

# The Italian household consumption: a comparison among recessions.

Lisa Rodano\* and Concetta Rondinelli\*\*

## Abstract

We compare households' behavior during recessions. We observe that households' consumption during the Sovereign debt crisis fell in line with real disposable income; to disentangle among alternate explanations, we make use of two different approaches: the first takes advantage of the consumption equations of the Bank of Italy Quarterly Model. We find that, differently from past episodes, the reduction in wealth, partly due to capital losses, is relevant to explain consumption contraction during the last recession; the length of the double recession and the intense consumption smoothing during the Global financial crisis may have played a non-negligible role as well. The second approach benefits from the microeconomic information contained in the Survey of Households Income and Wealth. We find that a large share of the fall in aggregate consumption stems from the choices of younger households, whose income and wealth decreased more significantly than those of their elder peers; a downward risk for the evolution of domestic demand may be related to the persistence of negative labour market conditions and a lower level of real wealth. Moreover, the perception of future income perspectives appears uncertain across all households types. Taking into account the subjective probability that the loss experienced in 2012 will extend into the future, we estimate that the perception of permanent denting of Italian households income did play a relevant role in driving the extraordinary fall of private consumption in the last few years.

*JEL classification:* E21, E32, D12.

*Keywords:* Consumption, Business cycle, Income, Wealth, Household behavior.

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\* Bank of Italy, Economic Outlook and Monetary Policy Directorate, via Nazionale, 91, 00184 Roma Italy. E-mail: marialisa.rodano@bancaditalia.it

\*\* Bank of Italy, Economic Outlook and Monetary Policy Directorate, via Nazionale, 91, 00184 Roma Italy. E-mail: concetta.rondinelli@bancaditalia.it

## 1. Introduction and stylized facts

At the end of 2013, after declining for 9 quarters in a row, economic activity in Italy showed the first signs of recovery. The strength of domestic demand along the recovery path however is highly uncertain. In this work we focus on households behavior and compare consumption dynamics across recessions, with the twofold objective of explaining current developments and assessing the prospects of the on-going recovery.

Over the last twenty years Italy has experienced three main episodes of recessions. The first one started in the second quarter of 1992 and lasted one year and a half (the “Early nineties” event from now on). The two most recent recessions followed one another in a rapid succession and covered a period that extends from the end of 2007 until the third quarter of 2013. For exposition purposes we will refer to these last two episodes as the “Global financial crisis” (until the end of 2009) and the “Sovereign debt crisis” (from the second half of 2011).

All in all, the economic downturn ensuing from the Sovereign debt crisis shares some key common features with each of the previous two recessions:

1. Similarly to the Global financial crisis, which originated from the US financial sector, the Sovereign debt crisis was triggered by a financial turmoil in the markets for sovereign bonds. However, the nature of the shocks that hit the Italian economy was very different in the two recessions<sup>1</sup>: the Global financial crisis was prominently an “imported crisis”, with the fall in international trade being the main driver of the large and prolonged decline of economic activity. During the Sovereign debt crisis, instead, the fall of GDP was mainly induced by the generalized worsening of financing conditions and the deterioration of business and household confidence, that resulted in an sharp drop in consumption and investment.
2. Similarly to the Early nineties event, the Sovereign debt crisis was characterized by a severe contraction of domestic demand.

More in detail, when comparing the three recessions a number of stylized facts stand out (Table 1):

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<sup>1</sup> See Caivano et al., 2010. For a detailed analysis of the main factors behind the two recessions see Buseti and Cova, 2013.

- the Sovereign debt recession lasted nine quarters, thus being 1½ times longer than the Early nineties event and just as long as the Global financial crisis, the most severe downturn since WWII;
- the last episode came after a harsh and long recession, interrupted by a short and incomplete recovery in 2010-11: at the end of the brief upturn, Italian GDP was still around 5 per cent below its pre-crisis level. Despite the different origins, the Global financial crisis and the Sovereign debt crisis jointly caused a prolonged strain on economic activity;
- the Sovereign debt crisis stands out as the episode with the most dramatic fall in real households disposable income; in terms of annual averages appears as intense as the one observed in the Early nineties, but it lasted much longer;
- a distinguishing feature of the Sovereign debt crisis is that the drop in overall households consumption – of both durables and non-durables – is equal to, if not stronger than, that of real disposable income.

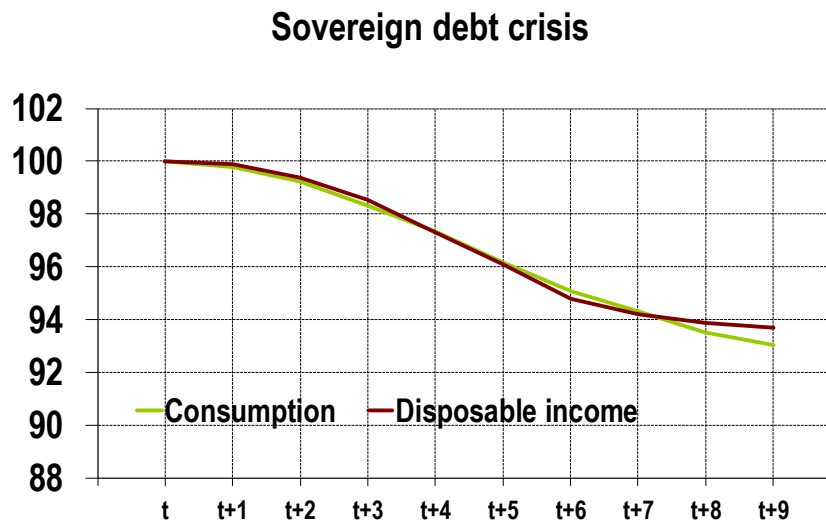
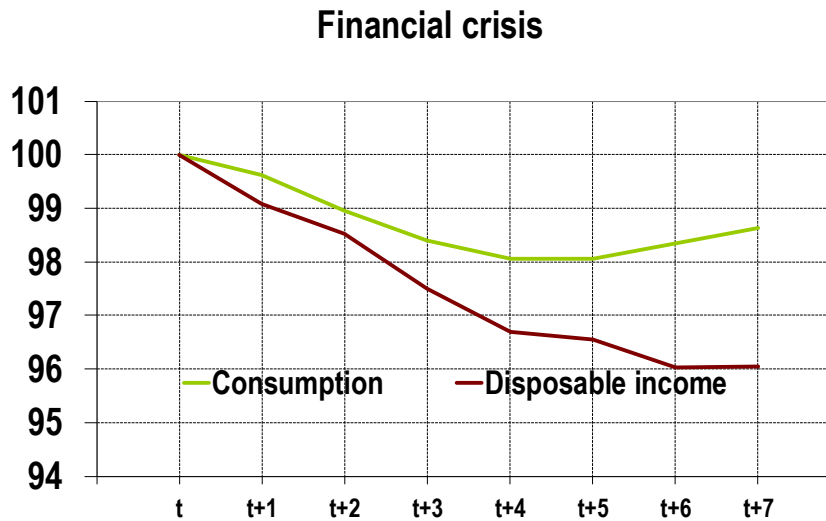
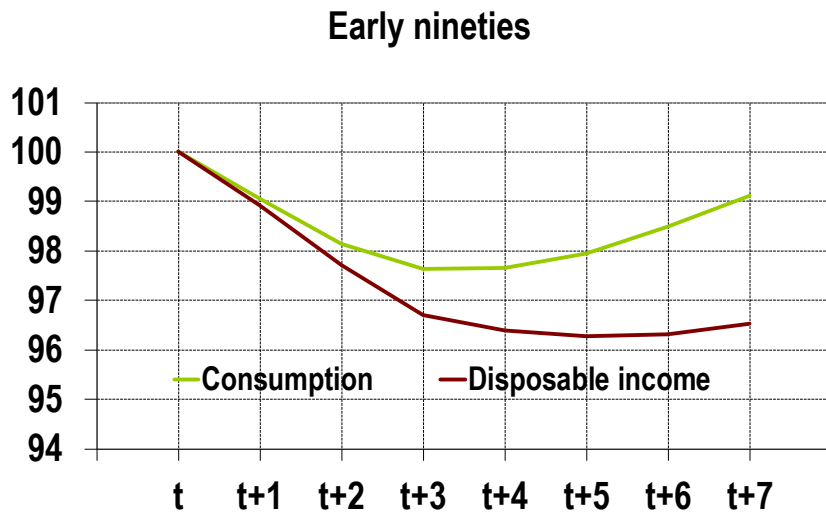
**Table 1. Comparing recessions**

		N.	GDP	Domestic demand	Total consumption	Non durable consumption	Durable consumption	Disposable income	Total employment
Early nienties	1992.2-1993.3	6	-1.0	-4.0	-2.1	-1.1	-10.3	-2.7	-2.7
Global financial crisis	2007.4-2009.4	9	-3.1	-2.6	-0.9	-0.7	-2.9	-2.0	-1.8
Sovereign debt crisis	2011.3-2013.3	9	-2.1	-3.7	-3.2	-2.8	-8.2	-2.7	-1.5
<i>Memo item: Long run growth</i>									
- 1990-2007			1.5	1.5	1.4	1.3	2.4	0.9	0.4
- 1990-2013			0.7	0.5	0.7	0.7	0.2	0.2	0.0

*Note: Our calculations from National Accounts quarterly data, average growth rates in annual terms (corrected for the length of each episode).*

Clear evidence of a different pattern characterizing the evolution of consumption during the Sovereign debt crisis compared with previous recessions is provided by the quarterly dynamics of real household income and consumption (Figure 1): during the Early nineties and the Global financial crisis, households consumption declined less than disposable income (*consumption smoothing*); during the Sovereign debt crisis, instead, the fall in income has been accommodated by a drop in households consumption of just the same magnitude.

Figure 1. Household real disposable income and consumption during recessions



Note: Our calculations from National Accounts quarterly data; indices equal 100 in the first period of contraction of disposable income in annual terms, 4 terms moving averages.

## **2. Possible explanations**

Against this background, we investigate whether the consumption dynamics during the last recession represents an anomaly and, if so, what are the potential drivers of such an unusual occurrence.

A number of possible, not necessarily mutually exclusive, explanations can justify the observed pattern:

- (i) the consumption squeeze observed during the Sovereign debt crisis may have resulted from a drop in (perceived) ‘permanent income’;
- (ii) variables relevant for consumption decisions, but different from households disposable income, may have been hit by unusual shocks;
- (iii) other things equal, there may be a structural increase, for precautionary reasons, in the desired saving ratio.

Disentangling among alternative explanations may be relevant, as it allows a more educated appraisal of the evolution of domestic demand along the recovery path that started at the end of 2013. In case we are not facing a drop in ‘permanent income’, we might expect a more buoyant expansion of consumption in the next quarters; the opposite may apply if a downward shift in ‘permanent income’ occurred.

In the remainder of this paper, we bring these questions to the data. We make use of two different approaches: the first takes advantage of the information contained in the consumption block of the Bank of Italy Quarterly Model (BIQM) and exploits the econometric relationships used for mapping consumption behaviour. The second benefits from the microeconomic information contained in the Survey of Households Income and Wealth (SHIW), which for the first time in 2012 contains a question on households’ perceptions about their income dynamics with respect to ‘normal times’.

## **3. The Bank of Italy Quarterly Model as a macro-economic tool to compare recessions**

One way to track and compare the evolution of consumption during different recessions involves the use of the macroeconomic relationships estimated in the BIQM. The BIQM is used to achieve four main tasks:

- (i) track the actual evolution of households expenditure and test whether the residuals signal a deterioration in the predictive accuracy of the equations. The performance of the model during different recessions is compared in order to assess whether consumption dynamics in the last episode followed a path which is in line with historical trends or rather presents anomalous features;

- (ii) run counterfactual experiments aimed at comparing recessions on the basis of the relationships estimated in the model, in order to evaluate whether factors different from disposable income – but playing a role in the theoretical framework underlying the BIQM – did affect consumer spending in a particularly strong way in the last recession;
- (iii) test whether the coefficients of the consumption equations are stable or point to a structural break in the long run relationships between consumption and its determinants;
- (iv) check whether there may be other relevant economic phenomena that contribute to explain the observed consumption performance, but are omitted from the model.

### 3.1 A brief description of the consumption block of the BIQM

Overall consumption ( $TC_t$ ) is the sum of durable ( $CD_t$ ) and non-durable consumption ( $CN_t$ ):

$$TC_t = CN_t + CD_t \quad (1)$$

For a better match with theory, economic consumption ( $C_t$ ) rather than non-durable consumption is modelled in the BIQM. The two components are related by identities:

$$C_t = CN_t + (\delta + \rho)CK_{t-1} \quad (1a)$$

$$CK_t = CK_{t-1}(1 - \delta) + CD_t \quad (1b)$$

where  $CK_t$  is the stock of durables at the end of period  $t$ ,  $\delta$  is the rate of (exponential) depreciation for CK, and  $\rho$  is the real interest rate. In the BIQM there are two behavioral equations, one for the economic consumption  $C_t$  and one for durable consumption  $CD_t$ . The estimated equation for  $C_t$  takes the form of an error correction model that describes the adjustment of economic consumption to its long run level:

$$\Delta \ln C_t = \beta_0 + \beta_1 \Delta \ln C_{t-1} + \beta_2 \Delta \ln Y_{t-1} + \beta_3 (C_{t-1} / A_{t-2}) + \beta_4 (Y_{t-1} / A_{t-2}) + \beta_5 \rho + u_t \quad (2)$$

with  $Y_t$  and  $A_t$  being, respectively, real private-sector disposable income and wealth<sup>2</sup>. Estimation results are reported in Table 2.

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<sup>2</sup> The BIQM does not distinguish between households and firms, thus the explanatory variables in the equations modelling consumption refer to the private sector as a whole.

**Table 2. Estimated values and statistics for economic consumption**

	Estimates	t-ratios
$\beta_0$	0.02577	3.166
$\beta_1$	0.24826	2.289
$\beta_2$	0.04327	2.253
$\beta_3$	-2.0062	-4.906
$\beta_4$	1.2326	6.183
$\beta_5$	-0.0912	-3.715
R-Squared		0.44025
Adjusted R-Squared		0.41285
Durbin-Watson Statistical		2.0881
Sum of Squares of Residuals		0.003
Standard Errors of Regression		0.004
Current sample		1971.2-2008.4

*Note: OLS estimates from National Accounts data.*

It can be shown that the long run cointegrating relationship of equation (2) takes the form:

$$C_t = c_y Y_t + c_a A_{t-1} \quad (3)$$

where:

$$c_y = \frac{\beta_4}{-\beta_3}; \quad \text{and} \quad c_a = \frac{\beta_0}{-\beta_3} + \frac{\beta_1 + \beta_2 - 1}{-\beta_3} g + \frac{\beta_5}{-\beta_3} \rho = c_0 + c_g g + c_r \rho \quad (4)$$

with  $g$  representing the long-run common growth rate of consumption, real disposable income and real wealth along the balanced growth path.

Consistently with the standard life cycle theory, in the long run economic consumption is driven by ‘permanent income’ represented in the equation by disposable income  $Y_t$  and wealth  $A_t$ . The real interest rate  $\rho$  captures the inter-temporal substitution between consumption and savings and it also accounts for capital gains and losses on the stock of wealth, which is not measured at market values.

The demand for durables is treated separately in the model. The consumption of durable goods is adjusted to match a desired stock of durables, which depends on the relative price of durables and

non-durables, the long-term interest rate and a set of demographic variables. Last but not least, the demand of durables is conditioned to non-durable consumption, which is also included in the equation among the explanatory variables.

#### **4. Goodness-of-fit of the BIQM during recessions**

The aim of this section is to investigate whether the consumption equations of the BIQM succeeded in tracking consumption dynamics during recessions. For each economic downturn, Figure 2 plots the errors of the static (bold line) and dynamic (dotted line) simulations; the latter basically cumulate the one-step ahead errors across time and thus summarize the performance of the model when the values of the endogenous variable are not known (i.e. forecast error).

The equation of economic consumption (right hand column of Figure 2) has relatively small residuals, none of them being statistically different from zero (with a confidence level of 5%). Notice though that in the two previous recessions they tended to compensate with each other, adding up to roughly zero by the end of the relevant horizon. By contrast, during the Sovereign debt crisis, even though remaining small in size in each period, they highlight a systematic overestimation of actual consumption dynamics: all in all, the end-of-period over-prediction of economic consumption amounts to about 1.5%.

Errors for total consumption (left hand column of Figure 2) show that the model performance worsens significantly in the last episode, unlike what had happened in the previous two. They are also much larger than those of economic consumption, due to the sizable forecast errors for durable consumption. In fact large errors in durable consumption may be expected in recessions owing to the earlier and faster reaction of durables than non-durables to economic downturn, as documented by simple OLS estimations.<sup>3</sup> The cumulated prediction error for total consumption during the last unprecedented crisis rises up to more than 4%.

Compared to past episodes, the analysis of residuals reveals that forecast errors increased during the Sovereign debt crisis for both components of consumption, in particular for durables.

It is worth noting that, while the estimation range excludes almost entirely both the Global financial crisis and the Sovereign debt crisis, the forecast performance worsens significantly only

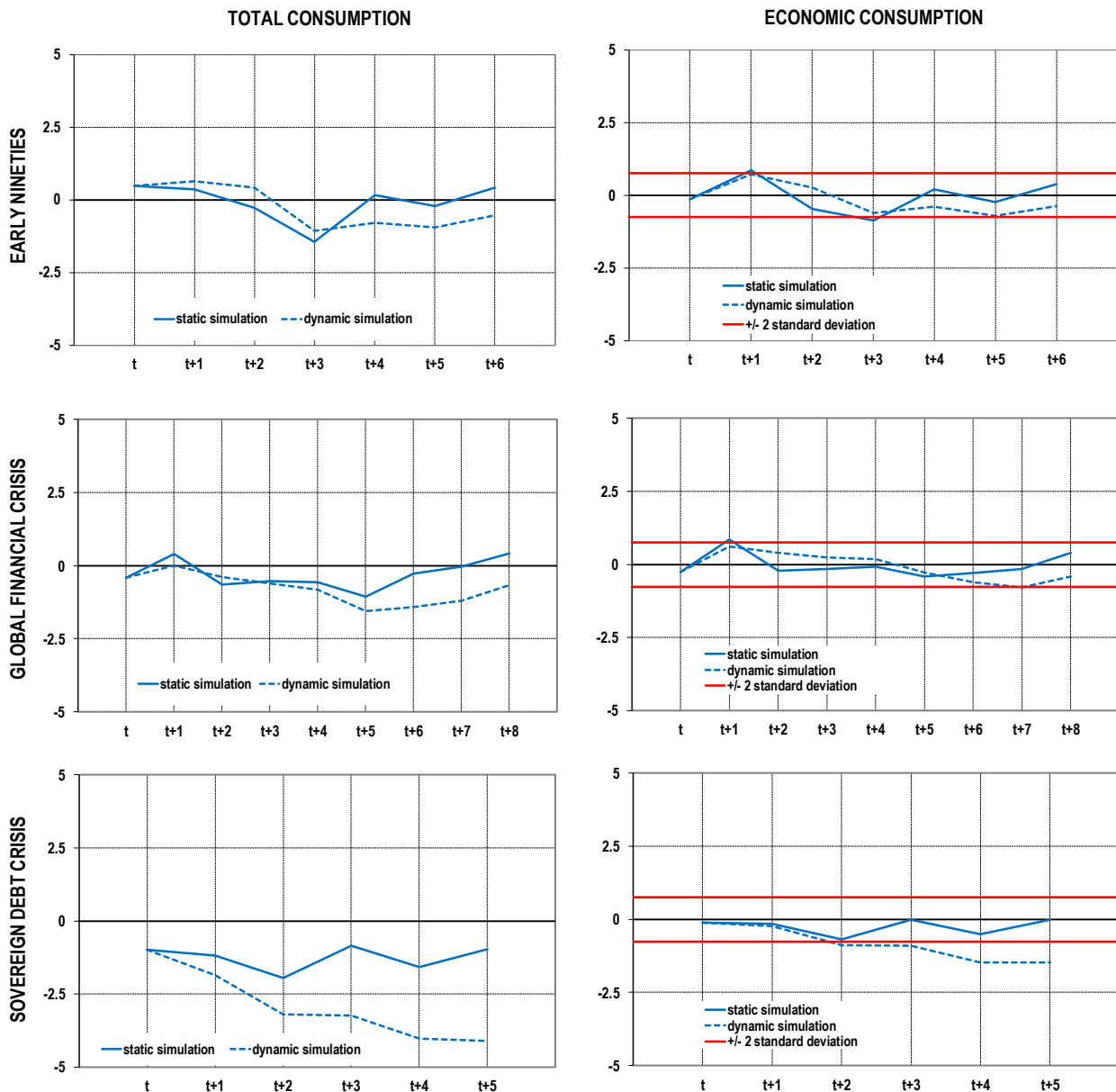
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<sup>3</sup> In order to check for the correlation of durable and non-durable consumption to the economic cycle, percentage variations of each component is regressed over the cycle, allowing coefficients to be different during recession episodes. Results show that correlation to the cycle is higher for durable consumption both in 'normal' times and during recessions.



in the latter. Moreover, residual analysis does not change in any relevant way when the estimation sample is extended to include also the last observations.

**Figure 2. Goodness-of-fit during recessions: static and dynamic residuals**



*Note: Residuals are calculated as percentage points of quarterly changes of the considered variable.*

## 5. A ‘permanent’ income loss?

The worsening of the model performance in the last recession tentatively suggests that some unusual fact may be characterizing the dynamics of consumption. We investigate whether such errors are likely to result from a drop in permanent income that is not correctly accounted for by the model.

The equations of a macroeconomic model, being aggregate in nature, do not help much to investigate the perceptions of individuals in a direct way; an inspection based on microeconomic data is provided in Section 8. However, following Guiso and Siviero (1994) and Siviero and Terlizzese (1995 and 2007), an indirect method can be used to explore the issue.

The argument put forward by these authors involves the evaluation of the relative size of the estimation errors in the two consumption equations. They claim that ‘permanent income’ implicitly drives both durable and non-durable consumption. However in the equation for non-durable consumption, ‘permanent income’  $Y^P$  is measured imprecisely, as current disposable income  $Y_t$  is used as a proxy. For exposition purposes, ignoring the role of other variables, we may write:

$$CN_t = c(Y_t^P) = \hat{c}Y_t + \varepsilon_t \quad (5)$$

In the equation for durable consumption, instead, non-durable consumption is directly taken in as an explanatory variable to proxy permanent income  $Y^P$ . Accordingly, if – and only if –  $CN$  correctly mirrors  $Y^P$ , we can write:

$$CD_t = g(CN_t) = g[c(Y^P)] \quad (6)$$

In principle measurement errors in ‘permanent income’ should enlarge the estimated residuals of the equation for non-durables, where permanent income is replaced by actual income. Following this line of reasoning, had the anomalous drop of consumption in 2012-13 resulted from a fall in ‘permanent’ income, we should have observed large errors in the non-durable consumption equation. Instead, the residual analysis shows sizeable one-step ahead forecast errors for durables, while they are negligible for non-durables (see previous paragraph).

However, some caveats apply: i) as discussed earlier, since durable consumption is also more responsive to the economic cycle, in particular during recessions, it is more likely that durable consumption more rapidly adjusts to changes in disposable income, thus resulting in worse fitting; ii) the non-durable equation systematically overestimated the actual spending during the Sovereign crisis, thus possibly signalling an increasing gap between current and permanent income.

All in all, the argument based on the residual analysis is hardly conclusive in order to test for a drop in permanent income during the latest years.

## 6. Are other factors relevant to describe consumption dynamics?

A common way to analyze and compare historical events using a macroeconometric model is by means of counterfactual exercises. In this context counterfactual analysis provides evidence on the role played by the determinants of consumption in different adverse cyclical episodes and allows to appraise the magnitude of the performance failure in the various recessions.

The basic idea behind the counterfactual simulation approach is to assume that the variable of interest, i.e. consumption, evolves according to a no-crisis scenario. To identify such a scenario, assume that the “true” model of consumption is  $C = X\beta + e$ , according to which consumption can be fully traced down by a set of economic variables  $X$  and an error term  $e$ . Then consumption in the counterfactual scenario will be  $C^* = X^*\beta + e^*$ , where each of the relevant  $X$  is bound to follow an alternate path,  $X^*$ , reflecting the “no crisis” assumption. In this setting, the difference  $C - C^*$  can then be decomposed into the contributions of each economic determinant  $\beta_i(X_i - X_i^*)$  and a residual term  $e - e^*$ .

### 6.1 Hypotheses behind the counterfactual scenario

The design of a counterfactual scenario is to some extent an arbitrary exercise, whose robustness largely depends on the plausibility of the assumptions adopted for the counterfactual path of the  $X$ s; such assumptions thus need to be as internally consistent as possible. As described earlier, the economic variables  $X$  mapping the evolution of economic consumption in the BIQM are real private-sector disposable income ( $Y_t$ ), wealth ( $W_t$ ) and interest rate ( $\rho_t$ ).

The counterfactual values for  $X$  have been set according to the following rules:

(1) Disposable income ( $Y^*$ ) is assumed to expand in the no-crisis scenario at the same average rate of growth prevailing in the ten years before each recession. In annual terms, the average rate of growth of real disposable income in the counterfactual scenario is around 3% in the early nineties and around 2% during the most recent recessions.

(2) No-crisis wealth ( $W^*$ ) evolves according to the following rule:  $W^*_t = W^*_{t-1} + (1 - c^*)Y^*$ , where  $c^*$ , the average propensity to consume out of disposable income, is kept constant at the level observed on average in the previous 3 years of each recession.

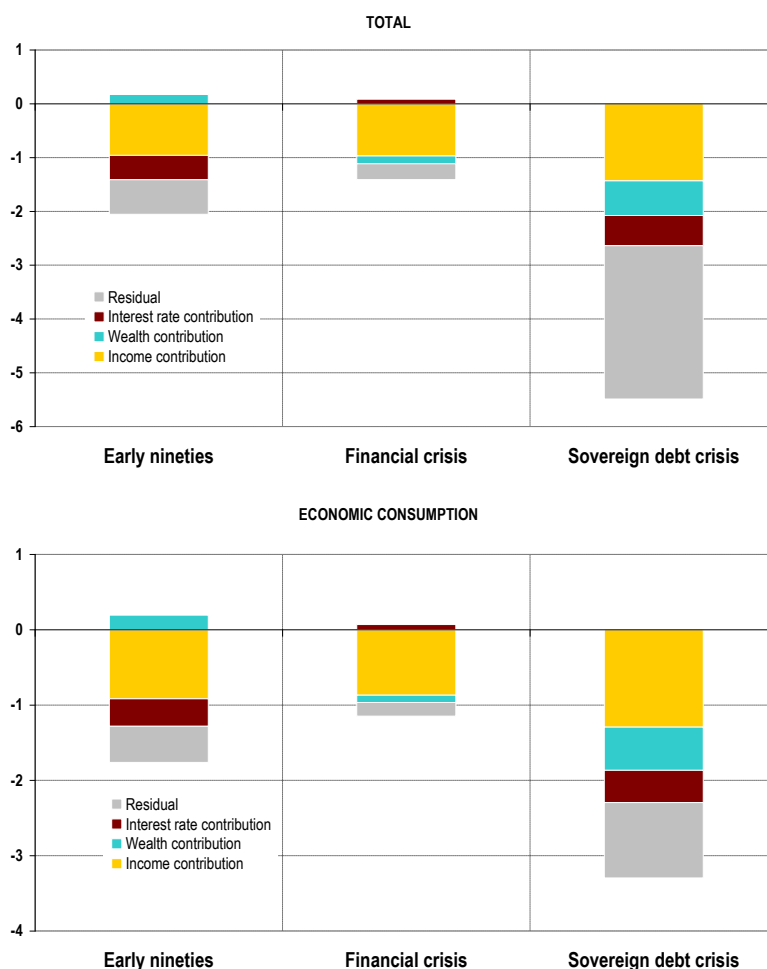
(3) The real interest rate  $\rho^*$  is been kept constant at the level recorded before each episode of recession.

(4) Errors  $e^*$  are set to zero.

## 6.2 Results

Figure 3 shows how the decline in consumption according to the counterfactual scenario is decomposed into its main determinants. Each histogram reports average consumption decrease with respect to a no-crisis scenario in annual terms; while the first two recessions were characterized by falls of similar size, the drop in the last episode has been much more intense.

**Figure 3. Contributions of the decrease in consumption with respect to counterfactual simulations**



*Note: Simulations from the BIQM consumption block.*

A common characteristic among different episodes is the contribution of real disposable income, which is comparable in magnitude. On the contrary, the contribution of real wealth, which was inexistent during the Early nineties, gains some prominence in explaining the drop in household spending during the Financial crisis and even more so during the last recession. The figure also shows that high interest rates too had a role in explaining the contraction of consumption during the Sovereign debt crisis, presumably reflecting large capital losses. The residual component has nearly tripled during the Sovereign debt crisis, representing almost one third of the overall factors behind economic consumption dynamics and a half of total consumption.

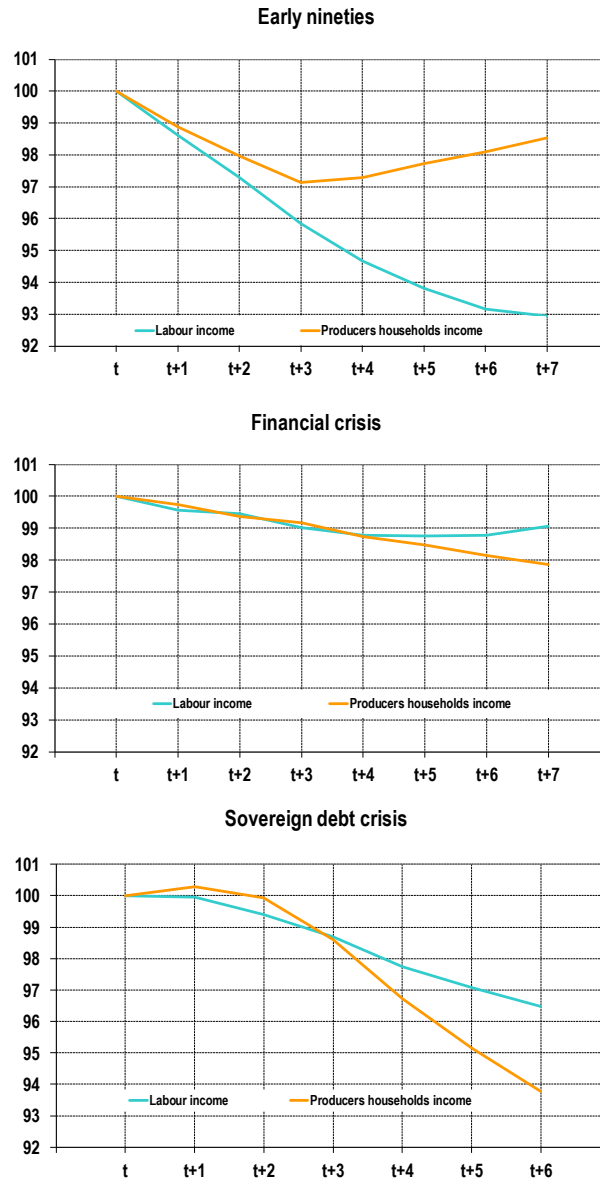
### *6.3 What is possibly missing?*

We ask now whether there is some other relevant variable, which has not been included in the model, that justifies the large forecast errors. Figure 4 reports the evolution of two major sources of household disposable income: labour income (net of social contributions), which accounts for around 40 per cent of total resources available to households, and producers' household income (which represents around 25 per cent of gross income). During the last recession, differently from the past, producers' household income contracted markedly more than labour income. Such developments suggest that a possible cause of consumption reduction may involve liquidity constraints.

Producers' household income in fact is a source of income that derives from enterprise activity and pertains to households inasmuch they own a small-scale enterprise, which in the National Accounts is recorded within the household sector. Since 2011 small enterprises have suffered a major reduction in activity and self-financing. Had those enterprises also been constrained in their access to external financing, then household owners could have been forced to reduce their consumption in order to save resources to finance their enterprise activity.

A first attempt to test this issue involves a re-estimation of the consumption block, including a variable that reflects credit restrictions to the enterprise activity. While future research will be devoted to explore the issue, preliminary results show that the impact of credit rationing may have been significant. The amended model markedly enhances the forecast performance of the durable consumption equation, virtually zeroing the overall prediction error. Though further analysis is needed as the estimated relation could well be spurious, capturing other factor possibly at work during the recession.

**Figure 4. Selected components of real disposable income: dynamics during recessions**



*Note: Our calculations from National Accounts quarterly data; indices equal 100 in the first period of contraction of disposable income in annual terms, 4 terms moving averages.*

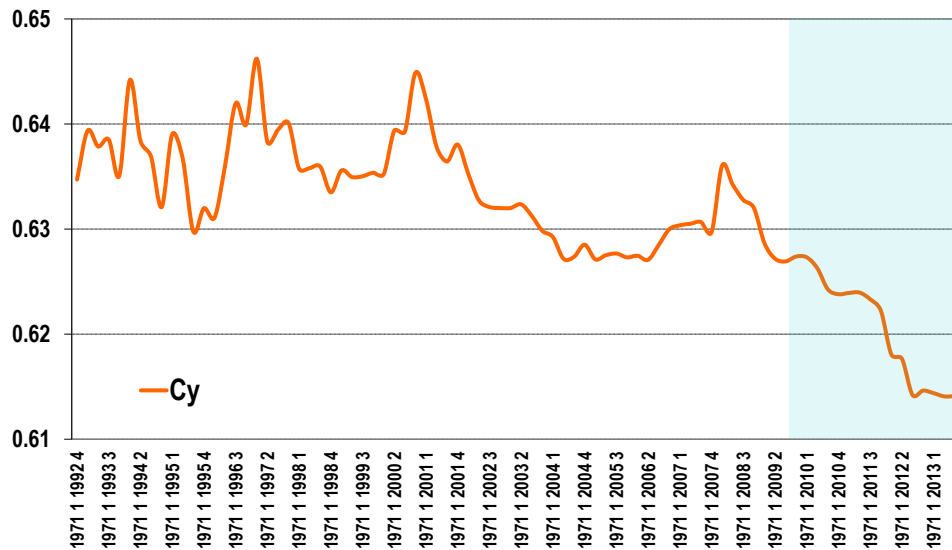
## 7. Stability tests on the estimated coefficients

In this paragraph, we explore whether relationships that drive consumption decisions are changing over time. To this aim the coefficients of the equations in the consumption block are tested for the existence of a structural break. We run a recursive regression of the model: the range moves ahead to include all observations up to the third quarter of 2013.

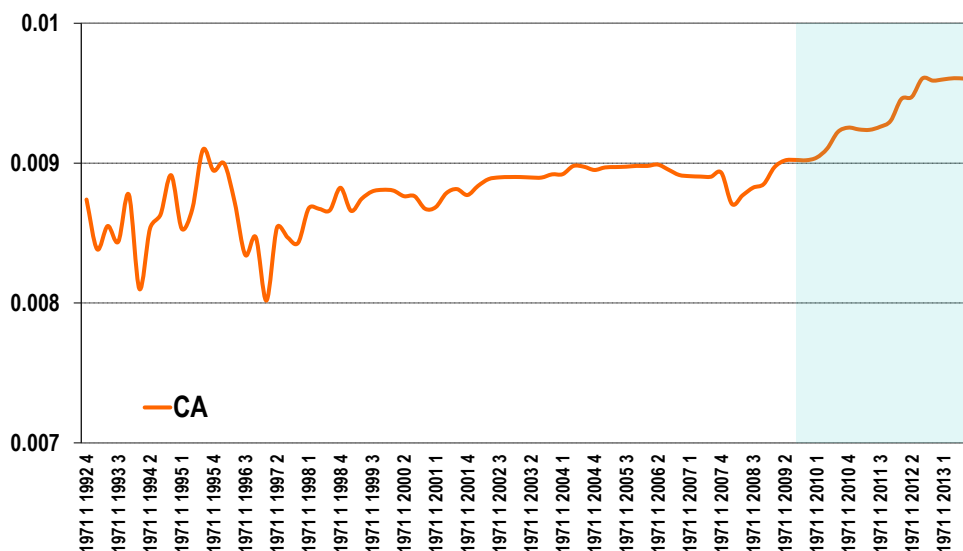
Results show that the long run average propensity to consume,  $c_y$  in equation (4), tends to decrease as the estimation range approaches the most recent years (Figure 5a). While the propensity to

consume out of wealth moves in the opposite direction (Figure 5b). Standard stability tests run on these recursive estimates<sup>4</sup> tend not to reject the null hypothesis of no structural break in the average propensity to consume; however a recent test developed by Buseti (2012), which gives more relevance to recent observations, provides some evidence for the existence of a structural break with a confidence level from 5 to 10%.

**Figure 5a. Recursive estimation for the average propensity to consume out of income**



**Figure 5b. Recursive estimation for the average propensity to consume out of wealth**



<sup>4</sup> Ploberger et al. (1989) propose a set of ‘fluctuation tests’ as a way to detect parameter instabilities examining the sequence of regression coefficients estimated with an increasingly large data set.

Notice that if we re-estimated the model including the most recent observations and ran the same counterfactual scenario as above with the new coefficients, the contribution of wealth would be larger.

## **8. The Survey of the Household Income and Wealth as a micro-economic tool to compare recessions**

In this Section we use micro data, recovered from the Survey of Household Income and Wealth (SHIW), to analyse the reaction of consumption to income in the last three recessions. In particular, we first verify whether the macro evidence (provided in Section 1) can reasonably be replicated aggregating households responses about their income  $Y$ , consumption  $C$  and wealth  $W$ . We then exploit the heterogeneous response of the Italian population and provide a first descriptive insight about the reasons why the Sovereign debt crisis was different from the two previous recessions.

### *8.1 The Survey of the Household Income and Wealth*

Our main data set is obtained from the Survey of Households Income and Wealth (SHIW), a large-scale household survey run every two years by the Bank of Italy on a random sample of about 8,000 Italian households. The survey is available since 1965 and covers at least three full business cycles with large fluctuations in Gross Domestic Product (GDP); to compare recessions we rely on the 1991, 1993, 1995, 1998, 2000, 2002, 2004, 2006, 2008, 2010 and 2012 waves whose questionnaire contents, survey methodology and variable definitions are broadly homogeneous. The survey has also a rotating panel component, so that every sampled year about half of the observations refer to households which have been interviewed in more than one survey. The rotating component could prove useful in eliminating unobserved heterogeneity when studying the dynamics of consumption in response to wealth and income changes.

The SHIW collects detailed information on Italian household income, consumption and wealth, as well as on households' portfolio allocation across financial instruments and their access to formal and informal credit. It has also detailed information on real estate wealth, including year of asset acquisition, size (in square meters) of the house, whether it is the main residence, property status and location. Also the net income definition is very detailed as it includes not only wages, but also capital gains and pensions. For each household, the Survey also provides information on characteristics of the households' head and each household member, such as education, age, place of birth, and residence. The Survey is provided with sample weights to expand the results to the Italian population as a whole. The 2012 SHIW included new questions asking whether the net



disposable income had been unusually high, low or normal; households were also asked to declare the amount of the reduction/increase of their income and to attribute a probability to the fact that it will stay high/low over the coming 5 years (see Section 8.3).

## *8.2 A comparison between macro and micro evidence*

In this Section we compare the change in consumption, income and wealth from the SHIW survey with the one recovered at macro-level from the National Accounts and offer an inspection by decile of the equivalised income distribution and other relevant demographic characteristics.

Micro and macro data in 1993 and 2008 (Figure 6a) show a similar pattern for consumption and income in the three recessions, with a less pronounced drop of consumption in 1993 and 2008 and, by contrast, a fall roughly in line with that of income during the Sovereign debt recession.<sup>5</sup> Also the evolution of wealth looks very similar across datasets, with an increase in 1993 and a sharp decrease in 2012. In real terms, median net wealth<sup>6</sup> dropped by 16%: the fall was mainly driven by the decline in real estate which is the main component of the real assets. The different magnitude between datasets can be attributed to the evaluation of house prices: these are based on the dynamics of house prices recovered from Agenzia del Territorio in the NA and on the subjective assessment provided by households in the SHIW. The appraisal expressed by households may have reflected the worsening of the housing market observed in the first 6 months of 2013, when the interviews were conducted. For 2008, instead, National Accounts point to a slight increase in wealth, while micro data suggest that wealth started to fall during the Financial Crisis.

We now analyse the changes in equivalised real income, consumption and wealth by decile.<sup>7</sup> During the Sovereign debt crisis, the largest drop in median income was observed in the first decile of the income distribution (-23%), while for wealth it occurred in the highest decile. In the 10th decile, also the compression of consumption (-9.3%) was more pronounced than the average (-4.8%; Figure 6b).

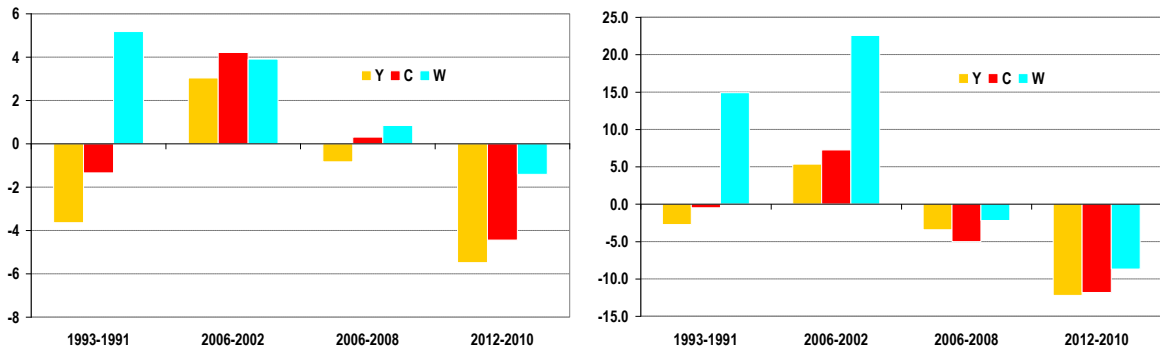
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<sup>5</sup> Aggregate percentage changes of SHIW and NA figures are not strictly comparable (see Banca d'Italia, 2014, 2012).

<sup>6</sup> Net wealth is the sum of real assets (real estate, companies, valuables) and financial assets (deposits, bonds, shares, etc...) net of financial liabilities (mortgages and other debts).

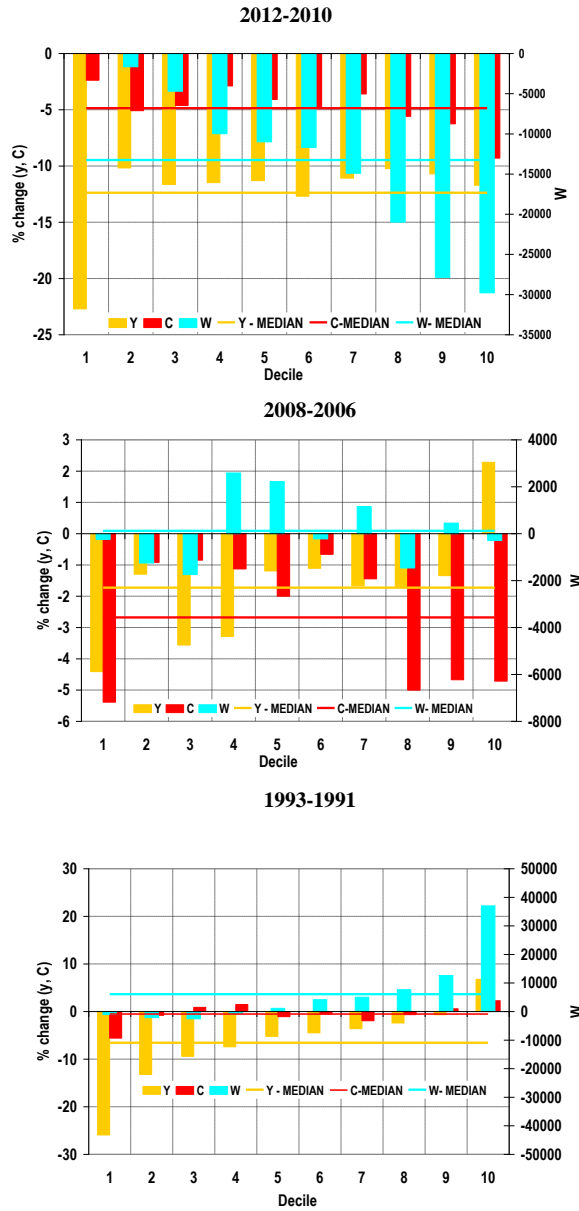
<sup>7</sup> Notice that Y, C and W in Figures 6a and 6b are not directly comparable, due to the different definitions of income, consumption and wealth (total versus equivalised).

**Fig. 6a macro and micro evidence**



Notes: our calculations from National Accounts (left panel) and SHIW (right panel; median percentage change)

**Fig. 6b Changes of Y, C, W by decile**

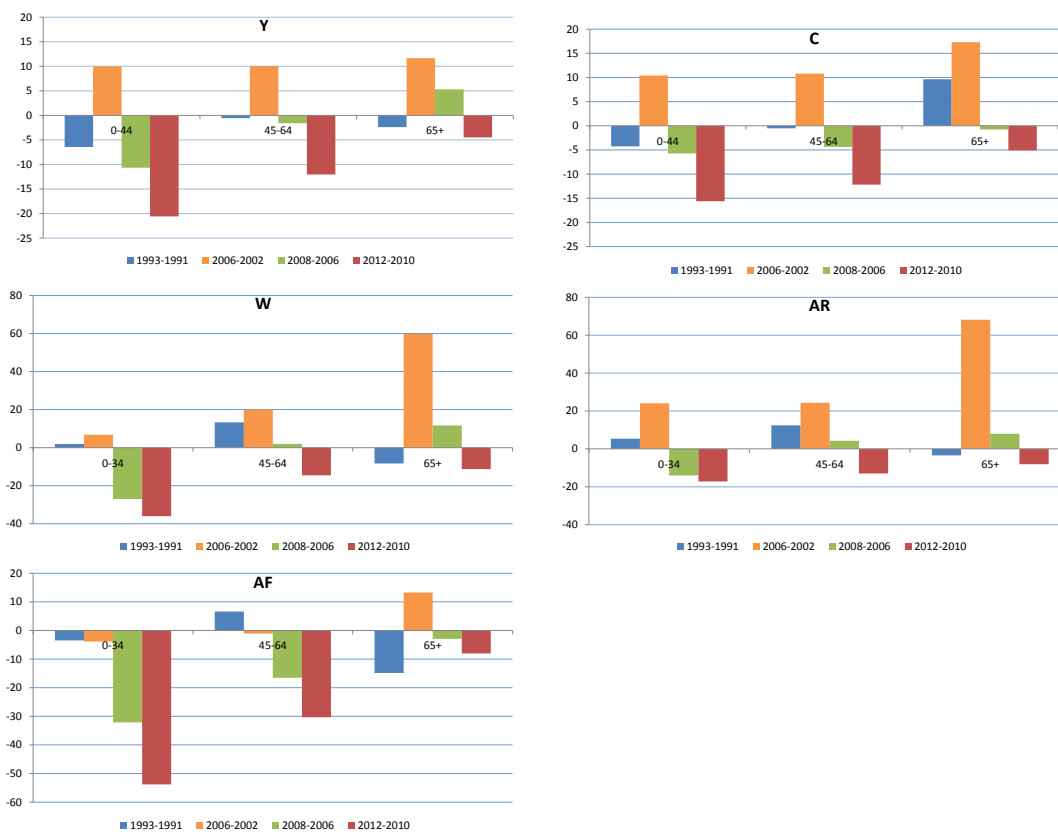


Notes: our calculations from SHIW by decile of the real equivalised income, consumption and net wealth distribution. Net wealt on the right scale.

During the Global financial recession, instead, the median fall in consumption had been about 5% for the first, 8th, 9th and 10th decile of the consumption equivalised distribution. The drop in median income was particularly severe for the lowest decile, while income increased for the highest. Wealth experienced a fall, though limited in size, due mainly to the reduction suffered from the poorest 30 per cent of the population.

A more regular pattern emerges from the recession of the Early nineties, when the drop in median income was more pronounced for the lowest decile and turned progressively positive along the income distribution. The fall in consumption has been less severe than the one in income for the first decile, but no clear pattern emerges along the distribution. Wealth registered an upward increase in the highest deciles.

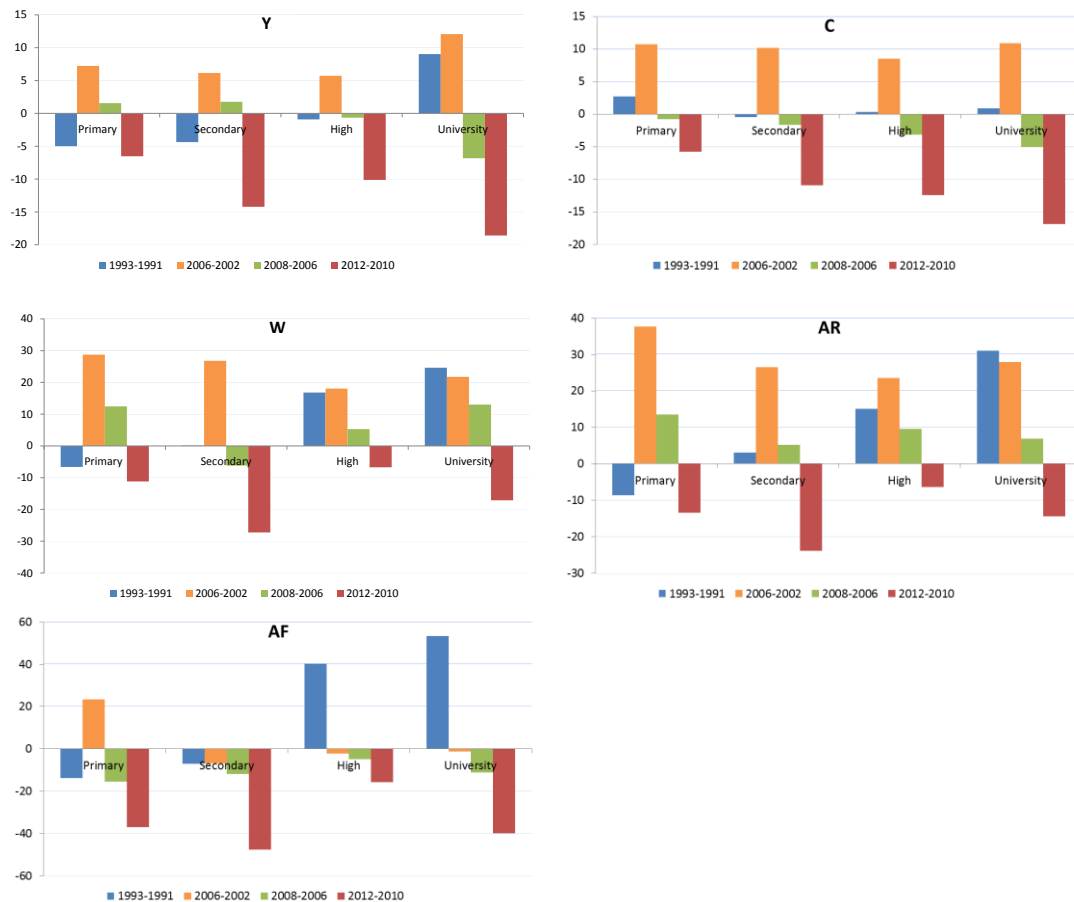
**Figure 7. Y, C and W by age**



Notes: Our calculation from SHIW. Mean percentage change for Y and C; median percentage change for W, AR (real assets) and AF (financial assets).

We now consider the evolution of equivalised real consumption, income and wealth according to the main socio-demographic characteristics of the Italian population. During the Sovereign debt crisis, at all ages, the reduction of income has been accommodated by an equal reduction of consumption. However younger households (less than 44, accounting for one third of total Italian households) suffered the largest reductions in income (21%), consumption (16%) and wealth (36%; Figure 7); this tendency had already started during the Financial Crisis and got exacerbated in 2012. The drop in wealth reflected mainly a contraction of real assets (representing about 90% of net wealth) and to a less extent a reduction of financial assets. During the crisis of the Early nineties household heads aged less than 44 reduced consumption by 4% vis-à-vis a negative shock in income of 6.5%. Notice, though, that the change in consumption, income and wealth turned negative, during the last episode, also for elders, while they had remained positive during the Global financial crisis.

**Figure 8. Y, C and W by educational level**

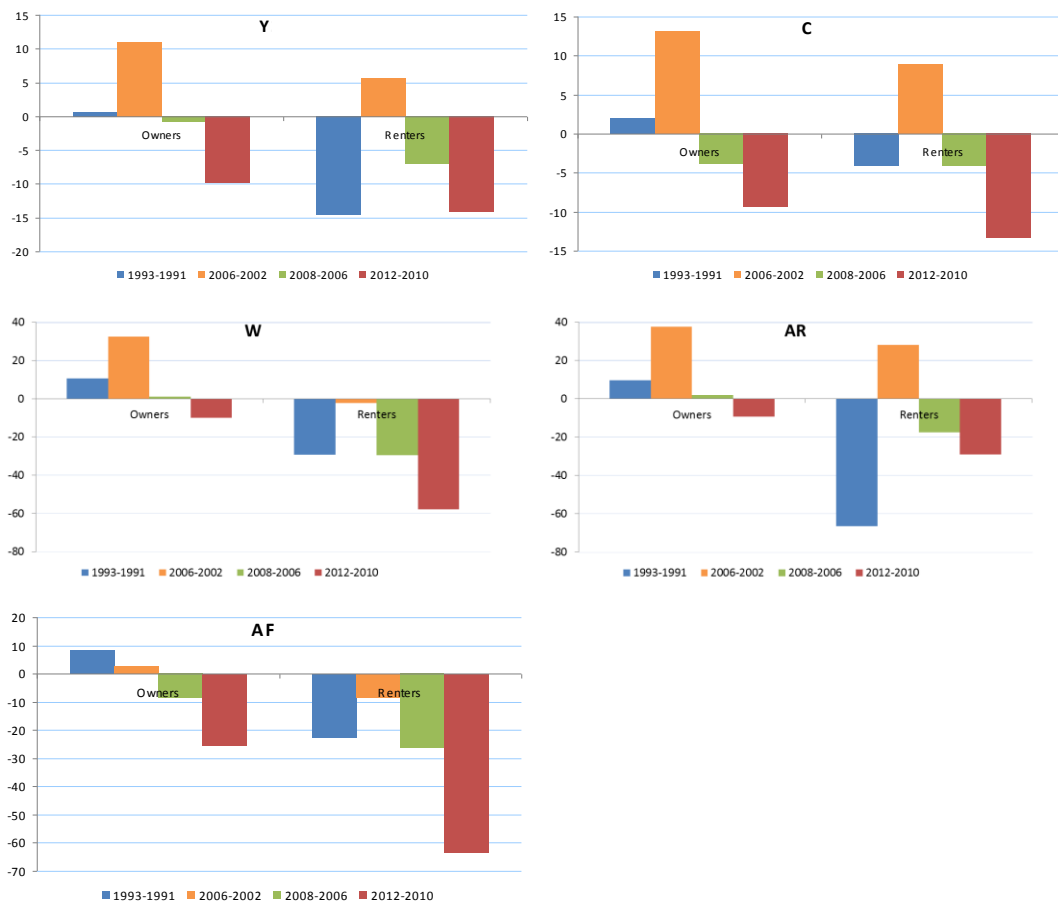


Notes: Our calculation from SHIW. Mean percentage change for Y and C; median percentage change for W, AR (real assets) and AF (financial assets). Household heads with no education are included within the primary class; those with a post graduate degree in the University class.

Highly educated households were also affected by the two consecutive recent recessions: Figure 8 shows that the drop in mean real equivalised income and consumption was particularly severe for households owning a university degree or a post graduate qualification. During the Sovereign debt crisis they experienced a severe drop in income (19% compared to 2010) and consumption (17%), following a trend started during the Financial crisis when Y fell by 7% and C by 5. A very different pattern emerged at the beginning of the nineties when real mean equivalised income dropped for all educational levels, but not for the high educated households. In 2012 also net wealth recorded a negative change, compared to 2010, for all educational levels, with a severe drop for households owning on average a relatively lower educational attainment, with respect to those with high school diploma or a university degree.

During the Sovereign debt crisis home owners and renters households (Figure 9) both were subject to a negative shock in income and adjusted their consumption by the same amount (10% and 14%, respectively); net median equivalised real wealth dropped for both, differently from past events. The recession of the Early nineties affected mainly renters.

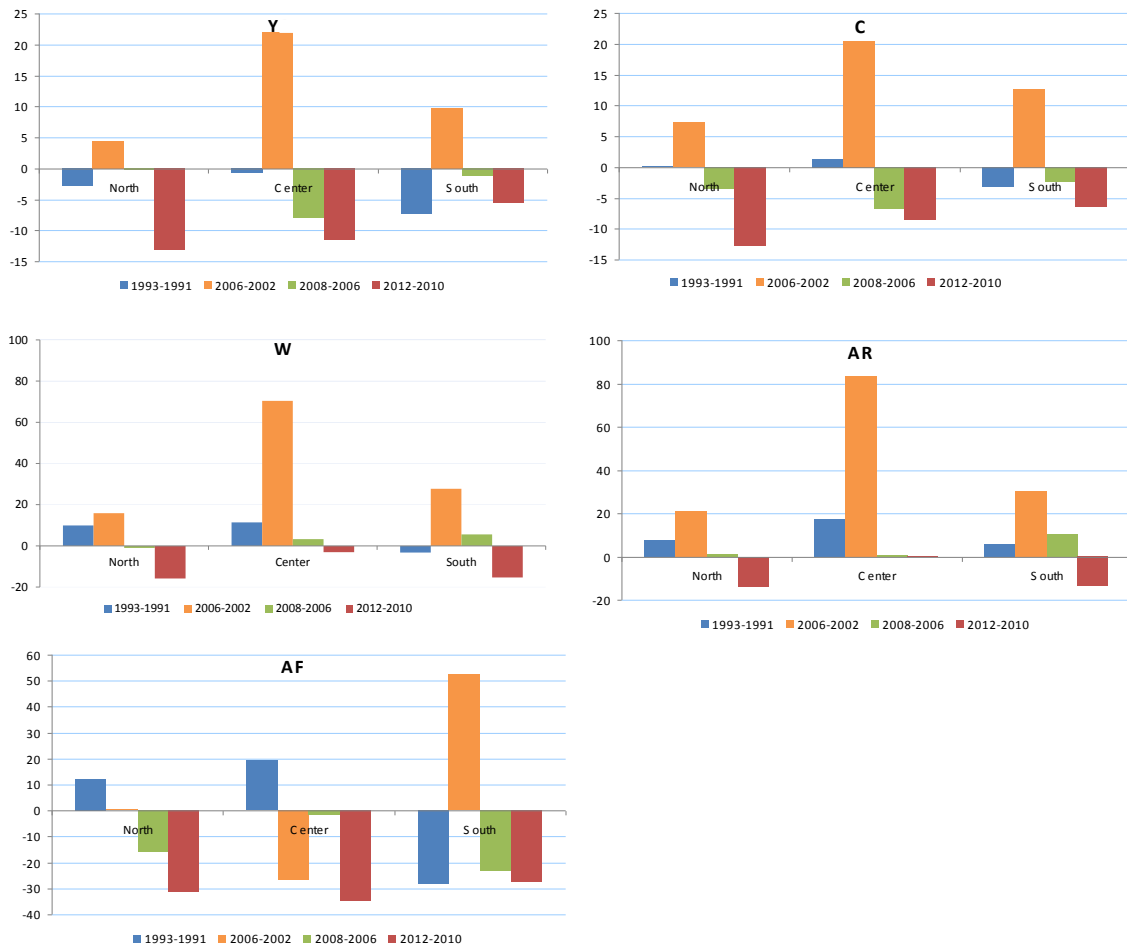
**Figure 9. Y, C and W for home owners and renters**



Notes: Our calculation from SHIW. Mean percentage change for Y and C; median percentage change for W, AR (real assets) and AF (financial assets).

As far as the geographical dimension is concerned (Figure 10), during the Sovereign debt crisis income and consumption reduced more markedly for Northern and Central households, while net wealth decreased in the South and North.

**Figure 10. Y, C and W by geographical region**



Notes: Our calculation from SHIW. Mean percentage change for Y and C; median percentage change for W, AR (real assets) and AF (financial assets).

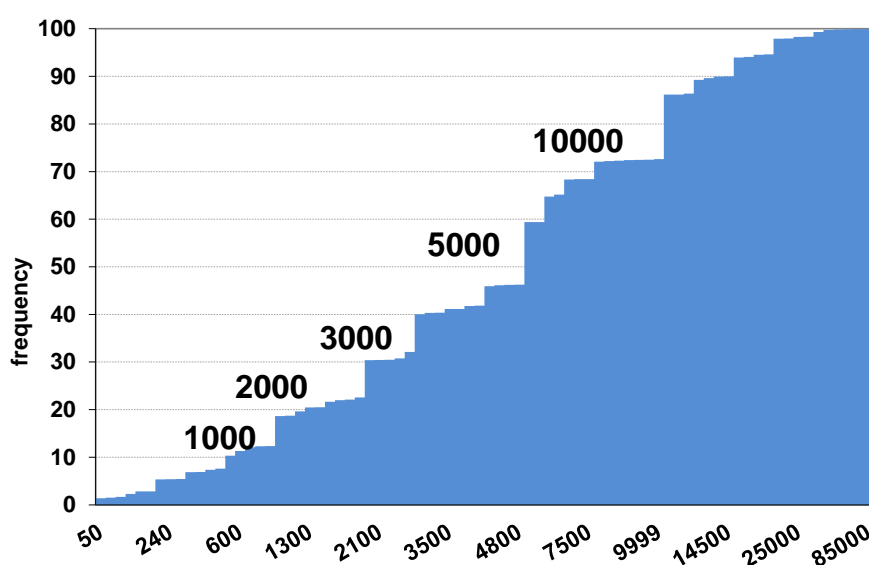
### 8.3 The Sovereign debt crisis in the households perceptions

In the 2012 wave, 8,151 Italian households were sampled and asked to provide an assessment of their income compared to a “normal” year.<sup>8</sup> About 1% of the households reported that income had been unusually high, while 17.5% declared that it had lowered and the vast majority (78.5%)

<sup>8</sup> The question was: “Considering all of your household’s sources of income together, would you say that the total was unusually high in 2012, unusually low, or normal with respect to the yearly income your household generally makes in a normal year?” Possible answers were unusually high, normal, unusually low, don’t know, no answer. If “Unusually high/low”, “About how many euros more than in a normal year?” and “In your opinion, what is the probability that it will stay so much above normal for five years? Please answer on a scale from 0 to 100, giving a low number if there is little chance of this happening and a high one if there is a good chance”.

judged it “normal”.<sup>9</sup> Looking closer at the 17.5% of households that reported unusually low incomes, they are predominantly found to be 45 and over (80%), living in the North and South (40% and 38%, respectively), employee (44%) and self-employed (20%), homeowners (62%), concentrated in the two lowest (37%) and highest (15%) decile of the equivalised income distribution. Of the 240 households (representing 3% of total population) that contacted a bank or a financial company with a view to obtaining a loan or mortgage, 72 reported a low income compared to a normal year; around two thirds of these households declared that their request was granted in part or refused.

**Figure 11. Cumulative density function for the perceived loss in income in 2012**



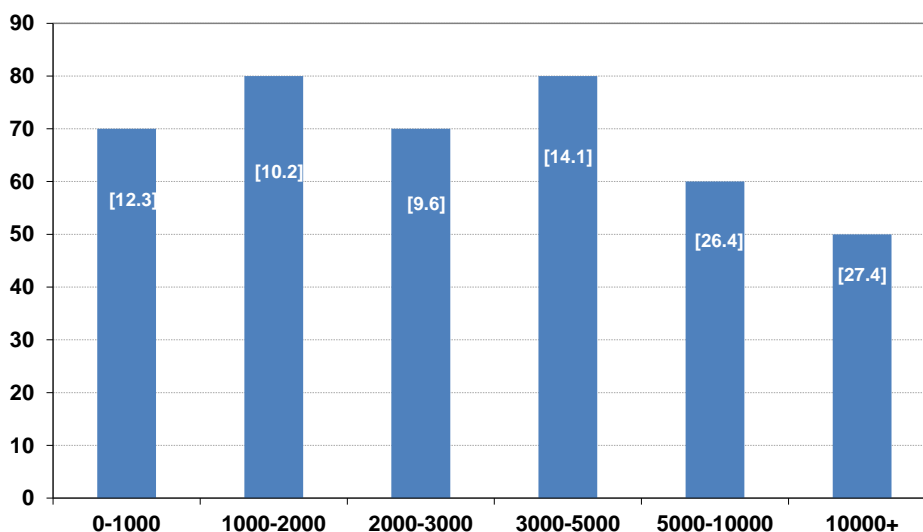
*Notes: Our calculation from SHIW (2012).*

Households were also asked to provide an estimate of the amount of reduction/increase and to assign a probability to the fact that the fall/rise will last over the coming five years. In Figure 11 we reported the cumulative density function for the decrease in income observed in 2012. The distribution peaks at the values of 1,000, 2,000, 3,000€, etc.; as it is common in these questions households round their values to the highest thousand. The median value of the distribution is 5,000€, the first quartile is 2000€; 27% of the population declare having experienced a drastic fall in their income (more than 10,000€). Households reporting a drop lower than 5,000€ believe that the cut is very likely to stay in the future (about 70%); in the 55% of the cases in which the reduction was more severe, 5,000€ and over, the loss is believed to persist (see Figure 12). This suggests that for relatively low losses, the majority of households tend to consider them

<sup>9</sup> The remaining 3% did not answer the question.

permanent, while the subjective probability that the fall be permanent is somewhat lower (but still sizeable) for larger losses.

**Figure 12. Probability that the loss will last over the coming 5 years**



*Notes: Our calculation from SHIW (2012). Values in brackets indicate the percentage of households with the loss reported in the x axis.*

Looking at the main socio-demographics traits in Table 3, pensioners and those aged 65 and over recorded a drop of 3,000€; the loss has been particularly severe for households in the 10th decile of the equivalised income distribution, self-employed and unemployed household heads. Considering the 4,611 households belonging to the panel in two consecutive waves (2010-2012), the drop in income (10,000€ and over) is associated with a change in the employment status from occupied in 2010 to unemployed in 2012 for about 40% of households.

The loss is more likely to be perceived as permanent by household heads aged 55 and over, pensioners, home owners; unemployed people are uncertain and assign a 50 per cent probability to the fact that the fall will persist in the coming five years. All in all, uncertainty is high across all household types.

For the households in the panel (4,611)<sup>10</sup> it is interesting to compare the actual loss in income, calculated as the difference between net disposable income in 2012 and 2010, and the perceived one, as recovered from the new questions about the “normal” income in the 2012 wave. In Figure 13 we report the actual and perceived loss for the 457 households in the panel (representing 4% of total population) who both recorded a negative change in income and perceived a loss; it is clear that for low losses, households perception is correct; for higher amounts, instead perceptions tend

<sup>10</sup> Over 8,151 households in 2012, 4,611 were also interviewed in 2010; 2,314 of these reported a negative change in actual income between 2012 and 2010 (2,297 registered an increase). 457 households (out of 2,314) also perceived a loss in income compared to a normal year.



to underestimate actual loss; in the mid-range (2,000-10,000€) the opposite tends to happen.<sup>11</sup> On average, for this 4% of total population the mean perceived income loss is roughly lower than the actual change in income.

**Table 3. Median fall and percentage probability the fall will last in 5 years.**

AGE					
	0-34	35-44	45-54	55-64	65+
median loss	5000	5000	5000	5000	3000
median probability of a permanent loss	50	60	50	70	80

EDUCATION				
	None and primary school	Lower secondary school	High School diploma	University degree
median loss	3000	5000	5000	5000
median probability of a permanent loss	70	50	70	70

GEOGRAPHICAL AREA			
	North	Center	South
median loss	5000	5000	5000
median probability of a permanent loss	60	70	60

OCCUPATION					
	Employee	Self-employed	Not employed	Unemployed	Pensioner
median loss	4000	8000	5000	7000	3000
median probability of a permanent loss	70	50	50	50	80

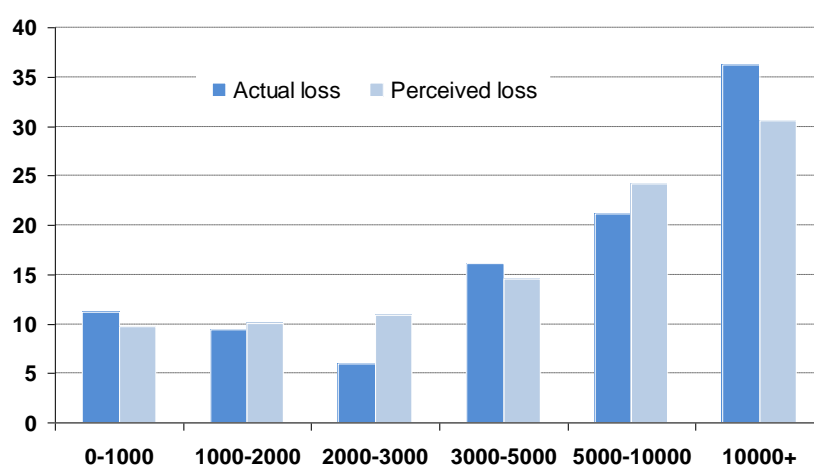
HOUSE				
	Homeowner	Renter	Under redemption agreement	Occupied in usufruct
median loss	5000	5000	1000	5000
median probability of a permanent loss	70	60	90	50

DECILE										
	1	2	3	4	5	6	7	8	9	10
median fall	5000	5000	3000	5000	5000	3500	5000	3000	6500	10000
median probability of a permanent loss	50	70	50	80	70	60	60	70	80	50

Notes: Our calculation from SHIW (2012).

**Figure 13. Actual and perceived loss in 2012**



Notes: Our calculation from SHIW (2012 and 2010). Panel component.

<sup>11</sup> Although the number of households decreases when considering households in the panel from 2008 to 2012 (3,596) and from 2006 to 2008 (2,790), this evidence is broadly confirmed also for the period 2012-2008 and 2012-2006.

Income in a “normal” year may be computed by summing (subtracting) from the actual income observed in 2012 the loss (gain) with respect to “normal” as recorded in the 2012 wave. For the overall Italian population, actual income in 2012 (30,884€) is non-negligibly lower than the “normal” one, computed as described above (31,912€).<sup>12</sup> If we weight observations according to the subjective probabilities that the loss/gain recorded in 2012 will persist in the next 5 years, “normal” income is found to have declined by 20% for the 17.5% of households who experienced a loss and increased by 40% for the 1% who recorded a gain. Therefore, during the Sovereign debt crisis aggregate “normal” income may be estimated to have permanently declined by 3%.

Between 2010 and 2012, average household income fell by 7.3% (Bank of Italy, 2014). Assuming that actual income in 2010 was roughly in line with “normal” income<sup>13</sup> and that the latter has remained by and large unchanged between 2010 and 2012, the findings above suggest that almost half of the loss of income in 2010-2012 is not expected to be recovered in the next five years, i.e. it is deemed a permanent loss.

All in all, micro evidence tentatively suggests that the perception of permanent denting of Italian households income did play a relevant role in driving the extraordinary fall of private consumption in the last few years.

## 9. Concluding remarks

In this paper we study how the last recession affected households’ consumption behaviour, in order to gain a deeper understanding of the likely evolution of domestic demand in the on-going recovery. In particular, we try and answer the question whether the one-to-one fall in consumption and income observed during the Sovereign debt crisis is the result of an anomalous behaviour of households with respect to past events.

Interpreting macroeconomic data through the lenses of the BIQM, we reach the following conclusions:

(i) Forecast errors during the Sovereign debt crisis are large and systematic, especially for durable consumption, but forecast performance worsens also for non-durables; no firm conclusion can be reached as to whether the consumption pattern is consistent with a fall in perceived permanent income. Large errors might be signalling the existence of other relevant factors, that are not captured by the specification of the consumption equations of the BIQM; in particular, part of the fall in consumption might be related to the plunge of gross operating surplus of small

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<sup>12</sup> We exclude those who did not answer the question.

<sup>13</sup> Indeed this is supported by the data: for households in the panel that also replied to the new questions, the actual income in 2010 and “normal” one are comparable (33,221 and 33,439€, respectively).

enterprises, whose financing conditions were affected by credit restrictions during the last crisis, requiring additional resources to be channelled by the owner households;

(ii) Wealth seems to have played a major role. During the Global financial crisis, households had reduced their consumption less than income (*consumption smoothing*), which had contributed to erode savings and wealth. The occurrence of a new recession, soon after the previous one, caused a further contraction of disposable income, exacerbated by substantial capital losses induced by severe financial shocks. The decline in both income and the perceived value of wealth may have prompted households to increase their savings in order to preserve their future purchasing power amid the prolonged tensions on the credit market, the difficult conditions on the labour market and substantial fiscal adjustments.

Microeconomic evidence based on the SHIW replicates the main macroeconomic developments, confirming that in the last recession income and consumption declined by the same amount; additionally, households were hit by a severe shock on wealth that mainly reflected that of real estates, which accounts for the lion's share of real assets.

Looking at heterogeneity within the population, we find that during the Sovereign debt crisis a large share of consumption reduction comes from the choices of younger households (0-44), whose income and wealth fell much more significantly than their elder peers'. This might have reflected weak conditions prevailing at the moment they were entering the labour market. In this perspective, the main evidence coming from the micro data points to a key role of the younger households to explain the reduction in consumption. Accordingly, a downward risk for the evolution of domestic demand is related to the persistence of negative labour market conditions and a reduced level of real wealth, which affect young people to a more pronounced extent.

Moreover, the perception of future income perspectives appears uncertain across all households types. Aggregating micro economic data and taking into account the subjective probability that the loss/gain experienced in 2012 will extend into the future, we estimate that during the Sovereign debt crisis "normal" income permanently reduced by 3% for the total Italian population. Given that average household income fell by 7.3% between 2010 and 2012, these findings suggest that almost half of the loss of income in 2010-2012 is not expected to be recovered in the next five years, i.e. it is deemed a permanent loss.

All in all, micro evidence tentatively suggests that the perception of permanent denting of Italian households income did play a relevant role in driving the extraordinary fall of private consumption in the last few years.

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