

# THE FINANCIAL CRISIS IN THE LIGHT OF THE EURO AREA ACCOUNTS: A FLOW-OF-FUNDS PERSPECTIVE

ARTICLES

The global financial crisis that erupted in 2008 has shown how a build-up of financial imbalances in various sectors of the economy, in conjunction with innovation in the financial system, can give rise to powerful feedback loops between the financial and the real side of the economy. The crisis has underlined the importance of developments in balance sheets and financial flows as well as the need to look at both quantities and price variables. This article examines the evolution of the various stages of the financial crisis through the lens of the integrated Euro Area Accounts, which provide comprehensive information on economic and financial developments by institutional sector. It highlights three main issues: the evolution and interplay of sectoral financial balances, the dynamics of sectoral leverage and the associated changes in financial intermediation patterns in successive stages of the crisis.

## I INTRODUCTION

Since the insolvency of Lehman Brothers in September 2008, vast efforts have been devoted to describing and explaining the developments prior to, during and after the associated financial crisis. Although the crisis originated in the United States – where substantial imbalances had accumulated, eventually unfolding into severe financial turmoil – the implications were global. This article looks at developments in the euro area, covering the period up to the first quarter of 2011. It focuses on the interactions between real and financial variables across all sectors of the economy during the build-up of domestic imbalances before the global crisis, as well as their unravelling during the subsequent recession and recovery phases. This is done by adopting a flow-of-funds approach, looking at the evolution of the crisis through the integrated and consistent lens of the Euro Area Accounts (EAA),<sup>1</sup> which bring together the financial and non-financial accounts of the different institutional sectors (i.e. households<sup>2</sup>, non-financial corporations, financial corporations and general government) and the rest of the world, and present data in nominal rather than real terms (see Box 1 for a conceptual discussion of this). Having consistent flows and balance sheets makes it easier to analyse the accumulation of imbalances and associated balance sheet vulnerabilities.

This article covers three main issues: sectoral shifts in financial deficits/surpluses, leveraging/deleveraging trends, and changes in financial intermediation patterns. The article also points to country heterogeneity in sectoral deficits/

surpluses within the euro area. Section 2 examines selected components of the non-financial accounts to review developments in the different phases of the crisis. Section 3 takes a sectoral perspective, examining the dynamics of financial surpluses/deficits shifting between sectors during the successive phases of the crisis. Section 4 discusses the leverage behaviour of households and of financial and non-financial corporations, as measured by debt-to-income and debt-to-asset ratios. Section 5 describes the changes in financial intermediation patterns which occurred after Lehman's insolvency. And Section 6 provides brief concluding remarks.

## 2 DEVELOPMENTS IN THE NON-FINANCIAL ACCOUNTS

This section describes developments in income, saving and investment in the euro area, broken down by sector, and discusses the resulting sectoral net lending/net borrowing positions (i.e. the financial surplus/deficit, which is also the balance between revenue and expenditure).<sup>3</sup>

1 For further reading, see Papademos, L. and Stark, J. (eds.), "Cross-checking and the flow of funds", Chapter 7 of *Enhancing Monetary Analysis*, ECB, Frankfurt am Main, 2010, and the article entitled "The introduction of quarterly sectoral accounts statistics for the euro area", *Monthly Bulletin*, ECB, November 2007. For a comparison with developments in the United States, see the article entitled "The external financing of households and non-financial corporations: a comparison of the euro area and the United States.", *Monthly Bulletin*, ECB, April 2009.

2 Including non-profit institutions serving households.

3 The net lending/net borrowing of a sector is the balance of its capital account, which measures the excess of saving and net capital transfers received over capital investments (net lending), or vice versa (net borrowing). It is also the balance of the financial accounts, which measures the difference between transactions in financial assets and transactions in liabilities. See also Box 1.

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In the eight years or so prior to the financial turmoil of 2008, the configuration of income growth distribution showed a traditional pattern (see Chart 1), with household income growing at a stable pace, driven by increases in wages. At the same time, income accruing to the government sector grew fairly robustly until 2008, allowing for a gradual reduction of public deficits. In the first three quarters of 2008, while household income was still growing at a stable pace, non-financial corporations' income was already decreasing – partly due to incomplete pass-through of the commodity price shock at that time (see Section 3) – and government income<sup>4</sup> had slowed.

After September 2008, growth in euro area disposable income plummeted, reflecting the fall in nominal production.<sup>5</sup> The strong initial downward pressure on household income (driven by a sharp fall in the compensation of employees) was then mitigated by the impact of automatic fiscal stabilisers, putting strain on

government accounts. After a gradual recovery in activity, starting in mid-2009, all sectors experienced positive income growth again by the second quarter of 2010, and as the economic expansion consolidated in subsequent quarters, income distribution across sectors has been approaching a pre-crisis configuration.

The crisis also induced significant changes to saving and capital formation flows in the euro area. The growth rate of *euro area saving* had been gradually increasing from 2005 until the first quarter of 2007 (see Chart 2). This was driven to a large extent – but not exclusively – by the government sector, reflecting deficit reductions. The euro area-wide growth rate of savings started to decline in the course of 2007 and suddenly turned negative in the first quarter

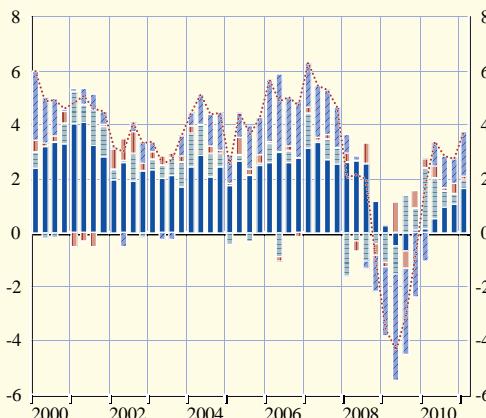
<sup>4</sup> Government income differs from government revenue, as the former nets certain expenditure items. For more details, see Box 1.

<sup>5</sup> Nominal GDP is closely related to nominal disposable income, because income in national accounts arises only from production.

**Chart 1 Euro area gross disposable income**

(annual percentage changes; percentage change contributions)

- households
- financial corporations
- non-financial corporations
- government
- ..... euro area economy

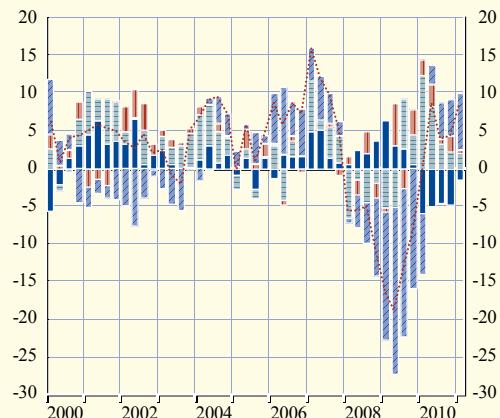


Sources: Eurostat and ECB.

**Chart 2 Euro area saving**

(annual percentage changes; percentage changes contributions)

- households
- financial corporations
- non-financial corporations
- government
- ..... euro area economy



Sources: Eurostat and ECB.

Note: With government saving being negative in level in recent quarters, a positive contribution of government to growth in euro area gross saving merely reflects a reduction in the level of dissaving.

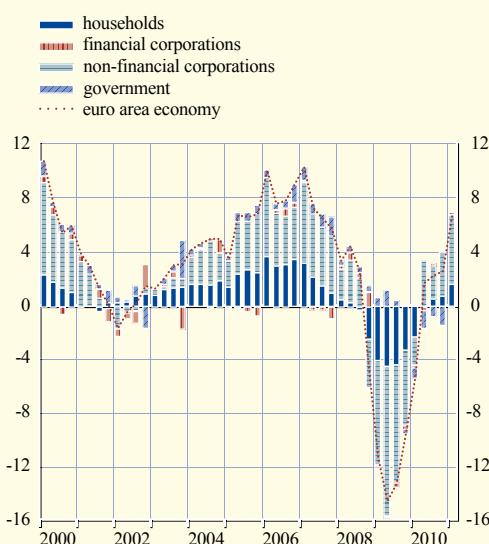
of 2008, particularly for governments and non-financial corporations, whereas households, by contrast, continued to increase savings.

After a steep contraction during 2008–09, growth in euro area-wide saving recovered on the back of the economic upturn led by net exports and capital formation (in particular, restocking) with still subdued consumption. Benefiting from this recovery, non-financial corporations increased their saving again from mid-2009. As automatic fiscal stabilisers reversed and deficit-reducing measures started to take hold, governments were able to decrease their rate of dissaving from the second quarter of 2010. In contrast to this, as of the first quarter of 2010, households started to reduce their saving flows amid improving confidence.

Even more pronounced was the adjustment in the *non-financial investment* decisions of private agents, as can be seen in Chart 3, which depicts growth in euro area nominal gross fixed capital formation by sector. Since 2002 growth in investment had been gradually increasing, with non-financial corporations taking the lead.

### Chart 3 Euro area gross fixed capital formation

(annual percentage changes; percentage change contributions)



Sources: Eurostat and ECB.

The booming housing markets of several euro area countries can also be seen in the robust growth rates of household investment. As housing markets started to lose momentum around 2007, household investment did the same. Following Lehman's insolvency, the sudden aggravation of the financial crisis induced a substantial drop in investment by households and an even more pronounced one by non-financial corporations (see Chart 3), which amplified the recession, before a rebound began in mid-2009.

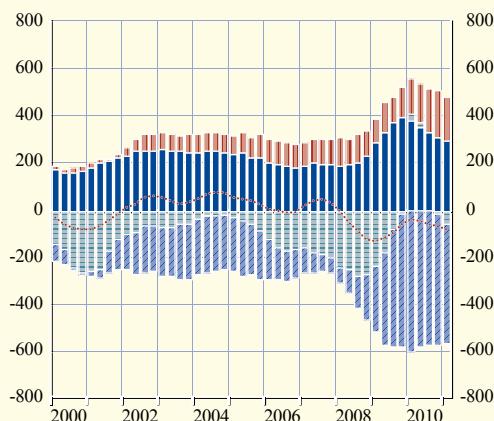
Chart 4 depicts the *net lending/net borrowing* by institutional sectors, which essentially results from the balance between saving and capital formation. Throughout the whole period of Monetary Union, both households and financial corporations have been net lenders (i.e. showing an excess of savings over capital formation). In 2004 non-financial corporations gradually started to increase their net borrowing to finance the excess of investment over retained earnings (i.e. saving). Owing to stable growth in income and saving, governments were, at the same time, able to reduce their deficits. However, while the euro area general government deficit declined gradually, most governments did not seize the opportunity of favourable economic conditions to sufficiently consolidate their fiscal positions by accelerating deficit reduction. Indeed, as Chart 4 indicates, euro area governments continued to show a deficit at the height of the economic expansion, thus failing to build up sufficient buffers during the boom period to face, in the short term, the eventual turnaround of the cycle, and failing to accumulate the required assets to face, in the longer term, the consequences of an ageing population. Nonetheless, with the net lending of households and financial corporations broadly offsetting the borrowing needs of non-financial corporations and governments, these developments did not lead to any significant change in the external deficit (reflecting the euro area current account balance).

In the run-up to the crisis, unlike non-financial corporations, households started retrenching

#### Chart 4 Euro area net lending/net borrowing

(four-quarter sum of transactions; EUR billions)

- households
- financial corporations
- non-financial corporations
- government
- ..... euro area external surplus/deficit



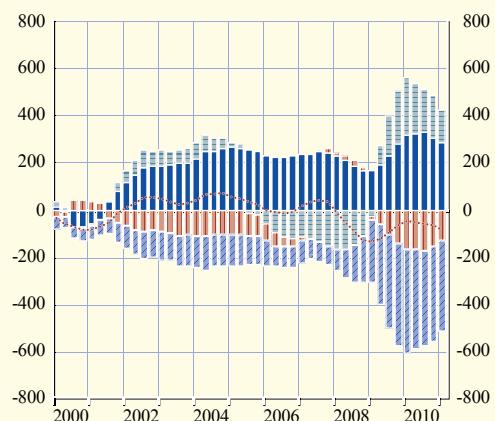
Sources: Eurostat and ECB.

Notes: The net borrowing of non-financial corporations in the period from the third quarter of 2000 to the first quarter of 2001 is affected by the purchase of mobile phone licenses (UMTS).

#### Chart 5 Euro area net lending/net borrowing: surplus vs deficit countries

(four-quarter sum of transactions; EUR billions)

- private sector of surplus countries
- government sector of surplus countries
- private sector of deficit countries
- government sector of deficit countries
- ..... euro area external surplus/deficit



Sources: Eurostat, ECB and ECB staff calculations.

Note: "Surplus countries" refer to Belgium, Germany, Luxembourg, the Netherlands, Austria and Finland. The "private sector" contains here all sectors other than government.

expenditure early on. They gradually increased their financial surpluses in the period 2006-08, first by way of a gradual moderation in housing investment growth and, later on, by restraining consumption and thus increasing saving. This adjustment by households exerted significant downward pressure on aggregate demand. At the same time, non-financial corporations continued on their expansionary path, thus compensating somewhat for these dampening influences, and kept increasing their financial deficit further, until Lehman's insolvency.

After this turning point, both sectors improved their financial balances simultaneously: households widened their surpluses, while non-financial corporations swung sharply from financial deficits into surpluses (notably by cutting fixed investment and destocking). The abrupt decline in activity and the activation of automatic stabilisers put considerable strain on government accounts, resulting in much higher government deficits.

In addition to some weaknesses in the configuration of sectoral deficits/surpluses at the euro area level, substantial regional intra-euro area imbalances were also building up prior to the crisis. Chart 5 presents an alternative description of the net lending/net borrowing positions within the euro area, where the non-government sectors taken as a whole and the general government sector are each split between countries running external current account surpluses for most of the recent period until the crisis hit ("surplus countries") and those running deficits ("deficit countries"). In the period 2006-08, the mounting deficits of both the private and government sectors in the deficit countries were covered by the ample private sector surpluses of the surplus countries. The heavy strains on government accounts arising from the recession were more pronounced in the deficit countries, as they failed in aggregate to balance their budgets at the peak of the cycle (in contrast to surplus countries in aggregate) and because their private sectors adjusted particularly strongly – swinging from large

deficit to significant surplus positions. By then, the initial geographical disequilibrium in private sector deficits/surpluses had turned into marked regional heterogeneities in government deficits across the euro area, eventually triggering doubts on government debt sustainability in some deficit countries.

Adding to the vulnerability of these sectors was a substantial build-up of leverage in the financial sector, especially in the other financial intermediaries (OFI) sector, as well as in the households and non-financial corporations sectors in many euro area countries, several of them experiencing housing booms. As the financial crisis hit, asset prices declined sharply, thereby further increasing leverage ratios (see Section 4). Banks' sources of market

funding suddenly became highly constrained due to money market tensions, a situation mitigated by the ample liquidity promptly made available by the Eurosystem.<sup>6</sup> As banks substantially tightened credit conditions to the non-financial private sector at the end of 2008,<sup>7</sup> concerns over credit supply in an environment of acute uncertainty, contributed to turning a mild cyclical slowdown into a severe real economy crisis. The tightening of bank credit conditions was also a factor spurring a change in the pattern of financial intermediation (see Section 5).

<sup>6</sup> See, for instance, Chart 21.

<sup>7</sup> According to the bank lending survey, banks started to tighten credit conditions in 2007, but the pace of tightening accelerated in the two quarters after Lehman's insolvency.

#### Box I

#### CONCEPTS USED IN SECTORAL ACCOUNTS

The sectoral accounts present the accounts of institutional sectors in a coherent and integrated way, linking – similar to the way in which profit and loss, cash flows and balance sheet statements are linked in business accounting<sup>1</sup> – uses/expenditure, resources/revenue, financial flows and their accumulation into balance sheets from one period to the next.

To this effect, all units in the economy are classified in one of the four institutional sectors (i.e. households, non-financial corporations, financial corporations and general government). Their accounts are presented using identical classifications and accounting rules (those of ESA 95), in a manner such that each transaction/asset reported by one unit will be symmetrically reported by the counterpart unit (at least in principle). Accordingly, the sectoral accounts present the data with three constraints: each sector must be in balance vertically (e.g. the excess of expenditure on revenue must be equal to financing); all sectors must add up horizontally (e.g. all wages paid by sectors must be earned by households); and transactions in assets/liabilities plus holding gains/losses and other changes in the volume of assets/liabilities must be consistent with changes in balance sheets (stock-flow consistency). The sectoral accounts are commonly presented in a matrix form, with sectors in columns and transactions/instruments in rows, with horizontal and vertical totals adding up (see the example in the table).<sup>2</sup>

<sup>1</sup> Sectoral accounts differ from business accounting in a number of ways, and most notably in the sense that the latter does not systematically distinguish *transactions* from *others flows* (although an increasing emphasis for distinguishing between *income* and *comprehensive income* in business accounting can be observed).

<sup>2</sup> For a comprehensive matrix presentation of the euro area, see Table 3.1. of the euro area statistics section.

### Simplified matrix presentation of the EAA

	A HH	B NFC	C FC	D Gov	E RoW	F=A to E =G to K							
						Total economy	G HH	H NFC	I FC	J Gov	K RoW		
<b>Uses/Expenditure</b>													
1=2+3+4+5	<b>Total</b>	<b>92</b>	<b>105</b>	<b>30</b>	<b>20</b>	<b>15</b>		<b>262</b>	<b>100</b>	<b>100</b>	<b>30</b>	<b>16</b>	<b>16</b>
2	Products	76	15		10	10		111	-	100	-	-	11
3	Wages		60	5	10			75	75	-	-	-	-
4	Interests		30	25		5		60	25	-	30	-	5
5	Taxes	16	-	-	-	-		16	-	-	-	16	-
6=1(G-A), 1(H-B), ... =7(A-G), 7(B-H), ...	<i>Surplus/deficit</i>	<i>8</i>	<i>-5</i>	<i>0</i>	<i>-4</i>	<i>1</i>		<i>0</i>	-	-	-	-	-
<b>Transactions in financial assets</b>												<b>Transactions in liabilities</b>	
7=8+9	<b>Total</b>	<b>13</b>	<b>1</b>	<b>15</b>	<b>0</b>	<b>1</b>		<b>30</b>	<b>5</b>	<b>6</b>	<b>15</b>	<b>4</b>	-
8	Deposits	13	1	-	-	1		15	-	-	15	-	-
9	Loans	-	-	15	-	-		15	5	6	-	4	-
10=1A+7A-1G-7G, 1B+7B-1H-7H, ...	<b>Net total transactions</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	-	-	-	-	-
<b>Financial assets</b>												<b>Liabilities</b>	
11	<b>Opening balance sheet</b>	<b>70</b>	<b>20</b>	<b>100</b>	<b>-</b>	<b>12</b>		<b>202</b>	<b>40</b>	<b>60</b>	<b>90</b>	<b>2</b>	<b>10</b>
12=7	Transactions	13	1	15	-	1		30	5	6	15	4	-
13	Other economic flows		1	1	-	-		2	-	-	2	-	-
14=11+12+13	<b>Closing balance sheet</b>	<b>84</b>	<b>22</b>	<b>115</b>	<b>-</b>	<b>13</b>		<b>234</b>	<b>45</b>	<b>66</b>	<b>107</b>	<b>6</b>	<b>10</b>
15=14(A-G), 14(B-H), ...	<b>Net financial worth</b>	<b>39</b>	<b>-44</b>	<b>8</b>	<b>-6</b>	<b>3</b>		<b>0</b>	-	-	-	-	-

Notes: HH: households, NFC: non-financial corporations, FC: financial corporations, Gov: general government, RoW: rest of the world. The figures shown in this table are simply illustrative.

The first five rows of the table show the expenditure and revenues of each of the sectors (broken down into types of expenditure/revenue). In row 6, the difference between revenue and expenditure (the surplus/deficit) is shown.

The notions of revenue and expenditure<sup>3</sup> are close to, but generally less encompassing than, the more traditional national account concepts of resources and uses. Income can then be defined as revenue (except capital transfers received) minus expenditure other than final consumption and capital expenditure (capital formation and capital transfers paid). For corporations, income corresponds to retained earnings. Savings is the excess of income over final consumption.<sup>4</sup>

Surpluses/deficits are then associated with transactions in financial assets and liabilities in each sector. This is shown in rows 7 to 10. The bottom part of the table shows the stocks of assets and liabilities, which result from the accumulation of transactions and other flows. This table is extremely simplified (e.g. omitting an explicit presentation of the stock of non-financial assets).<sup>5</sup>

3 ESA 95 formally defines revenue and expenditure for the government sector by reference to uses of the government sector.

4 A glossary of national accounts terms can be found at: [http://www.ecb.europa.eu/stats/pdf/eaa/EAA\\_Glossary.pdf?3f0aa8a9cd633211f9b30a47738e3d69](http://www.ecb.europa.eu/stats/pdf/eaa/EAA_Glossary.pdf?3f0aa8a9cd633211f9b30a47738e3d69)

5 For a methodological description of the EAA, see [http://www.ecb.europa.eu/stats/pdf/eaa/eas\\_note\\_ch3.pdf?766369a89fd9e1c4d1ff32f25a54eea1](http://www.ecb.europa.eu/stats/pdf/eaa/eas_note_ch3.pdf?766369a89fd9e1c4d1ff32f25a54eea1)

The excess of revenue over expenditure is the net lending/net borrowing (i.e. financial surplus/deficit), a key indicator of the sectoral accounts. Typically, a household's revenue will exceed its expenditure. Households are thus providers of net lending to the rest of the economy. Non-financial corporations typically do not cover their expenditure by revenue, as they finance at least part of their non-financial investments by funds from other sectors in addition to internal funds. Non-financial corporations are thus typically net borrowers. Governments are also often net borrowers. If the net lending provided by households is not sufficient to cover the net borrowing of the other sectors, the economy as a whole has a net borrowing position vis-à-vis the rest of the world. Deviations from this typical constellation were apparent in several euro area countries before the crisis, in particular, with extremely elevated residential investment that resulted in households becoming net borrowers (as has been the case in the United States).

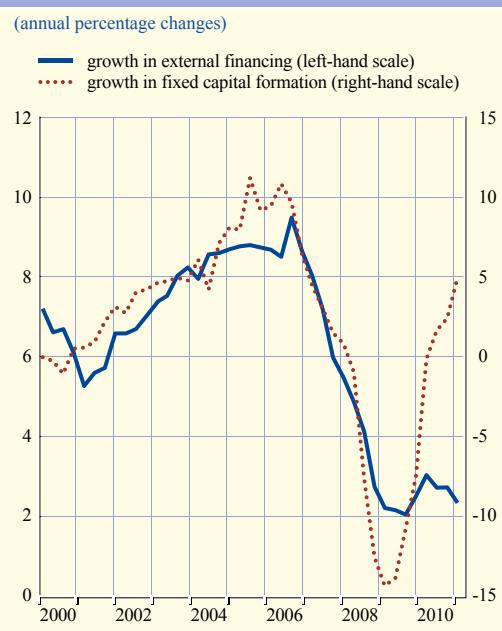
The adding-up constraints in the accounts require that any (ex ante) increase in the financial balance of one sector is matched by a reduction in the financial balances of other sectors. The accounting framework does not, however, indicate by which mechanism this reduction will be brought about, or which mechanisms are at play.<sup>6</sup> The EAA makes it possible to track changes in net lending in the different sectors of the economy. It also specifies the financial instruments affected and shows how the transactions and valuation changes leave a lasting effect on the balance sheets of the sectors.

6 If, for example, the net lending of households increases because they consume less and save more, this results, in the first instance, in higher inventories of non-financial corporations, which in turn need to be financed. Thus, the higher household sector saving provides the required financing to non-financial corporations. This can subsequently prompt adjustments whereby, for example, non-financial corporations cut costs, in turn reducing household revenue, and thus reducing the funds that households have available for non-financial corporations.

### 3 SHIFTS IN SECTORAL FINANCIAL DEFICITS/SURPLUSES

This section looks in more detail at developments – during the slowdown, the recession and the recovery – underlying the dynamics of the net lending/net borrowing positions of the different sectors. In the run-up to the crisis, *households* started to retrench expenditure early on. They steadily increased their financial surpluses in the period 2006–08, first by way of a gradual moderation in housing investment growth and, later on, by restraining consumption. In 2007, with conditions in housing markets deteriorating, growth in (nominal) housing investment by euro area households started to moderate, eventually turning into a slight yearly decline by mid-2008. This was one of the main factors behind the halving of the growth rate of households' external financing (comprising all liabilities) (see Chart 6). Although household income kept growing around a fairly stable annual nominal

**Chart 6 Household fixed capital formation and external financing**

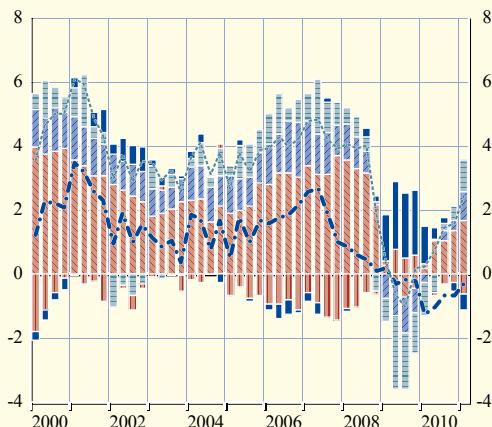


Sources: Eurostat and ECB.

**Chart 7 Households' nominal gross disposable income**

(annual percentage changes; percentage point contributions)

- social benefits net of social contributions
- direct taxes
- net property income
- gross operating surplus and mixed income
- compensation
- gross household disposable income
- real income growth

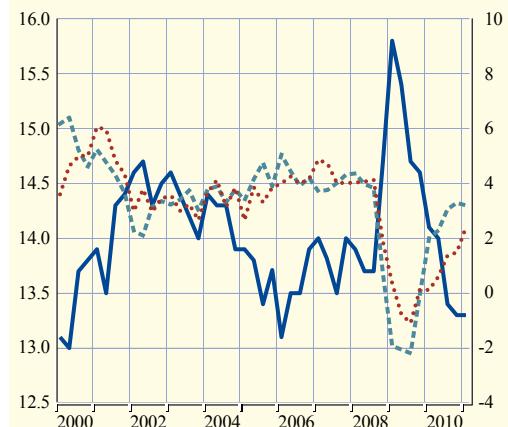


Sources: Eurostat and ECB.

**Chart 8 Household income, consumption and savings ratio**

(annual percentage changes; percentages)

- saving ratio (seasonally adjusted) (left-hand scale)
- household income (right-hand scale)
- consumption (right-hand scale)



Sources: Eurostat and ECB.

rate of 4% (see Chart 7), by the end of 2007 this was barely sufficient to compensate for the rapid acceleration in HICP inflation, which peaked at 4.1% in July 2008, fuelled by rapidly increasing commodity prices. Confronted with this real income shock, households preferred to slow their real consumption, rather than to try to smooth consumption by reducing their savings flows.

In the two quarters following Lehman's insolvency, household spending softened further. The decline in housing investment accelerated, reaching -14.9% in year-on-year terms by the second quarter of 2009. Households also cut nominal consumption, partly facilitated by a short episode of falling consumer prices. They also raised their savings ratio by 1.5 percentage points over two quarters (see Chart 8). In the context of declining compensation of employees as well as contracting net property income earned (interest and dividends), net transfers originating from government (social benefits minus taxes and social contributions) strongly supported household income growth, a phenomenon that

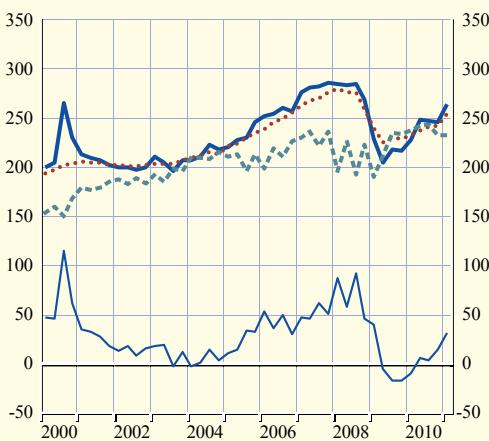
progressively reversed in the course of 2010 as the other components of household income recovered (see Chart 7). With income recovering, consumption growth received further support from a rapid decline of savings ratios to decade lows by the end of 2010. Country developments presented strong heterogeneities with, for instance, some countries showing booms in housing investment prior to 2007, or more pronounced savings ratio cycles than others over the period 2008–10.

In contrast to the early slowdown in household spending, *non-financial corporations* continued to increase their borrowing and expand their balance sheets until the third quarter of 2008. Chart 9 shows the upswing up to that date in net borrowing of non-financial corporations (seasonally adjusted), arising from elevated capital formation and falling retained earnings. The breakdown of non-financial corporations' external financing by "use of funds" (as shown in Chart 10) also points at increasing risk exposure, with stepped-up purchases of quoted shares, up to mid-2008. Furthermore, the hefty

**Chart 9 Non-financial corporations' capital formation, retained earnings and net borrowing (+)/net lending (-)**

(EUR billions; seasonally adjusted)

- non-financial investments
- of which, fixed capital formation
- - - retained earnings and net capital transfers
- net borrowing (+)/net lending (-)



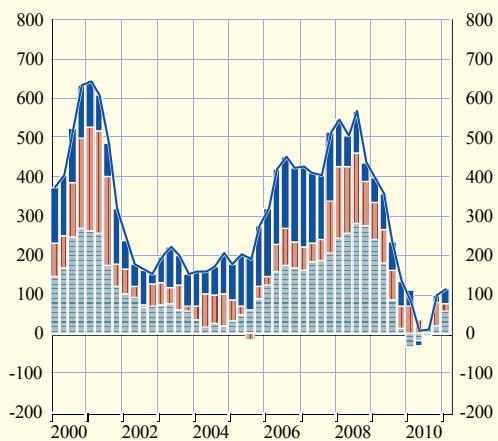
Sources: Eurostat, ECB and ECB staff calculations.

Notes: The spike in 2000 investment and net borrowing reflects the impact of the mobile phone licences (UMTS) that were accounted as non-financial corporation expenditure.

**Chart 10 Non-financial corporations' external financing by use of funds**

(four-quarter moving sum; EUR billions)

- liquid assets
- quoted equities purchased
- net borrowing (+)/net lending (-)
- total



Sources: Eurostat and ECB.

Note: For presentational purposes, some transactions in assets are netted from financing, as they are predominantly internal to the sector (loans granted by non-financial corporations, unquoted shares, other accounts receivable/payable).

accumulation of liquid assets<sup>8</sup> observed since 2006 had moderated from the end of 2007 onwards, as corporations started drawing on their liquidity buffers. Abruptly reversing course in the last quarter of 2008, non-financial corporations cut all types of expenditure – fixed investments, inventories, wages, current expenses (e.g. travel), but also interest and dividends – and of other outlays, such as the acquisition of quoted shares. They also paid less tax on their income. Non-financial corporations managed to turn their very large financial deficit recorded in 2008 into a financial surplus by summer 2009, hoarding cash and compressing their external financing needs. From mid-2009 onwards, the uptick in capital formation (initially driven largely by the reversal of the steep destocking in the first half of 2009) was almost fully matched by improved retained earnings. This led to a situation where non-financial corporations avoided returning to any noticeable financial deficit position, and where the upturn in their external financing was mostly accompanied by renewed liquidity accumulation,

until the first quarter of 2011, when net borrowing by non-financial corporations increased significantly.

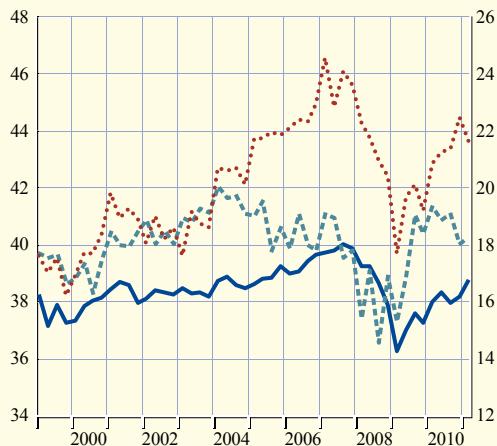
An analysis of profit margins can be based on a number of concepts compiled from the EAA, as shown in Chart 11. Particularly noticeable is the steep fall in gross operating surplus and gross entrepreneurial income since mid-2007, which subsequently bottomed out in the first quarter of 2009. This decline was due initially, among other things, to incomplete pass-through of commodity price increases and persistent wage pressures, and thereafter, to the adverse impact of the recession. In the course of the recovery, gross operating surplus margins recovered gradually, in a context of strong competitive pressures and incomplete pass-through of high input costs. By contrast, retained earnings of non-financial corporations rebounded more quickly, on the back of lower net interest paid (corporations being prime beneficiaries of the

8 Deposits, debt securities held and mutual fund shares.

**Chart 11 Gross profit measures of euro area non-financial corporations**

(as a percentage of value added; seasonally adjusted)

- gross operating surplus (left-hand scale)
- gross entrepreneurial income (left-hand scale)
- - - gross disposable income (= retained earnings) (right-hand scale)

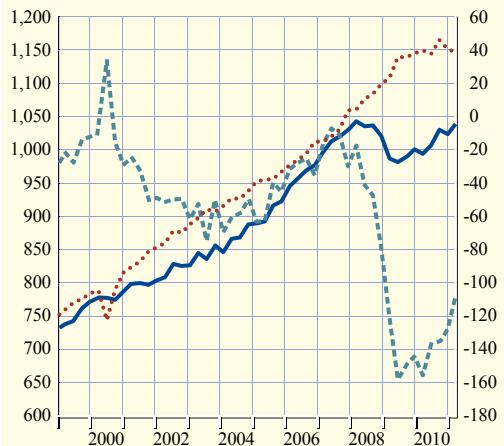


Sources: Eurostat, ECB and ECB staff calculations.

**Chart 12 Government expenditure, revenue and deficit**

(EUR billions; seasonally adjusted)

- revenue (left-hand scale)
- expenditure (left-hand scale)
- - - surplus/deficit (right-hand scale)



Sources: Eurostat, ECB and ECB staff calculations (seasonal adjustments by the authors).

very low policy rates), low taxes paid (delayed impact of the trough in activity) and low net dividends paid (corporations widely cut or froze dividends in 2009 as supplementary cash-saving measures). The recovery in entrepreneurial income presents an intermediate case, more pronounced than that of the operating surplus, but less so than that of retained earnings.<sup>9</sup>

The *government* position started to deteriorate slowly from near balance in the second quarter of 2007 until the third quarter of 2008, mostly owing to slower growth in revenue. In 2009, however, it deteriorated markedly on account of the operation of automatic fiscal stabilisers and the implementation of a number of policy measures<sup>10</sup> (see Chart 12). Direct taxes on households and non-financial corporations, as well as social contributions levied, contracted substantially, and social benefits paid accelerated, all of which supported the income of households and corporations. The recession had by then transformed private sector imbalances, accumulated in some countries before the crisis, into large (or larger) government sector deficits, triggering an urgent need for fiscal adjustment.

As of the first quarter of 2010, the implementation of corrective fiscal packages started to slow down government expenditure, reaching a negative year-on-year rate of change in the first quarter of 2011 for the first time on record since the start of Monetary Union, with governments' compensation of employees being nearly stable year on year for three quarters in a row. At the same time, government revenue began to increase due to consolidation measures and the effects of automatic fiscal stabilisers in a recovering economy. This has resulted in a moderate

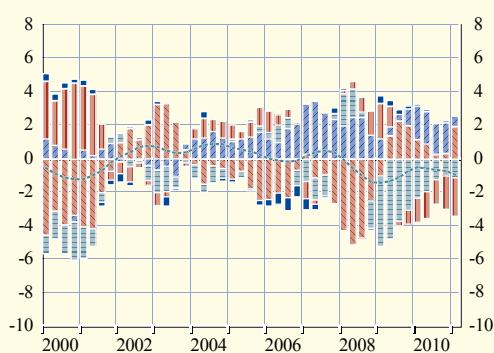
9 The gross operating surplus captures the margins on production activity (broadly, sales minus purchases and compensation of employees). The transition from gross operating surplus to gross entrepreneurial income adds to this net interest received and dividend received. Retained earnings (which, for corporations, is also the disposable income, as well as saving) deducts further other net current transfers: mostly taxes and dividends paid. Assessing margins based on entrepreneurial income can be prone to misinterpretation, mostly because dividends internal to the sector (i.e. distributed by resident non-financial corporations and earned by other resident non-financial corporations) are generally not eliminated. As a rough indication, dividends earned by non-financial corporations increased from 3.8% of value added in 2000 to 7.8% in 2010.

10 These exclude, however, most measures in support of the banking sector classified by Eurostat as not having an impact on the deficit (see Section 5).

**Chart I3 Euro area net lending vis-à-vis the rest of the world (by instrument)**

(as a percentage of GDP; four-quarter moving sums)

- other accounts
- equity
- debt securities
- loans
- cash and deposits



Sources: Eurostat and ECB.

Note: This chart depicts transactions in euro area residents' financial assets net of liabilities against non-residents, by instrument, thus measuring net inflows (-) or outflows (+) of the euro area in a given instrument.

reduction of the government deficit, starting from the first quarter of 2010. Fiscal imbalances, however, remain large.

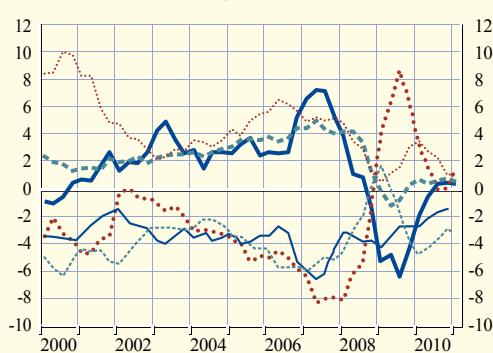
To complete the examination of institutional sectors, it is worth noting that *financial corporations* in the euro area exhibit a fairly regular and large financial surplus, mostly reflecting retained earnings that add to their capital. These were, however, insufficient to prevent their leverage ratio from rising (see Section 4). Moreover, their financial surpluses tended to increase further during and after the crisis. This somewhat counter-intuitive result largely reflects the rebounds in spreads charged on intermediation activities since 2007, which had previously fallen to very low levels.<sup>11</sup>

The excess of resident sectors' surpluses over deficits has led, over the period 2002–07, to a euro area net lending position vis-à-vis the *rest of the world*. In the course of 2007 and 2008, the combined effect of a negative terms-of-trade shock (driven by a large commodity price increase) and repeated negative net trade contributions to GDP growth turned the euro

**Chart I4 Euro area cross-border deposits and securities flows**

(as a percentage of GDP; four-quarter moving sums)

- currency and deposits assets
- currency and deposits liabilities
- debt securities assets
- debt securities liabilities
- shares and other equity assets
- shares and other equity liabilities



Source: ECB.

Notes: Assets and liabilities of the euro area. Inflows (-)/outflows (+).

area surpluses into deficits (see Charts 13 and 5). Thereafter, the terms of trade markedly improved from mid-2008 for a few quarters, but rapidly deteriorated again from mid-2009. Although the euro area generally registered positive net trade contributions from the second quarter of 2009, benefiting from a solid world economic recovery, this was insufficient to return the external balance to surplus.

The financing of the euro area net borrowing position took place smoothly during both the crisis and the recovery, although one can identify three separate phases. First, from mid-2007 to mid-2008, large net inflows in deposits were financing outflows in other instruments: loans, debt securities and equity. Second, after Lehman's insolvency, gross cross-border transactions contracted rapidly, particularly interbank deposits (see Chart 14).

11 Under the ESA 95 accounting rules, earnings exclude holding losses (or gains) such as those stemming from the toxic assets that banks had purchased during the boom. In addition, the rescue packages are not accounted as income of recipient (or capital transfers received) by Eurostat, but as financing.

The euro area deficit of 2008-09 was predominantly financed by net inflows in debt securities – mostly purchases, by non-residents, of bonds issued by residents (rather than disposal by the latter of bonds issued by non-residents). In a third phase in 2010, the euro area deficit was mainly financed by net inflows in equity (mostly purchases by non-residents) at the time of a fairly strong euro.

#### 4 LEVERAGE OF INSTITUTIONAL SECTORS

Financial deficits/surpluses and investments in non-financial assets both affect balance sheet developments and are affected by them. In particular, the balance between debt<sup>12</sup> and assets is a key focus of economic and financial analysis, notably with a view to monitoring financial stability and debt sustainability. Although it is difficult to determine *a priori* what constitutes a sustainable level of debt,<sup>13</sup> sudden changes in the perception of debt sustainability can trigger ensuing corrections with large macroeconomic consequences, as seen during this financial crisis. Indebtedness can be measured in relation to income, but also by reference to both financial and non-financial assets (see Box 2).

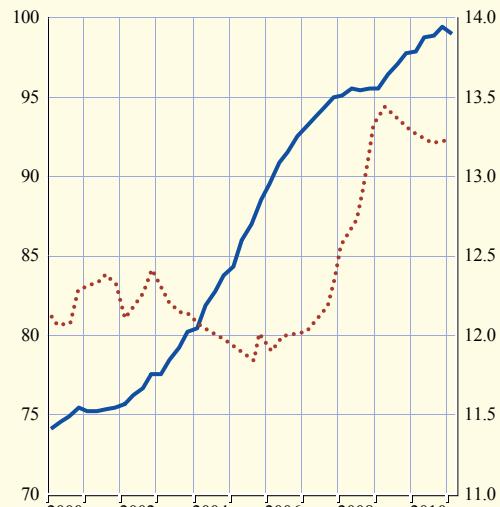
##### NON-FINANCIAL SECTORS LEVERAGE

Before the crisis, households in the euro area increased their indebtedness substantially when compared with their disposable income – from about 75% in 2000 to about 94% in 2007 (see Chart 15). However, as the value of household assets – both financial and non-financial – grew faster, households' debt-to-asset ratios actually decreased slightly over the same period. This may have contributed to the fall in the household savings ratio during this period via wealth effects. Starting in 2007, house prices in some euro area countries declined and, in 2008, the aggregate value of households' non-financial assets in the euro area declined substantially, leading to contractions in households' net worth.<sup>14</sup> Reacting to this, households reduced both their residential investments and their debt financing, managing

**Chart 15 Household debt ratios**

(as a percentage of households' gross disposable income (HGDI) and of assets<sup>1)</sup>)

— debt to HGDI (left-hand scale)  
... debt to assets (right-hand scale)



Sources: Eurostat and ECB.  
1) Financial and non-financial assets.

to temporarily halt the growth of their debt-to-income ratio. In 2009 they cut their non-financial investment and associated financing needs even further, although their debt-to-income ratio rose again as their disposable income shrank. Only in 2010 did this ratio stabilise (at around 99%), as the very low growth in household debt was offset by a similarly moderate rise in disposable income.

12 In this section, debt is defined as comprising all ESA 95 liabilities excluding shares and other equity and financial derivatives. For the non-financial sectors, other accounts payable are also excluded.

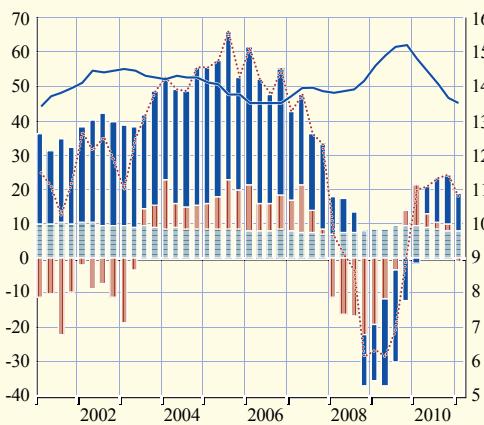
13 Most of the theoretical literature has focused on the composition of financing or leverage rather than on debt levels following the Modigliani-Miller propositions. For the original formulation of the "irrelevance proposition" (on capital structure) see Modigliani, F. and Miller, M., "The Cost of Capital, Corporation Finance and the Theory of Investment", *American Economic Review*, No 48(3), 1958, pp. 261-97. The subsequent literature on firms' capital structure has identified factors that affect the optimal equity to debt ratio. For a review of the subsequent literature see Villamil, A., "The Modigliani-Miller theorem" in Durlauf, S.N. and Blume, L.E. (eds.), *The New Palgrave Dictionary of Economics*, Palgrave MacMillan, 2008.

14 Net worth in ESA 95 is defined as assets minus liabilities, including equity.

### Chart 16 Change in net worth of euro area households

(four-quarter moving sums; as a percentage of disposable income)

- other flows in non-financial assets<sup>1)</sup> (left-hand scale)
- other flows in financial assets and liabilities<sup>2)</sup> (left-hand scale)
- change in net worth owing to saving<sup>3)</sup> (left-hand scale)
- savings rate (right-hand scale)
- change in net worth (left-hand scale)



Sources: Eurostat and ECB.

- 1) Mainly holding gains and losses on real estate and land.
- 2) Mainly holding gains and losses on shares and other equity.
- 3) This item comprises: net saving, net capital transfers received, and the discrepancy between the non-financial and financial accounts.

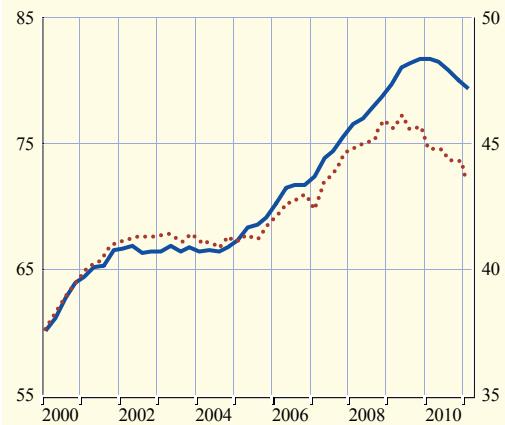
The development of household net worth can be further analysed by decomposing its quarterly changes into transactions and other changes<sup>15</sup> (see Chart 16). The latter are mostly due to holding gains on shares and residential property. During the years prior to the crisis, euro area household net worth, expressed here in Chart 16 as a percentage of disposable income, grew strongly, largely due to continued house price increases.

These valuation gains were much larger than the accumulation of wealth through savings. Later on, the sharp decline in share prices in 2008 led to large valuation losses in financial assets, a situation further aggravated by losses in residential property values towards the end of 2008. These developments, as well as the general deterioration in overall economic prospects, prompted households to raise their savings, which, however, barely slowed the decline in net worth in 2009. It was only in 2010 that net

### Chart 17 Debt ratios of non-financial corporations

(as a percentage of GDP and of assets<sup>1)</sup>)

- debt to GDP (left-hand scale)
- debt to assets (right-hand scale)



Sources: Eurostat and ECB.

- 1) Financial and non-financial assets.

worth started to increase again, as holding losses on assets turned into holding gains.

As explained in Section 3, euro area non-financial corporations started to retrench on expenditure later than households. Until mid-2008, they continued to accumulate debt at a fast pace in a context of high investment and mergers and acquisitions activity financed by debt; a trend that had started in 2004. Thereafter, as GDP decreased sharply in 2009, the debt-to-GDP ratio of non-financial corporations continued to rise throughout the year (denominator effect), despite the fact that non-financial corporations had reacted quickly by cutting their financial deficits, turning them into surpluses within a few quarters. Only in 2010 did the debt-to-GDP ratio of non-financial corporations start to fall, as recovering GDP growth outpaced debt financing (see Chart 17).

<sup>15</sup> The so-called *other economic flows*, which comprise *holding gains and losses* and *other changes in volume of assets*.

## FINANCIAL SECTOR LEVERAGE

Unlike the non-financial sectors, the dynamics of financial intermediaries' balance sheets are not dominated by own-sector expenditure-revenue imbalances and do not directly respond to them. In line with their economic function, intermediaries' balance sheets are vehicles for channelling financing between non-financial agents. Thus, their balance sheet developments are more intertwined with those of the latter.

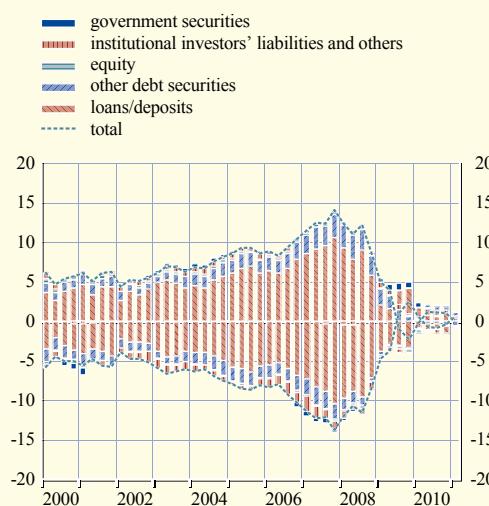
In economic expansions, intermediaries' balance sheets grow above average, as non-financial institutional units increasingly need funds, while in slowdowns, growth in intermediaries' balance sheets tends to be more moderate. Chart 18 shows how this pattern has been epitomised in the EAA by euro area monetary financial institutions (MFIs) since 2005, with a gradual acceleration in annual balance sheet growth that reached 14% by the end of 2007. The following year showed a moderate slowdown in the growth rate, which developed into a sharp drop after Lehman's insolvency and reached an annual rate of contraction of 2% by the end of 2009.

Periods of high growth in financial intermediaries' balance sheets may result in pro-cyclical increases in their debt-to-asset ratio (in the following referred to as the "leverage ratio") that could pose risks to financial stability and trigger or exacerbate a boom-bust cycle in economic growth.<sup>16</sup> Chart 19 presents the leverage ratios for MFIs and other financial intermediaries (OFIs)<sup>17</sup> over the last ten years distinguishing between the "headline" ratio and the "notional" ratio resulting only from the active accumulation of debt and capital, abstracting from effects of asset prices on leverage (see also Box 2). This makes it possible to examine changes in leverage due to asset price movements as well as the active reaction of intermediaries to them (and their effect on leverage).

The level of the ratios is higher for MFIs, for which leverage is part of their basic business activity, i.e. taking deposits and granting loans. However, since the turn of the century, OFIs have increased their headline leverage ratio considerably, from 27% at

**Chart 18 MFI balance sheet**

(annual percentage changes; percentage point contributions)



Source: Eurostat and ECB.

the beginning of 2000 to 41% by the end of 2010 (by contrast, the ratio of banks rose by less than two percentage points over the same period, to 92%), indicating a progressive shift of financial intermediation to non-bank institutions.<sup>18</sup>

The review of developments in leverage can be structured into three distinct phases. First, up to

<sup>16</sup> Parts of the financial sector are subject to incentives to react to asset price increases by engaging in further debt accumulation so to restore or even increase their leverage (see, for instance, Adrian, T. and Shin, H.S., "Liquidity and Leverage", *FRB of New York Staff Report No 328*, 1 January 2009). Moreover, institutional factors might further encourage such behaviour, such as a tendency towards looser regulation in boom times (see "The role of valuation and leverage in procyclicality", *CGFS Papers*, No 34, Report of the joint Working Group of the Financial Stability Forum and the Committee on the Global Financial System, chaired by Jean-Pierre Landau, Banque de France, April 2009).

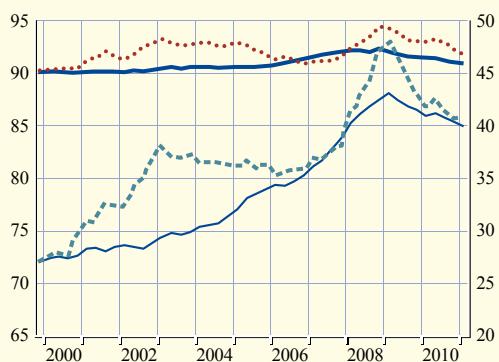
<sup>17</sup> The OFI sector encompasses very different agents: leveraged bank-like intermediaries – sometimes referred to as "shadow banking" – such as securitisation vehicles, but also investment funds, whose liabilities are almost entirely comprised of equity.

<sup>18</sup> Unlike the banking sector, these intermediaries lack a deposit insurance scheme, access to central bank liquidity facilities and stringent regulatory requirements. The adoption of business models that economise on regulatory capital, prompted intermediation activity to migrate to agents included in the OFI sector, such as securitisation vehicles, as a result of a shift from traditional banking (deposit/loan intermediation) to the originate-to-distribute model (loans originated by banks but distributed to investors through securitisation).

**Chart 19 Leverage in the financial institutions sector**

(debt as a percentage of assets)

- MFIs notional leverage ratio (left-hand scale)
- MFIs debt to assets (left-hand scale)
- - - OFIs debt to assets (right-hand scale)
- OFIs notional leverage ratio (right-hand scale)

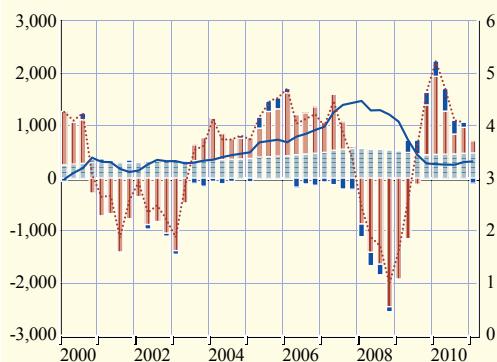


Sources: Eurostat and ECB.

**Chart 20 Profits of financial institutions**

(four quarter flows in EUR billions; percentages)

- holding gains in debt securities (left-hand scale)
- holding gains in equity (left-hand scale)
- - - gross entrepreneurial income (left-hand scale)
- total profits (left-hand scale)
- ..... income to notional equity (right-hand scale)



Sources: Eurostat and ECB.

Notes: Profits defined as the sum of gross entrepreneurial income and holding gains in equity and debt securities assets (see footnote 19). Income to notional equity refers to gross entrepreneurial income to notional equity. Notional equity is the result of accumulating equity transactions to the stock of equity at market value at the end of the first quarter of 1999. Equity comprises shares and other equity (excluding money market fund shares). Equity transactions cover financial transactions in equity (equity issuance) and retained earnings.

the end of 2004, the notional leverage ratio of MFIs remained fairly unchanged, while OFIs strongly increased theirs. This development is not clearly visible in the headline ratios, which are affected by the asset price increases that took place over that period. Second, from early 2005 to mid-2008, the masking effect of asset prices was even more pronounced, as the headline leverage ratios showed a flat profile for OFIs and a decreasing one for MFIs, while both sectors were in fact heavily adding debt, thus increasing their notional leverage. The headline ratio for both sectors only started to increase from the end of 2007, when asset prices started to slow down. Finally, the aftermath of Lehman's insolvency was then characterised by sustained deleveraging in both sectors, to some extent influenced by the large impact that the asset price declines had on their headline ratio and the subsequent reaction to bring them back to sustainable levels. In this context, the growth in financial corporations' balance sheets almost came to a halt (see Chart 18 for MFIs), reflecting, on the

one hand, disinvestment in non-core assets and, on the other, a shift from bank to market financing (see Section 5). This sequence of events would suggest that there is a lead-lag relation between the headline leverage ratios and the notional ratios, and that positive feedback forces between asset prices and leverage play a relevant role in euro area debt developments.

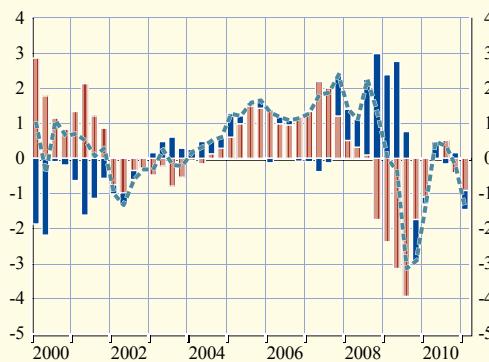
The sharp increase in leverage of the last decade also contributed to the apparent substantial increase in ex post return on equity, as measured by entrepreneurial income to notional equity in Chart 20. In addition, Chart 20 shows a broader measure of profits of financial institutions comprising entrepreneurial income and holding gains on assets<sup>19</sup>. Entrepreneurial income

19 Gross entrepreneurial income (see footnote 9) in the case of MFIs basically covers interest received minus interest paid, plus banking fees and dividends received. Holding gains in assets cover valuation changes in assets (which are valued at market prices in national accounts), comprising both the profits and losses realised when selling assets but also those latent in the balance sheet but not yet realised.

**Chart 21 MFI wholesale financing by MFIs**

(annual percentage changes; percentage point contributions)

financing by the Eurosystem  
other wholesale financing  
total



Sources: Eurostat and ECB.

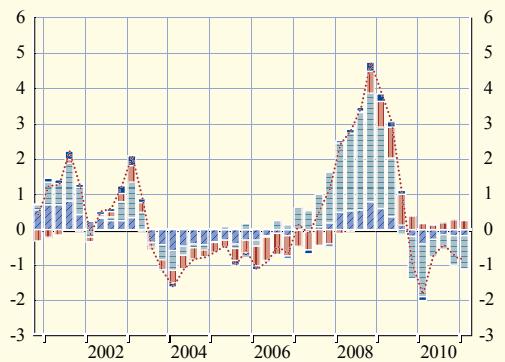
Note: Changes in the share of wholesale financing of total deposit/loan financing.

**Chart 22 Euro area leverage ratio<sup>20</sup> and contribution by sector**

(annual percentage changes; percentage point contributions)

households  
government  
financial corporations

non-financial corporations  
total euro area



Sources: Eurostat and ECB.

I) "Headline" leverage ratio – non-consolidated data.

contributed steadily to profitability up until 2008, when the slowdown in activity and subsequent reductions in interest rates hit profits of financial institutions, which, together with a decrease in leverage, has caused the ratio of income to notional equity to decrease by more than one percentage point since the end of 2007. At the same time, financial institutions have benefited from holding gains in equity since mid-2009, compensating, to a large extent, for the losses suffered during the first phase of the financial crisis.

The leverage ratios of financial institutions also reflect the proliferation of numerous intermediation "layers" and the lengthening of intermediation chains<sup>20</sup> between ultimate lenders and ultimate borrowers. Chart 21 illustrates this phenomenon by looking at the change in the share of MFI wholesale financing within total MFI financing via deposits and loans. Wholesale financing is the funds channelled to MFIs via other intermediaries: other MFIs (i.e. the interbank market), institutional investors (OFIs), non-residents (mostly foreign banks) or the Eurosystem. It therefore excludes direct traditional deposit financing from the non-financial sector.<sup>21</sup> Wholesale financing rose sharply from 2004 onwards, reflecting a progressive departure from traditional financing

patterns (moving, for instance, to an "originate-to-distribute" business model or to repo financing), and eventually increasing the exposure of MFIs to disruptions in money markets. When the financial turmoil unfolded in 2007 and money markets became impaired, recourse to the Eurosystem initially provided support to overall wholesale financing. Thereafter, the malfunctioning of the money markets led to a severe drop in the share of wholesale financing, in spite of increasing support from the Eurosystem. This retrenchment in wholesale financing was an important element in the MFI adjustment of balance sheets in the wake of the crisis.

## TOTAL ECONOMY LEVERAGE

Chart 22, which depicts changes in the debt-to-asset ratio (headline ratio, at market value) of the total economy broken down by institutional sector, shows the prominent role

20 See, for instance, Shin, H.S., "Financial intermediation and the post-crisis financial system", *BIS Working Paper Series*, No 304, Basel, March 2010.

21 A more thorough analysis should include debt security financing. The EAA does not yet provide a counterpart sector breakdown of securities holdings by issuing sectors. However, the ECB envisages compiling such information in future.

played by financial institutions in building up leverage in the run-up to the crisis. The two episodes of balance sheet adjustment observed since the turn of the century (i.e. 2000-02 and 2008-09) have in common the prominent role of non-financial corporations in leveraging drives prior to busts. However, the recent

period has been characterised by a notably larger contribution by financial institutions to leverage. This suggests a much more relevant role of bank or bank-like leverage in this recent credit boom, whereas the “dotcom bubble” at the turn of the century was more market and equity-driven.

## Box 2

### INDEBTEDNESS AND LEVERAGE METHODOLOGY

Analyses to assess indebtedness commonly rely on examining debt-to-income or debt-service-to-income ratios. However, given that debts are incurred to finance assets, it is also important to analyse debt by reference to assets, as captured by leverage ratios (debt-to-asset ratio).<sup>1</sup> Assets comprise not only financial assets, but also non-financial assets, the value of which is considerable but difficult to measure.<sup>2</sup> A primary justification for favouring leverage analysis is that assets often provide sources of cash flows needed to satisfy the debt service, serve as collateral for refinancing and can be available for sale in case the debtor runs into funding difficulties.<sup>3</sup> An alternative leverage indicator consists of taking the debt to equity at market value (or to debt plus equity). Results will differ from the debt-to-asset ratio to the extent that the market value of equity does not equal net assets, but net assets plus net worth. In particular, the market value of equity also captures non-recognised assets (such as non-recognised goodwill), among other things.

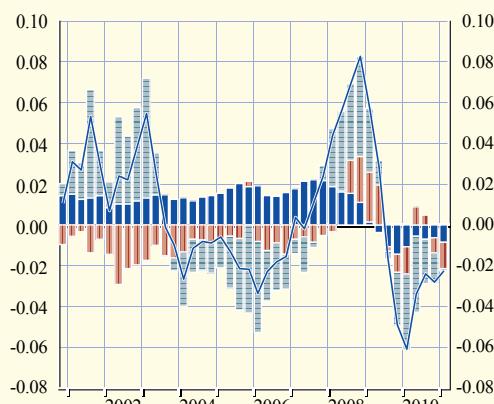
When analysing leverage ratios, consolidation<sup>4</sup> must be carefully considered, as leverage measures will depend on whether data are presented within the sector in a consolidated or non-consolidated form.

This is particularly relevant for financial institutions, which interact with each other through intricate networks of financial claims, but also for non-financial corporations that hold large amounts of intra-sector loans and payables/receivables (see Section 5).<sup>5</sup> Furthermore, given

### Change in financial institutions leverage ratio

(year-on-year changes in logarithms)

- active leverage (notional debt-to-assets)
- debt prices
- asset prices
- debt to assets



Sources: Eurostat and ECB.

<sup>1</sup> Separately, every debt is also an asset: the debt of one agent is the asset of another agent. Thus, from a flow-of-funds perspective, analysis of debt accumulation behaviours cannot be separated from that of accumulation of assets (of other agents).

<sup>2</sup> The EAA do not yet include inventories and the value of land in the assets of non-financial corporations.

<sup>3</sup> Certain assets such as loans or even certain debt securities issued by securitisation entities can, however, be difficult to sell.

<sup>4</sup> Consolidation in statistics implies solely the elimination of intra-sector links (e.g. holdings, transactions). It differs from consolidation in accounting, as the latter additionally involves defining a perimeter of consolidation.

<sup>5</sup> This problem of consolidation also has an impact on more traditional measures of indebtedness, such as debt to income.

that equity holdings constitute a significant share of non-financial corporations' assets (30% in the euro area at the end of 2010), the absence of consolidation of this item also tends to underestimate leverage. A non-consolidated analysis approach has been adopted in this article, partially because of difficulties obtaining data, but also because non-consolidated analysis allows for a more complete picture of intermediation patterns (see Section 5).

Given that the accounts follow the market-value principle,<sup>6</sup> the leverage ratio often fluctuates widely, not only due to net savings and equity issuance ("active leverage"), but also due to holding gains (on assets and on liabilities). To identify the component more directly controlled by agents and to remove excessive volatility, aside from the "headline" leverage ratio, it can be useful, from an analytical point of view, to trace the evolution of a "notional leverage", which cumulates "active leverage" flows (retaining only transactions, and excluding holding gains). As an example, the chart shows a decomposition of the annual change in (financial) headline leverage of financial institutions, distinguishing the impact of price movements from other causes of change in leverage, in three components: transactions in assets and liabilities, holding gains on assets, and holding gains on liabilities. This shows that the fall in leverage since 2009 ("deleveraging" period) stems largely from holding gains on assets and, to a lesser extent, from active deleveraging (the net impact of transactions, i.e. equity issuance and asset disposals to redeem debt).

<sup>6</sup> With some notable exceptions, such as loans, deposits and other accounts payable/receivable.

## 5 CHANGES IN INTERMEDIATION PATTERNS

The EEA help to trace the disintermediation phenomenon that occurred after Lehman's insolvency. Reacting to the tighter credit conditions in the context of deleveraging pressures on banks, non-financial agents raised less finance from banks and other financial intermediaries, obtaining it more directly from other sources. At the same time, there was less intermediation of financial investments via banks.

Although euro area *non-financial corporations* generally fund themselves more from banks than from the market (particularly compared with the United States), this tendency reversed after Lehman's insolvency. Chart 23 shows that the four-quarter sum flows of external financing, which were dominated by MFI loans up until the end of 2008 (up to an annual level of €450 billion), were thereafter redirected towards market financing:<sup>22</sup> debt securities issued and quoted equity raised were topped up to €150 billion annually in 2009-10, while non-financial corporations redeemed MFI loans of around €100 billion a year. This swift movement in volumes of

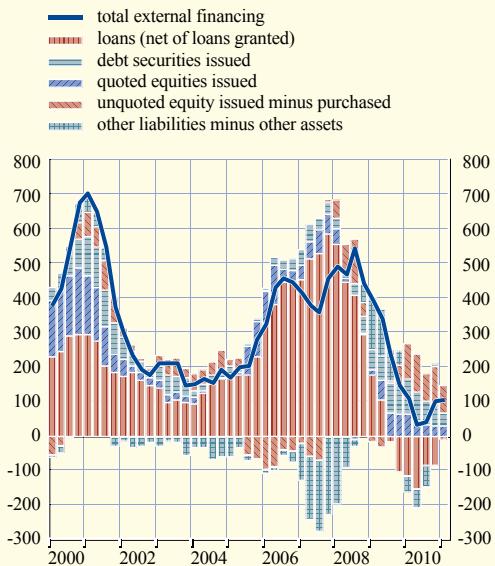
issuance towards market funding was all the more remarkable, given that the cost of market finance initially rose sharply after Lehman's insolvency (before gradually falling during 2009 to reach very low levels in 2010). This contrasts with interest rates on bank loans, as measured by MIR statistics, which started falling quickly, closely following ECB rate cuts in conjunction with ample liquidity provision by the Eurosystem. This would initially indicate heightened quantitative constraints in bank financing: banks substantially tightened credit standards – as documented by the bank lending survey – and instead preferred to arrange market funding for their non-financial corporation clients, which would not transit as loans via their balance sheet. The evidence available would suggest that, in the course of 2009 and 2010, non-standard measures were effective in their intended aim of maintaining the transmission mechanism of monetary policy by supporting funding conditions for banks to enhance the provision of credit to the private sector.<sup>23</sup> An

<sup>22</sup> Market financing temporarily vanished in the first year of the financial turbulence (i.e. August 2007 to August 2008).

<sup>23</sup> See the article entitled "The ECB's non-standard measures – impact and phasing-out", *Monthly Bulletin*, ECB, July 2011.

**Chart 23 External financing of non-financial corporations by source of funds**

(four-quarter moving sums; EUR billions)

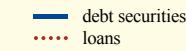


Sources: Eurostat and ECB.

Note: For presentational purposes, some transactions in assets are netted from financing, as they are predominantly internal to the sector (loans granted by non-financial corporations, unquoted shares, other accounts receivable/payable).

**Chart 24 US non-financial corporations' financing in loans and debt securities**

(four-quarter moving sums; as a percentage of GDP)



Sources: Board of Governors of the Federal Reserve System (flow of funds accounts of the United States) and ECB calculations.

even more pronounced movement towards market financing can be observed in the United States from 2009 onwards, as shown in Chart 24, with strong issuance of debt securities by US businesses, coupled with large net loan redemptions. The longer perspective of the US flow of funds reveals, more generally, the propensity of debt securities issuance to be significantly less volatile than bank finance, the latter exhibiting strong cyclical features.

Aside from dynamic market funding, intra-sector funding<sup>24</sup> also played a critical buffering role, particularly by allowing smaller firms (which cannot tap the capital markets) to raise the necessary funding. Chart 25 shows that loans<sup>25</sup> granted by non-financial corporations (mostly to other corporations) accelerated during 2007 – reaching the considerable level of €400 billion a year – and continued to be fairly high during the recession, albeit declining. These mostly correspond to intra-group funding: smaller entities constrained in

their bank funding started to draw from their parent companies that were less constrained or had easier access to capital markets. Nonetheless, additional anecdotal evidence confirms that outright loans were occasionally arranged by firms to help critically credit-constrained suppliers, even if these did not belong to the group (e.g. in the automobile industry). In addition, while flows of trade credits generally tend to move in synchrony with the growth rate of the value added of non-financial corporations, at the economic trough, the stock of trade credit contracted much less than implied by the fall in activity.<sup>26</sup>

24 Data on intra-sector funding are only available to the EAA.

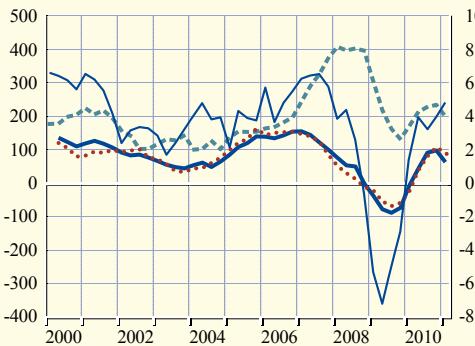
25 Trade credit differs from loans in that the former is associated to deliveries of goods and services, whereas the latter capture the payment delays associated to other transactions than the purchase of goods and services.

26 Trade credit should not be confused with trade finance, which involves a third party financial institution and would comprise discounting of trade bills, factoring, letters of credit, credit insurance, export insurance, etc. After Lehman's insolvency, trade finance was heavily impaired.

### Chart 25 Loans granted by non-financial corporations and trade credit receivable and payable

(four-quarter moving sums in EUR billions; annual percentage changes)

- trade credit receivable (left-hand scale)
- trade credit payable (left-hand scale)
- - - loans granted by non-financial corporations (left-hand scale)
- annual growth rate in value added (right-hand scale)



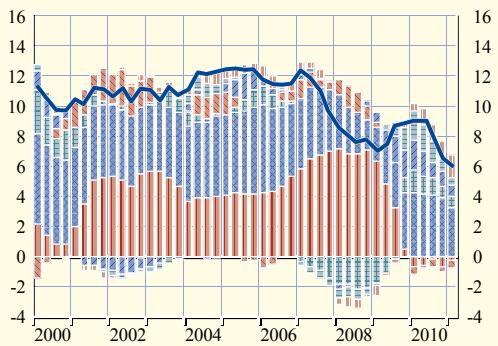
Sources: Eurostat and ECB.

Note: Trade credit receivable and payable are estimated by the ECB on the basis of partial information.

### Chart 26 Households' financial investment

(four-quarter moving sums, as a percentage of gross disposable income)

- total assets
- M3
- - - deposits not included in M3
- equity
- debt securities not included in M3
- - - mutual fund shares (other than money market fund shares)
- - - insurance technical reserves
- other financial investment



Sources: Eurostat and ECB.

Accordingly, the average delay of payments increased significantly. More recently, signs of re-intermediation have appeared, as MFI lending to non-financial corporations picked up (turning positive in the first quarter of 2011), while there was a moderation in the hitherto strong market funding and buoyant intra-sector lending.

A parallel – and, to some extent, symmetric – movement of disintermediation could also be observed in the investment behaviour of *households*. After an initial portfolio reallocation favouring safe and liquid financial assets included in M3 in the period 2007–08 and heavy sales of securities, households started, from 2009 onwards, to rebalance their portfolios (see Chart 26). Reacting to expected returns on various instruments – and, in particular, to the steep fall in remuneration of deposits – they subsequently resumed purchasing mutual fund shares and quoted shares, while moving out of low-yielding monetary assets. They also returned to purchases of life insurance and pension contracts.<sup>27</sup>

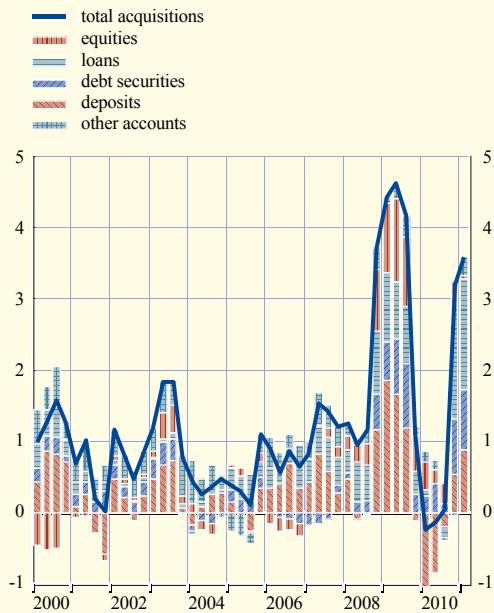
At the height of the financial turmoil, i.e. at the end of 2008, in a context of an impaired interbank market, *governments* also provided extensive support to their banking sectors, by purchasing banks' equity and bonds, extending loans, or sometimes placing large amounts of deposits with banks<sup>28</sup> (see Chart 27). In so doing, from a flow-of-funds perspective, governments de facto temporarily assumed something of an intermediation role. This induced them to issue on the market much more debt securities than implied by their own deficits. The general flight to safety into the government bond market observed at the end of 2008 implied that governments initially found no difficulty at that time in funding these exceptionally large borrowing needs. Finally, banks started to

27 For a longer-term country analysis, see Ramb, F. and Scharnagl, M., "Household's portfolio structure in Germany – analysis of financial accounts data 1959–2009", *Working Paper Series*, No 1355, ECB, Frankfurt am Main, June 2011.

28 Governments also provided support to the financial system by extending guarantees on intermediaries' liabilities. Being contingent liabilities, such guarantees do not appear in the balance sheet of the government sector.

**Chart 27 Euro area government acquisition of financial assets**

(four-quarter moving sums, as a percentage of GDP)



Sources: Eurostat and ECB.

become very large purchasers of government bonds (together with non-residents), exploiting carry-trade opportunities along the yield curve with assets perceived at that time to be fairly safe, and as part of a deleveraging and risk reducing process (in a context where regulation tends to assign zero or reduced weight to government liabilities for the calculation of solvability/solvency ratios). However, this exposed them to additional strain, as fears about debt sustainability unfolded at a later stage of the crisis (see Sections 3 and 4).

## 6 CONCLUSION

The use of euro area sectoral accounts, combined with corresponding country data, enables a detailed examination of income-expenditure flows and balance sheet developments and helps to identify emerging imbalances, from sectoral and geographical perspectives. During the years prior to the financial crisis, sectoral imbalances were building up across the private sectors of

some of the countries in the euro area, creating a dichotomy between those countries that were generating surpluses in their private sectors and those generating deficits. During this period, many governments failed to build up a surplus position substantial enough to cushion the effect of the eventual downturn in the cycle. At the same time, in the context of a growing economy, private sector imbalances rose. When the financial crisis erupted initially in the United States, spilling over into the global economy, and the euro area entered recession, private deficits were mostly replaced by further government deficits. There is now a broad agreement that private sector debt financing should be monitored in addition to the monitoring of excessive deficits of the government sector.<sup>29</sup>

Moreover, the build-up of debt during the boom (2005-07) had not been accompanied by a similar build-up of capital, as attested by increasing underlying leverage trends. The development was particularly pronounced in the financial institutions sectors, where intermediation activity progressively moved away from the regulated banking sector into other intermediaries facing less stringent capital requirements (notably through practices such as securitisation, prompting a lengthening of intermediation chains). The high level of leverage masked by the buoyant asset prices at that time left financial institutions vulnerable to subsequent asset prices reversals. When this materialised, starting from mid-2007, and more drastically after Lehman's insolvency, financial institutions experienced a sharp increase in their leverage position, and capital shortfalls relative to regulatory requirements, which gave rise to acute deleveraging pressures.

<sup>29</sup> The G20 initiative related to "Economic and financial indicators for multilateral surveillance" as well as the EU initiative for the correction of "excessive macroeconomic imbalances" (COM(2010) 525) suggest the use of sector accounts in order to derive comprehensive measures of debt financing. On the broader statistical post-crisis agenda, see also the IMF/Financial Stability Board report to G20 finance ministers and central bank governors of October 2009, <http://www.imf.org/external/np/g20/pdf/102909.pdf>

In the wake of the crisis, a change in financial intermediation patterns could be observed, as agents reacted to tighter credit conditions, and non-financial corporations increased their recourse to market and inter-company financing (including through trade credits). At the same time, investors – searching for yields – turned less to monetary assets and more towards higher yielding assets. It remains to be seen whether this pattern will be reversed going forward or whether it will remain a more lasting legacy of the financial crisis.