Consumption responses to a large shock to financial wealth: evidence from Italy *

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Abstract

We estimate marginal propensities to consume from wealth shocks for Italian households early in the Great Recession. Large asset-price shocks in 2007-2008 underpin instrumental variables. A euro fall in risky financial wealth resulted in cuts in annual total (non-durable) consumption of 8.5-9 (5.5-5.7) cents. We find small effects on food spending. Counterfactuals indicate financial-wealth effects were relatively important for consumption falls in Italy in 2007/08. The estimated effects are consistent with a simulated lifecycle model that captures the wealth shock. Also consistent with the model are findings of stronger wealth effects for agents who were pessimistic about stock returns.

Key words: Wealth effects; household consumption; the Great Recession

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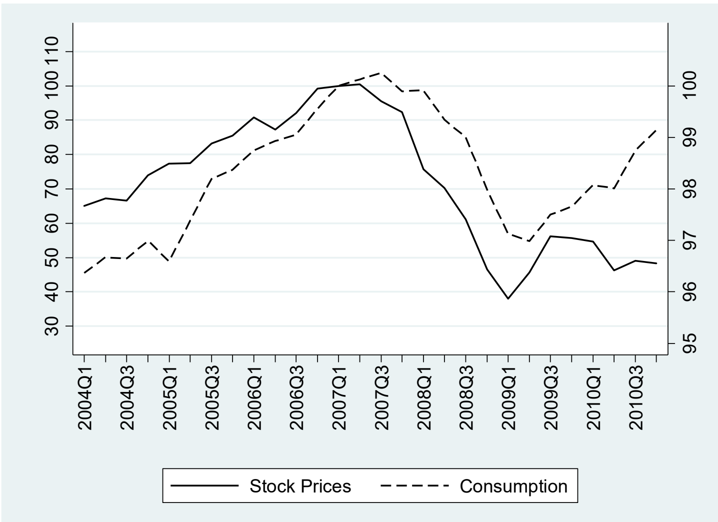
1. Introduction

A striking feature of the early part of the "Great Recession" was a crash in financial-asset values.[1] Italy's FTSE-MIB fell by more than 60% between May 2007 and March 2009, with a large part of this fall in the central months of 2008. Households that held wealth in stocks thus suffered a sudden, potentially large and mostly unanticipated shock to their financial wealth. Figure 1.1 shows that the path of aggregate consumption closely shadowed that of the stock market, with a 3 per cent fall between late 2007 and mid 2009 that slightly lagged the fall in stock prices. We exploit the 2008 shock to asset values to measure the strength of the response of consumption spending to the change in financial wealth, for a representative sample of Italian households.

Figure 1.1: ***Stock prices and Aggregate Consumption Spending in Italy, 2004 – 2010***



Source: FTSE via datastream for stock prices (FTSEMIB) and Istat (database I.stat) for consumption (final consumption expenditure of households on economic territory).
Notes: The vertical axis on the LHS measures the variation of stock prices with respect to the first quarter of 2007; that on the RHS measures the variation of consumption with respect to the first quarter of 2007.

The 2008 shock to asset values provides useful empirical variation, and is also fundamental to our strategy for dealing with a key endogeneity. All else equal, a household that cuts (increases) its consumption by more, will mechanically accumulate more (less) wealth. Unless this is properly accounted for, it could lead to a downwards bias in, or even a negative estimate of, wealth effects.

[1] The Dow Jones Industrial Average for the U.S., and the FTSE "All Share" for the UK, both approximately halved between peaks in autumn/summer 2007 and lows in March 2009.

We use the idea that the 2008 shock to asset values can provide a source of variation in wealth that is exogenous to households' consumption behaviour to build an instrumental variables (IV) estimator similar to that of Banks et al (2012); our estimator is discussed in detail in section 3.

As well as being important for our methodology, our focus on the period of the large asset-price change for a representative sample of households from a relatively large European economy, is a distinguishing point of interest. 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 following the large shock to financial asset values at the start of the Great Recession. It is worth noting that, unlike in 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 this explains our emphasis on the effects of financial wealth.

Our study is related to other papers that have aimed to estimate the importance of wealth effects in driving consumption behaviour since 2007. As mentioned, our study is similar in methodology to 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 of wealth shocks on household spending during the crisis, but are also able to analyse wealth effects on other outcomes that we do not observe. More tightly focussed on consumption outcomes is the influential study of the U.S. by Mian, Rao and Sufi (2013), who estimate a marginal propensity to consume out of housing wealth of 5 – 7 per cent for 2006-09 that is robust to instrumenting using geographical constraints on housing supply. In another important analysis of the US, Christelis, Georgarakos and Jappelli (2015) look at how losses on financial wealth and in real wealth, and unemployment, affected consumption in 2008-09. Using data that ask households to report capital losses on different assets they find a marginal propensity to consume out of financial wealth of around 3.3 per cent (and smaller effects for losses on housing). In line with economic theory, they also find evidence of stronger consumption responses from those who expected the stock-market shock to be permanent (rather than transitory). In an interesting recent study, Paiella and Pistaferri (forthcoming) use Italian data for 2008 -10 to decompose wealth effects into responses to unanticipated and anticipated changes in wealth. They find wealth effects of around 3 per cent that are similar for anticipated and unanticipated changes and driven by responses to house prices. The time period that these authors exploit provides consistent expectations variables, but does not include that large shock to financial asset values that is a key element of our identification strategy. [2]

There is an established literature on wealth effects in consumption that pre-dates the Great Recession. The studies most relevant here are those based on 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

[2] There are broader studies of consumption in the Great Recession. See, for example, Crossley, Low and O'Dea (2013) for the UK; and De Nardi, French and Benson (2012) and Petev, Pistaferri and Saporta-Ecksten (2011) for the US. For Italy, Celidoni, De Nadai and Weber (2016) look at how consumption and other outcomes deviated in later years from predictions based on the behaviour of cohorts up to 2006. Rodano and Rondinelli (2014) compare recent recessions and report that the Bank of Italy's quarterly model does not indicate a strong role for wealth in aggregate consumption in 2006-08. However, the already noted absence of a fall in house prices means that the model's measure of financial *plus* real wealth does not decline in the relevant years. While not focussing on financial wealth effects, both these papers do describe evidence in micro data of the falls in the value of (financial) wealth up to 2008 that provide our source of variation.

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 the asset price shock at the start of the Great Recession as a *new source of plausibly exogenous* variation in asset values in order to estimate how consumption responds to changes in wealth.

Precisely stated, our research goal is to estimate the marginal propensity to consume (mpc[3]) out of the shock to financial wealth at the start of the Great Recession. A preview of key results is as follows. A one euro fall in risky financial wealth resulted in households cutting annual total consumption spending by between 8.5 and 9 cents, and slightly more than 5.5 cents of this cut was in spending on non-durables. We find effects of around 1.5 cents for food spending, and insignificant results (with the expected positive coefficients) for durables. We show that the estimated propensity for total consumption to respond to the negative wealth shock is consistent with the predictions of a dynamic-stochastic lifecycle model. This model is carefully constructed to capture features of the period of our data, notably including the possibility of large wealth shocks in the stochastic process for returns to financial assets. Counterfactual simulations from our regressions indicate that financial wealth effects were an important driver (relative to other factors) of consumption falls in the early part of the Great Recession in our sample, accounting for 17 to 22 per cent of observed cuts in spending. Thus our results indicate that wealth effects on consumption can be important for households' welfare and for aggregate consumption and economic performance. Finally, the data also indicate that pessimistic expectations about stock-market returns may have been important in generating relatively strong responses to the wealth shock in our data, and this result is again in line with predictions of the simulated lifecycle model.

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 explains our research method,

[3] 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.

describing both our IV estimator and a key variable that must be constructed to implement this estimator. Section 4 presents our main results on wealth effects. We first present average wealth effects for broad measures of consumption, then results for finer spending categories. We then put the size of our results in context, including through the comparison with the predictions of the numerically solved and simulated dynamic-stochastic lifecycle model, and through counterfactual simulations. In the final part of Section 4, again guided by the model, we look at the relationship between wealth effects and stock market expectations. Section 5 concludes.

2. Data

The Survey on Household Income and Wealth (SHIW) is a representative sample of the Italian resident population. From 1987 onward the survey is conducted every other year (with the exception of a two-year gap between 1995 and 1998) and covers about 24,000 individuals and 8,000 households[4] in around 300 municipalities. 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 between 2006 and 2008, and between 2008 and 2010, and to construct our instrumental variable using information on household portfolios from the 2004 and 2006 surveys. Given our methodology, having information that spans the period of the large adjustment to financial asset values in 2007-08, is particularly important.

We now describe the SHIW consumption and wealth variables that we exploit.

SHIW consumption variables. The SHIW dataset records consumption spending on four different

[4] A household is a group of individuals related by blood, marriage or adoption and sharing the same dwelling.

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 of 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. Average total consumption decreases between 2004 and 2010, but 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 between 2006 and 2008, with almost 400 euros of this change coming from food consumption. Durable consumption displays a slightly different pattern, decreasing significantly (by approximately 300 euros on average) only in 2010.

Table 2.1: Descriptives of consumption in our sample

Consumption expenditure:		***Total***	***Non-durables***	***Durables***	**Food**
2004	Mean	18784	16630	2154	7074
	(St. dev.)	(12589)	(9103)	(7205)	(3676)
2006	Mean	18304*	16411	1893*	6918*
	(St. dev.)	(11179)	(8528)	(5773)	(3433)
2008	Mean	17541***	15796***	1745	6522***
	(St. dev.)	(10515)	(7943)	(5210)	(3108)
2010	Mean	17295	15859	1436***	6391*
	(St. dev.)	(9945)	(8130)	(4149)	(3064)

Notes to Table: 3047 observations in 2004; 3867 in 2006; 3865 in 2008 and 3323 in 2010.
Stars refer 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.

SHIW financial wealth variables. The SHIW dataset collects detailed information on household portfolios. Respondents are asked about ownership of, and about amounts of wealth held in, each of many types of 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; and, other minor categories. Within each broad category 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 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 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 6370 person-year observations from nearly 4000 families, out of the approximately 8000 interviewed per year.[7]

With our data and sample selection criteria in hand we can consider a description of the

[5] Having end of year wealth means we have data on households at close to the top of the stock market (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. The results of Section 4 are not sensitive to substituting Bank of Italy imputation for our imputation as far as possible.
[7] We also experimented with tighter selection criteria; results are not reported but are available on request.

relationship between consumption and holding of risky (stock market exposed) financial assets. Appendix Table C1 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 and how this relates to various other factors in our data. Qualitative patterns are similar between total and non-durable consumption.[8] Within each category, 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 suggest (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.

Description of the key (change in) wealth variables that we use, and the constructed variable that we subsequently use to instrument the wealth change, is included in the next section.

3. Research Method

3.1 Empirical and Conceptual Setup

The conceptual basis for our research design, and a useful framework for interpreting our empirical results, is the lifecycle model of consumption and saving. The simplest version of this model, with certainty and full transferability of resources between periods, predicts that agents should consume a certain proportion of their lifetime wealth (financial, physical and human

[8] Patterns are as expected: households with more members and more earners spend more, unemployed and retired households spend less. Coefficients are not reported but are available on request.

wealth) in each period. To estimate this proportionality, or propensity to consume out of wealth, one might estimate the relationship between household consumption and household wealth in levels. An alternative, used, for example, by Dynan and Maki (2001) and Banks et al. (2012), is to take differences and regress the change (first difference)[9] 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 is a model parameter and ε is the regression error term; and, ω is the parameter of interest intended to capture the propensity to consume out of wealth.

Relative to estimating in levels, there are some empirical advantages of the specification in differences. First, if one can measure a change in wealth which plausibly captures the change in value of the whole household portfolio, then this can be related to the change in consumption to provide a measure of the relevant propensity to consume, even if the value of some elements of the portfolio are not accurately observed. This potentially reduces the informational burden of the estimator (for example with regard to elements like human wealth). Second, a large change in the level (value) of one form of wealth will provide helpful variation to estimate the relationship of interest. The sudden fall in the value of some financial assets in 2007-2008 is precisely this kind of large change, and the variation it provides is important for our estimator.

The aim in estimating ω is to identify the effect of a(n unexpected) change in the value of wealth, on consumption. That is to say, we are aiming to estimate the marginal propensity to consume (mpc) out of (or to reduce consumption due to) a wealth shock. When we present our estimates in sections 4.3 and 4.4, we will compare them to the values of this parameter that are

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

generated by a lifecycle model in which agents make their consumption-savings decisions in the face of uncertainty and constraints on how resources can be transferred between periods.

In order to properly identify marginal propensities to consume that can be compared to those generated by the model, there is an endogeneity issue that must be dealt with. Suitable conditions for identification would include that the change in wealth is an exogenous (to the change in consumption) shock. However, 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 (from wealth to consumption) 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).

A method of dealing with this endogeneity that dates back at least to Dynan and Maki (2001) is the idea of regressing the change in consumption on the "passive" part of the change in wealth, which is that part that comes from capital gains rather than from active consumption/saving decisions. Banks et al. (2012) shares the idea of relating the change in consumption to a change in wealth that is not generated by active saving behaviour or portfolio adjustments, but uses this as the basis of an instrumental variables estimator.[10]

Our data are similar in structure to those used by Banks et al. (2012), and we also implement an instrumental variables estimator. 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

[10] One of the authors of that paper has also applied the idea of using changes in wealth from asset price shocks to instrument changes in wealth, in an analysis of the impact of wealth shocks on retirement plans; see Crawford (2013).

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.[11] 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.

If the measure of calculated changes in wealth just described were an accurate measure of the "passive" part of the change in wealth, then this measure could be used as Δw for the purpose of estimating equation (1). However, since the "passive" part of changes in wealth is the part that comes from capital gains or losses, it is hard to maintain that our measures based on observing wealth at two-year intervals (and not transactions in the intervening period), can be a completely accurate measure of the passive change. On the other hand, the measure of calculated changes in wealth can be expected to be correlated with actual changes in wealth and 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 consistently estimate the relationship we want to identify 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

[11] 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 Appendix A.

from this are surprises. Furthermore, in our case the biggest source of variation in asset prices comes from the 2007-2008 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 the large change in asset prices in 2007-2008 is important both for providing us with *variation*, and for providing variation that is *exogenous*.

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 $t\text{-}2$.[12] 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:[13]

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

[12] 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).

[13] 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.

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:

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

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.

3.2 Reported and Calculated Changes in Wealth

In order to implement the IV estimator just described, a necessary preliminary step is the data (and labour) intensive construction of 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; (two types of) short term Italian government bonds; (several types of) 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 of sources for interest rates and asset price indices that we used in constructing calculated asset values is listed in Appendix A.

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.[14]

While the process of constructing changes in "calculated" wealth is data and labour intensive, it is necessary for our IV strategy and comes with the additional advantage that comparisons between changes in reported wealth and in "calculated" wealth give us an initial indication of how households responded to the asset price crash in their wealth and portfolio decisions.

Table 3.1 describes the distribution of changes in reported and "calculated" wealth. On average, financial wealth decreases by almost 1300 euros in 2008 (i.e. between 2006 and 2008) and recovers by around half this amount in 2010. This trend is largely driven by a large fall in the value of risky financial wealth for owners of risky assets. Households that owned these risky assets in 2006 report an average decline in the value of their risky financial wealth between 2006 and 2008 of almost 25000 euro. Since around 14%[15] of households in the 2008 sample had risky assets in 2006, this decline would average to a fall of 3600 euros across all households.[16] There is also a decline in the value of risky wealth between 2008 and 2010, but the fall is much less precipitous.

[14] This is mainly stock market risk and exposure can be either through direct holdings or through mutual funds.
[15] 441 out of 3047: see notes to Table 3.1.
[16] 24957*(441/3047) = 3612.

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

Financial wealth			
		Changes in reported wealth	**Changes in "calculated" wealth**
Mean (st.dev)		-248 (56766)	-1397 (8050)
	2008	-1259 (46455)	-2829 (11431)
	2010	678 (64787)	-85 (909)
Median		0	-114
25th percentile		-4727	-369
75th percentile		5832	-14
Regression coefficient			0.649***
			(0.088)
Risky financial wealth (households with risky assets in 2006)			
		Changes in reported wealth	**Changes in "calculated" wealth**
Mean (st.dev)		-12814 (57000)	-4823 (17795)
	2008	-24957 (70442)	-10678 (24269)
	2010	-1540 (37431)	612 (1748)
Median		-3073	13
25th percentile		-20397	-1209
75th percentile		0	238
Regression coefficient			0.882***
			(0.102)

Notes to Table: The sample is the same that is used in our wealth effects regressions. Number of observations: 6370 observations, (3047 in 2008 and 3323 in 2010) from 3867 families. 441 households in 2008 and 475 in 2010, were share owners in 2006.
Monetary values are in 2010 euros. The regression coefficient is obtained by OLS regression of the change in reported wealth on the constructed change in wealth (and a constant).

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 capital 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 indicate portfolio reshuffling by households, 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 10% in 2010.[17] A regression of reported changes in wealth on calculated changes and a constant gives significant coefficients of 0.65 for overall wealth and 0.88

[17] These ownership rates are calculated by the authors using the SHIW data (with sample as used in Appendix Table C1). Note that the ownership rates cannot be inferred from the numbers in Table 3.1 because the sample "with risky assets" in that Table are those that had risky assets in 2006 (when the ownership rate was approximately 14%).

for risky wealth. Thus calculated changes in wealth do have the desired positive correlation with actual changes, and the relationship is closer for risky than for overall wealth.

4. Measuring wealth effects

Our main estimator is the IV estimator described in Section 3, which we believe provides consistent estimates of the relationship of interest (see discussion later in this section for comparison with OLS). Before presenting results, it is worth saying a few words about the variables included in our regressions.

In line with equations (2) and (3), all our estimates for wealth effects come from regressions that include several independent ($\boldsymbol{X}$) variables alongside the key financial wealth variables. One variable of 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 real estate wealth is not readily adjustable, there is less of a problem of a mechanical relationship between active saving in housing and changes in consumption.

The remaining regressors in all the reported regressions include *changes* in: unemployment status; retirement status; and, in the number of people and earners living in the household. The variables so far discussed are all in first differences. The reported results also always allow for the possibility that the change in consumption is related to the characteristics of homeownership, retirement status and employment in the private or public sector (all measured at time t-1), and not just to differences in such variables, and we always control for age bands, sex, education levels (compulsory, post-compulsory, and some college education), and, to capture effects coming from the state of the macroeconomy, region dummies, year and the regional unemployment rate.

Finally, we report results that control for the change (first difference) in labour income, but have repeated all analyses without this regressor. There is a worry that labour income may be endogenous (due, for example, to reverse causality from the desire to increase or reduce consumption to labour effort and therefore income) so it is reassuring that the inclusion of the change in labour income does not noticeably affect the other estimated coefficients in the model, and particularly the estimated wealth effects (results with and without the change in labour income are in Appendix Tables C5-C8). With the exception of the financial wealth variables already described in Table 3.1, descriptive statistics for all regressors are contained in Appendix Table C2.

4.1 Average responses to the wealth shock

Our first set of results, in Table 4.1, has the change in total household consumption spending (col. 1 and 2) and the change in household consumption spending on non-durables (col. 3 and 4) as dependent variables. We present the "second stage" results of the IV regression for two alternative definitions of our main variable of interest: in columns 1 and 3 the financial wealth variable is the change in risky financial wealth that is invested in the stock market either directly or through a wrapper product such as a mutual fund, while in columns 2 and 4 it is the change in total (accessible[18]) household financial wealth.

For interpretation of the main wealth coefficients, it is easiest to consider an example. The coefficient on the calculated change in risky financial wealth reported in column 1 of Table 4.1 (this is the regression for the change in total consumption) is 0.088. 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 one euro, annual consumption increases (falls) by 8.8 cents. In other words, the coefficient indicates an mpc out of the wealth shock of 8.8 percent. Other coefficients on wealth variables can be interpreted analogously.

[18] Accessible wealth excludes wealth "locked away" in pensions or life-insurance or similar products.

Table 4.1: Wealth effects IV regressions for total and non-durable household consumption

Dependent variable	*Δ total household expenditure*		*Δ household expenditure on non-durables*	
Delta risky financial wealth	**0.088 ***		**0.057 ****	
	(0.047)		**(0.028)**	
Delta total financial wealth		**0.100**		**0.062 ***
		(0.070)		**(0.036)**
Delta house value	**0.003 *****	**0.001**	**0.002 *****	**0.001**
	(0.001)	**(0.002)**	**(0.001)**	**(0.001)**
Delta labour income	0.079 ***	0.042	0.058 ***	0.035
	(0.020)	(0.037)	(0.016)	(0.022)
Delta unemployment status	-1481.319 **	-1427.671 **	-1123.289 ***	-1092.602 **
	(618.512)	(659.231)	(401.656)	(429.604)
Delta retirement status	569.728	446.971	-271.566	-352.157
	(480.620)	(733.326)	(324.924)	(481.610)
Delta no. of people in the HH	1930.572 ***	2005.018 ***	1731.445 ***	1780.590 ***
	(292.252)	(305.885)	(214.925)	(222.560)
Delta no. of earners in the HH	1039.473 ***	1168.668 ***	961.619 ***	1040.217 ***
	(297.779)	(339.568)	(223.897)	(240.356)
Year 2010	224.320	-30.916	182.231	26.857
	(580.768)	(682.737)	(413.681)	(455.016)

Notes to table: Number of observations: 6370 observations from 3867 families.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
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+), education dummies (medium and high education), gender, regional unemployment rate, regional dummies, constant term.
Detailed results from the first stage regressions for the IV models are included in Appendix Tables C3 and C4; F-statistics from “weak instrument” tests are 14.61 for “Delta Risky Financial Wealth”, and 5.11 for “Delta total financial wealth”.

With this interpretation in mind, we can summarise our main results for the effects of the shock to financial wealth on consumption, as follows. For total consumption, the mpc is 8.8 percent out of the shock to risky financial wealth, and 10 percent out of total financial wealth. For non-durable consumption, we obtain 5.7 percent out of the shock to risky financial wealth, and 6.2 out of total financial wealth. As a point of comparison, the estimated mpc for changes in financial wealth are considerably larger than the results that we get for the propensity to consume out of a change in housing wealth, which is robustly estimated to be between 0.3 percent and 0.1 percent.

Comparing these IV results to OLS estimates (reported in Appendix Tables C5-C8), one sees that the OLS results are always substantially smaller than the IV estimates. This is in line with the arguments of the previous section that there are good reasons (the mechanical relationship between changes in consumption and in wealth through the budget constraint, and attenuation bias due to measurement error) to expect OLS estimation to underestimate this coefficient.[19]

We notice that the point estimates for the mpc are very slightly smaller but more precisely estimated when the key independent variable is the change in risky financial wealth (col. 1 and 3, Table 4.1), compared to when it is the change in total financial wealth. For example, if we take the case for total consumption, the estimated coefficient is 0.088 (significant at the 10% level) when the regressor relates to risky wealth, and 0.1 (not significant at conventional levels) when the regressor is the change in total financial wealth. The equivalent coefficients for non-durable consumption respectively are 0.057 (significant at the 5% level), and 0.062 (significant at the 10% level). The greater precision when the regressor is the change in risky wealth is partly due to the fact that we have greater precision (a smaller standard error on the instrument) in the first stage for the case using risky wealth, which indicates that instrumenting adds less noise in this case. The greater precision, and larger size, of the estimated coefficient on the excluded variable in the case with risky wealth again indicate (as noted in subsection 3.2) that there is a stronger relationship between asset prices and the value of risky wealth than between asset prices and the value of all financial wealth, perhaps because portfolio reshuffling and the accumulation of safe assets weaken the relationship to total wealth. The F-statistic on the excluded instrument also indicates that our IV strategy is more effective when the regressor is the change in risky wealth: in that case we do not need to worry about a weak instrument problem. Full first-stage results are reported in

[19] We do not report the "reduced form" that relates the change in consumption to the excluded instrument (and the other regressors). Given that we have one endogenous variable and exact identification, the coefficient on the wealth variable in this reduced form can be inferred as the product of the coefficients on the respective wealth variables in the first and second stages of the IV regression (this is the reverse of indirect least squares). Given that the coefficients in the first stages (reported in Appendix Tables C3 and C4) are 0.672 (for the change in risky wealth), and just below 0.6 (for the change in total financial wealth), the reduced form estimates would be smaller than our IV estimates. However, there are reasons to suppose that the reduced form would understate the relationship of interest. In particular: the change in calculated wealth is likely to overstate the true shock to wealth (and thus lead to an understatement of effects measured *per* euro of change in wealth) if households can offset some of the asset price shock through their portfolio choices; and, the reduced form would be affected by attenuation bias if there is measurement error. These issues were discussed in more detail in Bottazzi, Trucchi and Wakefield (2013).

Appendix Tables C3 (risky financial wealth) and C4 (total financial wealth).

Other than the estimated wealth effects, the other coefficients that are reported in Table 4.1 are coefficients on the variables that we most often found to be significant (full results are in Appendix Tables C5 to C8). The patterns of results are in line with economic intuition: becoming unemployed (but not becoming retired) is associated with cuts in spending, while the addition of extra household members or of an extra earner is linked to higher expenditures.

As already noted, the wealth effect coefficients are robust to controlling for the change in labour income. Our results are also robust to a series of other modifications to our specifications. Using only the period 2006-2008, when most of the variation for our estimator takes place, leaves our results almost unaltered. Similarly, running the regressions based on delta risky wealth only on those who have risky wealth, does not substantially affect point estimates.[20] Results are also almost unaffected by restricting to a sample that might have less concern about the riskiness of future income or employment because they work in the public sector or have pension income.

Another robustness check involves slightly changing the way in which we conducted our IV analysis. As noted in Section 3, the variation exploited by our instrument is heterogeneity between households in terms of the level of wealth held in different assets, and differences in returns between assets. Including the (twice-lagged) level of wealth in different assets and the interaction of this with the FTSEMIB stock-market index, in place of the constructed change in calculated wealth as excluded variables in the first stage of our IV analysis, leaves the results almost unchanged relative to those we report (in fact, sometimes it improves the significance of results).

A final set of robustness checks involves modifying the set of covariates that are included in our regressions. It makes practically no difference to our estimates to drop regressors for (lagged)

[20] More precisely the sample is those who had risky wealth in the appropriate (lagged) wave of data such that they contribute to the estimation of the coefficient on the instrumented wealth variable. For example, those who had risky wealth in 2004 for the 2006-2008 change in wealth.

retirement status, sector of employment, and homeownership or to add the change in "safe" financial wealth (not instrumented) in to the specifications that include the change in risky wealth as the key regressor. Finally, we experiment with adding an indicator of being risk averse[21] to our specifications, and this had no noticeable effect on our regression coefficients. The results of this extensive set of modifications to our specifications indicate that our results are robust. Full results from the robustness checks just described, are available from the authors on request.

To summarise, the results discussed in this section give the average effect of the wealth shock on the consumption of households in our sample. Our favoured estimates indicate that a euro loss of risky wealth in the period of the stock-market crash led, on average, to an 8.8 cent cut in consumption, and 5.7 cents of this cut was in spending on non-durable goods. Point estimates for the response to the change in total financial wealth are slightly larger, but less precisely estimated.

4.2 Results for Categories of Consumption Spending

The previous subsection describes results for broad categories of consumption. 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. Our data measure spending on durables and on food.

Table 4.2 presents key coefficients for our wealth effect regressions for spending on food and durables, alongside the results for total spending and spending on non-durables already presented in Table 4.1 (full sets of coefficients from the regressions are presented in Appendix Table C9). We present results from the IV specification and with the key independent variable being the change in risky wealth (so that we do not have a problem of weak instruments[22]).

[21] Based on responses to questions about how prepared households are to trade off higher expected returns against increased probability of wealth loss.
[22] Given that the sample and regressors (including the endogenous regressor) do not change across the regressions reported, the "first stage" results are always those already discussed and presented in Appendix Table C3.

Table 4.2: Wealth effect coefficients: IV regressions for categories of consumption expenditure

Dependent variable:	***Δ Total C***	***Δ Non-durables***	***Δ Durables***	***Δ Food***
	(a)	**(b)**	**(c)**	**(d)**
Delta risky financial wealth	**0.088 ***	**0.057 ****	**0.031**	**0.015 ***
	(0.047)	**(0.028)**	**(0.041)**	**(0.008)**
Delta house value	**0.003 *****	**0.002 *****	**0.001**	**0.000**
	(0.001)	**(0.001)**	**(0.001)**	**(0.000)**
Delta labour income	0.079 ***	0.058 ***	0.021 ***	0.009 **
	(0.020)	(0.016)	(0.008)	(0.004)

Notes to table: As for Table 4.1. In addition: regressors include all those reported in, or listed in the notes to, Table 4.1; for all specifications in this table the F-statistic from a "weak instrument" test is 14.61.

The point estimates in column (c) of the table indicate that durables expenditures were affected by, on average, 3.1 cents per year for a euro change in risky wealth. Since total consumption spending is the sum of spending on durables and spending on non-durables, the change in total spending per euro change in wealth should be the sum of the changes in spending on non-durables and durables, per euro change in wealth. Looking at the coefficients in columns (a), (b) and (c), we can see that this relationship does indeed hold. While this "adding up" is reassuring about the consistency of households' responses to the different consumption questions in the survey, the results for durables spending are not significant. The lack of significance may in part be due to the fact that durable purchases happen only infrequently and so we do not observe enough durables purchases to identify patterns in the data.

For food spending, a euro change in the value of risky financial wealth is seen to lead to a cut in food spending of 1.5 cents per year and this result is significant at the 10% level (see column (d), Table 4.2). 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".[23]

[23] Based on a different dataset (a Household Budget Survey), Rondinelli (2014) does notice, for some groups of the

4.3 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 put our estimates in to context. We provide context by: comparing our estimates to those from existing literature; comparing our results to the predictions of a forward looking consumption-saving model that is structured to capture elements of the period we investigate; and, by assessing how important the wealth effects we identify are for explaining consumption changes in our sample.

A. Our estimates and existing 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 8.5 and 9 percent for total consumption, and just above 5.5 percent 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, or of Paiella and Pistaferri (forthcoming) of marginal propensities to consume of around 3% almost entirely driven by responses to changes in the values of real (i.e. non-financial) assets.[24] It seems likely that the difference of our results from these studies at least partly reflects our exploiting the asset price shock of 2006-2008.

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

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population, differences in the evolution of expenditure shares on "food" and on "accommodation services and restaurants" during the 2000s (until 2012).

[24] Paiella (2007) estimates a long-run marginal propensity for Italian households to consume out of net financial wealth of 9.2%. This result exploits cross-sectional differences in wealth, while the results we cite in the text are, like our study, for capital gains or changes in wealth.

comprehensive measures of consumption spending as we do and their sample is for a restricted (older) age range. However, to the extent that we can compare, their results would seem to suggest weaker effects than those we find. Compared to other, US based, results for wealth effects in the period since 2007, our mpc out of financial wealth is somewhat larger than the 3.3 percent found (again for an older sample) by Christelis, Georgarakos, and Jappelli (2015), but only slightly larger than the mpc out of housing wealth estimated by Mian, Rao and Sufi (2013). More generally our findings on mpc out of shocks to financial wealth do not seem out of line with findings in the literature (see for example the collection of micro-data based results in Table 3 of the impressive survey by Paiella, 2009), although our reading is that an estimate of 0.088 or 0.086 for total consumption is towards the top end of the range. Again, our exploiting a period with a large asset price shock may be important here.

B. Marginal propensities to consume from a consumption-savings model. We consider a dynamic-stochastic lifecycle consumption-savings model that allows us to explore whether the marginal propensities to consume that we estimate are in line with the predictions of a forward-looking model. The model that we use builds on a standard buffer-stock savings set up with zero borrowing (early contributions of this type include Deaton, 1991, and Carroll, 1997) and a finite length of life. However, in order to have a model that will allow us to assess marginal propensities to consume following a large shock to wealth, we implement some adaptations to standard models. In particular, we construct a model with a stochastic process for the return to financial assets that admits the possibility of large shocks to wealth. We also match the stochastic process for income to the Italian case (as described econometrically by Bucciol, 2012).

Full details of our model, and its results, are in Appendix B. As is well known, models of this kind cannot be solved analytically and the model is solved numerically and simulated.

In order to consider propensities to consume from a wealth shock as generated by the model, we simulate a set of agents and see how their consumption responds to a sudden loss in the value of wealth. To perform this exercise we build a model in which asset returns are stochastic with an expected real return of 3.6% and a variance in the return of 3.6 percentage points (values are chosen to match features of data, and we perform sensitivity exercises, see Appendix B). The potential loss of wealth is a return of minus 18% which occurs with low probability and this possibility (and other features of the process generating asset returns) is taken into account by agents as they form expectations rationally. The percentage size of the loss is chosen to match the average loss in calculated wealth experienced in 2006 – 2008 by households in our data that held risky assets. We use the model and compare assets and consumption for each simulated agent if they do or do not suffer the wealth loss, to calculate exact marginal propensities to consume. In order that the model generates data that are similar in structure to our data on Italian households, we simulate 300 agents experiencing the wealth shock at age 30, another 300 at age 31, and so on for each age up to 69. Thus we have a simulated dataset with some 12000 observations from which we can calculate the average marginal propensity to consume from the wealth shock.

The results of our simulation exercise show that our empirical findings are in line with the marginal propensities to consume from a wealth shock predicted by the model. The result from the baseline run of the model is an average mpc of 9.0%; our IV results indicate an mpc for total consumption of between 8.5% and 9%. This baseline simulation result is left almost unaffected by changing the variance of the asset return, and is only somewhat affected by changing preference parameters. Specifically, the average mpc gets a bit larger if we make the agent less risk averse (and so increase the intertemporal elasticity of substitution) or more impatient (and vice-versa for increased risk aversion or reduced impatience).

As discussed in more detail in Appendix B (see p.43, below), in our model buffer-stock savings motives are important in generating mpc that can exceed the annuitized value of the wealth loss:

households with relatively small precautionary balances respond strongly because the wealth shock sharpens the incentive to move away from the credit constraint by saving. The role of constraints in consumption responses has recently been emphasized by Kaplan and Violante (2014). Those authors were interested in responses to transitory income shocks, and show that in a model with liquid and illiquid assets, constraints may affect behaviour even for households who are wealthy (and, potentially, relatively high income).

Even without the richness of a two-asset model, all the results in Appendix Table B2 show an average mpc of between 8.3% and 11.1%. We conclude that the mpc that we estimate from data could be generated by the consumption-savings choices of rational, forward-looking agents.

C. To what extent do wealth effects explain consumption changes in our sample? 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.[25] 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 other regressors.

Table 4.3 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 reported in Table 4.1.

[25] 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) 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.

The two columns respectively report results for the counterfactual exercise computed across all households in our sample, and for the (approximately) half of the sample whose change in consumption is measured for 2006 – 08, the period of particularly large asset price shocks.

Table 4.3: Counterfactual Exercises: Predicted Changes in Consumption

	Full Sample	*2006 – 08 Sample*
Average observed change in total consumption	-515 (100%)	-796 (100%)
Counterfactual changes		
Δ risky financial wealth set to 0	-425 (83%)	-619 (78%)
Δ housing value set to 0	-498 (97%)	-770 (97%)
Δ labour income set to 0	-437 (85%)	-753 (95%)
Δ no earners in the HH set to 0	-494 (96%)	-781 (98%)
No unemployment	-464 (90%)	-748 (94%)
Δ no earners set to 0 *and* no unemployment	-443 (86%)	-733 (92%)
Δ no earners *and* Δ labour income set to 0 *and* no unemployment	-365 (71%)	-690 (87%)

Notes to table: These counterfactuals are based on the IV regression reported in column 1 of Table 4.1. The full sample size is 6370 while the 2006-08 sample has 3047 observations. The mean level of consumption is 17454 in the full sample and 17627 in the 2006-08 subsample. The percentages in parentheses are the percentage of the average observed change.

In our full sample the average two-year fall in annual consumption is 515 euros. This fall amounts to almost 3% of average consumption spending in our sample,[26] a figure which is reasonably in line with the fall in aggregate consumption in Italy over the same period (see Figure 1.1). Since we are using least-squares regression, the 515 euro fall is 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 for those who have risky wealth, we find the average fall in consumption is reduced to 425 euros. Thus, wealth effects are explaining around 90 out of the 515 euro average fall, or approximately 17% of the fall in consumption on average. In contrast, changes in housing wealth only capture around 3% of the average fall in consumption. The part of the change in consumption explained by wealth effects is also very slightly larger than the proportions coming from either changes in labour income, or

[26] 3% is calculated as 100*515/17454.

from the joint impact of changes in the number of earners *and* in unemployment status.

It may seem surprising that the change in the value of risky wealth is so powerful, relative to other factors, when only around 14% of our sample held risky financial wealth before the asset price shock (in 2004 or 2006). However, the shock to wealth was large. The results from our first stage indicate that the asset price shock led to an average fall in the value or risky wealth of 7130 euros among households with some risky wealth before the crisis, and combining this with our mpc estimate gives an average cut in consumption due to the wealth shock of 627 euros per year among these households. Averaging the size of the cut across all households (with and without risky wealth) gives us back the 90 euro result.

Considering only the 2006 – 08 sample, the average fall in consumption is now 796 euros (or around 4.5 per cent, again quite in line with aggregate data).[27] In this case we see that the changes in financial wealth are driving more of the fall in consumption (around 22% of it) than are any of the other factors we consider through our counterfactuals: in this sample even the composite effect of changes in the number of earners and in unemployment and in labour income, is not as strong as the effect of the shock to wealth.

4.4 Wealth Effects and Stock Market Expectations

As argued in the previous subsections, our estimated wealth effects are consistent with the predictions of a model of rational behaviour, but are towards the top end of the range of estimates from existing literature and are strong enough to explain an important part of the cuts in consumption observed in our data. It is therefore worth considering whether we can say anything about why the agents in our data might have reacted relatively strongly to the observed wealth shock.[28] To this end we use the consumption-savings model described in Appendix B, to

[27] Since there is a "2010 dummy", this fall is again matched exactly by regression predictions.
[28] In this section we look at heterogeneity in wealth effects. In a previous version of this work (Bottazzi, Trucchi and Wakefield, 2017) we also looked at heterogeneity with age and by mortgage liabilities. Heterogeneity in effects, and the role of expectations, have also been important in literature on the relationship between house prices and

provide a guide as to what features of the data might help to generate relatively strong wealth effects. We then look in the data at whether these features are important.

Our data contain subjective expectations data on expected returns in the stock market, and so we use the model to look at whether differences in expectations about the rate of return on financial wealth could affect marginal propensities to consume from wealth shocks. More specifically, we use our model to simulate pessimistic agents, who anticipate a mean return of 0, and optimistic agents, who anticipate a mean return of 7.2%, and see whether these different expectations affect responses to the wealth shock. Details of why we made these modelling choices are discussed in Appendix B, and results are reported in Appendix Table B3.

The simulations indicate that agents in the population who are pessimistic about the expected return on financial assets may exhibit an mpc from the wealth shock that is higher than the corresponding mpc for more optimistic agents. Changing the expected asset return to 0 but keeping all other features (including the variance of asset returns) of our baseline run, increases the average mpc by just over 6 percentage points to 15.1%. Meanwhile, increasing the expected asset return to 7.2%, reduces the average mpc to 7.2%. Thus the average mpc among pessimists is more than double that among optimists. The average of the mpc across the population of pessimists and optimists is 11.5%, which is slightly higher than our empirical estimates. However, for our purposes the important finding is that of a noticeably higher mpc for pessimists compared to optimists, and of its robustness to model parameters. It is this difference between pessimists and optimists that we look for in the data.

Our data include a question on households' expectations of the value of the stock market over the twelve months after they are surveyed. In 2008 and 2010 this question asks respondents to assess, on a scale from 0 – 100, the likelihood that investments in the Italian stock market will

consumption in the U.K. (see, Attanasio and Weber (1994), Attanasio, Blow, Hamilton and Leicester (2009), Disney, Gathergood and Henley (2010), Attanasio, Leicester and Wakefield (2011)).

yield a profit. Using responses to these questions we construct an indicator of whether households are “pessimistic” about the stock market, in the sense that they attach a probability lower than 50% to the event of obtaining a profit from investing in the Italian stock market over the next twelve months (we construct our simulated model in such a way that pessimists attach a probability of less than 50% to the event of making positive returns on financial wealth). Agents in the data who report expecting a higher probability of making a profit are “optimists”. When we add information on expected returns to our empirical models, we lose some observations since only half the sample are asked the question in 2010. Descriptively, for our regression sample that have the relevant data, we see that approximately 40% were pessimistic about the stock market, and this percentage increases to 54% among those in the sample who held some risky financial assets[29].

To investigate how stock-market expectations affect the strength of wealth effects, we add the “pessimistic” indicator to our baseline specification and interact it with the change in wealth variable in such a way that we have separate coefficients measuring the average marginal propensity to consume for “optimists” and for “pessimists”. The results are reported in Table 4.4. To show that our estimated marginal propensities to consume from risky wealth are not substantially altered simply by restricting the sample to those with data on stock market expectations, column (1) of the table reports our baseline specification but with the sample that is available for the regressions with the “pessimistic” variable. Column (2) then adds, for this same sample, the “pessimist” variable and the interaction variables. A little care is needed with interpretation given the values of the weak instrument tests for the interactions. Nonetheless, there is a clear pattern of point estimates that suggests that households with more pessimistic expectations of stock-market performance responded more strongly to the wealth shock, and it is

[29] Ownership of risky assets is defined in terms of having a non-zero value for our excluded instrument, so is measured in 2004 or 2006. Sample sizes are for the regressions reported in Table 4.4.

for these households that the estimated propensity to consume is significant.

Table 4.4: Wealth effects IV regressions for the change in household consumption, controlling for stock market expectations

Dependent variable:	Δ Total consumption	
	Not Controlling for expectations	Controlling for expectations
Delta risky financial wealth	**0.090 * (0.048)**	
Delta risky fin. wealth 'Optimists'		**0.033 (0.057)**
Delta risky fin. wealth 'Pessimists'		**0.136 * (0.074)**
Being "Pessimistic"		179.919 (333.856)
Delta house value	**0.002 *** (0.001)**	**0.002 ** (0.001)**
Delta labour income	0.075 *** (0.022)	0.078 *** (0.023)

Notes to table: Number of observations: 4782 from 3468 families in both samples to keep comparability between the regressions with and without stock market expectations.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household. Coefficients in bold can be interpreted as mpc out of wealth change.
Also included: a constant; homeownership, retirement and self-employment in the previous wave; age dummies (40-49, 50-59, 60-69, 70+), education dummies (medium and high education), gender, regional unemployment rate, region, 2010 dummy; change in: unemployment status, retirement status, no. of people in the household, no. of earners in the household.
F-statistics from "weak instrument" tests are: for the specification of column (1), 14.50; for the specification of column (2), 14.19 for *Delta risky financial wealth 'Optimists'*, and 4.67 for *Delta risky fin. Wealth 'Pessimists'*.

In the simulation model described above, expectations affecting buffer stock savings was important in generating differences between "pessimists" and "optimists". The empirical results are, though, open to other interpretations. We are not, unlike Paiella and Pistaferri (forthcoming), attempting to separate responses to anticipated and unanticipated changes in wealth.[30] On the other hand, pessimistic expectations could be a sign that agents expected negative wealth shocks to be permanent. A forward looking model of consumption and savings decisions predicts that households should respond more strongly to shocks if they perceive them to be permanent. An

[30] For the 2006 – 2008 period in which we have our main variation in financial wealth we do not have the consistent expectations variables that would allow this decomposition.

agent that has access to smoothing mechanisms has little need to adjust spending in response to a wealth shock if she expects the value of wealth to recover; on the other hand, an agent that believes that the shock to asset values has permanent consequences for the value of lifetime wealth should scale back consumption. This is one of the issues investigated by Christelis, Georgarakos and Jappelli (2015) using data for the US that include information on subjective expectations about the likely performance of the stock market. They find evidence that, among their sample of older households, those who expected the stock-market shock to be permanent adjusted their consumption more strongly than those who expected the shock to be transitory. Our results are consistent with that finding, although a change in the expectations variable between 2006 and 2008 does not allow us to fully import the previous methodology.

Our results suggest that expectations were important in explaining why wealth effects were a substantial driver of consumption for our representative sample of Italian households. Even given the excellent contributions cited in the previous paragraph, work on how expectations and responses to shocks interact, would still seem a profitable avenue for further research.

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 exogenous source of variation in financial wealth in an IV estimate of the marginal propensity to consume out of shocks to financial wealth.

Our findings indicate that a one euro fall in risky financial wealth results in households cutting annual total consumption spending by between 8.5 and 9 cents, and slightly more than 5.5 cents of this cut was in spending on non-durable goods and services. We find effects of around 1.5 cents for food spending, and insignificant results (though with the expected positive coefficients) for expenditure on durables.

While our results are perhaps towards the top end of the range of past estimates of similar parameters, we show that similar propensities to consume are consistent with the predictions of a dynamic-stochastic lifecycle consumption-savings model. The model that provides these predictions is constructed to capture certain features of the period of our data. In particular, we numerically solve and simulate a model with a stochastic process for the return to financial assets that admits the possibility of large shocks to wealth.

To help quantify the importance of the estimated wealth effects, we also 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 17 to 22 percent of the fall in consumption was a response to shocks to the value of financial wealth. This average effect is at least as large as the change in consumption spending accounted for by cuts in labour income or by the combined impact of changes in the number of earners *and* in unemployment status.

Given that we estimate propensities to consume that are quite large and that can explain an important part of the change in consumption in our sample, we look at whether there are any features of our data and sample period that might lead to relatively strong effects. Guided again by the simulated lifecycle model, we look at the possibility that pessimistic expectations about returns in the stock market might help to generate strong responses to a wealth shock. We find that in the data (as in the model) agents with more pessimistic expectations about returns in the stock market are important in generating the size of responses that we measure.

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. 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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Appendix A: Constructing the "Calculated Change in Wealth"

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 stock market 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.

Appendix B: An Illustrative Model

We consider a dynamic-stochastic lifecycle consumption-savings model that allows us to provide a benchmark for some of our results. In particular, having this model allows us to consider:

- the size of marginal propensity to consume that might be generated following a large wealth shock; and,
- how this propensity to consume might relate to optimism or pessimism about the rate of return.

The model that we use builds on a standard buffer-stock savings set up with zero borrowing (early contributions of this type include Deaton, 1991, and Carroll, 1997) and a finite length of life. As is well known, models of this kind cannot be solved analytically and so the model is solved numerically and simulated. In order to address our issues of interest, we implement some adaptations to standard models. In particular, we construct a model with a stochastic process for the return to financial assets that admits the possibility of large shocks to wealth. We also match the stochastic process for income to the Italian case.

More specifically, the model that we consider is of agents choosing consumption (and savings) each period to maximise expected discounted lifetime utility, which gives rise to a value function with recursive form:

$$max_{\{C_t\}} V_t(A_t) = u(C_t) + \beta^{-1} E_t[V_{t+1}(A_{t+1})]$$

and dynamic budget constraint:

$$A_{t+1} = (1 + r_{t+1})(A_t + Y_t - C_t)$$

where t indexes age[31] and (suppressing the time subscript): A is the beginning of period level of financial assets; C is consumption; β is a subjective discount factor; E is the expectation operator; r is the real return on financial assets; and, Y is the income level.

The agent must also pay off all debts by the end of life ($A_{T+1} \geq 0$) and is subject to the explicit borrowing constraint: $A_{t+1} \geq 0, \forall t$.

The within period utility function is assumed to be constant relative risk aversion (CRRA), with risk aversion parameter γ, ($u(C_t) = \{C_t^{(1-\gamma)}\}/(1-\gamma)$).

[31] Agents enter the model at entry into the labour market, assumed to be age 21, so *t* actually indexes age – 20. Thus, $t = 1$ when age is 21, $t = 2$ when age is 22, and so on.

Uncertainty in the model is due to stochastic processes for income (Y) and the asset return (r). In the baseline, agents are assumed to know the processes that generate these uncertain variables, and to form expectations on the basis of these true processes.

In more detail, the idiosyncratic income process has the form:

$$\ln Y_t = m_t + v_t$$

where m_t is a deterministic component of income, modelled as a quadratic in age ($m_t = m_1 t + m_2 t^2$) in order to capture the expected "hump shape" of the lifecycle income profile. In order to capture persistence in income shocks, the stochastic part of income, v_t, is modelled as an autoregressive process of order 1:

$$v_t = \rho v_{t-1} + \varepsilon_t \qquad \varepsilon_t \sim \mathbb{N}(0, \sigma_\varepsilon^2)$$

Parameters for this process are chosen to match (as nearly as possible given the simplified structure that we employ) those estimated by Bucciol (2012) for a representative sample of Italian households. Appendix Table B1 lists the full set of model parameters.

The uncertain asset return is assumed to be drawn from a fixed, symmetric iid distribution. In our baseline run, these iid draws come from a distribution with a mean and median of 3.6% and a standard deviation of 3.6 percentage points (the values for the expected return and its variability come from data, see below). To accommodate the possibility of a large negative wealth shock, the distribution of possible asset returns includes a node at minus 18%, with this percentage loss matching the average loss in calculated wealth experienced in 2006 – 2008 by households in our data that held risky assets.[32]

To implement a version of the model with agents that are optimistic and pessimistic about asset returns, we shift the possible realisations of asset returns so that the expected return is increased (for optimists) or decreased (pessimists), but the other features of the return distribution (its symmetry and standard deviation) are held fixed. In particular, for pessimists we set the expected (mean and median) return to 0 so that (in line with the data) these agents attach a probability of less than 50 percent to the event of making a profit on their risky financial assets. For the optimists the expected return is set to 7.2%. Thus, with a population containing approximately half optimists and half pessimists, the mean expected return across all agents is 3.6%. In our data, approximately 40% of agents had pessimistic expectations about asset returns, and this figure

[32] Since the distribution is symmetric, there is a corresponding node for a very high asset return.

rises to 54% among those with risky financial wealth (authors' calculations).

Appendix Table B1: Model Parameters - Baseline

Parameter		Value	Source
Preferences			
γ	(Risk aversion)	**2**	(standard in literature)
β	(Discount factor)	**1.04**	
Income process			
m_1	(Parameters of age polynomial in expected income profile)	**0.04**	(Bucciol, 2012, and authors' calculations)
m_2		**- 0.0007**	
ρ_Y	(Income shock persistence)	**0.65**	
σ_Y^2	(Variance, income shocks)	**0.03**	
Asset returns			
μ_r	(Expected (mean) return)	**0.036**	(Datastream)
σ_r	(Standard dev., asset return)	**0.0358**	

The mean and standard deviation (both 3.6) of the expected real asset return in our baseline are chosen to match the values that would have been received by investing in a composite of Italian government bonds during the ten years 1997 – 2006.[33] In reality agents with risky wealth might have had wealth invested in assets (such as cash or short-term government bonds) that are safer (offer a lower but less variable return) than assumed in our model, or in assets (stocks, long-term bonds) that are more risky. Our single asset model does not capture this richness, but we have simulated cases in which the wealth is more risky, or less risky, than in our baseline, and our results are almost completely unaffected by the changes. In particular, we have simulated a more risky case in which the standard deviation of the return is 5 percentage points. In the less risky case the return can take one of only three values (the mean of 3.6% plus the positive and negative shocks), and these returns and their associated probabilities are such that the expected return remains at 3.6% but its standard deviation falls to just below 3 percentage points.

With the model in hand, we can calculate exact marginal propensities to reduce consumption from a negative wealth shock for a set of simulated individuals, and compare the results to our findings from data. In order to generate marginal propensities to consume, we simulate a population of

[33] The returns are based on the composite index labelled "ITSLTOT" in Thomson Financial Datastream, and nominal returns are deflated by the authors to give real values.

agents[34] through two lifecycles, a first lifecycle in which the negative wealth shock occurs once, and a second lifecycle in which there is no shock. From data on these two simulated lifecycles we are able to measure the exact value of the marginal propensity to consume out of wealth. The two runs give us the counterfactual of the wealth shock occurring (or not): from these counterfactuals we can observe the exact value of the change in wealth when the wealth shock hits, and the exact value of the change in consumption due to the change in wealth, and thus we calculate the value of the marginal propensity to consume. In order that the model generates data that are similar in structure to our data on Italian households, we simulate many individuals experiencing the wealth shock at each age from 30 to 69. More precisely, we have 300 agents that suffer the wealth shock at age 30, another 300 that receive it aged 31, another 300 at 32, and so on up to 300 experiencing the shock at the age of 69. Thus we have a simulated dataset with some 12000 observed marginal propensities to consume from which we can calculate the average marginal propensity to consume from the wealth shock.

Results (see Appendix Table B2 for details) show that:

- The model produces average marginal propensities to consume out of the negative wealth shock that are in line with our findings from data. The result from the baseline run of the model is an average marginal propensity to consume (mpc) of 9.0%; our favoured IV results indicate an mpc for total consumption of just below 9%.
    - This baseline model result is left almost unaffected by changing the variance of the asset return, and is only somewhat affected by changing preference parameters. In particular, the average mpc gets a bit larger if we make the agent less risk averse (and so increase the intertemporal elasticity of substitution) or more impatient (and vice-versa for increased risk aversion or reduced impatience). Nonetheless, all the cases that we consider for agents who expect an asset return of 3.6% show an average mpc of between 8.3% and 11.1%.

[34] Where an agent is a fixed sequence of draws of the driving stochastic processes (income and asset returns) in the model.

Appendix Table B2: Marginal Propensities to Consume from Simulated Wealth Shock

	Average mpc from wealth shock
Baseline	9.0%
Low Risk Aversion ($\gamma = 1.5$)	9.3%
High Risk Aversion ($\gamma = 3.0$)	8.7%
Low discounting ($\beta = 1.036$)	8.3%
High discounting ($\beta = 1.05$)	11.1%
Safe Return ($\sigma_r = 0.03$)	9.0%
Risky Return ($\sigma_r = 0.05$)	9.1%

The consumption responses at we find in the model exceed the annuitized value of the wealth loss for many simulated households, and buffer-stock savings motives are important in generating these responses. Households who find that the wealth shock pushes them towards the credit constraint have little wealth to smooth the consumption path following the shock, and also have a strong incentive to cut back on their consumption and rebuild a precautionary "buffer-stock" after their wealth loses part of its value. The fact that responses to the wealth shock get noticeably smaller if we exogenously make the modelled households wealthier (for example, give households a larger initial endowment), is a good indicator that this "buffer-stock" behaviour is important (results available on request from the authors).

As outlined above, to see how the marginal propensity to consume is affected by optimism or pessimism about the rate of return on financial wealth, we carry out our simulation exercise for a population containing pessimists (who expect an average rate of return of 0 on financial wealth) and optimists (who expect a 7.2% return on average). The results of the exercise are reported in Appendix Table B3. The first column in the table reports the mpc averaged across all members of the population, where we suppose that 54% of agents are pessimistic, and 46% optimistic (the 54% matches the proportion of those with risky assets who report themselves to be pessimistic). Columns (2) and (3) report separate averages taken across all optimistic households, and across all pessimists. It should be noted that for the results reported we have, for both pessimists and optimists, simulated a case in which the realised return on wealth in all periods apart from the period of the shock is 3.6%. This is so that the differences in the responses to the shock are due to the effects on behaviour of different expectations, and do *not* also reflect a wealth effect due to the receipt of higher returns increasing the wealth of optimists relative to that of pessimists.

However, if we had maintained rational expectations (with optimists able to invest in assets with higher returns), the results would have been only slightly affected.[35]

Appendix Table B3: Marginal Propensities to Consume from Simulated Wealth Shock for "Optimists" and "Pessimists"

Average mpc from wealth shock		
(1) Whole sample	**(2) Optimists**	**(3) Pessimists**
11.5%	7.2%	15.1%

Notes to Table: Aside from the expected return, all other parameters are those reported in table B1 which correspond to the baseline run of the model. Optimists form expectations around a mean return of 7.2% on financial wealth; pessimists around a mean return of 0. In the simulations from which MPC are calculated, realised returns in periods other than the period of the negative wealth shock are always 3.6%. In the whole sample, 54% are pessimistic and this matches the proportion among owners of risky assets in our data (authors' calculations).

Results of the simulations with optimists and pessimists show that:

- If there are agents in the population who are pessimistic about the expected return on financial assets (expecting a 0 return on average), then these agents have a higher average mpc from the wealth shock than do agents who expect a higher return. Changing the expected asset return to 0 but keeping all other features (including the variance of asset returns) of our baseline run, increases the average mpc by just over 6 percentage points to 15.1%. Meanwhile, increasing the expected asset return to 7.2%, reduces the average mpc to 7.2%. Thus the average mpc among pessimists is more than double that among optimists.

The average of the mpc across the population of pessimists and optimists is 11.5%, which is slightly higher than our empirical estimates. However, for our purposes the important finding is that of a noticeably higher mpc for pessimists compared to optimists. Checks on sensitivity to the risk aversion parameter, the discount factor and the variability of asset returns (available on request), indicate that this is a robust prediction of the model. It is this difference between pessimists and optimists that we look for in the data.

[35] Simulating agents who, on average, receive the returns they expect yields average MPC of 15.6% and 7.0%, respectively for pessimists and optimists.

Appendix C: Supplementary Tables

Appendix Table C1: Fixed effects regressions for consumption

	Total consumption		*Non-durable consumption*	
Year 2006	-166.596	221.497	73.790	232.037
	(201.709)	(218.924)	(137.076)	(148.923)
Year 2008	-611.414 ***	-43.232	-351.571 **	-27.835
	(207.856)	(222.130)	(141.253)	(151.104)
Year 2010	-593.628 ***	-168.708	-219.549	44.279
	(230.087)	(238.774)	(156.360)	(162.426)
Own risky assets		3867.678 ***		2060.065 ***
		(446.388)		(303.655)
Own risky assets*2006		-2176.963 ***		-806.266 **
		(541.973)		(368.677)
Own risky assets*2008		-3551.314 ***		-2081.921 ***
		(565.730)		(384.838)
Own risky assets*2010		-2993.923 ***		-2043.553 ***
		(622.968)		(423.774)
R-squared	0.262	0.279	0.307	0.316

Notes to Table: 14102 observations from 3867 households. * 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.

Appendix Table C2: Descriptive statistics for Independent Variables

	All		*Hhs without risky assets in 2006*		*Hhs with risky assets in 2006*	
	Mean	*St. dev.*	Mean	*St. dev.*	Mean	*St. dev.*
Delta house value	-5911.87	*190177.55*	-3988.93	*168810.79*	-17361.35	*285947.67*
Delta labour income	-994.90	*15654.59*	-731.57	*13002.92*	-2562.78	*26369.08*
Medium education	0.314	*0.464*	0.286	*0.452*	0.481	*0.500*
High education	0.084	*0.277*	0.067	*0.249*	0.187	*0.390*
Delta employment status	0.035	*0.183*	0.037	*0.190*	0.019	*0.135*
Delta retirement status	0.074	*0.261*	0.072	*0.259*	0.083	*0.276*
Year 2010	0.522	*0.500*	0.522	*0.500*	0.519	*0.500*
Age 40-49	0.184	*0.388*	0.182	*0.386*	0.197	*0.398*
Age 50-59	0.227	*0.419*	0.215	*0.411*	0.297	*0.457*
Age 60-69	0.221	*0.415*	0.216	*0.411*	0.249	*0.433*
Age 70+	0.319	*0.466*	0.338	*0.473*	0.212	*0.409*
Δ no. of people in the HH	-0.085	*0.453*	-0.083	*0.456*	-0.096	*0.433*
Δ no. of earners in the HH	-0.020	*0.521*	-0.018	*0.528*	-0.029	*0.477*
Regional unemployment rate (%)	8.000	*3.788*	8.377	*3.837*	5.757	*2.504*
Male	0.549	*0.498*	0.523	*0.499*	0.703	*0.457*
Retired (previous wave)	0.380	*0.485*	0.378	*0.485*	0.394	*0.489*
Public sector (prev. wave)	0.221	*0.415*	0.211	*0.408*	0.279	*0.449*
Homeowner (prev. wave)	0.747	*0.435*	0.729	*0.445*	0.854	*0.354*

Notes to table: 6370 observations from 3867 families; 5454 do not own risky assets; 916 own risky assets.

Appendix Table C3: First stage of two-stage least squares

Dependent variable: Δ Risky financial assets

	Including Δ Labour Income	**No Control for Income**
Calculated delta risky fin. wealth	0.672 ***	0.672 ***
	(0.176)	(0.176)
Delta house value	0.008 *	0.008 *
	(0.004)	(0.004)
Delta labour income	0.004	
	(0.049)	
Delta unemployment status	-1335.731 **	-1351.300 **
	(665.475)	(619.538)
Delta retirement status	-1808.050	-1809.844
	(1377.481)	(1381.384)
Delta no. of people in the HH	987.924 **	1000.759 **
	(422.711)	(439.200)
Delta no. of earners in the HH	-737.572	-706.223
	(584.488)	(496.345)
Year 2010	1065.281	1056.149
	(1092.047)	(1059.393)
Age 40 – 49	-1208.210	-1201.859
	(956.548)	(992.871)
Age 50 - 59	-985.373	-978.527
	(795.046)	(780.297)
Age 60 – 69	-831.594	-828.918
	(1120.234)	(1122.293)
Age 70+	-1123.447	-1119.585
	(1047.313)	(1051.365)
Medium education	-1411.270 **	-1412.336 **
	(685.759)	(683.204)
High education	-843.732	-849.912
	(1626.763)	(1645.141)
Regional unemployment rate	154.886	158.510
	(711.598)	(703.920)
Male	-561.057	-564.116
	(504.619)	(497.618)
Retired (t-1)	-975.681	-972.787
	(748.877)	(743.309)
Public sector employee (t-1)	1.089	2.092
	(675.971)	(673.475)
Homeowner (t-1)	-55.297	-55.715
	(330.793)	(329.862)
Constant	1462.143	1438.102
	(3905.239)	(3876.776)

Notes to table: These first-stage results relate to second stage results reported in Tables 4.1, 4.2 and 4.3 (where the wealth variable being "instrumented" is the change in risky financial wealth).

Number of observations: 6370 from 3819 families.

Region dummies are also included in the regression.

Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.

F-statistics from weak identification tests are: 14.61 (column 1 including change in labour income) and 14.51 (column 2).

Appendix Table C4: First stage of two-stage least squares

Dependent variable: Δ Total accessible financial wealth

	Including Δ Labour Income	**No Control for Income**
Calculated delta fin. wealth	0.597 **	0.589 **
	(0.264)	(0.260)
Delta house value	0.030 ***	0.031 ***
	(0.010)	(0.010)
Delta labour income	0.372 *	
	(0.210)	
Delta unemployment status	-1714.593	-3076.670
	(2113.257)	(1980.498)
Delta retirement status	-333.583	-490.960
	(5609.413)	(5718.960)
Delta no. of people in the HH	83.841	1207.397
	(1293.229)	(1051.587)
Delta no. of earners in the HH	-1939.678	803.456
	(1786.020)	(1022.982)
Year 2010	3483.436	2684.318
	(2940.037)	(2811.973)
Age 40 - 49	-1323.801	-768.114
	(1702.314)	(1670.340)
Age 50 - 59	380.875	979.642
	(1853.972)	(1815.125)
Age 60 - 69	-1885.773	-1651.922
	(4330.357)	(4306.958)
Age 70+	-1576.705	-1238.721
	(3218.292)	(3140.160)
Medium education	-721.257	-815.443
	(1916.916)	(1944.050)
High education	6409.473 *	5866.477 *
	(3360.398)	(3248.962)
Regional unemployment rate	-1813.521	-1495.103
	(1846.334)	(1772.665)
Male	-1471.462	-1739.554
	(1090.804)	(1167.666)
Retired (t-1)	420.033	673.043
	(2837.864)	(2896.684)
Public sector employee (t-1)	-2043.700	-1956.050
	(2425.498)	(2429.737)
Homeowner (t-1)	1648.056 *	1610.634 *
	(871.821)	(887.792)
Constant	10091.711	7978.362
	(11652.970)	(11099.158)

Notes to table: These first-stage results relate to second stage results reported in Tables 4.1 and 4.2 (where the wealth variable being “instrumented” is the change in total financial wealth).
Number of observations: 6370 from 3819 families.
Region dummies are also included in the regression.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
F-statistics from weak identification tests are: 5.11 (column 1 including change in labour income) and 5.13 (column 2).

Appendix Table C5: Full results for regressions reported in column 1 of Table 4.1 (delta risky financial wealth)

Dependent variable: Change in household consumption expenditure

	OLS		IV 2nd Stage	
	Including Δ Labour Income	**No Control for Income**	**Including Δ Labour Income**	**No Control for Income**
Delta risky financial wealth	**0.016 ****	**0.016 ****	**0.088 ***	**0.086 ***
	(0.007)	**(0.007)**	**(0.047)**	**(0.047)**
Delta house value	**0.004 *****	**0.004 *****	**0.003 *****	**0.003 *****
	(0.001)	**(0.001)**	**(0.001)**	**(0.001)**
Delta labour income	0.079 ***		0.079 ***	
	(0.020)		(0.020)	
Delta unemployment status	-1556.171 **	-1846.143 ***	-1481.319 **	-1773.569 ***
	(612.166)	(616.947)	(618.512)	(623.452)
Delta retirement status	425.789	392.921	569.728	532.158
	(466.871)	(471.705)	(480.620)	(484.088)
Delta no. of people in the HH	2026.098 ***	2263.764 ***	1930.572 ***	2171.226 ***
	(294.384)	(292.070)	(292.252)	(292.015)
Delta no. of earners in the HH	1001.949 ***	1583.958 ***	1039.473 ***	1619.893 ***
	(297.572)	(276.589)	(297.779)	(275.373)
Year 2010	295.468	125.952	224.320	57.242
	(575.785)	(579.205)	(580.768)	(583.006)
Age 40 - 49	-161.135	-42.165	-45.521	69.583
	(501.821)	(501.724)	(509.992)	(509.534)
Age 50 - 59	-375.272	-246.830	-266.614	-141.816
	(488.098)	(490.212)	(491.351)	(492.696)
Age 60 - 69	-1170.911 **	-1119.904 **	-1072.162 **	-1024.426 *
	(525.759)	(528.143)	(533.083)	(535.024)
Age 70+	-486.734	-413.605	-364.744	-295.661
	(497.489)	(500.200)	(502.262)	(504.289)
Medium education	-395.526 *	-413.221 *	-230.043	-253.155
	(227.978)	(229.352)	(242.037)	(242.876)
High education	5.761	-104.798	196.508	79.759
	(466.178)	(476.064)	(493.498)	(503.352)
Regional unemployment rate	160.324	225.084	70.671	138.332
	(310.123)	(311.964)	(314.687)	(316.214)
Male	4.151	-51.837	70.295	12.172
	(187.095)	(189.673)	(189.330)	(191.626)
Retired (t-1)	123.045	176.819	193.063	244.507
	(264.451)	(266.475)	(274.934)	(276.276)
Public sector employee (t-1)	2.732	20.398	-27.110	-8.476
	(263.205)	(266.594)	(266.625)	(269.684)
Homeowner (t-1)	198.665	191.718	227.790	219.892
	(209.456)	(211.064)	(210.334)	(211.611)
Region dummies	Yes	Yes	Yes	Yes
Constant	-1233.575	-1665.068	-874.557	-1317.563
	(1757.480)	(1769.722)	(1780.904)	(1790.618)

Notes to table: Number of observations: 6370 observations from 3867 families.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
Coefficients in bold can be interpreted as mpc out of wealth change.
Detailed results from the first stage regressions for the IV models are included in Appendix Table C3; F-statistics from weak identification tests are: 14.61 (column 3 including change in labour income) and 14.51 (column 4).

Appendix Table C6: Full results for regressions reported in column 2 of Table 4.1 (delta total accessible financial wealth)

Dependent variable: Change in household consumption expenditure

	OLS		IV 2nd Stage	
	Including Δ Labour Income	No Control for Income	Including Δ Labour Income	No Control for Income
Delta financial wealth	**0.002**	**0.004**	**0.100**	**0.099**
	(0.003)	**(0.003)**	**(0.070)**	**(0.071)**
Delta house value	**0.004** ***	**0.004** ***	**0.001**	**0.001**
	(0.001)	**(0.001)**	**(0.002)**	**(0.003)**
Delta labour income	0.078 ***		0.042	
	(0.020)		(0.037)	
Delta unemployment status	-1569.980 **	-1852.280 ***	-1427.671 **	-1586.125 **
	(610.928)	(616.057)	(659.231)	(679.909)
Delta retirement status	395.724	364.399	446.971	428.463
	(469.031)	(473.835)	(733.326)	(724.879)
Delta no. of people in the HH	2045.942 ***	2278.874 ***	2005.018 ***	2133.766 ***
	(295.844)	(293.382)	(305.885)	(311.227)
Delta no. of earners in the HH	996.616 ***	1572.502 ***	1168.668 ***	1479.847 ***
	(298.533)	(276.870)	(339.568)	(308.515)
Year 2010	305.420	131.868	-30.916	-117.272
	(576.194)	(579.429)	(682.737)	(657.514)
Age 40 - 49	-183.343	-63.027	-19.155	42.511
	(501.452)	(501.226)	(524.039)	(518.598)
Age 50 - 59	-398.458	-272.016	-390.774	-321.666
	(488.321)	(490.100)	(503.900)	(509.482)
Age 60 - 69	-1188.404 **	-1133.505 **	-954.727	-930.731
	(525.747)	(527.761)	(689.408)	(678.795)
Age 70+	-509.693	-433.666	-306.486	-270.115
	(497.815)	(500.194)	(588.860)	(578.675)
Medium education	-428.612 *	-442.951 *	-275.921	-287.765
	(228.634)	(229.772)	(295.551)	(295.279)
High education	-42.463	-160.699	-505.516	-558.245
	(468.235)	(477.530)	(659.186)	(639.188)
Regional unemployment rate	180.764	246.045	257.430	291.214
	(310.366)	(312.239)	(371.248)	(360.952)
Male	-7.218	-58.657	171.405	138.548
	(187.410)	(189.756)	(233.703)	(247.867)
Retired (t-1)	107.385	159.417	66.702	96.285
	(264.438)	(266.266)	(384.998)	(385.220)
Public sector employee (t-1)	11.782	32.587	179.582	186.609
	(263.403)	(266.759)	(387.998)	(382.571)
Homeowner (t-1)	190.416	180.988	63.576	61.718
	(209.339)	(210.899)	(244.676)	(244.192)
Region dummies	Yes	Yes	Yes	Yes
Constant	-1316.500	-1748.618	-1691.330	-1918.413
	(1757.985)	(1770.439)	(2155.759)	(2084.642)

Notes to table: Number of observations: 6370 observations from 3867 families.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
Coefficients in bold can be interpreted as mpc out of wealth change.
Detailed results from the first stage regressions for the IV models are included in Appendix Table C4; F-statistics from weak identification tests are: 5.11 (column 3 including change in labour income) and 5.13 (column 4).

Appendix Table C7: Full results for regressions reported in column 3 of Table 4.1 (delta risky financial wealth)

Dependent variable: Change in household expenditure on non-durables.

	OLS		**IV 2nd Stage**	
	Including Δ Labour Income	**No Control for Income**	**Including Δ Labour Income**	**No Control for Income**
Delta risky financial wealth	**0.016 *****	**0.016 *****	**0.057 ****	**0.055 ***
	(0.005)	**(0.006)**	**(0.028)**	**(0.029)**
Delta house value	**0.003 *****	**0.003 *****	**0.002 *****	**0.002 *****
	(0.001)	**(0.001)**	**(0.001)**	**(0.001)**
Delta labour income	0.058 ***		0.058 ***	
	(0.016)		(0.016)	
Delta unemployment status	-1165.150 ***	-1377.210 ***	-1123.289 ***	-1337.046 ***
	(396.578)	(399.493)	(401.656)	(404.731)
Delta retirement status	-352.065	-376.102	-271.566	-299.045
	(323.674)	(325.511)	(324.924)	(326.027)
Delta no. of people in the HH	1784.869 ***	1958.676 ***	1731.445 ***	1907.463 ***
	(213.312)	(212.648)	(214.925)	(215.251)
Delta no. of earners in the HH	940.634 ***	1366.262 ***	961.619 ***	1386.149 ***
	(223.564)	(198.373)	(223.897)	(198.489)
Year 2010	222.021	98.052	182.231	60.027
	(412.706)	(416.229)	(413.681)	(416.880)
Age 40 - 49	183.514	270.518	248.173	332.362
	(343.934)	(344.675)	(348.224)	(348.701)
Age 50 - 59	122.799	216.729	183.567	274.847
	(333.565)	(334.925)	(337.172)	(338.412)
Age 60 - 69	-611.289*	-573.987	-556.063	-521.148
	(359.123)	(359.881)	(364.096)	(364.838)
Age 70+	-3.110	50.370	65.114	115.642
	(351.374)	(353.292)	(355.196)	(357.082)
Medium education	-272.787	-285.728 *	-180.239	-197.144
	(167.019)	(168.160)	(176.888)	(178.798)
High education	-69.782	-150.635	36.895	-48.498
	(403.329)	(408.166)	(413.807)	(419.285)
Regional unemployment rate	236.447	283.807	186.308	235.797
	(216.548)	(219.045)	(219.213)	(221.485)
Male	144.589	103.644	181.580	139.068
	(136.186)	(138.519)	(138.143)	(140.533)
Retired (t-1)	-27.285	12.040	11.873	49.500
	(193.719)	(195.035)	(198.730)	(199.634)
Public sector employee (t-1)	242.022	254.941	225.333	238.962
	(192.013)	(194.051)	(192.235)	(194.169)
Homeowner (t-1)	289.372 *	284.292 *	305.660 **	299.884 *
	(153.345)	(155.092)	(153.536)	(155.075)
Region dummies	Yes	Yes	Yes	Yes
Constant	-1855.587	-2171.142 *	-1654.803	-1978.826
	(1224.313)	(1239.657)	(1236.205)	(1249.708)

Notes to table: Number of observations: 6370 observations from 3867 families.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
Coefficients in bold can be interpreted as mpc out of wealth change.
Detailed results from the first stage regressions for the IV models are included in Appendix Table C3; F-statistics from weak identification tests are: 14.61 (column 3 including change in labour income) and 14.51 (column 4).

Appendix Table C8: Full results for regressions reported in column 4 of Table 4.1 (delta total accessible financial wealth)

Dependent variable: Change in household expenditure on non-durables.

	OLS		IV 2nd Stage	
	Including Δ Labour Income	No Control for Income	Including Δ Labour Income	No Control for Income
Delta financial wealth	**0.003**	**0.005 ****	**0.062 ***	**0.061**
	(0.002)	**(0.002)**	**(0.036)**	**(0.037)**
Delta house value	**0.003 *****	**0.003 *****	**0.001**	**0.001**
	(0.001)	**(0.001)**	**(0.001)**	**(0.001)**
Delta labour income	0.057 ***		0.035	
	(0.016)		(0.022)	
Delta unemployment status	-1177.262 ***	-1380.942 ***	-1092.602 **	-1224.290 ***
	(395.310)	(398.558)	(429.604)	(439.629)
Delta retirement status	-382.644	-405.245	-352.157	-367.538
	(326.928)	(328.934)	(481.610)	(473.220)
Delta no. of people in the HH	1804.936 ***	1972.997 ***	1780.590 ***	1887.590 ***
	(213.672)	(213.050)	(222.560)	(226.206)
Delta no. of earners in the HH	937.863 ***	1353.366 ***	1040.217 ***	1298.831 ***
	(223.419)	(198.625)	(240.356)	(206.872)
Year 2010	226.944	101.726	26.857	-44.912
	(412.649)	(415.868)	(455.016)	(445.911)
Age 40 - 49	162.985	249.793	260.660	311.910
	(343.488)	(344.321)	(358.345)	(357.159)
Age 50 - 59	98.699	189.927	103.271	160.704
	(333.500)	(334.835)	(346.746)	(347.991)
Age 60 - 69	-625.762 *	-586.152	-486.747	-466.804
	(358.873)	(359.489)	(452.627)	(446.136)
Age 70+	-23.790	31.064	97.098	127.326
	(351.182)	(353.013)	(404.145)	(399.064)
Medium education	-304.870 *	-315.216 *	-214.034	-223.877
	(167.472)	(168.335)	(203.187)	(203.012)
High education	-127.705	-213.012	-403.177	-446.999
	(404.240)	(409.117)	(479.710)	(473.066)
Regional unemployment rate	259.051	306.152	304.661	332.737
	(216.690)	(219.084)	(244.007)	(240.080)
Male	135.619	98.505	241.882	214.575
	(136.120)	(138.241)	(159.303)	(167.029)
Retired (t-1)	-44.310	-6.768	-68.511	-43.926
	(193.741)	(194.831)	(257.788)	(257.187)
Public sector employee (t-1)	254.209	269.220	354.034	359.873
	(192.961)	(194.936)	(253.385)	(250.357)
Homeowner (t-1)	278.689 *	271.886 *	203.232	201.687
	(153.298)	(155.014)	(169.902)	(170.456)
Region dummies	Yes	Yes	Yes	Yes
Constant	-1948.330	-2260.104 *	-2171.317	-2360.042 *
	(1224.689)	(1239.576)	(1416.872)	(1386.649)

Notes to table: Number of observations: 6370 observations from 3867 families.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
Coefficients in bold can be interpreted as mpc out of wealth change.
Detailed results from the first stage regressions for the IV models are included in Appendix Table C4; F-statistics from weak identification tests are: 5.11 (column 3 including change in labour income) and 5.13 (column 4).

Appendix Table C9: Full results for regressions reported in Table 4.2

Dependent variable:	***Δ Total C*** (a1)	(a2)	***Δ Non-durable C*** (b1)	(b2)	***Δ Durables expenditures*** (c1)	(c2)	***Δ Food expenditure*** (d1)	(d2)
Delta risky financial wealth	**0.088 *** **(0.047)**	**0.086 *** **(0.047)**	**0.057 ***** **(0.028)**	**0.055 *** **(0.029)**	**0.031** **(0.041)**	**0.031** **(0.040)**	**0.015 *** **(0.008)**	**0.015 *** **(0.008)**
Delta house value	**0.003 ******* **(0.001)**	**0.003 ******* **(0.001)**	**0.002 ******* **(0.001)**	**0.002 ******* **(0.001)**	**0.001** **(0.001)**	**0.001** **(0.001)**	**0.000** **(0.000)**	**0.000** **(0.000)**
Delta labour income	0.079 *** (0.020)		0.058 *** (0.016)		0.021 *** (0.008)		0.009 ** (0.004)	
Delta unemployment status	-1481.319 ** (618.512)	-1773.569 *** (623.452)	-1123.289 *** (401.656)	-1337.046 *** (404.731)	-358.030 (462.310)	-436.523 (462.777)	-209.005 (183.093)	-243.517 (183.091)
Delta retirement status	569.728 (480.620)	532.158 (484.088)	-271.566 (324.924)	-299.045 (326.027)	841.294 ** (367.328)	831.204 ** (368.194)	-117.269 (174.683)	-121.706 (174.288)
Delta no. of people in the HH	1930.572 *** (292.252)	2171.226 *** (292.015)	1731.445 *** (214.925)	1907.463 *** (215.251)	199.127 (193.044)	263.763 (191.205)	971.090 *** (101.054)	999.509 *** (100.635)
Delta no. of earners in the HH	1039.473 *** (297.779)	1619.893 *** (275.373)	961.619 *** (223.897)	1386.149 *** (198.489)	77.854 (203.553)	233.744 (206.509)	225.739 ** (91.141)	294.280 *** (88.480)
Year 2010	224.320 (580.768)	57.242 (583.006)	182.231 (413.681)	60.027 (416.880)	42.089 (408.083)	-2.785 (407.970)	818.169 *** (178.065)	798.439 *** (177.679)
Age 40 - 49	-45.521 (509.992)	69.583 (509.534)	248.173 (348.224)	332.362 (348.701)	-293.694 (376.033)	-262.779 (375.903)	-234.801 * (131.555)	-221.208 * (131.431)
Age 50 - 59	-266.614 (491.351)	-141.816 (492.696)	183.567 (337.172)	274.847 (338.412)	-450.181 (364.453)	-416.662 (364.787)	-334.795 *** (129.529)	-320.058 ** (129.507)
Age 60 - 69	-1072.162** (533.083)	-1024.426 * (535.024)	-556.063 (364.096)	-521.148 (364.838)	-516.099 (403.132)	-503.278 (403.394)	-427.830 *** (150.248)	-422.193 *** (149.960)
Age 70+	-364.744 (502.262)	-295.661 (504.289)	65.114 (355.196)	115.642 (357.082)	-429.858 (371.172)	-411.303 (371.049)	-360.494 ** (140.540)	-352.336 ** (140.555)
Medium education	-230.043 (242.037)	-253.155 (242.876)	-180.239 (176.888)	-197.144 (178.798)	-49.803 (173.796)	-56.011 (173.428)	-150.156 ** (72.820)	-152.885 ** (73.038)
High education	196.508 (493.498)	79.759 (503.352)	36.895 (413.807)	-48.498 (419.285)	159.613 (305.937)	128.257 (308.428)	-367.525 ** (159.206)	-381.312 ** (159.245)

Regional unemployment rate	70.671	138.332	186.308	235.797	-115.637	-97.464	-365.621 ***	-357.631 ***
	(314.687)	(316.214)	(219.213)	(221.485)	(220.921)	(220.754)	(91.909)	(91.693)
Male	70.295	12.172	181.580	139.068	-111.286	-126.896	-42.829	-49.693
	(189.330)	(191.626)	(138.143)	(140.533)	(134.885)	(134.884)	(58.244)	(58.227)
Retired (t-1)	193.063	244.507	11.873	49.500	181.190	195.007	28.906	34.981
	(274.934)	(276.276)	(198.730)	(199.634)	(198.989)	(199.575)	(93.649)	(93.622)
Public sector employee (t-1)	-27.110	-8.476	225.333	238.962	-252.443	-247.438	33.868	36.069
	(266.625)	(269.684)	(192.235)	(194.169)	(189.575)	(190.001)	(79.650)	(79.801)
Homeowner (t-1)	227.790	219.892	305.660 **	299.884 *	-77.871	-79.992	50.167	49.234
	(210.334)	(211.611)	(153.536)	(155.075)	(136.246)	(136.144)	(65.908)	(66.150)
Region dum.s	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-874.557	-1317.563	-1654.803	-1978.826	780.246	661.262	2396.792 ***	2344.478 ***
	(1780.904)	(1790.618)	(1236.205)	(1249.708)	(1269.021)	(1268.633)	(515.582)	(514.511)

Notes to table: Number of observations: 6370 observations from 3867 families.
Significance: * p<0.1, **p<0.05, *** p<0.001. Standard errors in parenthesis are robust to heteroskedasticity and to correlation within the household.
Coefficients in bold can be interpreted as mpc out of wealth change.
Detailed results from the first stage regressions for the IV models are included in Appendix Table C3; F-statistics from weak identification tests are: 14.61 (including change in labour income) and 14.51 (no control for change in labour income).