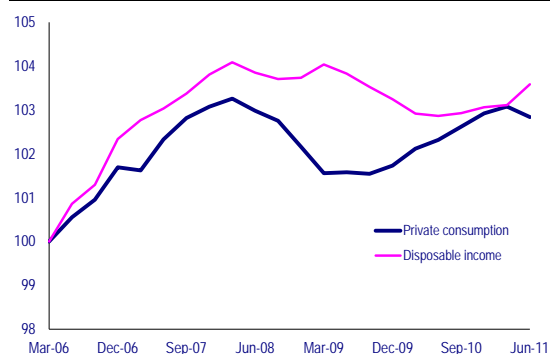


## II.1. The impact of the crisis on household savings in the euro area

Private consumption has been a major source of weakness in the recovery from the global economic and financial crisis. Since the cyclical trough in the second quarter of 2009, euro-area real consumption has increased by a cumulated 1.2%, compared with 3.8% for GDP. The significantly slower rate of expansion than in previous recoveries is attributable to sluggish growth in real disposable income (Graph II.1.1) rather than to adverse changes in the saving rate. Developments in households' saving rate have actually been supportive of spending since the trough of the recession in 2009Q2. After an abrupt increase of more than 1.5 pp in the early stages of the recession, the euro-area saving rate has fallen back progressively with the recovery, reaching pre-crisis levels at the end of 2010 before rising again somewhat during the first half of 2011 (latest available data) (see Graph II.1.2).

**Graph II.1.1: Household private consumption and disposable income, euro area (index 2006Q1= 100, 2006Q1-2011Q2)**



Source: Commission services.

These developments are at odds with the expected negative effects of sharp falls in asset prices on household consumption via wealth effects. Despite some gains with the recovery, equity prices in the euro area were still about 25% below their pre-crisis peak in the second quarter of 2011 (i.e. at the time of the latest available saving rate data). House prices have, on average, been more resilient to the crisis, incurring more limited losses during the recession and recovering moderately afterwards with an overall loss relative to the pre-crisis peak of about 1% in the second quarter of 2011. Their near stagnation over the past three years should, however, be seen against a trend of continuous rises in house prices in pre-crisis years with average annual gains of about 6% since the late 1990s.

Against this background, the present section sets out to better understand recent developments in the euro-area saving rate, trying to disentangle the effects of changes in fundamentals (mostly wealth) from other possible factors such as precautionary savings.

**Graph II.1.2: Household saving rate, euro area (% of disp. income, 2005Q1-2011Q2) (1)**



(1) Saving rate as used in the model in Box II.1.1. Calculated as 1 minus the ratio of household consumption to disposable income.

Source: Commission services.

### Recent cyclical swings in savings can partly be explained by fundamentals

The analysis presented hereafter is based on an estimated model of household savings and mortgage decisions (see Box for details).<sup>(20)</sup> The model relates euro-area household mortgage and savings decisions to a limited set of fundamental determinants. It captures quite well trends in the euro-area saving rate since the 1980s.

The model makes it possible to identify a 'down-payment channel'. This channel postulates a positive (negative) link between house prices and savings (private consumption). It is directly related to the existence of constraints on mortgage borrowing. In most parts of the euro area, banks lend less than the full value of a housing acquisition (technically, loan-to-value ratios are below 1) in order to cover risks of cyclical changes in house prices and the costs of foreclosure. As a result, first-time buyers (together with owners who want to acquire a property of higher value) need to set money aside to cover the part of their acquisition that is not covered by the mortgage (i.e. the down-payment).

<sup>(20)</sup> See Quarterly Report on the Euro Area, Vol. 8, No 3, 2009. A more detailed presentation of the model is also available in: Balta, N. and E. Ruscher (2011), 'Household savings and mortgage decisions: the role of the "down-payment channel" in the euro area', European Economy, Economic Papers, No 445 (September).

**Box II.1.1: A model of household savings and mortgage decisions in the euro area**

This box presents an update of an estimated model of household savings and mortgage decisions presented in an earlier issue of the Quarterly Report on the Euro Area.<sup>(1)</sup> The model relates euro-area savings and mortgage debt (as ratios of households' gross disposable income) to their respective medium-term determinants in a system of two co-integrating relations estimated in a VEC model with seven variables. All variables are in logarithms except for the two interest rates (in %) and inflation (in %). Net housing wealth is defined as housing wealth minus mortgage loans. Net financial wealth is defined as financial wealth minus non-mortgage credit. Data cover the period 1980Q4-2011Q2.

<b>Elasticities of the co-integrating equations (1):</b>			
	<b>Savings equation</b>		<b>Mortgage equation</b>
	<b>I</b>	<b>I bis</b>	<b>II</b>
Savings/Disposable income	1.00	1.00	-
Mortgages/ Disposable income	0.33		1.00
Mortgages/Net housing wealth		0.33	
Net financial wealth/Disp. income	0.72	0.72	-
Net housing wealth/Disp. income	-0.25	+0.08	-0.65
Short-term real interest rate	-	-	3.70
Long-term real interest rate	4.89	4.89	8.68
Inflation	3.58	3.58	6.94
Constant	-6.56	-6.56	-0.48

*(1) The variables are all non-stationary. The Johansen approach was used to test for the number of co-integrating relations and to estimate the equations. Over-identifying restrictions were tested, LR test for binding restrictions (rank=2), chi-square (7) =7.39.  
All estimated coefficients are significant at 1%.  
Sources: Commission services and ECB data.*

**The medium-term savings equation (I)**

Net financial wealth comes out as the main determinant of the savings ratio in the medium-term in the euro area. A 1% increase in net financial wealth as a share of gross disposable income leads to a decrease of about 0.7% in the savings ratio (a drop of about 0.1 pp given its current level), boosting consumption by about 0.1%.

The net housing wealth ratio has an overall positive effect on the saving rate (i.e. an increase in housing wealth pushes savings). This apparently paradoxical effect (estimated consumption equations usually come up with negative or zero effect) can be explained by the co-existence of two channels via which housing wealth impacts savings. Equation I can be reinterpreted (Equation I bis) so as to allow the identification of i) a small but significant housing wealth effect, captured by the ratio of net housing wealth to disposable income, combined with ii) a credit-constraint effect ("down-payment channel") captured by the ratio of mortgages to net housing wealth. This ratio can be interpreted as a de-facto "loan-to-value ratio", capturing the extent to which the credit-constrained households need to save in the euro area in order to pay for the share of the acquired property value not covered by the mortgage. In the reinterpreted equation the estimated coefficients are as follows: (1) a 1% increase in the ratio of mortgage to net housing wealth will decrease the savings ratio by 0.33%; (2) a 1% increase in the net housing wealth leads to a 0.08% decrease in the savings ratio (i.e.  $0.33 \cdot \log(\text{Mortgages}/\text{Disp. income}) - 0.25 \cdot \log(\text{Net housing wealth}/\text{Disp. income}) = 0.33 \cdot \log(\text{Mortgages}/\text{Net housing wealth}) + 0.08 \cdot \log(\text{Net housing wealth}/\text{Disp. income})$ ). This shows a small traditional housing wealth effect from an increase in housing wealth at the level of the euro area. An interesting feature of the model is that it shows that a rise in houses pushes the savings of euro-area households down via the traditional housing wealth effect but the fall is more than offset by the down-payment channel (i.e. higher house prices force credit-constrained households to save more in order to cover a more expensive down-payment). Overall, **increases in house prices in the euro area tend to be associated with rises in household's saving rate.**

<sup>(1)</sup> See Quarterly Report on the Euro Area, Vol. 8, No 3, 2009. A more detailed presentation of the model is also available in: Balta, N. and E. Ruscher (2011), 'Household savings and mortgage decisions: the role of the "down-payment channel" in the euro area', European Economy, Economic Papers, No 445 (September).

(Continued on the next page)

Box (continued)

### The medium-term mortgage equation (II)

The medium-term determinants of mortgages as percentage of gross disposable income have been found to be the net housing wealth as percentage of gross disposable income, the short-term real interest rate, the long-term real interest rate and inflation. In the medium-term, 1% increase in net housing wealth increases mortgages by about 0.65%, showing the extent of the collateral effect of net housing wealth on mortgages. The interest rates and inflation variables have the expected signs. A 1pp increase in the short-term real interest rate and the long-term real interest rate decreases the mortgage ratio by about 4% and 9% respectively. This shows that long-term interest rates are playing a bigger role in the euro area in accordance with the euro-area mortgage markets where fixed-interest-rate contracts dominate. A 1pp increase in inflation decreases the mortgage ratio by about 7%.

An increase in house prices raises the value of the down-payment and thereby encourages property buyers to set more money aside, i.e. to increase their savings and reduce their consumption. The down-payment channel and the traditional housing wealth channel operate in opposite directions. In the case of the down-payment channel, an increase in house prices entails an increase in household savings, whereas in the case of the wealth channel it entails a drop in savings.

A surprising result of the model is that, in the euro area, estimates suggest that *the down-payment channel more than offsets the traditional housing wealth effect, leading to an overall positive relationship between house prices and savings.*

According to the model, pre-crisis trends in the euro-area saving rate can largely be explained by a combination of changes in financial wealth and the down-payment channel. A simultaneous increase in financial wealth and relaxation of credit constraints (i.e. lower down-payments) explain most of the substantial fall in the euro-area saving rate in the 1990s. During the pre-crisis years of the 2000s, developments in both variables were less supportive, with rapid rises in housing prices offsetting the effect of looser credit constraints and progress in financial wealth hampered by the bursting of the dotcom bubble. As a result, the saving rate fluctuated without showing a clear trend over that period.

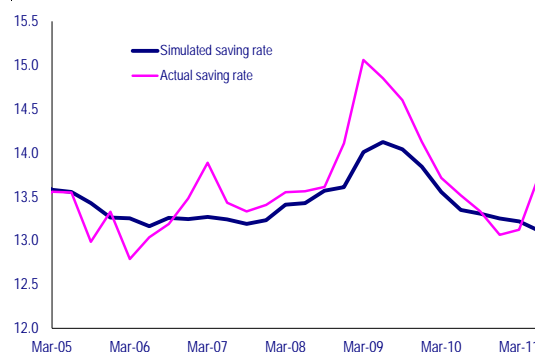
Turning to the impact of the crisis, Graph II.1.3 displays the actual euro-area savings ratio alongside its simulated value according to the model. Two observations stand out.

First, the crisis has not entailed changes in the fundamental drivers of savings that are sufficiently large and lasting to bring about a protracted increase in the saving rate. In the second quarter of 2011, the saving rate implied by

the model was actually clearly below its pre-crisis level.

Second, the model can explain the pattern of fluctuations in savings during the recession and the recovery, with an increase during the recession followed by a return to pre-crisis levels during the recovery. However, fluctuations appear more muted for the simulated saving rate than for the actual one, suggesting that fundamentals cannot fully account for the dynamics of the saving rate during the cycle.

Graph II.1.3: Euro-area saving rate, simulated and actual values  
(in % of disposable income, 2005Q1-2011Q1)



(1) The simulated value of the saving rate comes from the estimated model presented in Box II.1.1. for explanations. For the actual saving rate see footnote of Graph II.1.2.

Source: Commission services.

The remainder of the section discusses these two observations further.

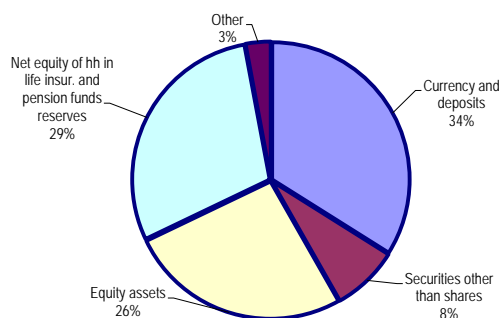
### Wealth effects have remained limited since the crisis

Looking more closely into the impact of the fall in asset prices triggered by the crisis, the assessment is more benign than one might expect given the magnitude of the crisis. Overall, the model

suggests that the fall may have actually pushed the saving rate slightly lower. Traditional wealth effects of falls in equity and housing prices have, to some extent, exerted upward pressures on savings during the crisis but the pressures have remained small and have been offset by other factors, including the down-payment channel, which has operated in the opposite direction.

This conclusion may be surprising in the light of the overall large losses in equity markets registered over the period 2007Q4-2011Q2. It is, however, important to put equities in the broader context of households' total financial asset holdings, which also include deposits, bonds and holdings in life insurance and pension fund reserves. Equities actually amount to only a quarter of households' total financial asset holdings, with deposits or equity holdings in life insurance and pension fund reserves being of a comparable or higher importance (Graph II.1.4).

**Graph II.1.4: Composition of household financial assets, euro area**  
(in %, average 2006Q3-2011Q2)



*Source:* Commission services.

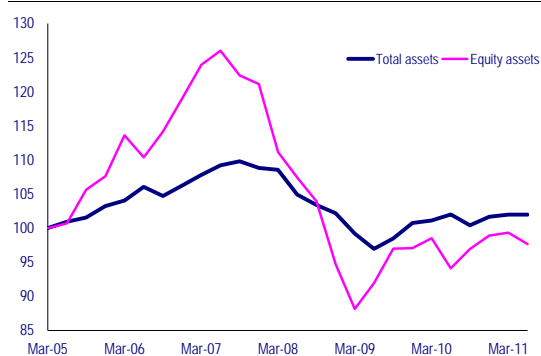
Price fluctuations in the non-equity asset categories are either limited or little correlated to equity prices. Consequently, even large falls in equity prices tend to have only a moderate impact on households' overall financial wealth. This is illustrated in Graph II.1.5, which displays valuation effects on households' holdings of total assets and equity assets. <sup>(21)</sup> In the second quarter of 2011, households had lost about 20% on the value of their equity holdings but only 6% on the value of their overall financial assets.

When assessing trends in household wealth, an additional dimension to bear in mind is that

<sup>(21)</sup> Valuation effects are calculated by deducting asset acquisitions from changes in the stock of assets. They measure the change in asset holdings that is attributable to changes in asset prices.

changes in household asset holdings reflect changes in prices but also asset acquisition. Since the onset of the crisis euro-area households have continued to accumulate financial assets, although at a lower pace than in pre-crisis years and while reducing their exposure to equity.

**Graph II.1.5: Valuation effects on household assets, euro area**  
(index 2005Q1=100, 2005Q1-2011Q2)



(1) Valuation effects are estimated from the financial balance sheet and financial transaction data of National Accounts. Changes in asset holdings are decomposed into a transaction component and a residual valuation component.

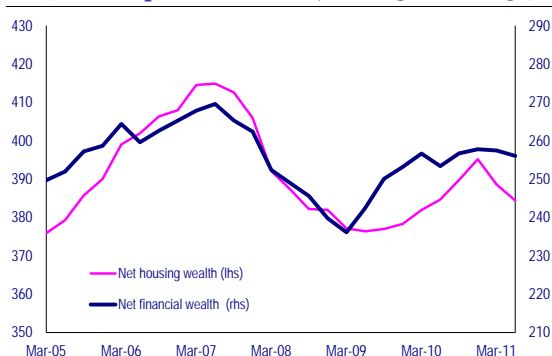
*Source:* European Commission.

As shown in Graph II.1.6, the ratio of households' net financial wealth (defined as financial wealth minus the stock of consumer credit) to disposable income dropped during the recession but has since recovered significantly and in 2011Q2 was less than 5 pp below its pre-crisis peak. This implies only moderate negative financial wealth effects on consumption over the period. This limited effect is explained by the relatively low share of equity in households' wealth as well as the continuous accumulation of financial assets since the crisis.

Turning to households' net housing wealth (as defined by housing wealth minus mortgage debt), the impact of the recession has been relatively similar to what has been observed for financial assets. The ratio of net housing wealth to disposable income dropped as a result of the recession but has since partly recovered though at a more muted pace than net financial wealth. In the first half of 2011, the ratio fell back somewhat and was about 7 pp below its pre-crisis peak. This suggests a moderate upward push of the savings ratio due to traditional housing wealth effects since the onset of the crisis. Nevertheless, the estimated model of savings also shows that the easing of house prices brought about by the crisis has entailed a de facto easing of credit constraints

on mortgages<sup>(22)</sup> (down-payment channel) that has more than offset this upward push. Taking into account these opposing forces, developments in housing wealth since the onset of the crisis have led to a modest decrease in households' saving rate.

**Graph II.1.6: Household net financial and net housing assets, euro area  
(% of disposable income, 2005Q1-2011Q2)**



*Source:* Commission services, ECB.

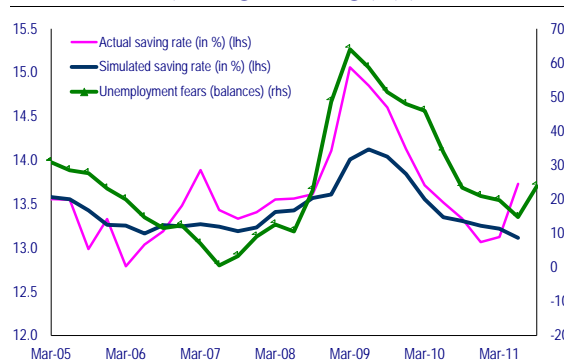
### Precautionary motives have probably also played a role

Whereas the estimated model of savings suggests that fundamentals such as wealth can explain the currently low level of the saving rate, it fails to fully track the swings of the savings ratio during the recession and the recovery. This suggests that the rapid increase in the saving rate during the recession and its similarly rapid decline in the recovery were not only driven by changes in the fundamental determinants of savings. As the phase of rapid increase in savings roughly corresponds to the contraction phase of the GDP cycle, it could be partly related to precautionary motives. In line with this interpretation is the fact that the swings in the saving rate during the crisis are, to some extent, correlated with some indicators of consumer confidence. This is illustrated in Graph II.1.7, which displays the actual saving rate and the simulated saving rate presented in Graph II.1.3 together with a measure of consumers' fears of unemployment.

The temporary rise in precautionary savings in 2008-09 probably reflects households' increased uncertainty about the economic outlook and deteriorating personal income prospects. It might also be an indication of their rising concerns about the sustainability of sovereign debt in the euro

area and an anticipation of future hikes in taxes and cuts in government transfers. However, such Ricardian effects, if confirmed, would have been only temporary, as indicated by the return of the saving rate to the level dictated by wealth fundamentals in the second quarter of 2011.

**Graph II.1.7: Household saving rate and unemployment fears, euro area  
(2005Q1-2011Q2) (1)**



(1) The simulated and actual saving rates are the same as in Graph II.1.3. Unemployment fears come from the Commission consumer survey (question on unemployment prospects over next 12 months).

*Source:* Commission services.

### Looking forward, the risks of an increase in savings remain significant

Looking ahead, the risks of an increase in households' saving rate, with depressing consequences for private consumption, remain significant for the second half of 2011 and the first quarters of 2012. Possible upward pressures on savings could come from three sources.

First, since the second quarter of 2011 (the most recent quarter covered in the analysis presented above) equity markets have again registered sharp losses, with prices 15-20% lower at the beginning of December than their average value in the second quarter. On the basis of the model used here, such a drop, if persistent, would push up the saving rate by close to half a percentage point (taking into account the relatively low share of equity in households' financial assets).

Second, because of the down-payment channel, recent developments in house prices through the crisis have been rather supportive of consumption. However, the existence of such a down-payment channel also implies downside risks to consumption related to credit constraints on mortgages. Because of this channel, the links between private consumption and credit constraints is far stronger than what could be assumed on the basis of the low importance of

<sup>(22)</sup> For a given loan-to-value ratio, a fall in house prices means that a household will have to bring less cash (i.e. draw less on its savings) to acquire a given property.

consumer credit in the euro area.<sup>(23)</sup> Tighter credit constraints weigh on consumption not only directly via more restricted access to consumer credit but also, indirectly, via constraints on access to mortgages and the related need to save to acquire a house. Hence, if banks were to adopt more conservative mortgage lending practices, for example by raising loan-to-value ratios, negative implications for household spending would not be limited to housing investment but would also involve consumption.

Third, the crisis has also shown that, when faced with significant economic uncertainty, households

may raise their savings above what is normally justified by changes in fundamentals such as wealth. The substantial fall in consumer confidence since the summer suggests that this precautionary motive might again be governing households' purchasing plans at the current juncture.

Finally, the necessary consolidation of public finances over the coming years may affect households' savings via Ricardian effects, although such effects appear so far to have been either small or temporary.

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<sup>(23)</sup> In the euro area, the stock of outstanding mortgages is more than five times bigger than the stock of outstanding consumer credit.