing their financing. Finally, emerging-market economies could be more affected by the financial crisis and the marked slowdown in advanced economies than previously anticipated. Upside risks to the growth outlook revolve around commodity prices which could ease further, providing some support to household disposable income.

The mounting risks of a deep and protracted recession led the European Commission to adopt the European Economic Recovery Plan (EERP) presented in Part I.

2. *Measuring euro-area financing conditions*

The financial crisis has intensified

Financing costs in the euro area are rising as the financial crisis intensifies. The crisis in financial markets, which started in July 2007, has deepened further since the end of the summer 2008. The conditions in the global financial system have become extremely fragile, reflecting the dislocation of several key credit markets, notably the markets for interbank lending. This follows from the collapse in investor confidence, amid pervasive uncertainty about the strength of banks' balance sheets. The combination of this uncertainty and increased risk aversion, particularly since the collapse of Lehman Brothers, has led to a generalised flight to quality. Important policy measures have been undertaken by governments in both the US and the EU as well as by central banks to restore financial stability.

Higher financing cost for euro-area corporations and households has been a direct outcome of the financial crisis, reflecting a sharp fall in stock prices, higher bank lending rates and increasing corporate bond rates. Elevated cost of capital diminishes the profitability of investment by corporations and thus lowers overall investment in the economy. For households, a higher cost of capital mainly increases the cost of house purchases, but also impacts on consumption loans such as consumer credit.

This section presents two composite financing cost indicators (CFCIs): one for euro-area non-financial corporations and one for households. Recently constructed by the Commission, they provide a comprehensive measure of financing conditions in the euro area. The indicators are calculated by weighting the different external financing costs according to their importance for financing.

Higher financing costs for corporations and households

Global stock markets have decreased substantially since the end of 2007 on the back of increased credit worries, negative earnings

surprises, recession fears and at times sheer panic. In Europe, the Eurostoxx50 has declined by around 45% in 2008. A large part of the sharp fall followed the bankruptcy of Lehman Brothers on 15 September 2008. While the value of some troubled financial stocks has deteriorated particularly significantly, the decline in equity markets has been widespread across sectors and countries. Lower equity prices diminish the value of new stock issues and thus increase corporations' cost of finance.

The current crisis has been characterised by severe liquidity shortages as banks have hoarded cash and refused to lend to other banks, driving up interbank rates. More recently, interbank rates have come down as major central banks have cut interest rates and injected huge amounts of liquidity into money markets. Long-term market rates, such as 10-year government bond yields and 10-year swap rates, have declined since July 2008 after increasing in the first half of the year, as the outlook for growth in the euro area has come down sharply. And the inflow of money into government bonds, regarded as safe havens, has added to the recent downward movement in long-term market rates.

The overall increase in banks' borrowing cost during the financial crisis has gradually been passed on to bank lending rates for non-financial corporations and households.⁵ Estimates suggest a pass-through from higher short-term market rates (i.e. interbank rates) to banks' short-term lending rates of around 60% during the first quarter and around 85% after two quarters.⁶ The pass-through from long-term market rates to long-term bank lending rates tends to be slightly stronger.⁷ By late November 2008, short-term lending rates for both non-financial corporations and households had increased by about 70 bps since the outbreak of the crisis in July 2007, while

⁵ Bank deposits are another important source of funding for banks. However, deposit rates also depend on market rates, and an increase in e.g. interbank rates will eventually feed into banks' lending rates via this channel as well.

⁶ See Gropp, R., C.K. Sorensen and J. Lichtenberger (2007), 'The dynamics of bank spreads and financial structure', ECB Working Paper Series, No 714.

⁷ See Sorensen, K. C. and T. Werner (2006), 'Bank interest rate pass-through in the euro area: A cross country comparison', ECB Working Paper Series, No 580.



long-term lending rates had climbed between 33 and 48 bps.

The increase in interbank rates earlier this year most likely continued to feed into lending rates in the fourth quarter of 2008, although the recent decline in short-term market rates may start to reduce short-term bank lending rates by the end of the year. In addition, the lower long-term market rates should have a downward impact on long-term bank lending rates. Beyond the direct pass-through from market rates, higher lending rates probably also reflect a hike in banks' margins amid tighter lending standards.

Corporate bond yields have increased during the financial crisis. This follows a sharp rise in the corporate bond spreads versus government bond yields, as the price of risk has surged. Thus, the financing cost for non-financial corporations based on market debt increased accordingly. The yield on 10-year AA-rated bonds was about 90 bps higher in early December 2008 than in July 2007, while the 10-year yield on BBB rated bond increased around 210 bps during this period.

The structure of households' and corporations' external finance

The amount of outstanding liabilities (stocks) for non-financial corporations (not including non-quoted shares) was €9 354 bn in June 2008, while total liabilities for households amounted to €4 914 bn, corresponding to around 4 times and 2 times euro-area nominal GDP respectively.

For non-financial corporations, external financing is dominated by equity (44% of total liabilities in Q2 2008) and long-term bank loans (25%), whereas medium-term bank loans represent around 10% and short-term bank loans constitute 14%. Market-based debt contributes only a modest amount to overall financing (7%). Following the decline in stock prices since January 2008, the share of equities in non-financial corporations' total liabilities has come down from around 50% to 44%, while the share of bank lending has increased.

Households' external financing is dominated by long-term loans for house purchases, constituting around 70% of total household liabilities. Short- and medium-term loans for house purchases,

consumer credit with different maturities and loans for other purposes with varying maturities each represent less than 11% of total household liabilities.

Two composite indicators of euro-area financing costs (CFCIs)

The two CFCIs presented in this section capture relevant sources of external finance for non-financial corporations and households. The indicators are calculated as averages of the different external financing costs, weighted according to their importance for financing (i.e. share of total outstanding liabilities). For euro-area non-financial corporations the CFCI combines the marginal costs of taking up short-, medium- and long-term bank loans, market-based debt and quoted equity. For euro-area households, the CFCI combines the cost of bank lending for short-, medium- and long-term consumer credit, lending for house purchases and lending for other purposes. This means a total of nine different interest rates (see Box 4 for further details).

The CFCIs show whether external financing conditions are moderating or intensifying. An increase in the indicators reflects a tightening of financing costs and a decrease reflects an easing. Changes in the CFCIs are measured in basis points.

For non-financial corporations, the CFCI has tightened steadily since 2005, reflecting the increase in the short- and long-term loan components. Around year-end 2007, a fall in stock markets led to a further up-tick in financing costs. More recently, the CFCI rose substantially, mainly mirroring the sharp fall in equity prices. In October 2008 (most recent available estimate), the CFCI for non-financial corporations was 160 bps higher than in July 2007.

The CFCI for households has also tightened since the end of 2005 when short- and long-term interest rates began to increase. Around October last year the CFCI flattened, reflecting a broad-based stabilisation of most interest rates. While the CFCI started to increase again in spring 2008, it has remained broadly unchanged in recent months in accordance with similar developments in lending rates. Developments in long-term interest rates for house purchases have been very

Box 4: Composite financing cost indicators

Composite financing cost indicators (CFCIs) help provide estimates of how much overall euro-area financing costs have increased during the financial crisis. They give a synthetic picture of euro-area financing costs in the current situation where the reassessment of risk has affected some financial prices more than others. Thus, they provide more information than a traditional single indicator such as government bond yields. They should not, however, be seen as a measure of the financial stimulus provided to the entire economy. This is one of the main differences between them and traditional monetary condition indices, which focus specifically on monetary policy variables such as key interest rates and exchange rates.

This box presents two CFCIs: one for non-financial corporations and one for households. The CFCIs are weighted averages of the external financing costs. The weights are based on the current financing structure, represented by the outstanding liabilities of the different means of finance, implicitly assuming it represents the long-term financing structure. Thus, substitution effects between different sources of finance due to changes in their respective costs are only taken into account to the extent they change the composition of the total amount of outstanding liabilities (both new *and* existing liabilities). To smooth the monthly series, a three-month moving average was applied to the weights but not to the cost series. Given data limitations, the financing cost indicator does not address the impact of different tax regimes between financing vehicles or countries or the effect of possible non-price restrictions that non-financial corporations and households might face when choosing financing means. Cost components were chosen on the basis of their representative power, data availability and straightforward updating possibilities.

Non-financial corporations

The CFCI for euro-area non-financial corporations combines the marginal costs of taking up short-, medium- and long-term bank loans, market-based debt and quoted equity.

For the costs of non-financial corporations' bank loans, MFI interest rates on new loans with three different maturities are used: up to 1 year, between 1 and 5 years and more than 5 years. Non-financial corporations' costs of market-based debt are based on The Economist's composite corporate benchmark bond yield. In recent years, the 'Economist's Composite' has followed AA-rated benchmarks quite closely. The cost of quoted equity is derived from the Eurostoxx50 dividend yield.

For non-financial corporations, financing is dominated by equity (44% of total liabilities in Q2 2008) and long-term bank loans (25%), whereas medium-term bank loans represent around 10% and short-term bank loans constitute 14%. Market-based debt contributes only moderately to the overall financing costs (7%).

Households

For euro-area households, the CFCI combines the cost of bank lending, applying MFI lending rates, for short-term (up to 1 year), medium-term (over 1 and up to 5 years) and long-term (over 5 years) consumer credit, lending for house purchases and lending for other purposes. That means a total of nine different interest rates. Households' financing is dominated by long-term loans for house purchases, constituting around 70% of total household liabilities. The remaining eight types of loans weigh between 0.3% and 11%.

General comments

While the CFCIs described in this box are nominal, real indicators could alternatively be established by adjusting for expected inflation (see ECB 2005). This would probably give a more directly relevant cost measure for investment decisions. The drawback, however, is that measuring expected inflation adds further uncertainty to the calculations.

There is a mismatch between the definition of the MFI interest rates, which are defined according to the initial rate fixing period of the loan, and the amounts of loans outstanding, which are defined by original maturity. The weighting of the rates by the corresponding amounts outstanding leads to an implicit assumption of no financing at variable rates. This mismatch applies to both non-financial corporations and households. According to the ECB (2005), the impact of this potential bias is relatively limited and should not affect developments over time.

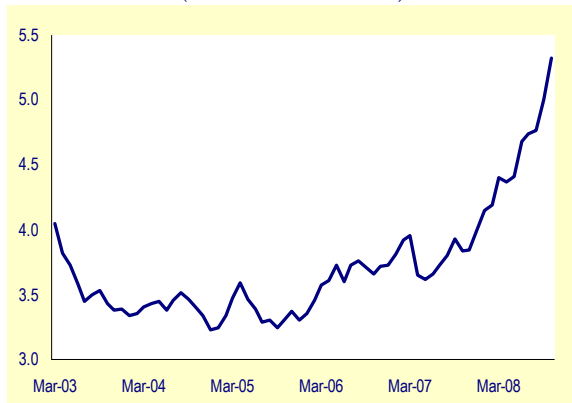
References:

Copeland, T. and J. F. Weston (1992), 'Financial theory and corporate policy', Addison-Wesley Publishing Company.
ECB Monthly Bulletin, March 2005.



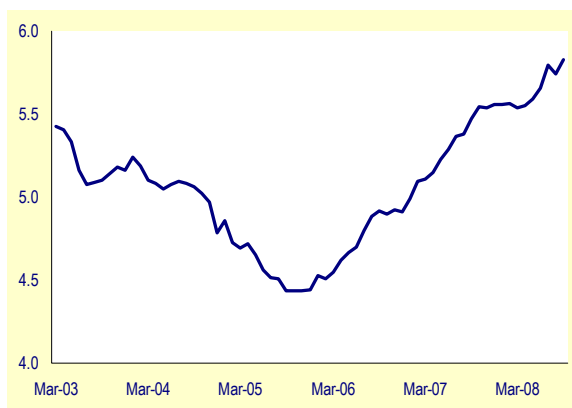
important for movements in the CFCI due to their predominant weight in the indicator. In October 2008 the CFCI for households was 47 bps higher than at the start of the financial turmoil in July 2007.

Graph 8: Composite financial cost indicator, euro-area non-financial corporations (Mar 2003 to Oct 2008)



Source: Commission services, ECB and EcoWin.

Graph 9: Composite financial cost indicator, euro-area households (Mar 2003 to Oct 2008)



Source: Commission services, ECB and EcoWin.

All in all, euro-area financing costs have increased significantly during the current financial crisis, in particular as regards non-financial corporations. In November 2008, the CFCI for non-financial corporations most likely increased further on account of the continued decline in equity prices. Households' financing costs, on the other hand, probably stabilised or even declined in November 2008 amid lower market interest rates.

Other determinants of euro-area financing conditions

In addition to higher direct financing costs for euro-area non-financial corporations and households as stated above, indications of tighter indirect financing conditions have appeared during the financial crisis. The October 2008 ECB Bank Lending Survey for the euro area reported a steep increase in the net tightening of credit standards for loans to enterprises and a more moderate climb in credit standards for loans to households. Banks reported that they had again considerably increased their margins on loans to both non-financial corporations and households, while non-price terms and conditions (size of loan, credit line and collateral requirements) were tightened significantly for corporations and remained unchanged at an elevated level for households. The most important driver of the tightening was expectations about future economic activity and housing market prospects.

Conclusion

During the global financial crisis, euro-area financing costs for non-financial corporations and households have increased substantially, in particular on account of the more recent drop in equity prices. Going forward, further declines in stock prices cannot be ruled out, which would raise financing costs still further for non-financial corporations in the euro area. On the other hand, the deteriorating outlook for euro-area growth, along with sliding inflation rates, has put downward pressure on key policy rates and market interest rates. Overall developments in financing costs over the next few quarters are therefore difficult to predict.

Even if financing costs come down in the coming quarters, other non-price financing conditions could tighten further as banks become more risk-averse. Moreover, the economic downturn could result in a negative feedback loop as banks de-leverage and cut down loan supply (see Section 3 'Bank lending and transmission to the real economy').

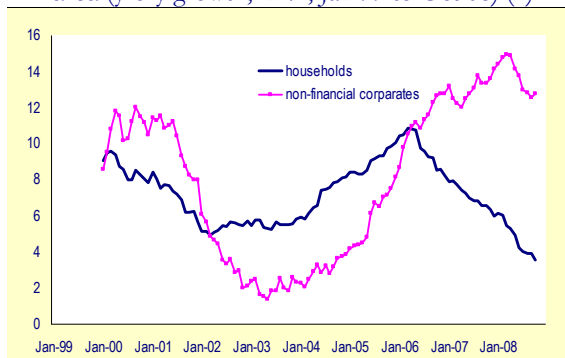
3. Bank lending and transmission to the real economy

Banks are key players in the euro-area's financial system. They are the main collectors as well as providers of funds from and to the non-financial corporate as well as the household sector. In contrast, in the US, capital-market-based financing is more important. Hence, the euro-area real economy is strongly dependent on banks' ability to extend loans to the non-financial sector. The current note therefore reviews banks' lending activity in the euro area and gathers evidence on the potential slowdown of lending in the next few quarters due to the financial crisis and the deteriorating economic outlook. It then presents estimates of the impact of bank loan supply on real GDP.

Loans to non-financial corporations are still growing strongly...

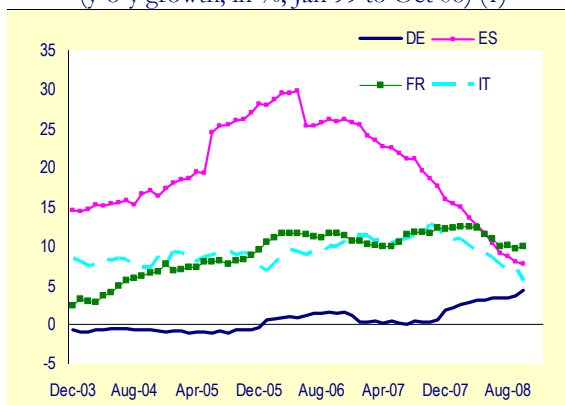
Loans by monetary financial institutions (MFIs) extended to non-financial corporations (NFCs) have increased strongly in the euro area in recent years (Graph 10). Year-on-year loan growth peaked at almost 15% in March 2008 and still stands at 12.6% in September 2008 – far above the levels seen in the downturn of 2003. In contrast, MFI loans to euro-area households peaked in March 2006 with annual growth of 10.9% and are now down to annual growth at 3.9% – a rate below the 4.9% low seen in the last trough of March 2002. Euro-area aggregate loan data conceal substantial heterogeneity across Member States (Graph 11). Among the four largest euro-area economies, Spanish loan growth rates were highest and reached a peak in 2006 with annual rates exceeding 30%. These high growth numbers have been coming down strongly in the household sector since June 2006 and the NFC sector since February 2007. In contrast, lending to German households was subdued over the entire period while lending to German NFCs has accelerated significantly since November 2007 and now stands at 11.3%. Lending growth to Italian households has come down strongly since March 2007 while lending to NFCs has been resilient. Lending growth to French households and NFCs has decreased only slightly since the beginning of this year.

Graph 10: MFI loans to the private sector, euro area (y-o-y growth, in %, Jan 99 to Oct 08) (1)



(1) Euro area in changing composition. MFIs exclude the Eurosystem. Loans include all maturities and currencies combined. Figures refer to growth of loan stock relative to stock one year earlier.
Source: ECB.

Graph 11: MFI loans to the private sector, selected Member States (y-o-y growth, in %, Jan 99 to Oct 08) (1)



(1) MFIs exclude the Eurosystem. Loans include all maturities and currencies combined. Figures refer to growth of loan stock relative to stock one year earlier.
Source: ECB.

... but current data are misleading and forward-looking indicators point to a substantial tightening of loan conditions...

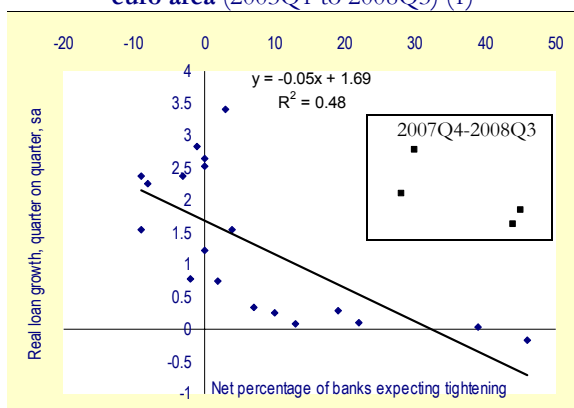
Current developments in loan data are at odds with the sharp contraction of credit availability frequently reported in the press. There are several reasons to believe that loan data do not accurately reflect the actual tightening of credit provision to the economy. First of all, companies have agreed credit lines, on which they can draw. Tightening loan conditions will only affect new loans and credit lines. Secondly, the surprising resilience of the growth in loans might also



reflect the difficulties companies currently face in getting finance via equity and bonds, which may be forcing them to draw on agreed credit lines with banks. Indeed, financing conditions via equity and securities have tightened considerably in recent months (see Section 2, 'Measuring euro-area financing conditions'). Moreover, the net issuance of shares has dropped strongly in the last few months.

The ECB's Bank Lending Survey (BLS) clearly points at a further tightening of lending standard in 2008Q4. The net percentage of banks expecting a tightening of credit standards applied to the approval of loans or credit lines to enterprises in the next quarter increased from 45% in the third quarter to 66% in the fourth quarter while in 2007Q3 the net percentage still stood at 3%.

Graph 12: **Bank lending survey and loan growth, euro area (2003Q1 to 2008Q3) (1)**



(1) Net percentage of banks in euro area expecting a tightening of credit standards of loans to enterprises in the next quarter (Question 6 of BLS). Regression line refers to 2003Q1-2007Q3. The 4 data points in the box are 2007Q4-2008Q3; they are excluded from the regression. The quarterly growth rate of loans to non-financial corporations is deflated by HICP and seasonally adjusted.
Source: Commission services' calculations based on ECB data.

While the BLS data start only in 2003, the available evidence suggests a strong impact of expected tightening on growth of actual loans given to enterprises. Graph 12 links the net percentage of banks expecting a tightening (in the next quarter) to the real quarterly growth rate of loans (in the next quarter) in the period 2003Q1 to 2007Q3. Loan growth data during 2007Q4-2008Q3 are surprisingly resilient and have therefore been excluded as outliers. The data suggest a strong impact of net tightening of the banks on actual loan growth, even though the

estimate is biased as it cannot separate loan demand from loan supply effects. The net percentage of banks expecting a tightening has increased to 66% for 2008Q4, up from 3% in 2007Q3. This should lead to a drop in the real quarterly growth rate of loans by 3.3 pp (or 13.2 pp annualised). Real loan growth to euro-area non-financial corporations could therefore fall into negative territory.

... due to the impact of the financial crisis and negative feedback from the real economy

According to the BLS, the most important factor in the tightening of loan conditions is banks' expectations of a deterioration in future economic activity both industry-wide and in firms' specific outlook. This result points to a significant risk of a negative feedback loop from real economic activity to bank financing, which in turn would impact on future real activity. In addition, banks' funding costs, particularly their ability to access market financing, and balance sheet constraints have also contributed to the net tightening. However, the relatively low number of banks reporting that access to market financing has contributed to a tightening of lending standards is somewhat at odds with the responses in the special section of the BLS on the turmoil. In this section, a much larger percentage of banks report tightening standards due to the turmoil.

Banks also reported that the financial turmoil had a tightening effect on credit standards – primarily for large enterprises but also for SMEs. This continues to concern in particular loans for M&As and corporate restructuring, as it has since 2007Q4. In addition, the financial turmoil has also had a tightening effect on loan provision for fixed investment, with more than 50% of banks now reporting a tightening of conditions for loans for this purpose compared to less than 40% in Q2. The last figure suggests that the impact of financial market stress on real activity via bank lending might be only starting to unfold.

Regarding the demand for loans or credit lines to enterprises, a majority of banks report a fall in demand since 2008Q1. The main factor contributing to the decrease registered in 2008Q3

Box 5: Banks' balance sheets and the propagation of the subprime losses to credit supply

The banking system intermediates funds between savers and investors. This critical function explains why banking is subjected to an extensive array of regulations and closer supervision compared to other sectors of the economy. For the banking sector to discharge its tasks, sound balance sheets are a prerequisite to access financing and retain customer deposits. Otherwise, credit demand might not be met and monetary policy impulses might be blunted or even counteracted by the need to repair balance sheets.

At the current juncture, banks in the euro area are under stress. The DJ Euro Stoxx Bank index has lost 65% since the beginning of the year, compared to 46% for the broader Euro Stoxx index. Episodes of bank distress were recorded in a number of euro-area countries, causing governments to provide liquidity and solvency assistance on an unprecedented scale, following the principles laid out in the Eurogroup action plan of 12 October. The defiance from investors originates above all in the recognised heavy losses on US subprime loans and other credit segments. Their transmission to non-US financial systems has been facilitated by loan securitisation. In contrast to previous episodes of euro-area bank fragility in the early nineties, the crisis did not originate from euro-area domestic debtors. According to ECB bank statistics, write-offs on loans to households and non-financial corporations in the euro area only amounted to EUR 20.8 billion in the first three quarters of 2008 against EUR 26.3 billion in 2007. In contrast, securities and shares held by MFIs had to be written down to the tune of EUR 80.3 billion during the first three quarters of 2008 against a negligible figure for the whole year 2007.

The propagation of the subprime shock throughout banks' balance sheet highlights the important role of leverage, which relates capital and quasi-capital to assets. Indeed, losses hit capital and increase leverage. Following such shocks, banks seek liquidity in financial markets, since customer deposits cannot expand due to their relative stickiness. Indeed, strong pressures in money market interest rates lead central banks to step in to provide emergency liquidity. Beyond immediate liquidity needs, banks also need to bolster their solvency position by raising additional capital to comply with supervisory thresholds and industry standards. The extent to which banks can access fresh capital is then crucial in order to sustain their existing assets. In challenging market conditions and barring capital injections from governments, banks which fail to replenish their capital would have to shrink their assets. In other terms, since losses induce an involuntary decrease in the denominator of leverage ratios, banks seeking to return to pre-crisis leverage ratios would have to decrease the volume of assets held in their balance sheets (which are in the numerator of leverage ratios). According to the so-called balance sheet channel of the monetary transmission mechanism, the borrowers' deterioration of their financial position impact their creditworthiness and their capability to access credit. Similarly, banks with worsening balance sheet will find it increasingly difficult to borrow or raise capital in financial markets adding to further pressures to deleverage.

In order to investigate linkages between banking losses, recapitalisation, deleveraging pressures and their impact on credit, several scenarios are presented. They are based on a set of assumptions and should be considered with caution. At the current juncture, a major source of uncertainty relates to the total amount of losses which will eventually have to be borne by euro-area banks. Such uncertainty is usually strong at turning points of the economic cycle, but is probably compounded by uncertainties on how new sophisticated financial products fare under stress, in a context marked by insufficient transparency and pro-cyclical features of the financial system.

Based on an estimate of global losses presented in the IMF Global Financial Stability Report of October 2008 and with such uncertainties in mind, we present four scenarios in which losses faced by euro-area banks are expressed as increments of global losses (10%, 20 and 30%), which were estimated by the IMF at USD1400 billion. Various scenarios on recapitalisation rates assume the extent to which banks can be successful in securing new capital. This depends, among others, on risk aversion levels in financial markets and the availability of funding from emerging market investors. Unmatched capital losses would lead to a decrease in balance sheet size, provided that banks target constant leverage ratios. Results presented in row 5 of the table show that bank balance sheets in the euro area would shrink by 1.5% to 8.1%, depending on the scenario chosen. The impact would however be stronger if banks decide to deleverage. Although deleveraging tends to remain contained when banks are facing mild losses, the possibility exist that bank will deleverage beyond pre-crisis ratios, due to faltering confidence and knock-on effects on still-performing assets in the banks' portfolio. For instance, such deleveraging pressures were experienced in the United States in the aftermath of the credit crunch of the early nineties. Line 7 of the table below shows that further deleveraging would make a significant difference in terms of the impact of bank losses on the size of banks' balance sheet. It would magnify the initial impact of losses and cause them to reduce significantly their assets (from 7.8% to 17.3%).

As losses on loan and securities seem to be recognised with long lags, their propagation to the asset side of the balance sheet and its components may be spread over several years. Since loans (in non-securitised form) represent



almost 50% of consolidated assets of banks in the euro area, they are bound to experience downward pressure. Banks might be tempted to sell more liquid components of their assets, such as securities to implement their deleveraging policies. However, in a period of highly volatile, distressed markets, fire sales might be only realised at a heavily-discounted price, and, indirectly lead to further mark-to-market losses on securities retained on the banks' balance sheet. Therefore, the assumption that loans could shrink in proportion to the reduction of total assets cannot be ruled out.

Bank losses, capital replenishment, leverage change and balance sheet crunch: several scenarios				
	Scenario A	Scenario B	Scenario C	Scenario D
(1) Capital - euro-area banks	1760	1760	1760	1760
(2) Assets - euro-area banks	31538	31538	31538	31538
(3) Loss level	10%	20%	20%	30%
(4) Recapitalisation rate	65%	65%	50%	35%
(5) Decrease in total balance sheet size (leverage constant)	-1.5%	-2.9%	-4.2%	-8.1%
(6) Change in risk appetite / scale of deleveraging	0	-5%	-5%	-10%
(7) Decrease in total balance sheet size (with deleveraging)	-1.5%	-7.8%	-8.9%	-17.3%

(1) Proxied by ECB data on Monetary Financial Institutions excluding the Eurosystem (in EUR billion, including reserves, Sep. 2008)
(2) Idem
(3) As a percentage of global losses from the financial crisis (from the IMF's Global Financial Stability Report, October 2008)
(4) Percentage of capital losses matched by new capital raised.

Source: Commission services.

Beyond the much-simplified nature of these estimates, the results underscore the particular relevance of capital injections to avoid disorderly reductions of bank assets. Such disorderly attempts of deleveraging may lead to fire sales or episodes of credit crunch. While exceptional and temporary, such capital injections provide support to prop up capital buffers. They also send an important stabilising message to deposit holders and liquidity providers, helping banks to secure more stable financing conditions on the liabilities' side. Hence, banks would ideally continue to distribute credit to the economy. Otherwise, the liquidity position of the corporate sector might deteriorate at a fast pace. Supply-side constraints would add to traditional information asymmetries between banks and borrowers. The freezing of money markets, where banks normally meet their short-term liquidity needs, has revealed strong informational asymmetries. Since even sophisticated investors, such as banks, have, over the last few months, been reluctant to exchange liquidity with each other, even at short maturities, a similar phenomenon between banks and non-financial borrowers could happen. Small and medium size enterprises or fragile borrowers, whose risk profile is traditionally higher, could be impacted in priority.

was a lack of demand for fixed investment followed by a lack of demand for M&As and corporate restructuring, which had already contracted in 2007Q4.

Credit standards for loans to households for house purchase also tightened somewhat, to 36%, up from 30% in Q2. The tightening of loan supply conditions started in 2007Q2. The net percentage of banks reporting an increase in loan demand has been in decline since 2006Q3. The strong decline in loans to households reported in Graph 10 therefore reflects to a significant extent the drop in loan demand, while loan supply factors have added to the drop in loan growth only since the onset of the crisis.

Besides using information from the BLS, the extent of the reduction in loan supply can also be calculated using estimates of sub-prime losses and information on banks' leverage ratios (see

Box 5). Although these are surrounded by significant uncertainty, due to considerable uncertainty regarding banks' behaviour and exposure, a range of estimates are presented reflecting different assumptions on the extent of euro-area banks' write-downs and re-capitalisation. The most benign estimate points at a reduction of loan supply of the order of 1.5% while the worst case suggests a contraction of around 17.3%.

A potentially substantial impact on the real economy

The estimates shown above point to a possible significant reduction in banks' balance sheets. Moreover, information from the BLS also points at a sharp tightening in bank lending conditions and a slowdown in loan growth. This raises the question of how strongly the deterioration in loan supply due to losses in the

Box 6: The effect of bank loan supply on the real economy

To assess the impact of bank lending supply on the real economy, loan supply has to be distinguished from loan demand. Moreover, reverse causality is a serious concern as expected output increases can endogenously lead to an expansion of loans. In addition, the lending channel has to be separated from the conventional interest rate channel. To avoid these problems, a method recently proposed by Driscoll (2004) for US states is applied to the Member States of the euro area. The central idea is that euro-area Member States can be considered as small open economies with a common monetary policy. State-specific money demand shocks are automatically accommodated. To the extent that banks rely on deposits as source of finance for lending, state-specific money demand shocks can be used as instruments to identify state-specific bank lending supply.

In a first step, all variables are calculated as deviation from the euro-area average. This allows to remove the effect of the common monetary policy. Money demand is estimated with panel fixed effects in deviations from the euro-area average. In a first specification, we employ the deposit interest rate (as a measure of the opportunity cost of holding money) and real GDP as explanatory variables (Column A in the table below). In a second specification we use inflation (again as a measure of the opportunity cost of holding money - see also Dreger and Wolters 2006) and real GDP (Column B). Both specifications deliver plausible estimates of country-specific money demand.

In a second step, the importance of deposits for bank lending is verified. The results indicate that money demand shocks are a significant determinant of bank loan supply. Loan supply reacts with a lag to the money demand shock. In the third step, the effect of bank loans is assessed in an instrumental variable estimation, where actual loans are instrumented with the shocks to money demand to capture the loan supply effect. All estimations include fixed effects.

The estimation results presented in columns C and D indicate that loan supply has a significant impact on real GDP growth with a lag of 1 quarter. The coefficient presented in column D, which is estimated for the sample 1999-2008, shows that a drop of real quarterly loan growth by 1 % would lower the real quarterly growth rate of GDP by 0.37 %. The coefficient is significant on a 5 % level. The coefficient in equation C would suggest a drop by 0.44 %, but is only significant at a 10 % level. It should be noted, that the coefficients are estimated relatively imprecisely. The 95 % confidence interval for the coefficient of regression D would range between 0.02 and 0.72. Overall, the estimation results point at a significant effect of bank lending on the real economy, in line with the important role of bank intermediation in the euro area. IMF (2008) comes to similar conclusions.

The impact of bank loan supply on real GDP growth (1)

Dependent variable	Money demand eq		Second stage IV regression	
	m-p		GDP growth	
	A	B	C	D
real GDP	1.43***	0.67***	loan growth (t)	-0.19
	13.3	9.3		-0.8
deposit interest rate	-0.05**		loan growth (t-1)	0.44*
	-1.98			1.68
inflation		-0.01**	GDP growth (t-1)	-0.35***
		2.1		-3.25
			GDP growth (t-2)	-0.11
				-1.05
				-1.91
sample	03Q1-08Q3	99Q1-08Q3	03Q1-08Q3	99Q1-08Q3
N	264	506	216	458
R ²	0.41	0.17		
			Instrument A	Instrument B

1. All variables are measured relative to the euro area average. Data are at quarterly frequency. Panel includes euro area Member States except MT, CY, and SI. t-values are below the coefficient estimates in bold. * (**, ***) indicates significance at a 10 (5, 1) percent level. Instrument A (B) is residual of regression presented in column A (B). Estimation is with country fixed effects.

Source: Commission services

References:

Dreger, C. and J. Wolters (2006), 'Investigating M3 money demand in the euro area: new evidence based on standard models', *DIW discussion paper*, No. 561.
 Driscoll, J.C. (2004), 'Does bank lending affect output? Evidence from U.S. states', *Journal of Monetary Economics*, 51, pp. 451-471.
 IMF (2008), 'Euro area policies, selected issues', IMF country report, 08/263.



subprime market will affect the real economy. To assess the impact of loan supply on the real economy, an econometric model – described in further detail in Box 6 – was estimated. The results from this empirical exercise indicate that loan supply has a significant effect on euro-area real GDP. This stands in contrast to findings by Driscoll (2004) for the US economy, where loan supply is not found to significantly affect GDP growth.⁸ The difference between euro-area and US findings most likely relates to the greater dependence of euro-area corporations on bank finance.

According to the econometric estimates, a fall in quarterly real loan supply growth by 1% will lead to a drop of real quarterly GDP growth by 0.37% in the euro area. According to scenario "A" of Box 6, a drop of 1.5% in the loan supply would accordingly reduce real GDP growth by 0.55%. In case of the less benign scenarios, the drop in GDP growth would amount to 2.9% (scenario B) and 6.4% (scenario D). The estimates therefore suggest that the write-downs of loans due to the sub-prime crisis could have a potentially quite significant effect on real GDP growth.

The data from the BLS point at a similar picture, even though the contraction of credit supplied is not only driven by write-downs and re-financing difficulties for banks but also by deteriorating prospects for the economy and for specific industries. The BLS survey indicates that banks expect a significant tightening of credit standards in 2008Q4. If actual loan growth falls as much as it did in 2003Q1, when the BLS survey was showing even slightly more positive figures, then real quarterly loan growth in 2008Q4 could fall by more than 2pp relative to Q3. Relative to the level of 2007Q3, the tightening would imply a drop of real quarterly loan growth by 3.3pp.

According to the estimates this would lead to a reduction of real quarterly GDP growth by 1.2pp relative to real GDP growth at the beginning of the tightening in the BLS in 2007Q3.

If real loan growth remained at zero for 1 year, real GDP growth could be lowered by more than 4pp relative to a scenario with 13% real loan growth. Overall, bank lending is thus a quantitatively important variable for real economic activity in the euro area.

Conclusions

This section shows that write-downs of euro-area banks due to losses in sub-prime mortgage markets can have a substantial impact on banks' provision of loans to the economy. The size of the impact depends on banks' recapitalisation rates as well as the extent of changes in risk appetite. Loan supply could drop by between 1.5 and 17% according to different scenarios. Moreover, BLS survey data point at a substantial contraction of loan supply growth, which might amount to an (annualised) 13% annual growth reduction relative to the BLS data for 2007Q3. It is shown that loan supply has statistically and economically significant effects on the euro-area's real activity. According to the estimates, a reduction in loan supply growth of between 1.5 and 17pp would lead to a reduction of real GDP growth by 0.5 and 6.4pp. These estimates, though imprecisely estimated, suggest that the impact of financial turmoil on real economic activity may be substantial. Real GDP growth in 2009 therefore crucially depends on bank lending to the economy. A protracted period of weak credit provision to the euro-area economy would severely affect real activity. Recapitalisation of banks therefore remains of crucial importance to avoid a credit crunch with potentially serious and mutually re-enforcing negative effects on the real economy.

⁸ See reference in Box 6.

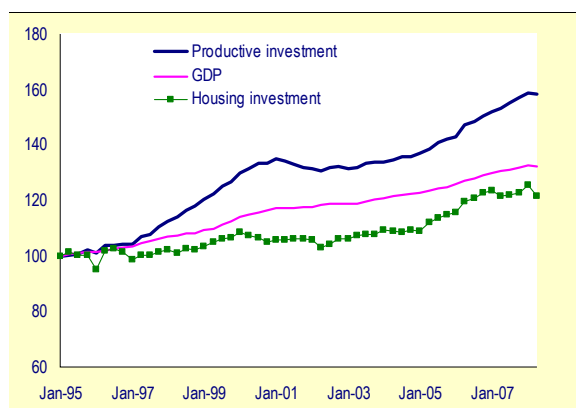
4. Prospects for non-residential investment in the euro area

This section looks into recent developments in non-residential investment (i.e. productive investment) and assesses the risks linked to the ongoing economic downturn.⁹ Investment is given particular attention because it is an important driver of both short-term GDP fluctuations and the economy's potential growth that is likely to suffer a sharp cyclical correction in the current downturn and to be faced, in the medium term, with higher financing costs due a general re-pricing of risk.

Gross fixed capital formation in the euro area

Over the past 10-15 years, one of the main drivers of economic growth in the euro area has been the strength in non-residential investment. Graph 13 shows that GDP at constant prices grew by 30% over the period 1995Q1-2008Q2 while productive investment increased by almost twice that rate, at 60%. Housing investment grew by only 20% over the period, with a significant acceleration of the rate of growth taking place mostly in the recent years, starting with the boom in mortgage credit in 2005Q1.

Graph 13: Gross fixed capital formation, euro area (index 1995Q1=100 – constant prices – 1995Q1 -2008Q2)



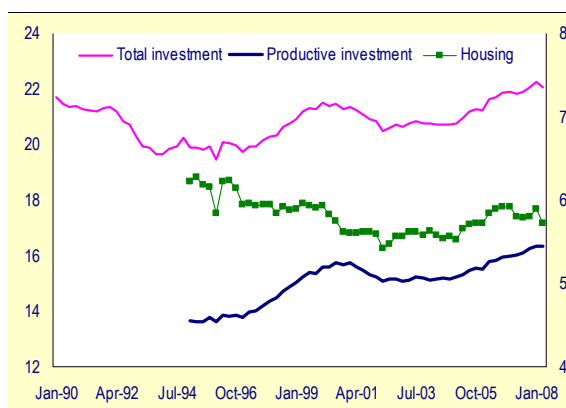
Source: Commission services.

As a result, the share of productive investment in GDP grew from about 14% in 1995Q1 to 16.3%

⁹ Non-residential investment is defined as total gross fixed capital formation (or total investment) less housing investment. Corporate investment represents about 85% of non-residential investment, the rest being accounted for by government investment.

in 2008Q2, while the ratio of residential investment to GDP remained broadly stable around 6% despite the recent house price booms in some euro-area Member States (Graph 14).

Graph 14: Share of investment in GDP, euro area (in % – constant prices – 1995Q1 -2008Q2)



Source: Commission services.

The contraction in productive investment has so far remained modest...

While total gross fixed capital formation fell by 1% and 0.6% in the second and the third quarter of 2008, the contraction in non-residential investment was more modest. Non-residential investment dropped by 0.2% q-o-q in the second quarter and by 0.3% in the third quarter.¹⁰ This compares favourably with the early stages of the previous downturn in 2001 when it contracted at a quarterly rate of about 0.8%. Recent data for non-residential investment also compare well with the ongoing cyclical correction in the housing sector which started ahead of the financial turmoil – i.e. already in the first half of 2007 – and has translated into quarterly rates of contraction of about 0.5% since the spring.

As noted in a previous issue of the Quarterly Report on the Euro Area, non-residential investment turned out to be significantly more resilient in the 2001-03 downturn than during the recessions of the early 1980s or early 1990s.¹¹ Traditional determinants of capital formation

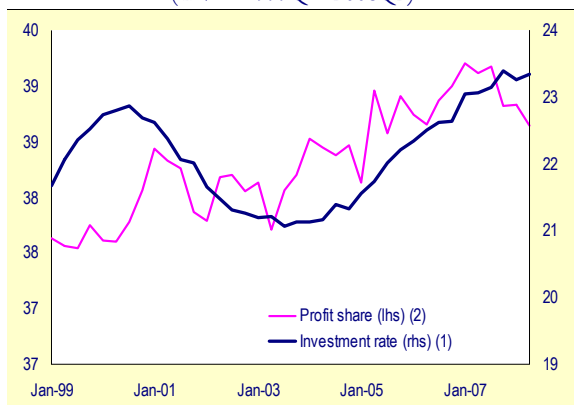
¹⁰ Growth for the third quarter is an estimate based on available data for Germany, Spain and France.

¹¹ See 'The resilience of the euro-area economy', Quarterly Report on the Euro Area, Volume 6 No. 3 (2007), pp 31-42.



would a priori point to continued resilience in the current cycle. First, the euro-area economy entered the downturn with a relatively high rate of capacity utilisation which was similar to that at the peak of the previous cycle. There is therefore no evidence of overcapacity problems. Second, despite a slight weakening in 2008, profitability of in the non-financial corporate sector has been on a moderate upward trend since 2003 and is now above its level at a similar stage of the previous cycle (Graph 15).

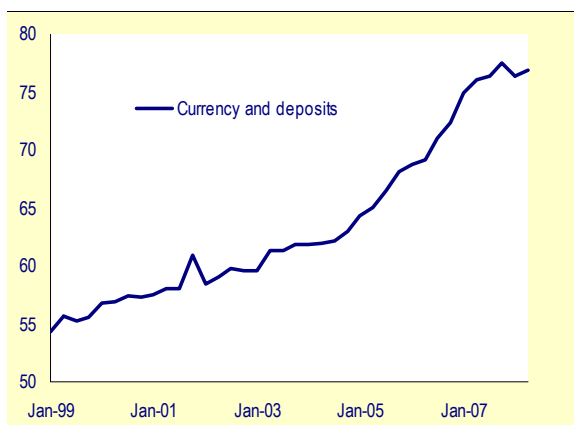
Graph 15: Profitability and investment in the non-financial corporate sector, euro area (in % – 1999Q1–2008Q2)



(1) Share of gross operating surplus in gross value added.
(2) Share of investment in gross value added.

Source: Commission services.

Graph 16: Cash holdings of non-financial corporations, euro area (as % of GDP, 1999Q1–2008Q2)



Source: Commission services based on ECB data.

More generally, the non-financial corporate sector enters the downturn with balance sheets that are at least as sound as in the previous cycle. On some measures, balance sheets even appear

healthier now than at the beginning of the decade. For instance, companies have accumulated sizeable cash holdings in the past few years that should help to reduce the risks of financial stress and bankruptcy (Graph 16). Similarly, companies entered the downturn with a share of equity liabilities in total corporate liabilities that was comparable to that registered at the peak of the previous cycle.¹²

...but investment is likely to go through a sharp cyclical correction

Notwithstanding these positive factors, there are at least two reasons to believe that the ongoing cyclical correction of non-residential investment will be much sharper than in the early 2000s.

First, the collapse in confidence indicators in the past few months indicates that the euro-area economy will experience a much sharper cyclical downswing than in the early 2000s. Investment and GDP tend to move closely in tandem, with capital formation responding more strongly than GDP to cyclical fluctuations.

Second, financial constraints are likely to be a serious drag on non-residential investment in the next few quarters. Despite the development of market-based finance (quoted equity and debt securities), outstanding bank loans to the non-financial corporate sector have continued to increase more rapidly than GDP in recent years. Non-financial corporations are still getting most of their credit from banks (as opposed from markets via debt securities) and remain highly exposed to changes in bank lending. The econometric evidence provided in Box 7 suggests that the short-term or cyclical response of productive investment in the euro area is closely related to the availability of bank loans (but not to the availability of equity funding). Furthermore, evidence presented in Section 3 ('Bank lending and the transmission to the real economy') shows that changes in bank-lending supply can have a strong impact on short-term growth in the euro-area. Investment and durable consumption are the most likely channels for this effect.

¹² Although collapsing equity prices have brought an abrupt fall in the share in the past two quarters.

Box 7: Investment and the financial position of non-financial corporations

The estimated investment equation presented in this box is composed of two elements: a long-term and a short-term equation. The long-term equation relates investment to selected long-term determinants in the neo-classical framework of investment (Jorgensen, 1971) to which variables that express the financial position of the corporate sector are added. The short-term dynamics links changes in investment to its own lags, lagged changes in GDP, lagged changes in the cost of capital, lagged changes in the ratio of equity liabilities to total liabilities, lagged changes in debt and the lagged deviation of investment from its long-term value (the error correction term). The analysis is carried out by estimating a co-integrating equation using a method that was originally proposed by Stock and Watson (1993) and extended to the panel context by Kao and Chiang (2000). The analysis includes 10 euro-area Member States during the period 1995Q1-2008Q2. Cyprus, Ireland, Luxembourg, Malta and Slovenia were not included in the panel due to data availability constraints.

In the long run, the volume of productive investment is determined by real GDP, the real cost of capital and a variable that represents a measure of the corporate sector financial position. The ratio of equity liabilities to total liabilities is a balance sheet variable capturing the valuation effects in the equity value and giving also an indirect measure of the external financing premium attached to the corporate sector. The higher the ratio, the lower the external financing premium should be. The same valuation effect can also be obtained by considering the ratio of total debt (loans plus securities liabilities minus currency and deposits assets) in total liabilities, the results being very similar but with the opposite sign.

The estimated long-run elasticities are presented in the left-hand table below. In the long-run, a 1% increase in the cost of capital will lead to a decrease in investment of 0.7%, while a 1% decrease in the ratio of equity liabilities to total liabilities will decrease investment by 0.11% in the long run. The GDP variable has an estimated coefficient close to one, as expected.

Co-integrating equation: Long-run elasticities of productive investment (1)		Short-run elasticities of productive investment	
Variable (2)	Estimated elasticity	Variable	Estimated elasticity
Productive investment	1.00	Error-correction term (lagged by 1 quarter)	-0.16***
Real GDP	-1.14	Changes in real GDP (lagged by 2 quarters)	0.38** (lag 2)
Real cost of capital	0.67	Changes in Real cost of capital (lagged by 2 quarters)	0.005
Equity liabilities / Total liabilities	-0.11	Change in Equity liabilities/Total liabilities (lagged by 2 quarters)	0.13** (lag 1)
		Change in Debt liabilities (lagged by 1 quarter)	0.20**

(1) The variables are all non-stationary *Im Pesaran Shin (IPS)* unit root test with two lags and *Pedroni (1999)* group test for null of co-integration were performed. The real cost of capital is calculated as $\log(1 + \text{real cost of capital})$. All variables are in logs. The model includes country dummies.
 (2) All estimated coefficients are significant at 1%
Source: Commission services.

Notes: ***, ** and * denote respectively statistical significance at 1, 5 and 10%. Debt liabilities are calculated as loans plus securities liabilities. The short-run equation contains also two lags of the change in productive investment and fixed effects.
Source: Commission services.

The estimated parameters in the short-term dynamics are displayed in the right-hand table. The error-correction mechanism in the dynamic relationship has the expected negative sign. This means that when investment deviates from its long-term value, there is a reversion in the following quarter. Changes in real GDP have the most important impact on investment growth in the short-run, investment growth reacting positively to cyclical improvements, while changes in the cost of capital are not statistically significant. Changes in the balance sheet variable have a lower impact than the changes in debt, while changes in equity liabilities were found not to be statistically significant in the short run. An important impact on the change in investment comes from the change in the debt liabilities. In the short run, a 1% increase in the growth of debt has a positive impact of 0.2% increase in the investment growth.

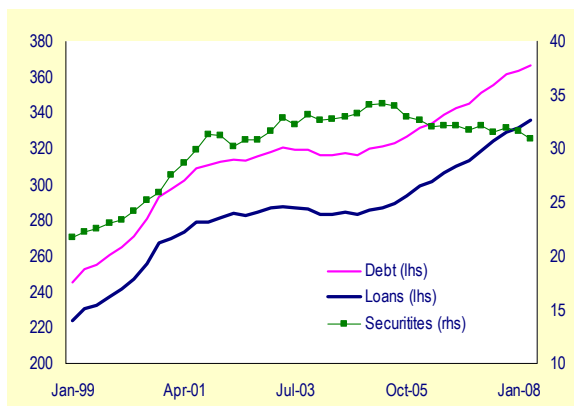
In the long run, the cost of capital channel plays an important role, the impact on investment depending also on the initial value of the cost of capital. When the real interest rate increases from 3% to 4%, given the depreciation and a relative prices for investment of about 1, a 1pp increase in the real interest rate will increase the cost of capital also by about 1pp. Given an initial cost of capital of 6.5% (or 0.065), the 15% increase in the cost leads to a decrease in investment of about 1%. If the initial cost of capital is higher, then also the decrease in investment will also be larger.



Stock, J. and M. Watson (1993), 'A simple estimator of cointegrating vectors in higher order integrated systems', *Econometrica*, 61(4), 783-820.

Kao, C. and M.H. Chiang (2000), 'On the estimation and inference of a cointegrated regression in panel data', in Baltagi B.(ed.), 'Nonstationary panels, panel cointegration, and dynamic panels', *Advances in Econometrics*, Vol.15, Amsterdam: JAI Press, 179-222.

Graph 17: **Non-financial corporations sector debt liabilities, euro area (1)**
(as % of GDP, 1999Q1-2008Q2)



(1) Debt liabilities are calculated as loans plus securities liabilities.
Source: Commission services based on ECB data.

Admittedly, there is no clear sign of a credit crunch in bank-loan data of end-October yet. Nevertheless, euro-area banks have reported a considerable tightening of their lending conditions both in terms of price and non-price conditions. There is also anecdotal evidence of increasing difficulties in access to credit in the corporate sector.¹³ Overall, it is more than likely that financial constraints will be a much bigger drag on productive investment in the current downturn than in its predecessor.

Corporate investment faces additional medium-term pressures due to a likely reassessment of the price of risk

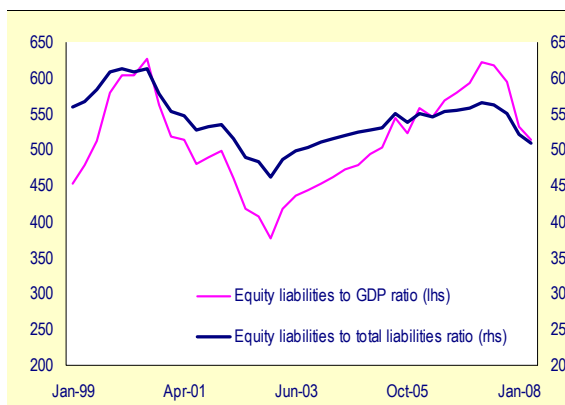
Information asymmetries lead to imperfect substitutability between internal and external funds, making a firm's capital structure relevant for investment decisions. National accounts shows that the balance sheets of the corporate sector in the euro area are mainly composed of equity liabilities, debt liabilities representing only 33% of total liabilities.¹⁴ As equity

¹³ See for example recent comments by the German carmakers association in the Financial Times ('Loan drought hits European suppliers' 13 November 2008).

¹⁴ However, quoted equities only represent a relatively small share of total equity liabilities (36%).

assets/liabilities stocks are subject to significant valuation effects over the cycle, in periods of economic downturn the corporate sector is faced with a drop in their net worth (liquid assets plus the collateral value of illiquid assets) that increases the sector's exposure to external financing through debt through the collateral channel. Due to equity valuations effects, the ratio of debt levels to total liabilities becomes higher in downturns, while in the upturns, the ratio of equity liabilities to total liabilities increases (Graph 18).

Graph 18: **Equity liabilities of non-financial corporations, euro area (in %, 1999Q1-2008Q2)**



Source: Commission services based on ECB data.

Valuation effects on equity holdings seem to play an important role for the investment decisions, as there is a long-run correlation between the ratio of equity liabilities to GDP and productive investment (Graph 19). The drop in net worth increases the premium on external finance through the so called financial accelerator effect.¹⁵ A negative shock to net worth will affect negatively investment through the premium channel (i.e. higher cost of capital) and an additional valuation channel (i.e. the increased exposure of the balance sheets due to the drop in the collateral value).

¹⁵ Bernanke, B., Gertler M. and Gilchrist, S (1996), "The Financial Accelerator and the Flight to Quality", *Review of Economics and Statistics*, 78, 1-15.

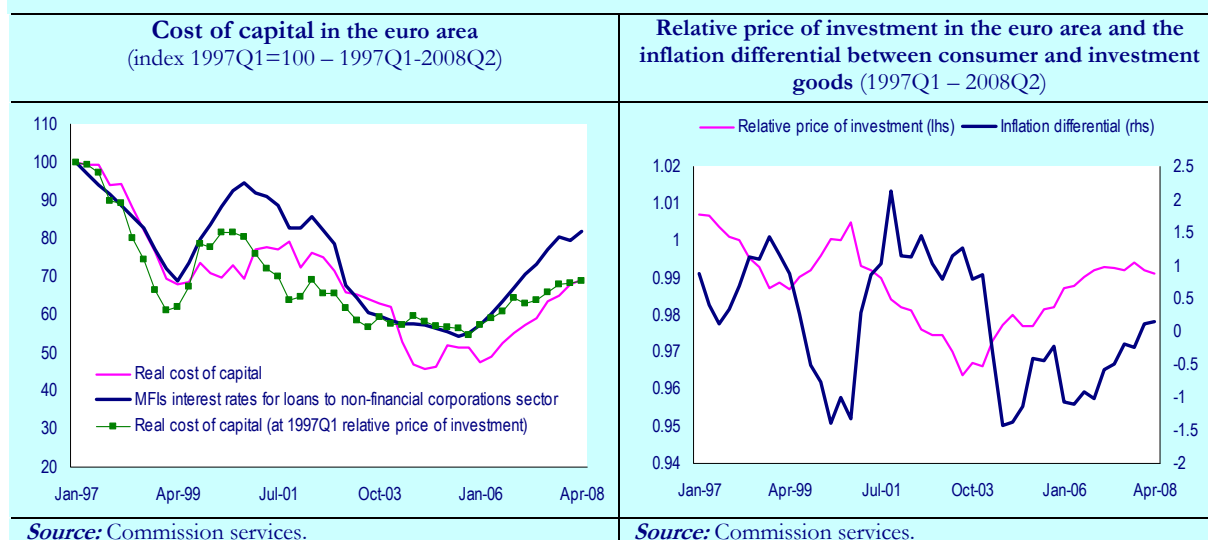
Box 8: The real cost of capital

Economic theory predicts that companies invest up to the point where the return on capital equals the cost of financing it. Based on the neo-classical framework of investment (Jorgensen, 1971), the real cost of financing is measured as the rental cost of capital that takes into account the prices of funding (i.e. a weighted interest rate among the different sources of finance), the depreciation rates and the relative price of investment goods.

$$Cost = (R - \pi + \delta) \times \frac{P_I}{P_C}$$

where R should be a weighted nominal interest rate among the different source of finance, π is the inflation in the price of investment goods, δ is the depreciation rate and P_I/P_C the price of investment goods relative to the price of consumer goods (e.g. the GDP deflator). Due to data availability, for the analysis of the real cost of capital, the nominal interest rate that monetary and financial institutions (MFIs) apply for loans to the non-financial corporations sector with maturities between 1 to 5 years was considered. Due to the large share of equity liabilities as a source of funding, not including the cost of issuing equity, and the yield on corporate bonds, probably underestimates the impact of the cost of funds on the cost of capital.

The fall in the cost of capital up to 2005Q4 seems to have reverted to an upward trend. The evolution is mostly due to movements in the interest rate and to some extent to the relative price of investment equipment.



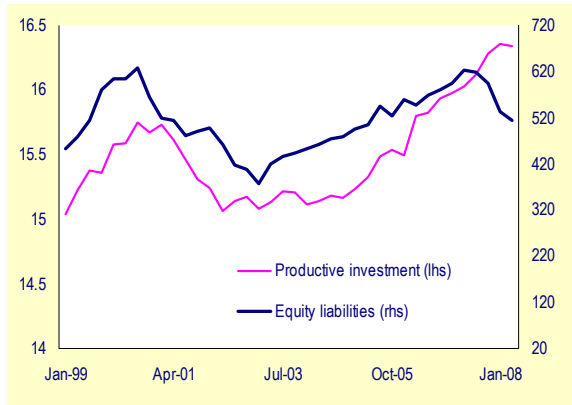
The depreciation rate. The impact of depreciation on the cost of capital is relatively very small. The adoption of new technologies and the increasing importance of equipment with short lifespan (ICT) have led to an increase in the speed of depreciation and a corresponding trend increase in the investment required for the maintenance of the stock of capital. The depreciation rate in the euro area has been growing from about 4.6% in the mid-1990s to about 5% in 2008. If depreciation would have stayed unchanged the cost of capital would have been today lower by 4.5%.

The relative price of investment. The relative price of investment could have a significant impact on the cost of capital since it affects the pass-through of the changes in both the real interest rate and the depreciation rate: 1pp increase in the real interest rate or in the depreciation rate will increase the real cost of capital in percentage points by the level of the relative price of investment, everything else equal. If the relative price of investment goods had stayed at the same level as in 1997Q1, given the evolution in the GDP deflator, the cost of capital would have been slightly higher in the last four years (left panel of graph above). However, as it can be seen from the left panel of the graph, the main driver of the real cost of capital still remains the nominal interest rate despite the slight decrease in the relative price of investment over the period (right panel of the graph).

The inflation differential between consumer and investment goods. The real cost of capital is also positively correlated with the inflation differential between consumer and investment prices: 1pp increase in the inflation differential increases the cost of capital by the level of the relative price of investment. Therefore, it is not only the relative price of investment that is relevant for the movements in the cost of capital, but also the growth of the price of investment level relative to the growth of consumer price level. In 2008, the inflation differential between consumer and investment goods has become positive, contributing to the increase in the real cost of capital.



Graph 19: Equity liabilities of non-financial corporations and investment, euro area
(as % of GDP, 1999Q1-2008Q2)



Source: Commission services based on ECB data.

Econometric evidence shows that there is a long-run relation between productive investment, GDP, the cost of capital and the ratio of equity liabilities to total liabilities that captures the balance-sheet channel (Box 7). In the long run, a 1% decrease in the ratio of equity liabilities to total liabilities decreases investment by about 0.11%. Therefore, if the current financial crisis results in a long-lasting reduction of the ratio of equity liabilities to total liabilities, the economy's medium-term investment to GDP ratio will be revised downwards.

Moreover, in the medium run, the cost of capital plays an important role. The real cost of capital takes into account changes in real interest rates, in capital depreciation and in the relative price of investment. Econometric evidence provided in Box 7 shows that when the real interest rate increases from 3% to 4%, the cost of capital also increases by about 1pp, leading to a decrease in investment by about 1% (for an initial cost of capital of 6.5%). Box 8 gives a complementary detailed analysis of the method used to calculate the real cost of capital. It is worth stressing that the indicator of the cost of capital used in this section probably underestimates the magnitude of the recent increase in the cost of capital. Due to statistical availability constraints, it is indeed based only on bank lending rates.¹⁶ The composite indicator of the cost of financing

¹⁶ More precisely, the nominal interest rate that monetary and financial institutions (MFIs) charge for loans to the non-financial corporations sector with maturities between 1 to 5 years.

presented in Section 2 ('Measuring euro-area financing conditions') shows, however, that a large part of the increase in companies' financing costs since the outset of the financial turmoil in July 2007 is attributable to falling stock prices.

The capital cost channel is likely to feed through less rapidly than the balance sheet channel in the short run as it affects productive investment only through the adjustment to the long run (Box 7, right-hand table). In case of a temporary sharp increase in the cost of capital, a 1% deviation of productive investment in the previous quarter from its long-run determinants leads to a downward adjustment of investment by 0.16% in the current quarter, everything else equal.

While the relative resilience of productive investment in recent years was partly due to the availability of abundant and cheap capital, the corporate sector will probably have to adjust to less favourable financing conditions in the medium run. It is indeed likely that the financial turmoil will be accompanied with a lasting and global reassessment of the price of risk and that risk premia will not return to the historical lows registered in recent years even when market disruptions and bank balance sheets problems are resolved. The analysis presented here shows that this reassessment of risk will impact medium-term prospects for productive investment both via the capital cost and the balance sheet channels.

Conclusion

Despite its relative resilience in the previous downturn and since the beginning of the financial turmoil, non-residential investment faces a sharp cyclical correction in the next few quarters. Balance sheet problems in the banking sector compounds investment's traditional strong sensitivity to the business cycle with tighter financing constraints. In addition to these cyclical considerations, euro-area corporations also face a more medium-term challenge related to the need to adjust to a reassessment of risk premia which is likely to have a permanent effect. This will weigh on medium-term prospects for investment via the capital cost and balance sheet channels, and eventually, on potential growth.