



CPB Netherlands Bureau for Economic
Policy Analysis

Uncertain supply

Fragile demand



Roads to recovery

Chapter 6

Consumers in distress: Consumption, income and wealth

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6 Consumers in distress: Consumption, income and wealth

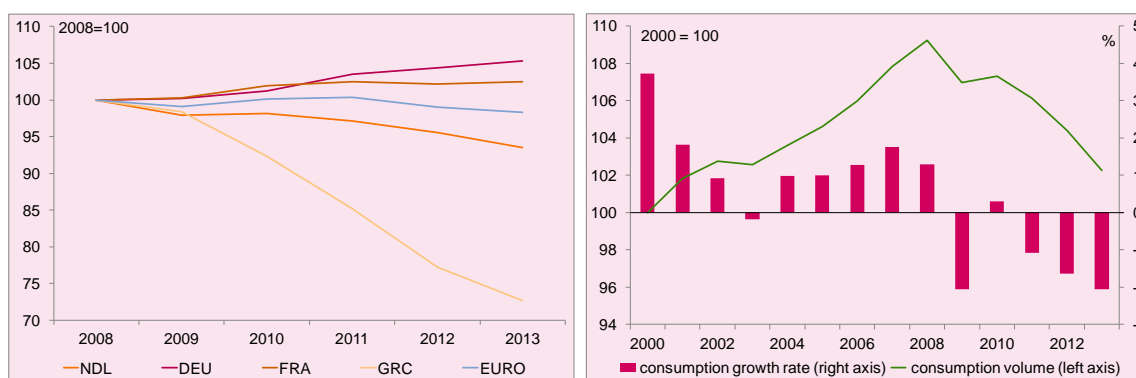
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- Since the beginning of the Great Recession, household consumption in the Netherlands has decreased by an exceptional amount.
- Key factors for recovery of consumption are productivity growth, lower unemployment, higher housing prices and improved funding rates of pension funds.
- Deleveraging and precautionary savings yield downward risks.

6.1 The story so far: consumption during the crisis

Since the beginning of the Great Recession, consumption of Dutch households has been decreasing. This reduction is exceptional, particular in comparison with developments in the 1970s, 1980s and 1990s, when consumption grew steadily. The left-hand panel of figure 6.1 shows consumption volume and growth rates between 2000 and 2013. Consumption increased 9% from 2000 until its peak in 2008. Between 2008 and 2013, consumption dropped by more than 6%. In comparison with the situation in other northern European countries and the US, consumption of Dutch households has been hit relatively hard (figure 6.1, right-hand panel).

Figure 6.1 Private consumption declines in the Netherlands (left) more than in other EU-countries (right)

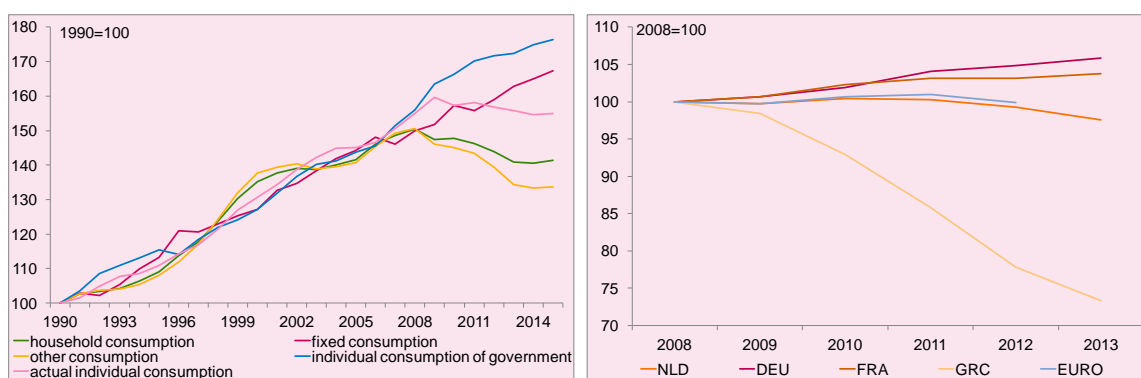


Source: Statistics Netherlands (left) and Eurostat (right). Figures for the Netherlands are corrected for the introduction of the new health-care system in 2006.

Since the beginning of the crisis, consumption has declined at the same pace as in periphery countries such as Spain and Italy. Only Greece is performing worse. The right-hand side of figure 6.2, depicting actual individual consumption, confirms this picture although the difference between Dutch actual individual consumption and the EU average is smaller. Actual individual consumption is private consumption increased with “individual” spending of the government on individual-related items such as education and health care. These expenditures increased during the crisis.

The left-hand panel of figure 6.2 shows actual individual consumption and its components (i.e. fixed consumption, individual consumption of government and other consumption).⁴⁵ Fixed consumption includes spending on housing, energy and non-insurable health care. It grew steadily during the Great Recession, leaving consumption of other goods and services (expenses on luxury goods, food and so forth) to fully absorb the unanticipated wealth and income shock. The figure shows indeed a large decline of this consumption category, which makes up about 75% of total household consumption. Apparently, this type of consumption could be adjusted most quickly to the unanticipated wealth and income shocks in the short run.

Figure 6.2 Actual individual consumption in the Netherlands (left) and compared with other countries (right)



Source: Statistics Netherlands and CPB (2014).

The question is, will consumption recover and at what pace? What can we learn from consumption patterns and the way that the underlying components of consumption have developed during the Great Recession? And, looking ahead, which risks and opportunities are in store that might accelerate or hamper this recovery?

This chapter covers these questions in four parts. Section 6.2 provides a short introduction to consumer theory. Which components drive the consumption decision of individuals in normal times, and to what extent can they explain the consumption decline of the crisis? Section 6.3 illustrates recent developments in these drivers, while Section 6.4 provides a look into the future. First we describe what can be expected of income, interest rate and

⁴⁵ Regular household consumption is sometimes criticized for not including government spending on personal items, such as expenditures on health care and education. For example, health care expenditures in the Netherlands are, to a relatively great extent, taken up by the government and thus absent from household consumption. Individual spending of the government may differ by country; the corrected measure should avoid that type of criticism.

wealth developments. Additionally, the crisis has brought about some other risks, which might hamper future consumption. We also discuss these crisis-specific factors in detail. Section 6.5 sums up our main findings.

6.2 Basic principles determining consumption

The theory of consumer choice has evolved along different lines. The traditional Keynesian consumption function states that consumption is solely determined by current disposable income. As the implications of Keynes' theory did not fully match with empirical evidence, economists developed different theories. Inspired by Fisher's intertemporal choice theory, Modigliani and Brumberg (1954) developed the Life Cycle Hypothesis, and Friedman (1957) the Permanent Income Hypothesis, which are at the basis of modern intertemporal consumption models. These models assume that consumption decisions are determined not only by current income but also by (expectations) about future income and wealth.

6.2.1 Intertemporal consumption models

The basic principle of intertemporal consumption models is that individuals are rational and forward-looking, choosing optimal levels of current and future consumption in order to maximise lifetime utility. Individuals prefer to smooth consumption over their lifetime, given their intertemporal budget constraint. Consumption is therefore a function of lifetime resources consisting of current financial wealth, current labour income and the entire stream of potential future labour income, which is driven mainly by labour market experience and human capital.

Unanticipated wealth shocks will consequently affect consumption over all remaining periods in life. When confronted with a negative wealth shock, households will increase their savings, which serves to guarantee a smooth consumption pattern over their lifetime. Unanticipated income shocks will lead to a similar response, depending on whether the shock is expected to be permanent or temporary. Suppose that households are confronted with a temporary negative income shock. Consumption will decline, but not as much as current income declines. The difference will be absorbed by a decrease of private savings over the remaining years. If this shock is permanent, however, the drop in lifetime income will be much higher and consumption will fall at the same pace as income. Smoothing consumption via a decrease in savings is no longer feasible.

Savings in intertemporal consumption models signify nothing more than future consumption, and represent a way to transfer resources from periods of high income to periods of low income. Savings can be used for consumption later on in the life cycle (for example, during the retirement phase) or bequeathed to children for their consumption. But as long as an individual does not value saving itself, the division of income between consumption and saving will be driven by preferences between present and future consumption and by the relative price of current and future consumption.

The real interest rate provides a measure for the price of current consumption compared to future consumption. If the real interest rate increases (for example, because of lower inflation), then the price of current consumption increases relative to that of future consumption and individuals may choose to increase savings (substitution effect). On the other hand, if these individuals have positive net wealth, then a higher real interest rate makes them wealthier, leading to higher consumption and hence less saving (income effect). The overall effect of real interest rate changes on consumption and savings is therefore ambiguous.

6.2.2 Beyond the intertemporal consumption models

An important implication of the intertemporal consumption model is that only unanticipated changes in income will affect consumption. A change in income that was anticipated has already been factored into (expected) lifetime resources, so it will not change current and future consumption. However, a great deal of empirical evidence shows that this prediction of the model is incorrect and that changes in consumption can be related to predictable changes in income (see, e.g., Campbell and Mankiw, 1989; Shea, 1995).

A possible explanation for these discrepancies between theory and empirics is that individuals are sometimes limited in their possibilities to smooth consumption. Intertemporal consumption models assume that people can borrow against future income and wealth. Financial markets do not function this way, however. Some people lack or have no access at all to capital markets. For instance, when they have little financial wealth, they easily face credit constraints. If, for example, households are unable to borrow against their human capital leading to future income increases, then their consumption is determined by their current income. In these cases, predictable changes in income produce predictable changes in consumption.

Apart from liquidity constraints, other reasons may explain why individuals appear to depart systematically from the predictions of the intertemporal consumption model. The idea of consumption smoothing is based on costless utility maximization and rational expectations, which in practice may involve complex calculations. So instead of attempting to be completely optimising, individuals may follow rules of thumb in determining their consumption pattern. An example can be seen in 'hand-to-mouth' consumers, following the rule of thumb of spending current income and hardly saving at all. In most estimated macro models the percentage of liquidity-constrained and hand-to-mouth consumers appears to be quite high (about 80%).⁴⁶

6.3 Explaining past consumption

This section analyses the aforementioned determinants of macro consumption from both a historical and an international perspective. We aim to relate the observed drop in consumption to the actual developments in household income, wealth and the interest rate,

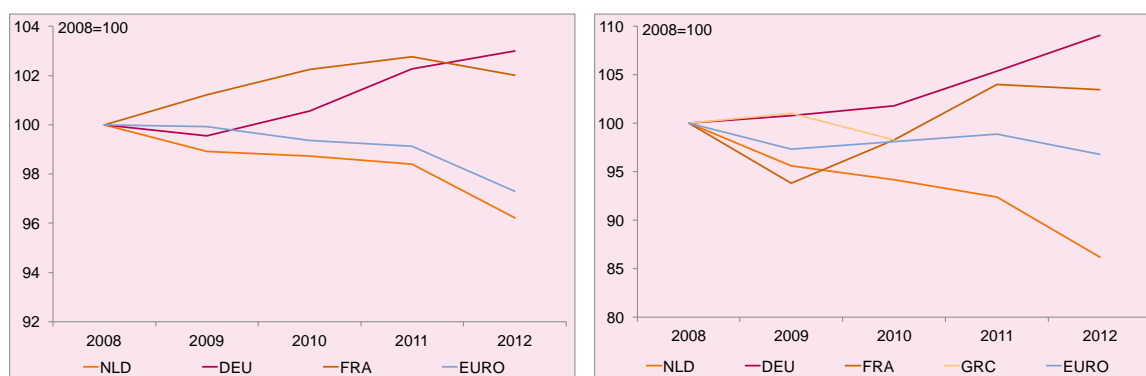
⁴⁶ See for example CPB (2010).

based on the theoretical mechanisms described in the previous section. These components have changed significantly over the last few years. Both income and wealth have experienced a substantial drop, directly reducing consumption opportunities. Income has mainly been hit by growing unemployment (see Chapter 5), a negative real wage development and by tax increases and cuts on income transfers by the government. Wealth on the other side has mainly deteriorated because of decreasing house prices (see Chapter 3). On top of these real developments, consumer confidence has been very weak and consumers may have become more risk averse because of negative economic expectations.

Income and wealth

During the Great Recession, consumption declined at a rate similar to that of real disposable income, suggesting that household consumption was fully driven by received resources. Real disposable income declined by 4% since the peak in 2008 (see figure 6.3, left-hand side). As income decreased during the crisis, consumption fell accordingly. Compared to the developments in core European countries, the decline in real disposable income in the Netherlands was substantial. On average, real disposable income in the euro area has grown by over 10% since 2000, while growth in the Netherlands was only 1.5%, which is comparable to that of Italy.

Figure 6.3 Development of real disposable income (left-hand panel) and house prices (right-hand panel) in the Netherlands worse than in other countries



Source: Eurostat.

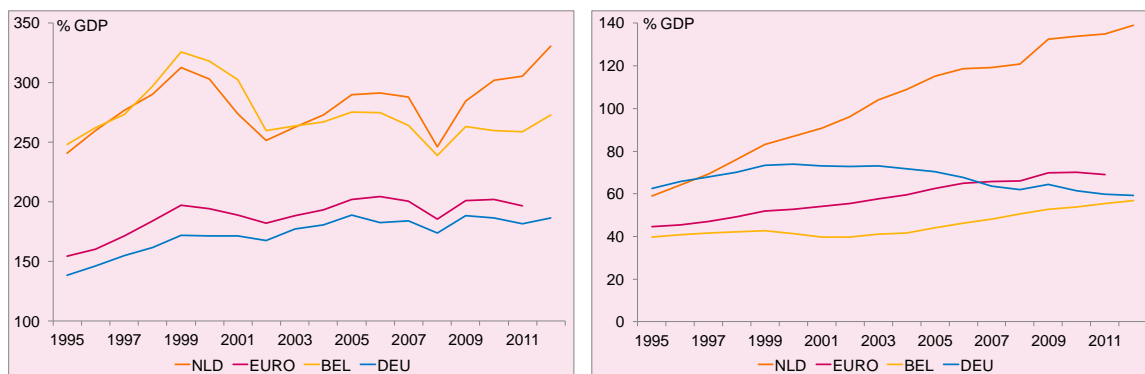
Apart from disposable income, households experienced a severe drop in their wealth, mainly consisting of dwellings. Nominal house prices dropped by almost 15% until 2012; in 2013, this number increased even further to 20%. The right-hand panel of figure 6.3 shows house price developments for some European countries. The drop in the Netherlands was relatively large.⁴⁷ The euro area average was slightly above 3%. Furthermore, since 2011 and 2012, house prices in most European countries showed signs of cautious recovery. The Netherlands again lags behind.

When other assets are included, the wealth position of Dutch households looks more promising. The left-hand panel of figure 6.4 shows the total wealth position (excluding housing wealth) of Dutch households compared to other European households. Dutch

⁴⁷ No data are available for Greece for 2011 and 2012.

households have more assets than most European countries, mainly driven by pension wealth. The left-hand panel of figure 6.5 shows the decomposition of the assets of Dutch households, now including housing wealth. Total assets grew during the crisis, despite the drop in housing wealth. The decrease in housing wealth is offset by a larger increase in pension wealth. However, pension liabilities have also increased in recent years, even stronger than the increase in wealth, more on this in the next section.

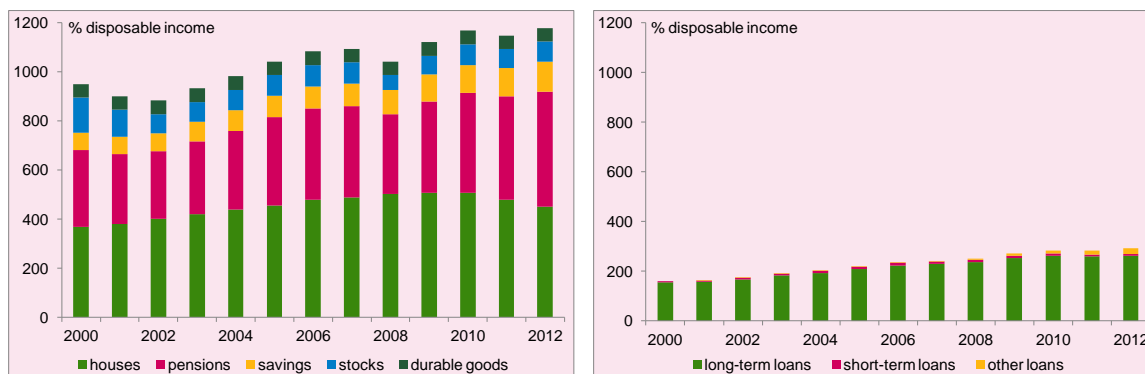
Figure 6.4 Assets (left) and liabilities (right) in international perspective



Source: Eurostat. Housing wealth is not included in the asset figures, because of problems with international comparability.

On average, the level of assets fluctuates more over time in the Netherlands than it does in the euro area. This volatility can be related to the large share of pension savings in household wealth, which depends on relatively volatile stock prices. Apart from this volatility, the level of assets of Dutch households developed differently than in other European countries. Mainly driven by favourable fiscal measures for homeownership, dwellings form a relatively large part of households' assets.

Figure 6.5 Decomposition of assets (left) and liabilities (right) of Dutch households



Source: Statistics Netherlands.

Not only do Dutch households have more assets; they also have more debt than households in most other European countries (see right-hand panel of figure 6.4). Almost all debt of Dutch households consists of long-term loans, which are mainly mortgages on houses. Since 1995, the liabilities of Dutch households have more than doubled as a percentage of GDP. Because of new types of mortgages featuring low or no repayments, the level of mortgage debt grew steadily in the nineties and in the first decade of this century. This increase was

halted in 2011, because of stricter rules on repayment of mortgages related to cutting fiscal benefits.

If we confront aggregate assets of Dutch households to aggregate debts, two points stand out (see figure 6.5). First, over the entire time period between 2000 and 2012, total assets are much higher than total liabilities, even without pension wealth, which means that Dutch households have a *positive* net wealth position. Second, this positive net wealth position has been *improved*, even during the crisis period. Actually, total assets increased by more than 225%-points of disposable income between 2000 and 2012, from 950% to 1175%, while total debt increased by 130%-points during that period, from 160% to 290%. Hence, net wealth as a fraction of disposable income has increased by 95%. From that point of view, when including all assets (including pension wealth), one could conclude that wealth developments do not fully explain consumption falling that much behind. However, it is questionable whether one might expect that the rise in pension wealth contributes to consumption growth.

The role of pensions

Although pension wealth increased during the crisis, the Dutch occupational pension system was hit hard, resulting in an additional decline of disposable income and thus consumption. The Dutch occupational pension system is based on the provision of nominal guarantees. The relevant determinant for household consumption is not so much the amount of available assets but the amount of accrued (nominal) pension entitlements. In the long run, the system's solvency is guaranteed by matching these entitlements to the assets. Over the last decade, the increase in pension wealth has been much lower than the increase in pension entitlements. The ratio between assets and entitlements (that is, the funding ratio) has decreased sharply. Between 2001 and 2012 the funding ratio fell by 55%-points, from 157% to 102% (see the left-hand panel of figure 6.6). This decline was mainly caused by a fall in the nominal interest rate, which is used by pension funds to discount their nominal liabilities. The nominal interest rate is depicted in the right-hand panel of figure 6.6. A lower discount rate implies that the current value of future pension outlays increases, which is a key factor behind the declining funding ratio.

Figure 6.6 Pension funding ratio (left) and long-term nominal interest rate (right)



Source: Dutch Central Bank. The long-term interest rate is the 15-year nominal swap rate.

Compared to the pension systems in other countries, the Dutch pension pillar is large, which makes Dutch wealth more vulnerable to shocks in nominal interest rates. Lower interest rates make future consumption more expensive. In response to this, Dutch pension funds have two possibilities. They can either stick to the original ambition level by increasing the contributions or they can decrease the ambition level by providing lower benefits or indexation cuts. In practice, most pension funds have applied a combination of both measures. Irrespective of which instrument is used, both have an impact on income of workers or retirees and may have contributed to the decline in disposable income and consumption over the last years.

Distribution of wealth in the Netherlands

When individuals respond differently to wealth changes, a modest shift in aggregate wealth can still be accompanied by a large shift in aggregate consumption. Indeed, the evidence suggests that the marginal propensity to consume is inversely related to people's wealth (e.g. Mian *et al.*, 2013; Disney *et al.*, 2010).

Table 6.1 Division of wealth in the Netherlands 2006-2012

Wealth decile	% Of total wealth in decile				Average wealth per household	
	Per decile		Cumulative		x1000 euro	
	2006	2012	2006	2012	2006	2012
1	-3.9	-3.8	-3.9	-3.8	-61	-58
2	0.0	0.0	-3.9	-3.8	0	0
3	0.2	0.1	-3.7	-3.7	3	1
4	0.6	0.4	-3.1	-3.3	9	6
5	1.6	1.1	-1.5	-2.2	25	18
6	4.0	3.1	2.5	0.9	63	47
7	7.9	6.9	10.4	7.8	125	106
8	12.5	12.0	22.9	19.8	197	186
9	19.4	19.5	42.2	39.3	306	301
10	57.8	60.7	100.0	100.0	911	937

Source: Statistics Netherlands. Figures do not include wealth in pension funds.

What happened to the distribution of wealth in the Netherlands during the crisis? Table 6.1 shows the division of wealth, excluding wealth in pension funds. Per wealth decile, the percentage of total wealth of Dutch households owned by that decile is presented.⁴⁸ The next two columns present the cumulated percentages.

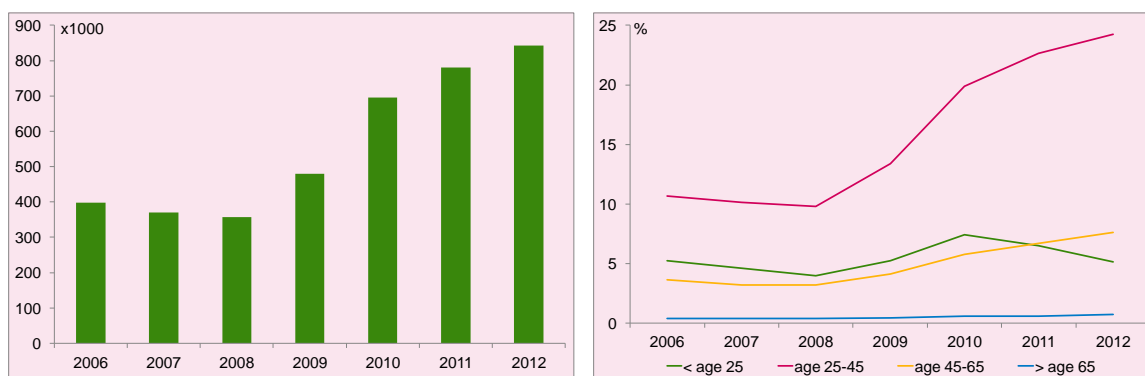
Notice first that wealth is unequally distributed across households.⁴⁹ The 10% least wealthy households (i.e., the first decile) have negative wealth, with an average of around 60,000 euros per household. On the other side of the distribution, the 10% most wealthy households own around 60% of total wealth. On average, their wealth is about 1 million euros. A large group (deciles 2-5) has almost no wealth.

⁴⁸ Please note that the composition of the deciles changes over time. Households that are in a particular decile in 2006 could be in another decile in 2012.

⁴⁹ The gini-coefficient for wealth is around 0.8; for income it is around 0.3.

The most striking result from table 6.1 is that the wealth distribution hardly changed during the crisis. Only the 10% richest people have become wealthier, most likely because of a smaller fraction of housing wealth in their total wealth. This assumption is supported by the fact that until 2009 the share of the 10th decile decreased compared to 2006, and in that period the house prices still increased (not in table). The 6th to 8th decile of households, with assets between about 50,000 and 200,000 euros, have been confronted with the largest drop in wealth. These households in particular might have responded by a decline in consumption.

Figure 6.7 Households with net debt (left) and fraction with negative debt by age category (a) (right)



Source: Statistics Netherlands. (a) Age category determined by age of head of the household.

Households with a negative net wealth are mainly those troubled by a mortgage value larger than the value of their house. These households are assumed to respond more strongly to wealth shocks, as supported by evidence in Mian *et al.* (2013) and Disney *et al.* (2010), for instance. To be precise, they show that people with high loan-to-value (LTV) ratios, including those with negative wealth, respond more strongly to wealth shocks than people with low LTV ratios. The left-hand panel of figure 6.7 shows the number of Dutch households with negative net wealth. This number more than doubled from around 400,000 at the end of 2006 to 850,000 at the end of 2012. This is more than 10% of Dutch households. When we distinguish between age categories⁵⁰ (right-hand panel of figure 6.7), we see that the problem is especially large for young people: almost 25% of households between age 25 and 45 have a negative net wealth at the end of 2012.

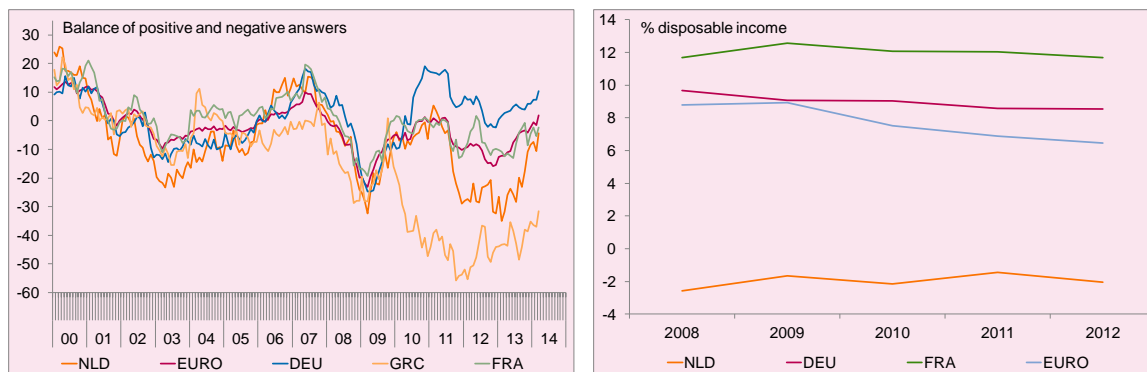
Relevance of confidence effects

Apart from changes in more fundamental determinants such as income, wealth (distribution) and interest rates, changes in consumption can also be driven by confidence effects. The consumer confidence indicator points at underperformance of consumption as well. The left-hand side of figure 6.8 shows that since the beginning of the crisis only in Greece consumer confidence dropped more, compared to the long-year average. The largest drop was measured in the second half of 2011, at a point that negative income and wealth developments and the pessimistic outlooks for these determinants dominated this indicator. Fortunately, Dutch consumer confidence improved rapidly over the second half of 2013, which can be attributed to improved expectations about general economic outcomes.

⁵⁰ Categories are based on the age of the main breadwinner of the household.

Whether low consumer confidence indeed led to lower household consumption is doubtful. Since 2000, the individual saving rate of households (excluding occupational pension savings) has remained almost stable, just as it did in most other European countries (right-hand panel of figure 6.8).

Figure 6.8 Consumer confidence relative to long-year average and the individual saving rate



Source: Eurostat.

To conclude, the recent large decline in private consumption in the Netherlands can to a great extent be attributed to a reduction in disposable income. Consumption and income developed more or less at the same pace, and the individual saving rate did not increase substantially. On the other hand, it seems highly unlikely that the severe decline in housing wealth has not affected consumption. What might have caused these observations? One possible explanation is that most households behaved more or less like hand-to-mouth consumers, implying that wealth has indeed played a modest role so far. Alternatively, the consumption effects of a decline in income might have been counteracted by the effects of a wealth decrease according to the principles of the intertemporal model. If households perceived the decline in income at least to some extent as temporary, then the decline in income led to a decrease in total savings, and as only part of the current income reduction will lead to a reduction in consumption. On the other hand, a negative wealth shock leads to an increase in savings, leaving total savings unaffected.

6.4 Exploring future consumption

6.4.1 Regular responses

This section explores the extent to which the insights from the intertemporal consumption models may be useful in predicting consumption behaviour in the coming years. We explore here the expectations for the main determinants of consumption behaviour: income and wealth.

The speed of recovery of income is strongly related to what will happen to productivity and employment (see Chapters 4 and 5). As discussed in Chapter 4, there is not much evidence that a financial crisis has a long-term effect on productivity growth. If this is the case, then

catch-up productivity growth will have a positive effect on real wages and therefore on disposable income, stimulating household consumption.

When labour supply recovers and actual unemployment is reduced, consumption will benefit as well. Household income will increase again, stimulating consumption. There is little evidence for structural labour market effects of the recent crisis in terms of higher structural unemployment or structurally lower labour supply (see Chapter 5). Labour supply might remain below its structural trend for a while after the crisis, but will return once the discouraged workers retire from the labour market and are replaced by younger cohorts. Similarly, unemployment will return to its equilibrium rate.

The development of the wealth of households will mainly depend on what happens to asset prices, inflation and the interest rate. As discussed in Chapter 3, the housing market still imposes several downward risks, like stagnation of economic growth, further tightening of lending standards and additional reductions of the fiscal subsidy for owner-occupants. On the other hand, there are also a number of factors that can stimulate the recovery of the Dutch housing market. Prices will increase when confidence in the housing market is restored in the wake of renewed financial and economic stability. More importantly, the low levels of construction during the crisis have limited the supply of new dwellings. In times of normal demand and supply behaviour, a tight housing market would result in an incline of house prices. Furthermore, an increase of the interest rate would benefit funding ratios, diminishing downward risks stemming from pension funds.

6.4.2 Crisis-specific factors

This paragraph covers unanticipated consumption shocks stemming from the crisis. Which risks are in store that might induce an additional downfall in consumption? Unfortunately, given the character of the crisis (that is, a significant loss in aggregate demand), unanticipated opportunities seem absent. We distinguish two risks that dominate the debate on consumption recovery. First, households might shorten their balances. Assets with low returns (such as private savings) are used to reduce debt and subsequently interest payments. High mortgage debt confines flexibility on the housing market for either voluntary moves or required moves (with high debt serving to limit job searches in a wide labour market). Second, concern for high unemployment may lead to precautionary savings, as households seek to protect themselves from a possible income loss in the future.

Overall, the aforementioned risks could severely hamper future consumption. This section explores their impact and their likelihood.

Under water

After the sharp decline in house prices and the subsequent fall in housing wealth, high debt levels invoked a great deal of discussion on the sustainability of debt. In both the Netherlands and other European countries, households accumulated high debt levels during the recent credit boom. Would households shorten their balances and/or increase savings to pay off their debt? And to what level would households tend to lower their debt levels?

Dealing with household debt in the Netherlands is mainly dealing with housing debt: 95% of all loans are related to housing mortgages (Van Beers and Bijlsma, 2013). Since the peak in 2008, nominal house prices have declined by 20% until 2013. As a result, many homeowners have seen a decline in the market value of their houses, dropping even below the value of their mortgage: they are 'under water'.

The underwater problem has increased sharply over the last few years (Van Es and Kranendonk, 2014). In 2013, the houses of 1.4 million households were under water, which represents one-third of all homeowners (CBS, 2014). At the beginning of 2008, this percentage of underwater households was 13%. Also the average amount of undervaluation has increased: in 2013, the average undervaluation was 61,000 euro, compared to 52,000 euro in 2012. The underwater problem is mainly a problem of younger households (see Figure 3.4). More than two-thirds of the people with an undervalued house are under 45 years old. Younger households have mostly bought their houses at the onset of the crisis, when house prices peaked at unprecedented levels. Among the older households the underwater issue is hardly a problem. At the beginning of 2013, almost 45% of the people over 65 with a house did not have a mortgage loan at all, and only 3% of them were under water.⁵¹

In the coming years it is reasonable to assume that households will respond to the underwater problem by repaying debt. We assume that households who are under water cover the negative equity in order to increase their mobility on the housing market. Underwater mortgages keep households from moving. When people sell their houses, the difference between their mortgage and the value of their house will be added to current debt levels. In addition, banks are reluctant to refinance undervaluation of housing with new loans, due to a lack of collateral. The underwater problem is mainly related to households consisting of relatively young homeowners who bought a house over the last decade. These households are short of other assets to absorb an increase in their debt level.⁵²

Deleveraging

The literature takes different approaches to settle the deleveraging challenge of households. Several papers (for example, Cuerpo *et al.*, 2013) consider the pre-boom debt level in 2000 as a sustainable level, and the difference between the current debt level and the 2000 debt level as a deleveraging need. However, whether debt has to fall all the way to its 2000 level also depends on the value of assets and collateral. Other approaches focus on net or gross wealth, but have their shortcomings too. Deleveraging based on the decline in wealth would mainly be related to the fall in equity before the crisis (that is, the bursting of the dotcom bubble). Strong deleveraging on that account is unlikely, as it mainly affected wealthy people who benefited from the rise in equity prices before 2000 and who could take a setback.

⁵¹ DNB (2014) reports that 30% of all mortgages are under water when corrected for household savings related to home ownership. The amount of overhang for these mortgages is not given. As we need this amount in our calculations on deleveraging we confine ourselves to the CBS definition of under water mortgages.

⁵² Note that deleveraging is not in accordance with the intertemporal consumption models. In that case, regarding the decline in housing wealth as a permanent shock, households would decrease current consumption (and increase savings), thereby affecting lifetime consumption.

Resumption of net housing wealth and net housing debt using 2000 as deleveraging target may be challenged, as well. Housing wealth loss due to the recent decrease in the housing prices is unevenly distributed among households. Households that bought homes before the price boom in 2003-2008 benefited significantly. Others that bought homes at the peak of the housing market only endured a big loss. It is reasonable to think that households in the first group will not deleverage. To reduce debt, they will either simply continue their monthly instalment or decide to shorten their balance by using accumulated wealth to pay back their mortgage completely— something that indeed is happening in the Netherlands.

To what extent do we already observe a deleveraging process happening in the Dutch economy? The answer to the question depends on the definition of deleveraging. There is empirical evidence that homeowners in the Netherlands use existing savings balances to reduce their housing debt.⁵³ This process certainly leads to a balance-sheet reduction, but it does not necessarily improve the net wealth position of households. For the latter, we need to observe an increase in the saving rate. Looking at the actual saving rate (right-hand panel of figure 6.8), we observe that this rate is more or less constant in recent years, which may suggest that deleveraging has not started yet.

From a macroeconomic point of view, it is not immediately clear that individual deleveraging will reduce aggregate consumption, because one person's debt is another's asset. However, since the Netherlands is a small open economy there is a high probability that debt repayments float abroad. But even if lender and borrower would live in the same country, there could be an effect on consumption if both groups have a different marginal propensity to consume. There is evidence that the marginal propensity to consume is larger for people with relatively less wealth (i.e., the people that are under water). In this case, debt reduction leads to a decline in aggregate consumption. Aggregate consumption can further be affected if the household sector is not the only sector that wants to restore their balance position. If the government and firms also aim to reduce their debt levels, this can produce a vicious circle of disappointing income, higher debt levels and even stronger contractions in consumption.

The impact of deleveraging on private consumption: a numerical illustration

Can something be said about the potential impact of deleveraging on private consumption in the Netherlands? This is a difficult question to answer because one has to make an assessment of uncertain household behaviour and an uncertain future. Notwithstanding this, we can make a back-of-the-envelope calculation, not with the pretension of providing an accurate estimate but just to give an idea about the order of magnitude and the impact of alternative assumptions.

⁵³ See <https://economie.rabobank.com/publicaties/2014/maart/nederlandse-hypotheekschuld-fors-gedaald-in-2013/>.

We estimate the households' deleveraging effects on consumption, making the following set of assumptions:

- We define deleveraging savings as the amount of money that agents repay to eliminate the underwater problem net of mortgage interest payments. These mortgage interest payments should be paid anyway.
- People have an idea about the future development of the house price, and take that into account in the decision on how much to repay. So if house prices are recovering, people take that into account and save less.
- We consider three alternative scenarios for the housing market in the next decade. In the first scenario, nominal prices fall by 0.5% yearly. In the second scenario, nominal house prices increase by 3% yearly in the coming ten years. In the third scenario, nominal prices increase by 4% yearly. We consider two scenarios for the possible deleveraging horizon: eight and ten years. We assume that households will fully repay the debt part that is above the house price value.
- We assume that agents have no private wealth, or at least do not use it, to repay their mortgage up to the level of the house value.
- We assume that deleveraging starts in 2016. The reason to start not immediately but to wait for another two years is that household income is still going to be relatively low in the next two years, and unemployment remains high (CPB, 2014) so that the underwater households postpone deleveraging until their income situation improves.

Table 6.2 Deleveraging effects on consumption (% change in consumption level)

Projected annual change in house prices	Projected deleveraging horizon	
	Eight years	Ten years
-0.5%	-4.9%	-3.9%
3.0%	-0.7%	0.0%
4.0%	0.0%	0.0%

Table 6.2 summarises the deleveraging effects, which are one-time effects on the consumption growth rate when we assume repayments to be equally distributed over the deleveraging period (i.e. a negative effect when the deleveraging starts and a positive effect when the deleveraging ends).

As shown in table 6.2, the deleveraging effect on consumption is extremely sensitive to future development of the house price and the projected deleveraging period. In the worst case of annual nominal change in house prices of -0.5% and a recovery period of eight years, consumption will be almost 5% lower during the deleveraging period. In the most optimistic scenario in which nominal house prices increase by 4% annually and people have a ten-year horizon, there is no deleveraging needed. In the moderate recovery scenario, households will only deleverage for the eight-year period.

There are different reasons to believe that our numbers provide an upper bound rather than a lower bound. First, households can reduce the underwater debts using money from

existing saving accounts or from bequests (balance sheet reduction). However, as stressed before, there is some evidence that the people who actually use savings to reduce their housing debt do not have an underwater problem. Second, the actual underwater problem can be lower than the data above suggest because many mortgage contracts also include a housing-related saving account. However, the underwater problem is mainly concentrated among the young, who probably did not have time to build up a sufficient amount of capital. Third, some of the households could take loans up to 105% of the value of their house so that not the whole difference between the mortgage sum and the current house value can be considered as a loss. Fourth, apart from lower consumption, debt reduction can also be financed by supplying more labour. Finally, it could be the case that disposable income of households is not sufficient to make additional mortgage repayments. Then the speed and magnitude of the deleveraging process will be hampered, due to liquidity constraints.

Precautionary savings

Apart from a deleveraging motive, another crisis-specific reason to save more (and consume less) is the increased uncertainty about future income. Even in a simple intertemporal consumption model it can be shown that an individual operating in an uncertain environment builds up a stock of precautionary savings to insure against some bad state of the economy in the future. They anticipate that if this bad state is realised, they will earn lower income. To avoid future large income fluctuations and retain a stable consumption level, they set aside a precautionary buffer, by consuming less in the current period. With a currently high unemployment rate, relatively unfavourable career opportunities and an increasing reliance on temporary labour contracts, precautionary savings could be a relevant factor for the Dutch economy in hampering consumption growth.

Although economic theory suggests a response of savings to increased uncertainty, the empirical relevance of precautionary savings is unclear. Empirical studies, which have attempted to assess the relevance of the precautionary saving motive, have delivered results that are far apart from each other (see the literature survey by Kennickell and Lusardi, 2004). Some studies conclude that savings for precautionary reasons make up only approximately 2% of all savings (Guiso *et al.*, 1992); other studies come to much larger percentages of about 20-40% (Lusardi, 1997; Ventura and Eisenhauer, 2006).

As pointed out by Mastrogiacomo and Alessie (2013), these contradictory results may be either the result of institutional differences between countries or suggestive of methodological shortcomings. They note that the effect of increased uncertainty on savings depends on how this uncertainty is measured. With subjective (self-reported) measures for uncertainty, the effect of increased uncertainty on savings is small, while this effect becomes larger when using more objective uncertainty measures (based on income data).

The literature is, if anything, explicit about the level of precautionary savings in normal times. Unfortunately, we are unaware of empirical literature that investigates whether a financial crisis increased precautionary savings and to what extent.

6.5 Conclusion

Summarising, this chapter has shown that household consumption declined significantly during the crisis as the result of a sharp decline in housing wealth and the reduction of disposable income. Compared to the situation in other Northern European countries and the US, this decline was substantial. Households tried to cut back their expenses mainly by reducing consumption.

When the economy recovers, consumption likely follows. For instance, Chapter 4 points to catch-up productivity growth, and Chapter 5 suggests that unemployment will diminish, thereby increasing real wages, disposable income and thus consumption. Recovery in the housing market also benefits consumption. When house prices increase again, wealth increase and loan-to-value ratios avert the debt sustainability problem. Chapter 8 explores two scenarios in which consumption, in concordance with economic growth may recover.

On the other hand, several downward risks are in store, which might hold back consumption for a longer time period, see the *Delayed Recovery* scenario in Chapter 8. As mentioned before, it is questionable whether the large household debt levels will be sustainable. In particular, households with an underwater mortgage are less mobile and have a larger marginal propensity to consume. In a few years they might deleverage on their house, regaining their flexibility on the housing market. Furthermore, actual unemployment is substantial. Recovery might take some time; depending on the state of the economy, full recovery might stretch beyond 2023. Credit constraints might remain, if the financial crisis does not recover sufficiently. Stricter credit conditions and limited supply could limit consumption as well. Finally, as we were unable to determine the effect of a financial crisis on precautionary savings, we exclude any assumptions on their future development, and let it suffice to state that persistent unemployment and the insurance for other risks may affect savings into the next decade.

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