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Wealth Effects and the Consumption of Italian Households in the Great Recession*

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Abstract

We estimate marginal propensities to consume from wealth shocks for Italian households. Large asset price shocks in 2008 underpin an IV estimator. A euro fall in financial or risky financial wealth resulted in cuts in annual total (non-durable) consumption of 5 – 9 (3.5 – 6) cents. There is evidence of effects for food spending. Responses of total and non-durable spending to changes in housing wealth are 0.2 to 0.4 cents/euro. Counterfactuals indicate financial wealth effects were important (relative to other factors) for consumption falls in 2008/09. Thus wealth effects on consumption can be important for households' welfare and aggregate outcomes.

Key words: Wealth effects; household consumption; 2008 financial crisis

JEL codes: D12, D91, G01

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1. Introduction

A striking feature of the early part of the "Great Recession" was a sudden crash in the value of financial assets. Major stock-market indices[1] in the US and the UK approximately halved in value between peaks in autumn/summer 2007 and lows in March 2009. The drop in value of Italy's FTSE-MIB was even more pronounced at around 70% between May 2007 and March 2009. Furthermore, a large part of the changes in asset values occurred during the central months of 2008, and so households that held wealth in the stock market suffered a sudden, potentially large and mostly unanticipated shock to the value of their financial wealth. Alongside these falls in asset values there were substantial falls in households' consumption expenditures. Figure 1.1 shows that for Italy the path of aggregate consumption closely shadowed the path of the stock market index, with a 3 per cent fall between late 2007 and mid 2009 that, if anything, slightly lagged the fall in stock prices.

Our aim is use the shock to asset values observed in 2008 to measure how strongly consumption spending responds to changes in the level of financial wealth. Given the time period we are observing we will also be able to comment on the importance of these "wealth effects", relative to other factors,[2] in driving the fall in households' consumption during the early part of the Great Recession in Italy.

[Figure 1.1 about here]

The 2008 shock to asset values is not only useful for us in providing empirical variation and the chance to analyse the evolution of consumption in the recession, it is also fundamental to our strategy for dealing with a key endogeneity problem. All else equal, a household that increases (decreases) its wealth by more will be cutting (increasing) its consumption by more. Unless this is properly accounted for in the empirical set up, this could lead to a downwards bias in, or even a negative estimate of, wealth effects. We use the idea of Banks et al (2012) that the 2008 shock to

[1] The Dow Jones Industrial Average for the U.S., and the FTSE "All Share" for the UK.

[2] Included among these changes in "other factors" is the role of changes in housing wealth. However, unlike the US and UK, house values in Italy did not suffer large falls near the beginning of the Great Recession (Agenzia del Territorio, 2012), and so our emphasis is on the effects of financial wealth.

asset values can provide a source of variation in wealth that is exogenous to households' consumption behaviour. This insight is used to build an instrumental variables (IV) type estimator that is a version of the empirical model of Banks et al. The precise nature of the estimator is discussed in section 3.

Our analysis contributes to two related streams of literature. The first is the literature regarding measuring wealth effects on consumption. There has been much recent emphasis on how propensities to consume from real wealth differ from propensities to consume from financial wealth[3]; an impressive recent survey of time series and micro-econometric evidence on wealth effects is provided by Paiella (2009), itself building on the equally excellent Poterba (2000). The studies most related to the present paper are those that provide evidence for Italy. Paiella (2007) uses pooled cross-sections of data to estimate long-run marginal propensities to consume from different forms of wealth while Calcagno, Fornero and Rossi (2009) focus on the effects of real estate wealth. Guiso, Paiella and Visco (2005) is closer to our study in that, in line with our analysis based on shocks, they aim to estimate the effects of capital gains as well as long run relationships between wealth and consumption; they find that on average a 1 euro gain in housing wealth increases annual consumption by around 2 cents, while capital gains on financial assets may even lead to reductions in consumption. Our key contribution to this literature lies in our exploitation of a *new source of plausibly exogenous* variation in asset values in order to estimate how consumption responds to changes in wealth.

The second stream of literature to which we contribute is the small but growing set of papers that consider the evolution of consumption during the Great Recession. Petev, Pistaferri and Saporta Eksten (2011) for the US, and Crossley, Low and O'Dea (forthcoming) for the UK, provide descriptive analyses that point to unusual features such as the duration of the contraction in consumption, and the broad range of consumption categories that have been affected, but do not attempt to measure wealth effects. One paper that has attempted to assess consumption responses to the crisis, including to the associated wealth shocks, is Christelis, Georgorakos and Jappelli (2011) which uses American data. They have data which asks individuals to assess what per cent of their wealth in different assets was lost during the crisis, and, among other findings, they find a propensity to reduce consumption in response to shocks to financial asset values of around 1-3% and this this effect was stronger for households who perceived wealth shocks to be

[3] See Slacalek (2009) and Case, Quigley and Shiller (2005).

permanent. As mentioned above, a study from which we borrow, and so which is close to ours in terms of methodology, is the England based analysis of Banks et al (2012). Those authors have less comprehensive data on spending than we do and a sample of agents aged 50+. They find only modest effects on household spending of wealth shocks during the crisis, but are also able to focus on wealth effects on other outcomes (including expectational outcomes) that we do not observe. To our knowledge our paper is the first attempt to look at the drivers of change in consumption, including wealth effects, during the Great Recession in Italy. Our data come from the Bank of Italy's Survey on Household Income and Wealth (SHIW), which provides rich data on households' asset holdings (values and ownership), consumption outcomes, and demographic and economic characteristics. The data are designed to be representative of the Italian resident population and also have a panel component, and this combination of characteristics is unique for Italy and impressive even by international standards. Thus our analysis of the Italian experience is of broader interest for understanding the importance of wealth effects and the evolution of consumption in the Great Recession.

Precisely stated, our research goal is to estimate the marginal propensity to consume (mpc[4]) out of shocks to financial wealth. A preview of some key results is as follows. A one euro fall in financial (or risky financial) wealth resulted in households cutting annual total consumption spending by slightly more than 5 cents (with a maximum estimate of close to 9 cents), and spending on non-durable goods and services by around 3.5 to 6 cents. We also find effects of 1 – 2 cents for food spending, and insignificant results (though with the expected positive coefficients) for expenditure on durables. Additionally find that a one euro change in housing wealth results in total and nondurable consumption spending moving in the same direction by around between 0.2 and 0.4 cents. Counterfactual simulations indicate financial wealth effects being an important driver (relative to other factors) of consumption falls in the early part of the Great Recession in Italy. Thus our results indicate that wealth effects on consumption can be important for households' welfare and for aggregate consumption and economic performance.

The paper is organised as follows. Section 2 introduces the dataset that we use and provides some data descriptives that further motivate our analysis. Section 3 then explains our research method, describing both our IV estimator and a key variable that must be constructed in order to

[4] We use "mpc" indifferently for "marginal propensit**y** to consume" and "marginal propensit**ies** to consume". Context should reveal whether we have a singular or a plural.

implement this estimator. Section 4 then presents our main results on wealth effects and section 5 concludes.

2. Data

In this section we describe the structure of the dataset that we use, and the consumption and wealth variables that are essential to our analysis. Description of these key variables also helps to motivate our analysis of wealth effects.

2.1 The SHIW Dataset

The Survey on Household Income and Wealth (SHIW) is a representative sample of the Italian resident population. Sampling is in two stages, first municipalities and then households. From 1987 onward the survey is conducted every other year and covers about 24,000 individuals and 8,000 households in about 300 municipalities. A household is defined as a group of individuals related by blood, marriage or adoption and sharing the same dwelling. About 50% of households in a given year are interviewed at least once in subsequent years (panel component).

The survey records a rich set of household and person characteristics as well as information on incomes and savings, and on household expenditure and wealth. Wealth data is rich, containing both participation and value for a range of financial assets, housing wealth, and businesses. For the purpose of our analysis, we use data for the years 2004-2010. In this way we are able to observe changes in wealth and consumption during the "Great Recession" (2006 – 08 and 2008 - 10) and also to construct our instrumental variable using information on household portfolios from the 2004 and 2006 surveys.

In the next two subsections we describe the SHIW variables that are the most important for our analysis, those regarding consumption and asset holding.

2.2 SHIW consumption variables

The SHIW dataset records consumption spending on four different categories of products. Total consumption is the sum of two other categories, namely durable (means of transport, furniture, household appliances, etc.) and non-durable expenditures. Food consumption is a subclass on non-durable spending and includes meals at home or eaten out. In our analyses we always measure expenditures annually and in real terms (2010 euros, based on the Household Index of Consumer Prices provided by Istat).

Descriptive statistics on consumption in our sample are shown in table 2.1. Total consumption decreases between 2004 and 2010, but, on average, the drop is statistically significant at 1% only between 2006 and 2008. This drop is largely driven by non-durable expenditure that significantly decreases by more than 600 euros on average between 2006 and 2008, with almost 400 euros of this change coming from food consumption. Durable consumption displays a slightly different pattern. It significantly decreases only in 2010, when, on average, durable goods expenditure decreases by 300 euros.

[Table 2.1 about here]

2.3 SHIW financial wealth variables

The SHIW dataset collects detailed information on household portfolios. Respondents are asked whether they hold each of many types of asset and, if so, about the amount of wealth they hold in each asset. Assets are grouped in broad categories: cash (bank accounts and saving certificates); Italian government bonds (with different durations); domestic bonds and investment funds; Italian shares; foreign bonds and shares; other minor categories. Within each of these broad categories individuals are asked about a detailed set of assets. SHIW also provides information on household wealth in several types of mutual funds, and these funds can be categorised according to whether or not (and the extent to which) they expose the holder to stock market risk.

If survey respondents report that they hold an asset, they are then asked about how much wealth they held in that asset at the 31st of December in the year after which the survey wave is named (i.e. December 31st 2008 for the "2008 SHIW").[5] Respondents are first asked to indicate in to which of several bands of value their asset fell and then to report a point amount for this value. Failure to report a point amount results in the household being asked whether the value of their holding is nearer to the bottom, middle or top of the band. Since not all individuals give a point amount we use some imputed values for wealth. In imputation we use band and bottom/middle/top information to allocate values by asset.[6]

Since our main regressions are in first-differences (see section 3) we have to be careful about the fact that imputation could considerably increase noise to signal ratio, especially for cases

[5] Having end of year wealth means we have data on households at close to the top of the stockmarket (at the end of 2006) and at close to the bottom of the crash (at the end of 2008).

[6] To have a homogeneous measure of asset values we do not use imputed values provided by the Bank of Italy, since they are not available for the 2004 wave. We need to rely on imputation by the Bank of Italy for (the sum of) three types of deposit in 2006, since information on the band they belong to is not available. Results of section 4 are not sensitive to substituting Bank of Italy imputation for our imputation as far as possible.

where individuals report holdings in the relatively broad top bands of asset values. For this reason in our sample selection we exclude from the sample households who do not provide a point amount and ever report being in the top bands (imputed wealth in a single asset above 150 000 euros with no upper limit). Our sample selection also requires panel information for three consecutive waves (to have a difference and our instrument) and we select respondents older than 30 years. We end up with a sample of 6269 person-year observations from nearly 4000 families, out of the approximately 8000 interviewed per year. We also experimented with tighter selection criteria; results are not reported but are available on request.

We postpone discussion of description statistics on wealth variables (and particularly on changes in wealth) until the next section, as these variables can usefully be compared to a key constructed variable. With our data and sample selection criteria in hand we can consider a description of the relationship between consumption and holding of risky (stock market exposed) financial assets. Table A1 presents fixed effects regressions, based on the households used in our main analysis, that describe patterns in the level of total consumption and non-durable consumption (qualitative patterns are similar) and how this relates to various other factors in our data. Patterns are as expected: households with more members and more earners spend more, unemployed and retired households spend less. The difference between the two regressions is that the second includes a dummy for the ownership of risky assets, and the interaction of this dummy with year. While the year dummies in the first regression suggested (in line with the descriptives of the previous subsection) significantly lower average consumption in 2008 and 2010, the coefficients on these year dummies are no longer significant in the second regression. Rather, the substantial and significant negative coefficients on the interactions between year and holding risky assets suggest that the yearly pattern was driven by lower average consumption among individuals that hold risky assets. Of course this analysis is descriptive and stops short of identifying any mpc from wealth shocks. To proceed with estimation of such parameters we must adopt an appropriate empirical technique.

3. Research Method

We now describe the main IV estimator that we use to estimate mpc from asset price shocks. We explain why the time period of our data, and the asset price shock that they encompass, are crucial for our method of dealing with the key problem of endogeneity.

In order to measure the propensity to consume out of wealth shocks, the natural tool for the analysis is a regression of the change (first difference)[7] in household consumption on the change in household financial wealth:

$$\Delta c_{ht} = \alpha + \omega \, \Delta w_{ht} + \varepsilon_{ht} \qquad (1)$$

where: subscripts h and t denote household and time period respectively; Δc_{ht} is the first difference of real consumption spending equal to $c_{ht} - c_{h(t-1)}$; Δw_{ht} is the similarly defined first difference in real wealth; α and ω are model parameters, and, ε is the regression error term.

Given suitable conditions, and in particular if the change in wealth is an exogenous shock, then the coefficient ω can be interpreted as the mpc out of (to reduce consumption due to) the wealth shock. If resources can be either saved or spent then the problem of endogeneity is that, all else equal, an individual who accumulates more wealth will enjoy a smaller change in consumption (which may be a bigger absolute drop). This negative correlation between Δc and Δw is a mechanical implication of the dynamic budget constraint and not the causal relationship that we wish to identify. Estimation that does not take this into account will tend to yield underestimates of ω, or possibly even negative mpc (implying a cut in wealth results in higher consumption spending).

We deal with this endogeneity problem by implementing an instrumental variables estimator developed by Banks et al (2012). The estimator is based on taking a fixed wealth portfolio for each household, and calculating how the value of this portfolio would have changed due to changes in asset values and in the absence of any active saving (or dissaving) by the household. More concretely, consider calculating the change in the value of this fixed portfolio (hereafter "the calculated change in wealth") for an individual whose change in consumption and wealth are observed for the period 2006 to 2008. A candidate fixed portfolio is the amounts of assets held in 2006. The household might (for example) have a certain amount of cash deposits, domestically held shares, and domestically held bonds.[8] Real values for these holdings by the end of 2008 can be calculated by applying the relevant real interest rate to the cash deposits, and the real change in the relevant price index for stocks and bonds, to up- (or down-) rate the values of the initial holdings. This will give a final value of the portfolio, and the calculated change in wealth is this final value less the initial value of the portfolio.

[7] In our data first differences are two-year changes.

[8] The list of assets classes used in our empirical application, and the price indices and interest rates that we apply to them, are described in the appendix.

The measure of calculated changes in wealth can be expected to be correlated with actual changes in wealth, but is unaffected by active saving decisions and thus free of the mechanical relationship between wealth and consumption changes that we described above. Thus the calculated change in wealth is the ideal "excluded variable" to construct an instrument for actual changes in wealth.

The instrumental variables (IV) estimator just described should identify exactly the relationship we want between wealth *shocks* and consumption. The key exogenous variation in wealth that is being exploited is that generated by asset price changes. One way to justify that such changes come as shocks would be to note that asset price movements are highly persistent (permanent), so that the best guess of future prices are current prices and deviations from this are surprises. Furthermore, in our case the biggest source of variation in asset prices comes from the 2008 stock market crash and it seems reasonable to suppose that price falls in this period were largely unanticipated (especially by individuals who remained in the stock market).

Thus far we have described the instrumental variables strategy as if the instrument for changes in wealth between t and $t\text{-}1$ is based on the portfolio held at time $t\text{-}1$. In fact, if there is measurement error in portfolio shares such an estimator would be subject to bias since the same measurement error affects observed wealth changes and the proposed instrument. The method we use to deal with this is to take an extra lag and base the instrument on portfolio shares observed at $t\text{-}2$.[9] Thus when considering the 2006 – 2008 change in wealth we use the household's 2004 portfolio, and for 2008 – 2010 the 2006 portfolio.

Another threat to clean identification could be an omitted variables problem if other factors that affect consumption (on average) are also correlated with the asset price shock. In this regard a powerful advantage of the first-differenced regression is that it conditions out any household fixed effect. To further mitigate this potential problem we exploit the richness of our dataset and extend specification (1) to include a vector ($\boldsymbol{X}$ - with household and time subscripts suppressed) of covariates. An additional advantage of including covariates is that it enables us to compare the influence of wealth effects to the impact of other factors in driving changes (falls) in consumption in our sample. With covariates, the main model that we estimate by two-stage least squares is:[10]

[9] This strategy is standard in differenced panel data models and in studies of consumption and saving it is familiar from the literature on estimating log linear approximations to Euler equations (see the discussion of Attanasio and Weber, 1993, p.634, or Banks, Blundell and Tanner, 1998, especially footnote 8).

[10] Note that the notation for some coefficients and the error term is, for convenience, the same as in equation (1), but this should not be taken to mean that estimating (1) or the model of equations (2) and (3) will yield identical results.

$$\Delta c_{ht} = \alpha + \omega \widehat{\Delta w_{ht}} + \boldsymbol{X}'\boldsymbol{\beta} + \varepsilon_{ht} \qquad (2)$$

where: $\widehat{\Delta w_{ht}}$ is the predicted change in the relevant measure of wealth based on the first-stage equation, with the calculated change in wealth (the change in the value of a fixed portfolio), Δfp_{ht}, as a regressor:

$$\Delta w_{ht} = \gamma + \varphi \Delta fp_{ht} + \boldsymbol{X}'\boldsymbol{\delta} + \mu_{ht} \qquad (3)$$

When estimating the model described by equations (2) and (3), the main source of variation exploited to identify the effect of the instrumented wealth variable is heterogeneity between households in the distribution of financial wealth to different assets. By estimating based on data for changes in wealth and consumption between 2006 and 2008 and between 2008 and 2010 (and thus exploiting portfolios observed in 2004 and 2006), we get additional variation from the different movements in asset prices in the two periods.

3.1 Constructing the calculated change in wealth

In order to implement the IV estimator just described, a key preliminary step is to construct the "calculated change in wealth" variables. The principle involved is that already described of taking a household's portfolio as at 2004 or 2006, rolling forward the (real) values of the different assets held in this portfolio using appropriate interest rates and price indices, then aggregating values within a household's portfolio and taking the first difference. As made clear above, we use 2004 portfolios in instrumenting 2006 – 08 changes in wealth, and 2006 portfolios for 2008 – 10 changes. Thus the calculated changes in wealth that we exploit are the difference in two forecasted wealth values.

The variation in calculated changes in wealth in our data will depend on variation in initial portfolios and variation in the factors by which different assets get up- or down- rated. We applied different up- (or down-) rating factors to: cash deposits; short term Italian government bonds; long-term Italian government bonds; shares in Italian traded companies; shares held overseas; Italian private bonds; and a set of other foreign assets. In addition to this, information on holdings in mutual funds and the extent to which these funds are exposed to stock market risk allows us to up rate forecast values for holdings in funds using information on stock returns for part of the fund, and on returns to safer assets for the other part of the fund. The full set sources for interest rates and asset price indices that we used in constructing calculated asset values is listed in the appendix to the paper.

Having constructed calculated changes in the values of individual assets, we aggregate these up to get calculated changes in the value of a household's portfolio. We use calculated changes in wealth for two different portfolios: the overall portfolio of financial wealth; and, the portfolio of wealth exposed to financial market risk.[11]

Table 3.1 describes the distribution of changes in reported and "calculated" wealth. On average, financial wealth decreases by 1400 euros in 2008 and recovers in 2010. This trend is largely driven by owners of risky assets, who experienced a drop in risky financial wealth by more than 3000 euros during the financial crisis. Changes in reported and "calculated" wealth are sensibly different. Reported changes in financial wealth are, on average, less negative than their calculated counterpart, possibly because losses are partially offset by active saving. On the other hand, the reported change in risky assets is more negative than the "calculated change". This may relate to reshuffling of household portfolios to reduce exposure to stock market risk. The idea is also supported by observed exits from the stock market during the crisis: the stock market participation rate decreases from 14% before 2006 to 12% in 2008 and to less than 10% in 2010. A regression of reported changes in wealth on calculated changes and a constant gives significant coefficients of 0.65 for overall wealth and 0.73 for risky wealth. Thus calculated changes in wealth do have the desired positive correlation with actual changes, and the relationship is closer for risky then for overall wealth.

[Table 3.1 about here]

4. Measuring wealth effects

We now turn to our estimates of the mpc out of shocks to financial wealth. Our main estimator is the IV estimator described in section 3.

Alongside IV results we will also report results from two other regressions. First we report the result of the basic OLS regression (hereafter "basic OLS") of the change in consumption on the reported change in wealth. As explained in section 3, we would expect this to underestimate true wealth effects.

Second, we report the results of putting our instrumental variable (the calculated change in wealth) directly in to the equation for the change in consumption. This is the regression

[11] This is mainly stock market risk and exposure can be either through direct holdings or through mutual funds.

sometimes referred to as the "reduced form", and we may also think of it as using the calculated change in wealth as a "proxy variable" for the true wealth shock (we use "reduced form" and "proxy variables" interchangeably). This proxy should be exogenous to consumption changes, so to think about whether we expect this to under- or over-estimate the mpc we must think about the relationship between the calculated change and the true wealth shock. Perhaps the most likely mechanism is that households, observing asset prices falling and perceiving higher risk in holding stocks, adjust their saving and portfolio behaviour in order to offset the effect of price changes on their wealth. If this happened during the two years over which we difference, then the proposed proxy variable will, on average, overstate the true "wealth shock" and thus we expect the proxy variables strategy to underestimate the mpc out of wealth shocks.

We apply the different estimators to each of our four different outcome variables, namely changes in annual household: total expenditure (table 4.1); non-durable expenditure (table 4.2); durables expenditure (table 4.3); and, food expenditure (table 4.4). We also have two different key independent variables. First, the change in total (accessible) household financial wealth, and, second, the change in risky financial wealth that is invested in the stock market either directly or through a wrapper product such as a mutual find. Separate regressions for these two regressors are included in, respectively, the top and bottom panels of tables 4.1 – 4.4. Thus each of the tables reports coefficients for eight regressions: in order, the columns are basic OLS, the proxy variables regression, and the 2^{nd} and 1^{st} stages of the IV estimator.

Aside from our key financial wealth variables, all of our regressions include several other independent variables. One variable of particular interest is the change in the household's perceived valuation of their housing wealth. While we have gone to a great deal of effort to ensure exogeneity of the financial wealth variables, for this housing wealth variable we simply include the change in the reported value of housing. The idea here is that since survey respondents are asked what they perceive to be the value of their house, what they report should be the level of wealth that informs their consumption choices. Furthermore, since (unlike financial wealth) real estate wealth is not readily adjustable, there is unlikely to be a major problem of a mechanical relationship between active saving in housing and changes in consumption. On the basis of these arguments we cautiously interpret the coefficient on changes in house value to be the mpc out of shocks to housing wealth.

The "other" coefficients that we report in the tables are those that we most find to be significantly different from zero among those that are included in the regressions. These are

coefficients on *changes* in: unemployment status; retirement status; and, in the number of people and earners living in the household. When these coefficients are significant they tend to have the expected relationship with consumption outcomes. Becoming unemployed is associated with cuts in consumption, while the addition of extra household members or of an extra earner in the household is linked to higher expenditures. The variables so far discussed are all in first differences. We also always allow for the possibility that the change in consumption is related to the characteristics of homeownership, retirement and self-employment status, (all measured at time *t-1*), and not just to differences in such variables, and we always control for age-bands, sex, and (to capture effects coming from the state of the macroeconomy) region dummies and the regional unemployment rate. Coefficients on these regressors are generally not significant and are not reported (but are available from the authors on request).[12]

We can now turn to our estimates of wealth effects. For interpretation of coefficients it is easiest to consider an example. The coefficient on the calculated change in financial wealth in the proxy variables regression in table 4.1 is 0.051. Since calculated changes in wealth are measured in real (2010) euros, and consumption is measured in euros per year, this point estimate indicates that if wealth increases (falls) by 100 euros, annual consumption increases (falls) by 5 euro and 10 cents. Other coefficients on wealth variables can be interpreted analogously.

[Table 4.1 about here]

With the proxy and IV regressions, it is easiest to consider results for each consumption outcome in turn. For the proxy variables regressions we see that results are quite similar for our two different wealth variables. This reflects the fact that risky wealth is a sub-category of total financial wealth and at least for 2006 – 2008 the same asset price changes drive a large part of the changes in both variables. Point estimates in the proxy variables regressions in table 4.1 indicate that a one euro increase (decrease) in financial wealth or risky financial wealth would lead to an 0.051 euro increase (decrease) or an 0.058 euro increase (decrease) in total consumption, and these results are, respectively, significant at the 10% and 5% levels. Moving to the IV regressions, the coefficients increase to 0.09 and 0.086, though only the latter for risky financial wealth is significant (at the 10% level). The larger estimate of the mpc in the IV regression is consistent with the idea, discussed in section 2, that the proxy variable might overstate wealth shocks and so lead to underestimates of mpc out of these shocks.

[12] Descriptive statistics for our independent variables are in Appendix Table A2.

In fact, in our case with one endogenous variable and one excluded instrument, the first-stage coefficients on the excluded instrument (which are between zero and one and bigger when working with risky wealth) tell us that the coefficient on the variable of interest will increase when we move from the proxy case to IV, and the proportional change will be smaller in the specification based on risky wealth. Additionally, the greater precision (smaller standard error on the instrument) in the first stage for the case using risky wealth indicates that instrumenting adds less noise in that case.[13] Note that the two first-stage regressions will be identical in each of tables 4.1. – 4.4. Thus, these comments on the first-stage regressions and how they mediate between the proxy and IV regressions remain relevant as we turn to other outcome variables.

Finally, regarding the regressions in 4.1, the coefficients on the change in housing wealth are, with the exception of the IV case when the regressor is total wealth, remarkably robust. The interpretation is that an extra euro in housing wealth would lead to 0.3 or 0.4 extra cents of consumption per year. This effect is significant at the one per cent level.

[Table 4.2 about here]

Table 4.2 presents results for the change in consumption spending on non-durables. In this case point estimates of wealth effects are somewhat reduced relative to those from table 4.1, but standard errors are also reduced. For example the coefficients from the proxy variables regressions are now 0.035 and 0.037 for total wealth and risky wealth, respectively, and both are significant at the five per cent level. Coefficients from the IV specifications suggest that a one euro increase in financial wealth may increase spending on non-durables by 6.1 cents, or by 5.4 cents (significant at the 10 per cent level) if we restrict ourselves to considering risky assets. As with financial wealth, the propensity to consume out of housing wealth seems a little smaller (at around 3 cents a year per euro change in house value) when considering non-durable consumption rather than total consumption, but these small effects remain precisely identified.

[Table 4.3 about here]

Theoretical considerations that "luxuries are easier to postpone" (Browning and Crossley, 2000), and findings that households in temporarily straitened circumstances may postpone the renewal of durables rather than immediately cutting back on all spending (Browning and Crossley, 2009), mean it is interesting to look at finer categories of spending. Table 4.3 presents results for

[13] The good performance of the instrument in the case with risky wealth is also supported by a more convincing F-statistic (see notes to Tables 4.1 – 4.4) in that case a test for weak identification.

durables spending. Point estimates do suggest that durables expenditures were affected by, on average, around 2 – 3 cents per year for a dollar change in financial or risky wealth (and this change in durables spending would make up the difference between the results for total spending in table 4.1, and those for non-durables in Table 4.2). However, none of these results is significant and coefficients on changes in house value are insignificant and close to zero. The problem may relate to the fact that durable purchases happen only infrequently and so we may not observe enough durables purchases to identify patterns in the data.

[Table 4.4 about here]

The final category of goods our data allow us to consider is food spending. For this category we find no evidence of effects from housing wealth. A euro change in the value of financial wealth may though lead to a 1 to 2 cent change in food spending: coefficients of 0.011 in the proxy regression on total wealth, and 0.010 in the similar case with risky wealth, are significant at the five per cent level, while the IV coefficient on risky wealth of 0.015 is significant at the ten per cent level. These results are potentially striking. If food is a necessity, then even small changes in food spending could be potentially important for households' welfare. However, we should be careful in interpretation. Our data on food spending are not very disaggregated and we cannot, for example, distinguish "food in" and "food out".

To benchmark our results, let us mention the basic OLS regressions. In general the coefficients on the financial wealth variables in these regressions are close to zero, in some cases being insignificant while in others we have precisely estimated zeroes. The biggest exceptions are the coefficients of 0.016 on the reported change in risky wealth in the regressions for total consumption and non-durable consumption, coefficients which are significant at the 5 and 1 per cent levels, respectively. However, even these coefficients are smaller than the results we get from the proxy variables and IV specifications. We interpret the small size of these estimated coefficients as evidence that, in our data, the endogeneity issues described in section 2 are important and so the coefficients from basic OLS are likely to be underestimates of true mpc from shocks to financial wealth. Regarding effects from housing wealth, the results of the basic OLS are similar (in size and significance) to the results from the proxy variables specifications.

4.1 How Large are these Wealth Effects?

Our estimates of wealth effects are based on the early years of the Great Recession, and using this period helps us to have a plausibly exogenous source of variation in financial wealth that we

exploit to identify effects. This exogeneity may give estimates that have generality outside our sample period, or it may be that the time period that we exploit is unusual in terms of average wealth effects. While we cannot investigate this directly, we can at least put our estimates in the context of previous literature.

Findings regarding wealth effects in consumption have usually focussed on broad measures such as total consumption or non-durable consumption. Our point estimates for the mpc out of shocks to financial wealth are between 0.05 and 0.09 for total consumption, and between 0.035 and 0.06 for non-durable consumption. These effects differ from the Italy based finding of Guiso, Paiella and Visco (2005) that consumption may even fall in response to capital gains on financial assets. One could only speculate as to whether this difference comes from differences in sample period or differences in the method and variation used to capture effects. It is slightly difficult to make a direct comparison of our results to those of Banks et al (2012), the paper that is closest to ours in terms of methodology, since they do not observe such comprehensive measures of consumption spending as we do. However, if we try to extrapolate an effect on total consumption from their results it would seem that this would be weaker than our findings, and our findings for spending on food are also stronger than the sum of their results for food in and food out. More generally our findings on mpc out of shocks to financial wealth do not seem out of line with findings in the literature, although our higher (but insignificant) 0.09 estimate for total consumption is perhaps at the top end of the range.

Our findings on mpc from changes in housing wealth are (for total and non-durable consumption) robustly in the range 0.002 – 0.004. This is in line with the findings of Guiso, Paiella and Visco (2005). Thus our findings seem to confirm that the average marginal propensity of Italian households to consume from changes in their housing wealth is reasonably in line with (perhaps at the lower end of) the range of international estimates of this parameter.

Another way of thinking about the size of our estimated mpc is to consider what these mpc imply for how much smaller observed falls in consumption would have been in our data if the value of financial assets had not fallen in 2008. We can address this issue by performing counterfactual simulations based on our regression. That is to say, we first use the regression to predict the average change in consumption in our sample. We can then (counterfactually) set the

change in wealth to zero for all individuals in our sample and make a new prediction.[14] Comparing the two predictions will give a measure of how much of the average fall in consumption is being driven by wealth effects. We can also compare this influence of wealth effects to the impact of other factors by using a similar technique to "switch off" the influence of (say) changes in housing wealth, unemployment status or the number of earners in the household.

[Table 4.5 about here]

Table 4.5 displays the results of this kind of counter factual exercise based on the IV regression for the change in total consumption on the change in risky wealth that is reported in the bottom panel of Table 4.1 (we choose this specification since the coefficient on the wealth variable is well identified). We report results for the counterfactual exercise for computed across all households in our sample (first column), and only for the (approximately) half of the sample whose change in consumption is measured for the period of particularly large asset price shocks (2006 – 08, second column).

In our full sample the average two-year fall in consumption is 522 euros. This fall amounts to almost 3% of average consumption spending in our sample,[15] a figure which is reasonably in line (slightly below) the fall in aggregate consumption in Italy over the same period (see Figure 1). The 522 euro fall is also (by construction) matched by the average prediction of consumption changes based on our regression. If we repeat the prediction exercise but with the "predicted wealth" variable from the first stage of the IV set to zero, we find the average fall in consumption is reduced to 402 euros, so wealth effects are explaining around 120 out of the 522 euro average fall, or approximately 23% of the fall in consumption on average. In contrast to this, changes in housing wealth only capture around 3% of the average fall in consumption. Of the counterfactuals we considered, only the case in which changes in the number of earners in households *and* movements in to unemployment are both set to zero comes close to capturing the proportion of the consumption falls explained by the shock to financial wealth.

[14] Our preferred estimates are IV regressions. The easiest way to perform this counterfactual analysis within the IV set up is to "manually" compute the two steps of the IV. That is, rather than using a built in package in to statistical software (in our case Stata 12) to compute the IV, use a regression command to compute the first stage, then construct the "predicted wealth" variable that becomes an input in to the second stage which is computed by a second use of the regression command. Since this procedure involves explicitly obtaining the "predicted wealth" variable, it is straightforward to produce predictions based on coefficients of the second stage regression but with the predicted wealth variable set to zero.

[15] 3% is calculated as 100*522/17461.

Considering only the 2006 – 08 sample, the average fall in consumption is now 816 euros (or around 4.6 per cent which is again quite well in line with aggregate data).[16] In this case we see that the changes in financial wealth are driving much more of the fall in consumption (around 30% or it) than are any of the other factors we consider through our counter-factuals.

4.2 Heterogeneity in Wealth Effects?

The wealth effects considered so far are average effects in our sample. It is interesting to also consider heterogeneity in effects and how this is distributed across the population. However, identification of average effects is quite demanding and so limitations of sample size mean that analyses of the heterogeneity of effects stretch our data. Nonetheless, we present some results on how wealth effects vary by age, as a simple life-cycle model suggests that they might do. Older individuals have a shorter horizon over which they can expect to spread new wealth in consumption spending, so the model suggests that older individuals should respond more strongly to the wealth shocks.[17]

To check whether this kind of intuition is confirmed in our data, we split our sample in to three age bands (30 – 44; 45 – 59 and 60+) and repeat our main analyses for each group. Results for the key parameters in the second stage of the IV models, and in the reduced form or proxy variables regressions, are presented in Table 4.6 (full sets of results are available from the authors on request). While sample size issues mean our conclusions are tentative, our reading of the table is that it broadly confirms the intuition. In particular, we only get significant results for the older age groups. For the under 45s coefficient estimates are imprecise and point estimates are sometimes even negative. This is consistent with the idea that there are not strong wealth effects for this group.

[Table 4.6 About here]

5. Conclusions

In common with other developed economies, the start of the Great Recession was marked in Italy by a sudden and substantial fall in the value of financial assets. We have used this as a plausibly

[16] Since there is a "2010 dummy", this fall is again matched exactly by regression predictions.

[17] This kind of intuition underlies much work trying to untangle why house price growth and aggregate consumption are so strongly correlated in the UK: see Attanasio and Weber (1994); Attanasio et al (2009), Attanasio, Leicester and Wakefield (2011).

exogenous source of variation in financial wealth in an IV estimator (based on Banks et al., 2012) of the marginal propensity to consume out of shocks to financial wealth.

Our findings indicate that a one euro fall in financial (or risky financial) wealth resulted in households cutting annual total consumption spending by slightly more than 5 cents, with upper estimates of between 8 and 9 cents. Considering spending on non-durable goods and services, our estimates are in the range of 3.5 to 6 cents. We find effects of 1 – 2 cents for food spending, and insignificant results (though with the expected positive coefficients) for expenditure on durables. We also find that a one euro change in housing wealth results in total and nondurable consumption spending moving in the same direction by around between 0.2 and 0.4 cents, but we do not find significant effects on food or durables expenditures.

To help quantify the importance of these wealth effects, we constructed counterfactual exercises to simulate how much of the average fall in consumption in our sample is accounted for by shocks to financial wealth. The average proportional fall in consumption for individuals in our sample was in line with the fall in aggregate consumption in the Italian economy, and the counterfactual exercise indicates that for these individuals around 20 to 30 percent of the fall in consumption was a response to shocks to the value of financial wealth. This is rather more than is explained by factors such as changes in housing wealth or unemployment status.

The effects mentioned thus far in these conclusions are average effects in our sample. As with all studies, ours has limitations. While it would be interesting also to consider heterogeneity in effects and how this is distributed across the population, limitations of sample size mean such analysis stretches our data. The analysis we have done suggests that wealth effects are *not* driven by the youngest households in our sample.

Another limitation is that applying our method requires a period of large shocks to asset prices. Thus we considered wealth effects in the early part of the Great Recession in Italy. While we therefore need to be careful about claiming too much generality for our results, episodes of negative asset price shocks do make the study of wealth effects painfully relevant. We feel that our findings that households did contract consumption due to wealth shocks highlight that wealth effects in consumption are important. They are important both for the welfare of households that suffer the shocks and as a mechanism through which such shocks feed back into aggregate consumption and, therefore, economic activity.

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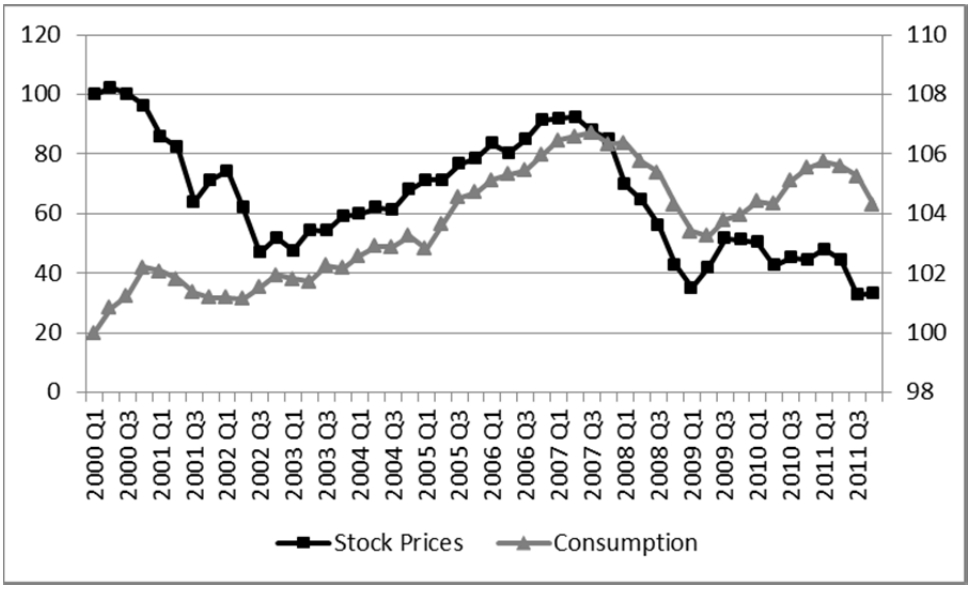
Figures and Tables

Figure 1.1: Stock prices and Aggregate Consumption Spending in Italy, 2000 – 2011



Source: FTSE via datastream for stock prices (FTSEMIB) and Istat for consumption.

Table 2.1 Descriptives of consumption in our sample

		Total consumption expenditure	*Non durables consumption expenditure*	*Durables consumption expenditure*	Food *consumption expenditure*
2004	Mean	18862	16677	2184	7081
	St. dev	(12817)	(9324)	(7273)	(3669)
2006	Mean	18329*	16428	1900*	6929*
	St. dev	(11194)	(8517)	(5793)	(3435)
2008	Mean	17557***	15809***	1748	6533***
	St. dev	(10525)	(7940)	(5226)	(3103)
2010	Mean	17315	15873	1441***	6397*
	St. dev	(15873)	(8123)	(4161)	(3057)

7,107 observations, from 3819 families.
The mean test of equality of consumption before and after 2006 is rejected at 1% for each measure of consumption
*refers to the significance of the test on equality of mean consumption in the current and previous wave (with equal variances)
* p<0.1, **p<0.05, *** p<0.001

Table 3.1 Descriptives of the change in wealth and the calculated change in wealth

Financial wealth			
		Changes in reported wealth	**Calculated Changes in wealth"**
Mean (st.dev)		-295 (57080)	-1483 (8365)
	2008	-1409 (46799)	-3020 (11913)
	2010	713 (64992)	-91 (877)
Median		0	-117
25th percentile		-4677	-376
75th percentile		5899	-16
Regression coefficient			0.651***
Risky financial wealth (hhs with risky assets in 2006)			
		Changes in reported wealth	**Changes in "calculated wealth"**
Mean (st.dev)		-1404 (23148)	-1119 (7934)
	2008	-3012 (28948)	-2464 (11334)
	2010	52 (16433)	100 (716)
Median		-3073	30
25th percentile		-20481	-1209
75th percentile		0	296
Regression coefficient			0.729***

2979 observations in 2008 and 3290 in 2010; 433 households in 2008 and 473 in 2010 were share owners in 2006.
Monetary values are in euros 2010.
The regression coefficient is obtained by OLS regression of the change in reported wealth on the change in calculated wealth. The R squared for financial wealth and risky financial wealth is, respectively, 0.009 and 0.062.

Table 4.1: Wealth effects regressions for the change in total household consumption

	Basic OLS	Proxy variable	Instrumental Variables	
			2nd stage	1st stage
Wealth variable: Total accessible financial wealth				
Delta financial wealth	**0.004**		**0.090**	
	(0.003)		**(0.066)**	
Calculated change in fin. wealth		**0.051** *		0.567 **
		(0.026)		(0.254)
Delta house value	**0.004** ***	**0.003** ***	**0.001**	0.030 ***
	(0.001)	**(0.001)**	**(0.002)**	(0.011)
Delta unemployment status	-1674.272 ***	-1712.260 ***	-1446.617 **	-2963.544
	(622.037)	(620.930)	(675.950)	(2027.533)
Delta retirement status	348.578	363.873	409.042	-503.905
	(478.166)	(479.998)	(693.188)	(5780.387)
Delta no. of people in the HH	2179.018 ***	2159.322 ***	2042.626 ***	1301.866
	(294.977)	(290.757)	(310.334)	(1075.677)
Delta no. of earners in the HH	1665.108 ***	1654.895 ***	1578.661 ***	850.467
	(279.804)	(279.732)	(308.363)	(1045.983)
Year 2010	20.933	31.591	-196.140	2540.586
	(583.868)	(584.147)	(648.281)	(2842.274)
Wealth variable: Risky financial wealth				
Delta risky financial wealth	**0.016** **		**0.086** *	
	(0.007)		**(0.047)**	
Calculated change in risky wealth		**0.058** **		0.674 ***
		(0.028)		(0.177)
Delta house value	**0.004** ***	**0.004** ***	**0.003** ***	0.008 *
	(0.001)	**(0.001)**	**(0.001)**	(0.004)
Delta unemployment status	-1668.083 ***	-1712.730 ***	-1597.816 **	-1338.897 **
	(622.955)	(620.833)	(629.578)	(627.711)
Delta retirement status	377.743	362.899	518.685	-1815.098
	(475.976)	(480.198)	(488.552)	(1394.491)
Delta no. of people in the HH	2163.313 ***	2158.277 ***	2067.910 ***	1052.887 **
	(293.561)	(290.706)	(293.760)	(447.256)
Delta no. of earners in the HH	1677.174 ***	1652.449 ***	1714.542 ***	-723.451
	(279.493)	(279.781)	(278.182)	(508.352)
Year 2010	13.792	36.549	-58.720	1109.999
	(583.604)	(584.358)	(587.639)	(1072.686)

6269 observations from 3819 families. * p<0.1, **p<0.05, *** p<0.001.

Coefficients in bold can be interpreted as mpc out of wealth change.
Also included: homeownership, retirement and self-employment in the previous wave, age dummies (40-49, 50-59, 60-69, 70+), gender, regional unemployment rate, regional dummies, constant term.
Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
F-statistic from weak identification test: 4.98 with total financial wealth (top panel); 14.51 with risky financial wealth.

Table 4.2: Wealth effects regressions for the change in household non-durable consumption

	Basic OLS	Proxy variable	Instrumental Variables	
			2nd stage	1st stage
Wealth variable: Total accessible financial wealth				
Delta financial wealth	**0.005 ****		**0.061**	
	(0.002)		**(0.037)**	
Calculated change in fin. wealth		**0.035 ****		0.567 **
		(0.014)		(0.254)
Delta house value	**0.003 *****	**0.003 *****	**0.001**	0.030 ***
	(0.001)	**(0.001)**	**(0.001)**	(0.011)
Delta unemployment status	-1292.020 ***	-1323.899 ***	-1143.162 **	-2963.544
	(406.365)	(405.403)	(446.816)	(2027.533)
Delta retirement status	-416.123	-407.319	-376.587	-503.905
	(332.270)	(331.827)	(479.066)	(5780.387)
Delta no. of people in the HH	1907.904 ***	1898.118 ***	1818.721 ***	1301.866
	(212.084)	(211.409)	(226.560)	(1075.677)
Delta no. of earners in the HH	1395.588 ***	1390.930 ***	1339.062 ***	850.467
	(201.248)	(201.331)	(209.856)	(1045.983)
Year 2010	-17.546	-4.542	-159.485	2540.586
	(418.044)	(419.361)	(447.695)	(2842.274)
Wealth variable: Risky financial wealth				
Delta risky financial wealth	**0.016 *****		**0.054 ***	
	(0.006)		**(0.029)**	
Calculated change in risky wealth		**0.037 ****		0.674 ***
		(0.015)		(0.177)
Delta house value	**0.003 *****	**0.003 *****	**0.002 *****	0.008 *
	(0.001)	**(0.001)**	**(0.001)**	(0.004)
Delta unemployment status	-1288.299 ***	-1322.855 ***	-1250.106 ***	-1338.897 **
	(407.241)	(405.286)	(412.215)	(627.711)
Delta retirement status	-386.763	-408.780	-310.156	-1815.098
	(328.771)	(331.963)	(328.994)	(1394.491)
Delta no. of people in the HH	1893.307 ***	1898.661 ***	1841.452 ***	1052.887 **
	(211.618)	(211.376)	(214.655)	(447.256)
Delta no. of earners in the HH	1409.036 ***	1390.038 ***	1429.347 ***	-723.451
	(200.972)	(201.370)	(201.024)	(508.352)
Year 2010	-22.373	-1.474	-61.785	1109.999
	(418.379)	(419.521)	(419.155)	(1072.686)

6269 observations from 3819 families. * p<0.1, **p<0.05, *** p<0.001.

Coefficients in bold can be interpreted as mpc out of wealth change.

Also included: homeownership, retirement and self-employment in the previous wave, age dummies (40-49, 50-59, 60-69, 70+), gender, regional unemployment rate, regional dummies, constant term.

Standard errorS in parenthesis are robust to heteroskedasticity and to correlation within the household.

F-statistic from weak identification test: 4.98 with total financial wealth (top panel); 14.51 with risky financial wealth.

Table 4.3: Wealth effects regressions for the change in household durables expenditures

	Basic OLS	Proxy variable	Instrumental Variables	
			2nd stage	1st stage
Wealth variable: Total accessible financial wealth				
Delta financial wealth	**-0.001**		**0.029**	
	(0.002)		**(0.049)**	
Calculated change in fin. wealth		**0.016**		0.567 **
		(0.026)		(0.254)
Delta house value	**0.001**	**0.001**	**0.000**	0.030 ***
	(0.001)	**(0.001)**	**(0.002)**	(0.011)
Delta unemployment status	-382.252	-388.361	-303.455	-2963.544
	(463.309)	(462.904)	(480.487)	(2027.533)
Delta retirement status	764.701 **	771.192 **	785.629 **	-503.905
	(359.022)	(359.545)	(391.934)	(5780.387)
Delta no. of people in the HH	271.114	261.204	223.905	1301.866
	(196.559)	(193.307)	(198.815)	(1075.677)
Delta no. of earners in the HH	269.520	263.965	239.599	850.467
	(209.905)	(210.952)	(225.509)	(1045.983)
Year 2010	38.480	36.133	-36.655	2540.586
	(410.209)	(409.914)	(439.627)	(2842.274)
Wealth variable: Risky financial wealth				
Delta risky financial wealth	**-0.000**		**0.031**	
	(0.005)		**(0.041)**	
Calculated change in risky wealth		**0.021**		0.674 ***
		(0.027)		(0.177)
Delta house value	**0.001**	**0.001**	**0.001**	0.008 *
	(0.001)	**(0.001)**	**(0.001)**	(0.004)
Delta unemployment status	-379.784	-389.875	-347.710	-1338.897 **
	(463.155)	(462.834)	(463.785)	(627.711)
Delta retirement status	764.506 **	771.679 **	828.841 **	-1815.098
	(358.823)	(359.519)	(372.571)	(1394.491)
Delta no. of people in the HH	270.006	259.616	226.458	1052.887 **
	(195.901)	(193.157)	(194.059)	(447.256)
Delta no. of earners in the HH	268.138	262.412	285.195	-723.451
	(210.517)	(210.941)	(208.631)	(508.352)
Year 2010	36.165	38.022	3.066	1109.999
	(410.182)	(409.884)	(413.136)	(1072.686)

6269 observations from 3819 families. * p<0.1, **p<0.05, *** p<0.001.

Coefficients in bold can be interpreted as mpc out of wealth change.
Also included: homeownership, retirement and self-employment in the previous wave, age dummies (40-49, 50-59, 60-69, 70+), gender, regional unemployment rate, regional dummies, constant term.
Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
F-statistic from weak identification test: 4.98 with total financial wealth (top panel); 14.51 with risky financial wealth.

Table 4.4: Wealth effects regressions for the change in household food expenditure

	Basic OLS	Proxy variable	Instrumental Variables	
			2nd stage	1st stage
Wealth variable: Total accessible financial wealth				
Delta financial wealth	**0.001**		**0.019**	
	(0.001)		**(0.012)**	
Calculated change in fin. wealth		**0.011** **		0.567 **
		(0.005)		(0.254)
Delta house value	**0.000**	**0.000**	**-0.000**	0.030 ***
	(0.000)	**(0.000)**	**(0.000)**	(0.011)
Delta unemployment status	-259.911	-268.333	-212.492	-2963.544
	(185.135)	(184.740)	(198.942)	(2027.533)
Delta retirement status	-160.028	-156.929	-147.434	-503.905
	(174.561)	(174.257)	(206.210)	(5780.387)
Delta no. of people in the HH	996.169 ***	992.291 ***	967.760 ***	1301.866
	(100.618)	(101.033)	(104.061)	(1075.677)
Delta no. of earners in the HH	311.551 ***	309.570 ***	293.544 ***	850.467
	(88.189)	(88.109)	(91.723)	(1045.983)
Year 2010	786.070 ***	788.727 ***	740.855 ***	2540.586
	(178.917)	(179.162)	(186.101)	(2842.274)
Wealth variable: Risky financial wealth				
Delta risky financial wealth	**0.003**		**0.015** *	
	(0.002)		**(0.008)**	
Calculated change in risky wealth		**0.010 ** **		0.674 ***
		(0.005)		(0.177)
Delta house value	**0.000**	**0.000**	**0.000**	0.008 *
	(0.000)	**(0.000)**	**(0.000)**	(0.004)
Delta unemployment status	-259.354	-267.256	-247.786	-1338.897 **
	(184.943)	(184.743)	(185.549)	(627.711)
Delta retirement status	-154.630	-157.822	-131.427	-1815.098
	(174.557)	(174.211)	(176.043)	(1394.491)
Delta no. of people in the HH	993.548 ***	993.152 ***	977.841 ***	1052.887 **
	(100.505)	(100.911)	(100.794)	(447.256)
Delta no. of earners in the HH	314.089 ***	309.721 ***	320.241 ***	-723.451
	(88.151)	(88.128)	(88.288)	(508.352)
Year 2010	785.303 ***	789.506 ***	773.365 ***	1109.999
	(179.027)	(179.193)	(178.790)	(1072.686)

6269 observations from 3819 families. * p<0.1, **p<0.05, *** p<0.001.

Coefficients in bold can be interpreted as mpc out of wealth change.
Also included: homeownership, retirement and self-employment in the previous wave, age dummies (40-49, 50-59, 60-69, 70+), gender, regional unemployment rate, regional dummies, constant term.
Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
F-statistic from weak identification test: 4.98 with total financial wealth (top panel); 14.51 with risky financial wealth.

Table 4.5 Counterfactual Exercises: Predicted Changes in Consumption

	Full Sample	*2006 – 08 Sample*
Average observed change in total consumption	-522 (100%)	-816 (100%)
Counterfactual changes		
Δ risky financial wealth set to 0	-402 (77%)	-558 (68%)
Δ housing value set to 0	-505 (97%)	-789 (97%)
Δ no earners in the HH set to 0	-486 (93%)	-787 (96%)
No unemployment	-467 (89%)	-765 (94%)
Δ no earners set to 0 *and* no unemployment	-431 (83%)	-736 (90%)

Notes: These counterfactuals are based on the IV regression reported in the bottom panel of Table 4.1.
The full sample size is 6269 while the 2006-08 sample has 2979 observations. The mean level of consumption is 17461 in the full sample and 17622 in the 2006-08 subsample. The percentages in parentheses are the percentage of the average observed change.

Table 4.6 Heterogeneity in key Regression coefficients by age

	Age 30 - 44		Age 45 – 59		Age 60 +	
	Red.Form	**IV 2nd stage**	**Red.Form**	**IV 2nd stage**	**Red.Form**	**IV 2nd stage**
Dependent variable: Change in Total consumption expenditure						
Delta financial wealth		-0.013		0.105		0.081
		(0.247)		(0.104)		(0.071)
Calculated delta fin. wealth	-0.004		0.077		0.042	
	(0.071)		(0.049)		(0.032)	
Delta house value	-0.001	-0.001	0.004**	0.003	0.003***	0.003**
	(0.003)	(0.005)	(0.002)	(0.002)	(0.001)	(0.001)
Dependent variable: Change in Non durables consumption expenditure						
Delta financial wealth		0.091		0.062		0.057
		(0.196)		(0.045)		(0.050)
Calculated delta fin. wealth	0.026		0.045**		0.029	
	(0.049)		(0.020)		(0.022)	
Delta house value	-0.002	-0.001	0.002	0.001	0.003***	0.003***
	(0.002)	(0.004)	(0.001)	(0.001)	(0.001)	(0.001)
Dependent variable: Change in Durables consumption expenditure						
Delta financial wealth		-0.104		0.044		0.024
		(0.278)		(0.086)		(0.036)
Calculated delta fin. wealth	-0.030		0.032		0.012	
	(0.056)		(0.055)		(0.018)	
Delta house value	0.002	0.000	0.003*	0.002	0.000	-0.000
	(0.002)	(0.005)	(0.002)	(0.002)	(0.001)	(0.001)
Dependent variable: Change in Food consumption expenditure						
Delta financial wealth		0.030		0.026		0.004
		(0.083)		(0.020)		(0.012)
Calculated delta fin. wealth	0.009		0.019***		0.002	
	(0.029)		(0.007)		(0.006)	
Delta house value	-0.001	-0.001	-0.001*	-0.001*	0.001**	0.001*
	(0.001)	(0.002)	(0.000)	(0.001)	(0.000)	(0.000)

Notes: Number of Observations: 30-44: 836; 45-59: 2038; 60+ 3395.

Appendix

Sources for asset price indices and interest rates, and the asset classes that they are applied to in constructing calculated changes in wealth, are:

- Holdings in current accounts and cash deposits: the annual interest rate on current accounts available to households (source: Bank of Italy, Bolletino Statistico).
- Short term Italian government bonds (duration lower than 2 years, assumed to be held to maturity): interest rates yielded by BOT with 12 months duration and by CTZ traded in Borsa Italiana (source: Bank of Italy).
- Long-term Italian government bonds (CCT and BTP): capital gains based on price indices available from the Bank of Italy.
- Shares held in Italy: FTSEMIB (FTSE via datastream)
- Shares held overseas: FTSE All-World index (FTSE via datastream)
- Italian private bonds and other foreign assets, Pfandbriefe index.

To classify mutual funds according to exposure to stockmarket risk we use the classification provided by the Italian association of savings providers (Assogestioni, *Guida alla classificazione*). We then assume the amount invested in the stock market evolves in line with the FTSEMIB and that the remainder of the fund is invested in Italian government bonds. In detail, the share of government bonds is 100% for monetary and bond funds; 15% for stock funds; 50% for mixed funds; 30% for balanced stock funds; 70% for balanced bond funds.

Table A1: Fixed effects regressions for consumption

	Total consumption			*Non-durable consumption*		
Year 2006	-192.342		215.993	67.888		241.715
	(204.525)		(222.105)	(139.196)		(151.305)
Year 2008	-617.917	***	-17.977	-336.101	**	9.885
	(211.094)		(225.672)	(143.667)		(153.734)
Year 2010	-600.893	**	-145.912	-203.290		83.880
	(234.288)		(243.209)	(159.452)		(165.681)
Own risky assets			3989.659	***		2169.072	***
			(451.241)			(307.399)
Own risky assets*2006			-2258.569	***		-877.519	**
			(547.513)			(372.982)
Own risky assets*2008			-3708.226	***		-2193.455	***
			(571.950)			(389.629)
Own risky assets*2010			-3189.896	***		-2203.837	***
			(627.494)			(427.467)
R squared	0.266		0.282	0.310		0.319	

13907 observations from 3819households. * p<0.1, **p<0.05, *** p<0.001.
Also included: homeownership, house value, unemployment, retirement and self-employment, age dummies (40-49, 50-59, 60-69, 70+), education, no. of people in the household, no. earners in the household, regional unemployment rate, constant term.
Standard errors in parenthesis.

Table A2 Descriptive statistics for Independent Variables

	Mean	*St. dev*
Delta financial wealth	-295.264	*57080.106*
Delta risky financial wealth	-1403.983	*23284.407*
Calculated delta fin. wealth	-1482.559	*8364.839*
Calculated delta risky fin. wealth	-1118.624	*7933.521*
Delta house value	-5910.277	*190490.701*
Age 40-49	0.182	*0.386*
Age 50-59	0.227	*0.419*
Age 60-69	0.221	*0.415*
Age 70+	0.321	*0.467*
Medium education	0.314	*0.464*
High education	0.084	*0.277*
Delta employment status	0.034	*0.182*
Delta retirement status	0.074	*0.262*
Delta no. of people in the HH	-0.086	*0.451*
Delta no. of earnersin the HH	-0.021	*0.518*
Regional unemployment rate	7.998	*3.784*
Male	0.552	*0.497*
Retired (previous interview)	0.382	*0.486*
Public sector (previous interview)	0.222	*0.415*
Homeowner (previous interview)	0.747	*0.435*
Year 2010	0.525	*0.499*

6269 observations from 3819 families