How can the rise in the French household saving ratio since the start of the crisis be explained?

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Business Conditions
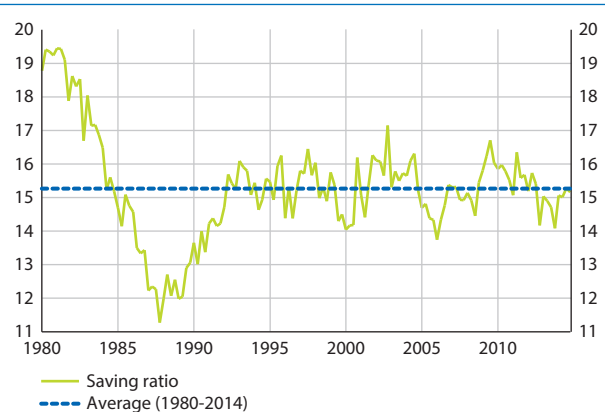and Macroeconomic Forecasting Directorate

Lower growth in purchasing power and the rise in unemployment do not provide a sufficient explanation for the weakness observed in consumer spending since the beginning of the crisis. In this study, the authors test various theories in succession: first, the impact of the decline in consumer confidence on spending behaviour; second, the effect of changes in the structure of disposable income; third the backlash caused by the withdrawal of the "cash-for-clunkers" scheme; and lastly, a less usual assumption is investigated, i.e. the impact of changes in households' permanent income expectations.

Since the start of the Great Recession, French household consumption appears to have disconnected from its usual determinants, for example real disposable income and the unemployment rate. Conversely, these same determinants suggest a lower household saving ratio than that actually observed between 2008 and 2014: the slowdown in real disposable income growth should have prompted a decline in the saving ratio; yet the latter increased sharply in 2009, then stabilised at a higher level than before the crisis (see Chart 1).

The weakness observed in consumer spending during the Great Recession can in part be attributed to lower growth in household income and to higher unemployment

In the Banque de France's projection model (Baghli *et al.*, 2004), long-term consumer spending, according to an error correction equation, is chiefly determined by purchasing power (see Table 1, Equation 1).

In the short run, however, consumer spending is determined by the unemployment rate, with a negative coefficient suggesting that consumers adopt precautionary saving behaviour when their income expectations deteriorate, and by gross disposable income (GDI) plus consumer credit.

C1 French household saving ratio

(% of gross disposable income)

- Saving ratio
- - - Average (1980-2014)

Source: Quarterly national accounts (2010 system).

T1 Estimations of household consumption using an error correction equation

Specification	Eq. 1	Eq. 2	Eq. 3
	$\Delta \log C_t$		
Constant	**-0.03**	**-0.03**	**-0.03**
	(0.01)	(0.01)	(0.01)
$\ln C_{(t-1)} - \ln R_{(t-1)} - 1{,}0.\dfrac{T_{t-1}}{R_{t-1}}$	**-0.20**	**-0.19**	**-0.20**
	(0.05)	(0.05)	(0.04)
$\Delta \ln R_t + \Delta \dfrac{T_t}{R_t}$	**0.19**	**0.17**	**0.13**
	(0.05)	(0.05)	(0.04)
Δ unemployment $_t$	**-0.37.10⁻²**	**-0.39.10⁻²**	**-0.46.10⁻²**
	(0.20.10⁻²)	(0.21.10⁻²)	(0.17.10⁻²)
1996Q1	**0.01**	**0.01**	**0.01**
	(0.40.10⁻²)	(0.43.10⁻²)	(0.35.10⁻²)
1998Q1-2000Q1	**0.43.10⁻²**	**0.37.10⁻²**	**0.42.10⁻²**
	(0.20.10⁻²)	(0.16.10⁻²)	(0.13.10⁻²)
Confidence $_t$		**0.03.10⁻²**	**0.03.10⁻²**
		(0.02.10⁻²)	(0.01.10⁻²)
Cash-for-clunkers scheme			**0.01**
			(0.14.10⁻²)
Adjusted R^2	0.40	0.40	0.65
SER	0.0046	0.0046	0.0034
Sample period	1994Q1-2014Q4		

Significant coefficients at the 10% threshold are shown in bold; standard deviations are given in brackets.
Where:
C: *real household consumption;*
R: *gross disposable income deflated by the consumption deflator;*
T: *flow of consumer credit, deflated by the consumption deflator;*
Unemployment: *ILO unemployment rate;*
1996Q1: *dummy equal to one in Q1 1996, when consumption rose 1.8% quarter-on-quarter, after falling 1.3% in Q4 1995; the second half of 1995 was marked by a series of strikes and terrorist attacks which weighed on consumption;*
1998Q1-2000Q1: *dummy equal to one between Q1 1998 and Q1 2000, when consumption grew at a faster pace than suggested by its usual determinants against a backdrop of falling manufactured goods prices;*
**Confidence**: *residual of the regression of the Insee confidence indicator over the change in GDI;*
Cash-for-clunkers scheme: *dummy indicator for government subsidies for automobile purchases, which is equal to one when the schemes were introduced, -1 when they were ended, and nil for the rest of the period.*
The long-term relationship is based on the assumption that C=R+αT, or C/R=1+α T/R. Given that T/R is close to zero, the long-term relationship is based on the approximation ln C/R ≈ α T/R.

The equation is estimated using quarterly data for the period 1994-2014, as 1993 appears to mark a cut-off point:[1] two of the variables that are significant when the estimation period includes 1970-1980, are no longer significant when the estimation period is restricted (i.e. changes in real short-term interest rates with a negative coefficient, which suggests that consumption is smoothed over time,[2] and inflation, with

C2 Ratio of the dynamic simulation to observed consumption
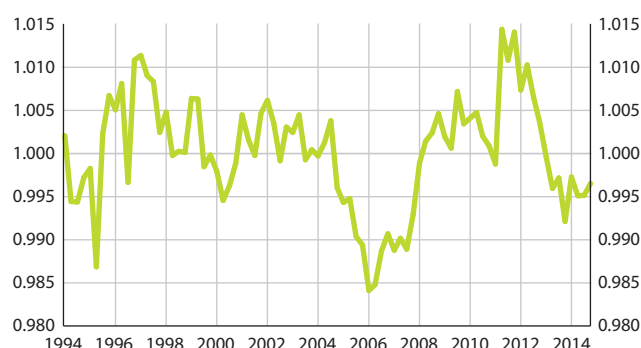
Key: In Q12014, consumption estimated using Equation 1 was underestimated by 0.1%.
Sources: Quarterly national accounts (2010 system) using chain-linked prices (in EUR millions); simulations using the Mascotte model.

a negative coefficient, which suggests a real money balance effect).

Equation 1 tends to overestimate consumption between 2008 and 2013 (see Chart 2). This bias is also found in an Insee model (Faure *et al.*, 2012).

The rise in the unemployment rate from 7.4% in 2008 to 10.3% in 2014, coupled with the slowdown in purchasing power growth (from an annual average of 2.4% between 2000 and 2007, to 0.5% between 2008 and 2014) do not fully explain the slowdown in consumer spending observed during the Great Recession (see Chart 3).

The overestimation bias could be due to the fact that certain variables have been omitted. We test a succession of different theories in order to find a suitable explanation for the rise in savings: first, the impact of the decline in consumer confidence on household spending behaviour; second, the effect of the structure of disposable income; third the backlash caused by the withdrawal of the "cash-for-clunkers" scheme; and lastly, a less usual assumption is investigated, i.e. the impact of changes in households' permanent income expectations.

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1 *Structural changes, such as the period of disinflation seen in the 1980s, the opening up of financial markets from 1986 onwards, the widening of public deficits or successive pension reforms may also have affected consumer spending behaviour.*

2 *A rise in real interest rates lowers the discounted value of future consumption over present consumption, thereby encouraging households to substitute savings for present consumption, in order to smooth their consumption over time.*

C3 Contribution of the annual variation consumption

(in percentage points)

Real GDI
Residual
Consumer credit
Other
Unemployment rate
Consumption (% chg yoy)
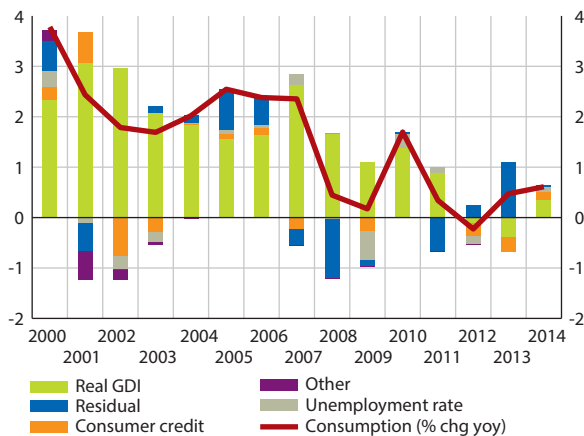
Key: In 2014, growth in household purchasing power accounted for 0.4 percentage point of the 0.6 per cent rise in consumption; the decline in unemployment and rise in credit flows contributed 0.1 percentage point respectively.

C5 Contribution of the confidence indicator to the change in consumption

(in percentage points)

Real GDI
Residual
Consumer credit
Other
Unemployment rate
Confidence indicator
Consumption (% chg yoy)
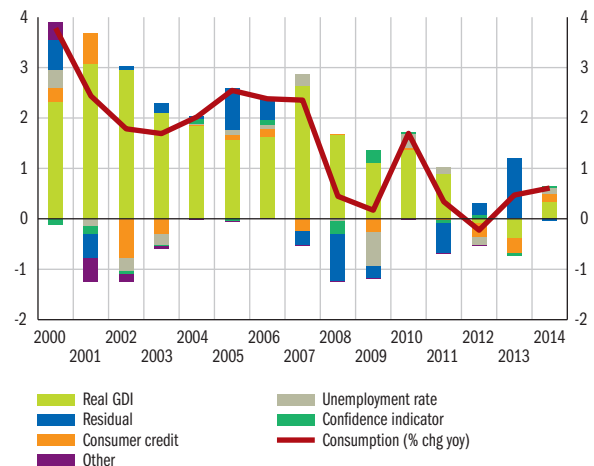
Key: In 2008, the deterioration in consumer confidence shaved 0.3 percentage point off consumption growth.
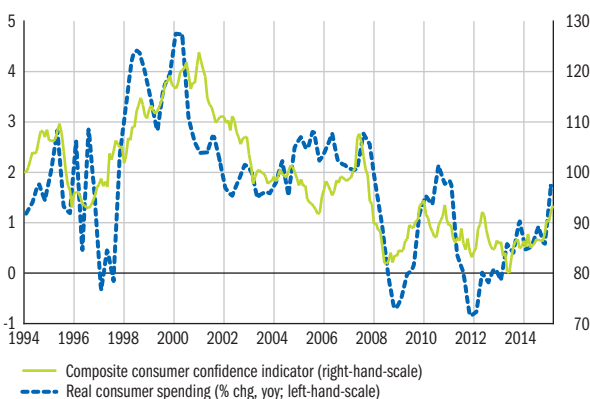
The decline in consumer confidence contributed to the increase in the saving ratio, but only partially explains the slowdown in consumer spending

Consumer confidence, as measured by the Insee monthly confidence index, deteriorated markedly during the Great Recession (see Chart 4) and, since September 2007, has remained firmly stuck below its long-term average (normalised to 100). This decline has coincided with a slowdown in consumer spending, suggesting that uncertainties

C4 Consumer confidence indicator and consumer spending

Composite consumer confidence indicator (right-hand-scale)
Real consumer spending (% chg, yoy; left-hand-scale)

Sources: Insee, composite consumer confidence indicator and quarterly national accounts (2010 database).

over the employment outlook and over future income levels may have prompted consumers to set aside precautionary savings.

We add a consumer confidence indicator[3] to our consumption equation to capture the incentive to increase precautionary savings (see Table 1, Equation 2). This slightly limits the consumption overestimation in 2008, and reduces the underestimation in 2011 and 2013. According to our estimation, a one-standard-deviation shock to the confidence indicator leads to a 0.1% variation in real consumption. The decline in consumer confidence thus contributed to, but only partially explains, the fall in consumption observed between 2007 and 2009, and the slowdown in 2011 (see Chart 5).

The discontinuation of the "cash-for-clunkers" scheme contributed to the slowdown in consumption in 2012

The overestimation bias could be caused by the omission of certain variables. We focus in particular

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3 *As Insee's composite index of consumer confidence is correlated to income, which is an exogenous variable in our consumption equation, changes in the index are regressed over changes in income and a constant (changes in the unemployment rate were also tested but were not significant). The residual of this regression is used as the consumer confidence indicator (Faure* et al.*, 2012).*

C6 Ratio of the dynamic simulation to observed consumption
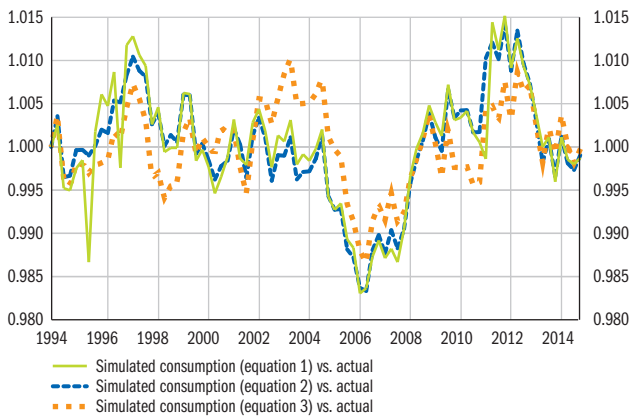
Key: In Q1 2014, consumption estimated using Equation 3 is underestimated by 0.1%.

on automobile purchases, which account for 5% of nominal spending on goods and services, but are also extremely volatile. Between the fourth quarter of 2008 and the fourth quarter of 2010, automobile purchases were buoyed by a government subsidy.[4]

While this subsidy – dubbed the "cash-for-clunkers" scheme – was in place, vehicle purchases made a positive contribution to consumer spending. But car sales subsequently plummeted when the scheme was ended in early 2011, making a negative contribution to overall consumption. After falling by 1% in 2008 versus 2007, new private vehicle registrations rebounded by 11% in 2009 (a rise of 221,700 registrations), before falling back again between 2010 and 2013.

Nonetheless, adding an indicator to capture the impact of car subsidies (see Table 1, Equation 3) only limits the overestimation of consumption in 2009 to a minor extent (see Chart 6).

The slowdown in consumer spending can be attributed to the change in the structure of household income

The change in households' sources of income since the start of the Great Recession could have had an impact on consumer spending, due to variations in the propensity to consume according to income type (e.g. income from activity vs. replacement income).

After remaining stable from 2000 to 2007, the share of wages in overall income rose from 60.1%

in 2007 to 62.0% in 2014. The share of individual entrepreneurs' gross operating surplus (GOS), which has tended to decline due to the rise in salaried employment and fall in agricultural jobs, fell at a faster pace during the Great Recession, dropping from 10.1% of gross disposable income in 2007 to 8.6% in 2014. In contrast, the weight of welfare benefits in household income increased from 30.6% in 2007 to 34.9% in 2014, reflecting an increase in retirement pensions and, to a lesser extent, in unemployment benefits. This rise in the proportion of replacement income during the Great Recession could explain the slowdown in consumption, assuming that older or low-income households tend to exhibit different spending behaviour to households with a wage income.

Equation 4 (see Table 2) tests the effects of income structure, using a specification based on Bonnet and Dubois (1995).

The breakdown of income[5] shows that individuals have a higher propensity to spend from wages and GOS, as these revenue streams tend to be steadier. The propensity to spend from welfare income, meanwhile, is not significantly different from zero, suggesting that the rise in benefit payments during the crisis did not help to support consumer spending as replacement income such as unemployment benefit does not make up for the loss of more permanent sources of income such as wages or GOS. The weight of income from property and net interest income is not significant either.

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4 *From February 1994 to June 1995, the Balladur government granted a subsidy to consumers if they scrapped an old vehicle and purchased a new one. In September 1995, the Juppé government increased the amount of the subsidy and extended the scheme until 1996. The qualifying conditions for President Sarkozy's 2008 scrappage premium were tightened in 2010 and the scheme was discontinued on 1 January 2011. In 2012, the conditions were also tightened for the super-bonus paid to consumers scrapping an old vehicle and purchasing a low emission vehicle. During the 1990s and the Great Recession, while the scrappage schemes remained in place, the rebound in car purchases contributed strongly to consumer spending, particularly just before the discontinuation or tightening of the schemes. Car purchases, which are part of total consumption, then dropped sharply after the end of the schemes.*

5 *Gross disposable income can be broken down as follows:*
Income (R) = Wages (W) + GOS + Other (O)
Consumption can be expressed as follows:
$C = \alpha.O + \beta.W + \gamma.GOS = \alpha.(R\text{-}W\text{-}GOS) + \beta.W + \gamma.GOS.$
$C = \alpha R.\left[1 + \frac{(\beta-\alpha)}{\alpha} \cdot \frac{W}{R} + \frac{(\gamma-\alpha)}{\alpha} \cdot \frac{GOS}{R}\right]$
After converting this into a logarithm and using a linear approximation, we obtain $\ln \frac{C}{R} = \ln \alpha + \frac{(\beta-\alpha)}{\alpha} \cdot \frac{W}{R} + \frac{(\gamma-\alpha)}{\alpha} \cdot \frac{GOS}{R}.$

T2 Estimation of the impact of income structure

	Equation 4	
	$\Delta \log C_t$	
	Coefficient	σ
Constant	**-0.15**	0.04
$\ln\left(\dfrac{C_{t-1}}{R_{t-1}}\right)$	**-0.22**	0.05
$\left(\dfrac{Payroll_{t-1}}{R_{t-1}}\right)$	**0.15**	0.05
$\left(\dfrac{GOS_{t-1}}{R_{t-1}}\right)$	**0.22**	0.05
Δ unemployment $_t$	**-0.58x10^{-2}**	0.18x10^{-2}
1996Q1	**0.01**	0.34x10^{-2}
1998Q1-2000Q1	**0.46x10^{-2}**	0.13x10^{-2}
Confidence $_t$	**0.04x10^{-2}**	0.01x10^{-2}
Cash-for-clunkers scheme	**0.01**	0.14x10^{-2}
Adjusted R^2	0.69	
SER	0.0032	
Sample period	1994Q1-2014Q4	

Although the rise in wage income should have helped to buoy consumption, it was more than offset by the decline in the share of GOS, as the propensity to consume is higher for this latter type of revenue. Taking into account income structure thus reduces the overestimation bias for consumption during the Great Recession. However, it also tends to underestimate consumption between the third quarter of 2008 and second quarter of 2009 (see Chart 6), which was marked by a sharp fall in GOS.

The crisis could have prompted households to lower their permanent income expectations, and thus led to a fall in consumption

Lastly, we make an assumption that cannot be tested econometrically. The crisis may have prompted a downward revision of households' expectations regarding their future permanent income. According to the most recent PATER survey, households surveyed in 2011 were generally more pessimistic about their wage prospects and about the probability of future job losses than in 2007 (Arrondel and Masson, 2014). Assuming that households tend to smooth their consumption over time, this downward revision would explain the fall in present consumption and the rise in the saving ratio.

To illustrate this hypothesis, we use a neoclassical growth model incorporating shocks to productivity growth, which are specified as shocks to the trend in productivity (Aguiar and Gopinath, 2007). We examine how household spending and saving behaviour react when expectations of permanent income are revised downwards due to an information shock to productivity growth.

Our simulation is based on the assumption that in 2009 (period 0 in the model), households anticipated a permanent drop of 1.3% in productivity growth over the next five years. In 2011, households incurred a second shock, signalling that their permanent income would decline further and eventually to zero in 2016. Each of these shocks was permanent.

Our simulations suggest that, in the event of a negative information shock to income expectations, households increase their savings. After an initial overreaction, the saving ratio subsequently declines slightly, and then stabilises below its initial equilibrium level (see Chart 7).
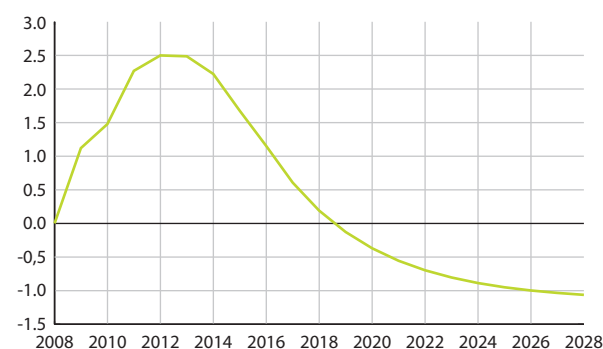
C7 Reaction of the saving ratio to an information shock

(deviations from steady state, in per cent)

a) News shock
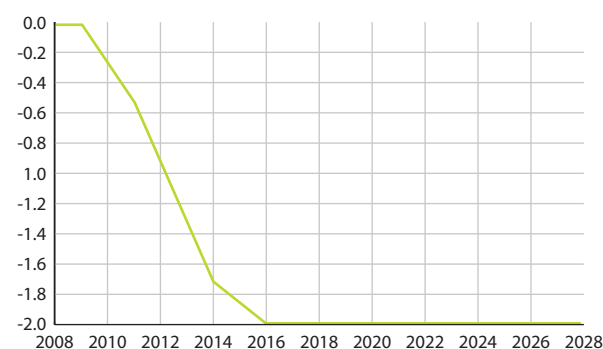
b) Saving ratio

This reaction could be linked to consumption smoothing, as households realise they do not have sufficient savings to compensate for a future slowdown in productivity growth. In France, the rise in the unemployment rate (from 8.0% in 2007 to 10.3% in 2014), the implementation of pension reforms or a downward revision in long-run growth prospects could have prompted a downward revision of household income expectations, thereby explaining the persistently high saving ratio.

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