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Wealth effects on consumption: evidence from the Euro area

Abstract

This paper estimates the wealth effects on consumption in the Euro area as a whole. I show that: (i) financial wealth effects are relatively large and statistically significant; (ii) housing wealth effects are virtually nil and not significant; (iii) consumption growth exhibits strong persistence and responds sluggishly to shocks; and (iv) the immediate response of consumption to wealth is substantially different from the long-run wealth effects.

By disaggregating financial wealth into its major components, the estimates suggest that wealth effects are particularly large for currency and deposits, and shares and mutual funds. In addition, consumption seems to be very responsive to financial liabilities and mortgage loans.

Finally, the empirical findings highlight that consumption has become more sensitive to wealth, reflecting the beneficial effects of public finance consolidation on stock markets and the importance of relaxation of access to credit in housing markets.

Keywords: consumption, housing wealth, financial wealth.
JEL Classification: E21, E44, D12.

Introduction

The transmission of monetary policy to real variables such as output and employment operates through the effects on asset prices, firms' balance sheets, interest rates, and exchange rates (Ireland, 2008). Similarly, conventional macroeconomic analysis typically includes wealth in models of output, income and prices' determination, namely, by considering that it impacts both private consumption and money demand.

Wealth can influence economic activity through four major channels: (i) the (wealth) effect on consumption (Ando and Modigliani, 1963; Modigliani and Tarantelli, 1975); (ii) the Q effect on investment (Tobin, 1969); (iii) the credit channel (Roosa, 1951; Bernanke and Gertler, 1995); and (iv) the confidence effect on private spending (Carroll et al., 1994).

Authors have used different econometric techniques and databases to address the issue of wealth effects on consumption. Nevertheless, the interest in the topic has recently revived as a consequence of the financial turmoil and the severe drop in housing prices. Not surprisingly, numerous academics, central banks and governments have started to question the potential macroeconomic implications of a downturn in house and equity prices.

Although most of the empirical evidence refers to advanced economies and the U.S. (mainly, due to the data availability), the existing literature on the impact of asset wealth fluctuations in the Euro area is scarce or inexistent, despite its importance as a key engine of growth in the world.

The main goal of this work is, therefore, to measure the wealth effects for the Euro area as a whole. The paper adopts a "disaggregate" approach, in the sense that it focuses on estimating the effects of different asset categories on consumption. Specifically, it improves the existing literature by emphasizing the importance of wealth composition. In this context, the paper provides the first comprehensive and exhaustive assessment, for the Euro area, of the effects of financial wealth, housing wealth, and their major components on consumption.

In order to do so, I consider two main econometric methodologies: (i) the Dynamic Ordinary Least Squares (DOLS); and (ii) the Instrumental Variables/ Generalized Method of Moments (IV/GMM). Using quarterly data for the period of 1980:1-2007:4, I show that (i) financial wealth effects are relatively large and statistically significant; and (ii) housing wealth effects are virtually nil and not significant. The marginal propensity to consume out of financial wealth typically ranges between 0.7 cents per euro (the immediate response) and 1.9 cents per euro (the long-run impact) and consumption is also strongly responsive to changes in financial wealth: a 10% increase in financial wealth leads to an increase of between 0.6% and 1.5% in consumption.

By looking at the composition of financial assets, the estimates suggest that wealth effects are particularly large for currency and deposits, and shares and mutual funds. Similarly, consumption seems to be very sensitive to financial liabilities and mortgage loans.

Additionally, consumption growth exhibits strong persistence and responds sluggishly to shocks. As a result, the long-run response of consumption to wealth tends to be substantially larger than its short-run effect.

Finally, the empirical evidence suggests that the sensitivity of consumption with respect to financial and housing wealth has increased over time. This reflects the beneficial effects of public finance consolidation (and discipline imposed by the Maastricht

Treaty) on stock markets. It can also be associated with the higher degree of liquidity of housing markets and the less restrictive access to credit.

The rest of the paper is organized as follows. Section 1 reviews the existing literature on wealth effects on consumption. Section 2 presents the estimation methodologies, Section 3 describes the data, and Section 4 discusses the results. The final Section concludes with the main findings and policy implications.

1. A brief review of the literature

The influence of wealth on economic activity is materialized under four specific channels. First, the wealth effect on consumption, which is the focus of the current paper and according to which household consumption is determined by income and asset wealth, namely, real estate and stock ownership. The positive impact on consumption due to the increase in housing wealth is called housing wealth effect, whereas the effect that is due to the increase in financial wealth is called financial wealth effect. Second, the Q effect on investment, as it increases asset prices, reduces the cost of capital and, therefore, increases demand of investment. Third, the credit channel, by increasing the value of collateral and, therefore, affecting the balance sheets of households and firms and reducing the problem of adverse selection and the risk associated to investment. Fourth, the confidence effect on both present and future household consumption expenditures.

The research designed to quantify the effect of changes in wealth on consumption goes back to Ando and Modigliani (1963) and an extensive empirical literature has been presented since then.

In the U.S., the estimates of the marginal propensity to consume out of wealth range between 4 and 7 cents of increase in consumer spending from a dollar increase in aggregate wealth (Davis and Palumbo, 2001).

The empirical evidence for the Euro area at the country level is diversified. In France, there is no evidence of a significant wealth effect (Bonner and Dubois, 1995; Grunspan and Sicsic, 1997). In Italy, Rossi and Visco (1995) show that the marginal propensity to consume out of wealth ranges between 0.03 and 0.035, while Guiso et al. (2005), Paiella (2007) and Grant and Peltonen (2008) suggest a magnitude of around 2 cents per euro of increase in aggregate wealth. In Portugal, Castro (2008) estimates the marginal propensity to consume out of wealth to be 0.03. For Spain, Balmaseda and Tello (2002) show that consumption is strongly responsive to relative changes in aggregate wealth, Estrada et al. (2004) suggest a marginal propensity to consume out of wealth of 0.04, and Bover (2005) does not find a significant wealth effect.

2. Methodology strategies

As a starting point, I use the Augmented Dickey and Fuller (1979) and the Phillips and Perron (1988) tests to determine the existence of unit roots in the series and conclude that all series are first-order integrated, I (1). Next, I analyze the existence of cointegration among the series using the methodologies of Phillips and Ouliaris (1990) (based on Engle and Granger (1987)) and Johansen (1991), and find evidence that supports that hypothesis[1].

In order to quantify the wealth effects on consumption, I follow two approaches: (i) the dynamic ordinary least squares (DOLS); and (ii) the instrumental variables/generalized method of moments (IV/GMM). The next sub-sections describe both approaches in detail.

2.1. DOLS. The trend relationship among consumption, asset wealth and labor income is estimated in accordance with Davidson and Hendry (1981), Blinder and Deaton (1985), Ludvigson and Steindel (1999), and Davis and Palumbo (2001). Following Saikkonen (1991) and Stock and Watson (1993), I use a dynamic ordinary least squares (DOLS) technique, specifying the following equation:

$$\log C_t = \mu + \beta_w \log W_t + \beta_y \log Y_t + \sum_{i=-k}^{k} b_{w,i} \Delta \log W_{t-i} + \sum_{i=-k}^{k} b_{y,i} \Delta \log Y_{t-i} + \varepsilon_t, \qquad (1)$$

where C_t stands for consumption, W_t for asset wealth, and Y_t for labor income, Δ denotes the first difference operator, μ is a constant, and ε_t is the error term. The parameters of interest, β_w and β_y, represent, respectively, the long-run elasticities of consumption with respect to asset wealth and labor income, and give the percentage response of consumption to one percentage point change in asset wealth and labor income. Similarly, the marginal propensities to consume out of wealth (MPC_w) and labor income (MPC_y), that is, the Euro response of

consumption to a one-euro increase in wealth and labor income can be easily obtained as $MPC_w = \beta_w \cdot \dfrac{C}{W}$ and $MPC_y = \beta_y \cdot \dfrac{C}{Y}$, where ($C/W$) is the consumption-wealth ratio and (C/Y) is the consumption-income ratio.

The parameters β_w and β_y should, in principle, equal the share of asset wealth in total wealth,

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[1] The results of the unit root tests and the cointegration tests are available upon request.

$R_w W / (Y + R_w W)$, and the share of human wealth in total wealth, $Y / (Y + R_w W)$, respectively, where R_w corresponds to the return on aggregate wealth. In practice, however, they may sum to a number less than one, because only a fraction of total consumption expenditure is observable (Lettau and Ludvigson, 2001).

2.2. IV/GMM. Despite the unpredictability of consumption advocated by Hall (1978), several authors (Flavin, 1981; Campbell and Mankiw, 1989; Lettau and Ludvigson, 2001) have argued that future consumption growth is significantly affected by past information (consumer confidence, consumption growth, lagged income). As a result, consumption growth equations should include a lag of consumption growth, which is simultaneously a test of the permanent income hypothesis.

Carroll et al. (2006) have, therefore, proposed an alternative method to estimate the wealth effect, which follows from the first-order approximation of the Euler equation for a habit-formation consumer:

$$\Delta \log C_t - \chi^k \Delta \log C_{t-k} = \tilde{\mu}_k + \upsilon_t + \chi^2 \upsilon_{t-2} + ... + \chi^{k-1} \upsilon_{t-k+1}, \qquad (3)$$

where $\tilde{\mu}_k = \tilde{\mu}_0 \times (1 - \chi^k) / (1 - \chi)$. This equation can be rewritten (for $k > 2$) as

$$\Delta \log C_t - \chi^k \Delta \log C_{t-k} = \tilde{\mu}_k + \sum_{i=2}^{k-1} \chi^i (\alpha_y \Delta \log Y_{t-i} + \alpha_w \Delta \log W_{t-i}) + \tilde{\eta}_{k,t}, \qquad (4)$$

where $\tilde{\eta}_{k,t} = \upsilon_t + \chi \upsilon_{t-1} + \sum_{i=2}^{k-1} \chi^i \eta_{t-i}$. In sum, this methodology allows one to: (i) account for the persistence of consumption growth that is due to, for instance, the presence of habit formation; and (ii) disentangle between the immediate propensities to consume out of wealth (and income) and the long-run wealth effects on consumption.

3. Data

This section provides a summary description of the data employed in the empirical analysis. In the estimation of the wealth effects, I use quarterly, seasonally adjusted data for the Euro area and all variables are measured in logs of real per capita terms. The main data source is the European Central Bank (ECB) and Euro area aggregates are calculated as weighted average of euro-11 before 1999 and, thereafter, as break-corrected series covering the real-time composition of the Euro area.

Consumption corresponds to private consumption while income refers to disposable income. Original data on wealth correspond to the end-period values. Therefore, I lag once the data, so that the observation

$$\Delta \log C_t = \mu_0 + \chi \Delta \log C_{t-1} + \nu_t, \qquad (2)$$

where $\Delta \log C_t$ represents consumption growth, χ is a parameter that captures the persistence of consumption growth, μ_0 is a constant, and ν_t is the error term.

Assuming that the disturbance term can be decomposed into a part due to the current changes in household income, wealth and the rest, $\nu_t = \alpha_y \Delta \log Y_t + \alpha_w \Delta \log W_t + \eta_t$, the coefficients α_y and α_w will be, respectively, the immediate responses of consumption growth to income and wealth growth. Consistently, the effect of one percentage point increase in wealth growth at time $t - s$ on consumption growth is $\alpha_w \chi^s$. In addition, the long-run effects of income and wealth are the sums of the partial effects, that is, $\alpha_y \sum_{i=0}^{\infty} \chi^i = \alpha_y / (1 - \chi)$ and $\alpha_w \sum_{i=0}^{\infty} \chi^i = \alpha_w / (1 - \chi)$, respectively.

By backward iterating the Euler equation, one gets

of wealth in t corresponds to the value at the beginning of the period $t+1$. Aggregate wealth is the sum of financial wealth and housing wealth. Regarding financial wealth, I consider the net financial wealth, that is, the difference between gross financial wealth and financial liabilities (excluding mortgage loans). Financial assets include: (i) currency and deposits; (ii) debt securities; (iii) shares and mutual fund shares; (iv) insurance reserves; and (v) net others. Financial liabilities correspond to the difference between total liabilities and mortgage loans. Regarding housing wealth, the following measure is used: net housing wealth, that is, the difference between gross housing wealth and mortgage loans.

4. Results and discussion

4.1. Baseline models. I now present and discuss the results of estimation of the wealth effects on consumption. I start by using an aggregate measure of wealth, and Table 1 presents a summary of the findings. Columns 1 and 2 provide the estimates from the DOLS estimation while Columns 3 to 6 report the results from the IV/GMM estimation.

Column 1 shows that the long-run elasticity of consumption with respect to aggregate wealth is relatively large (0.092)[1]. Column 2 suggests that the marginal propensity to consume out of aggregate wealth is statistically significant although relatively small (0.4 cents per euro of increase in consumption). Column 3 provides evidence supporting that consumption exhibits strong persistence as the coefficient associated with the lag of consumption is statistically significant and large in magnitude (0.797). Both the short-run elasticity of consumption with respect to aggregate wealth and the marginal propensity to consume out of aggregate wealth are small (respectively, 0.010 and 0.046). A similar conclusion regarding the long-run estimates can be drawn from the observation of Columns 5 and 6: while the long-run elasticity of consumption is 0.049, the long-run marginal propensity to consume is 0.224. Although somewhat smaller in magnitude, the IV/GMM estimates are in accordance with the ones produced by the DOLS estimation.

While quantitatively important, the estimates of the long-run elasticity of consumption with respect to aggregate wealth are smaller than the ones for the U.S. and the U.K. In fact, Lettau and Ludvigson (2001) suggest the consumption is strongly responsive to changes in wealth in the U.S.: a 1% rise in aggregate wealth leads to a 0.2% increase in consumption. As for the U.K., Sousa (2010) shows the long-run elasticity of consumption with respect to aggregate wealth is also large (0.17). Consequently, the dynamics of wealth seem to play a more important role in explaining the patterns of consumption in the U.S. and the U.K. than in the Euro area.

Table 1. Wealth effects on consumption: aggregate wealth

	DOLS		IV/GMM			
	Elast.^{LR}	MPC^{LR}	Elast.^{SR}	MPC^{SR}	Elast.^{LR}	MPC^{LR}
Cons(-1)			0.797***			
			[0.074]			
Aggr. wealth	0.092***	0.4197***	0.010	0.046	0.049	0.224
	[0.024]		[0.009]			
Income	0.844***	72.3710***	0.184***	15.786***	0.907***	77.730***
	[0.051]		[0.067]			
Constant	-0.346***		-0.046***			
	[0.040]		[0.027]			

Note: The DOLS estimation includes 1 lead and 1 lag of the explanatory variables. Heteroscedasticity and serial correlation robust standard errors are in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

[1] In what follows, long-run elasticities are computed using the (unrestricted) estimates of consumption persistence, that is, the long-run elasticity equals short-run elasticity / (1 – coefficient on lagged consumption growth). The estimates for the marginal propensities to consume are calculated by multiplying elasticities with consumption-wealth ratios.

While theoretical and empirical studies previously mentioned suggest that the marginal propensity to consume out of wealth should be the same no matter what asset categories are considered, another strand of the literature has argued that stock market or housing wealth may have a different impact on consumption (Zeldes, 1989; Poterba and Samwick, 1995). In fact, the responsiveness of consumers to financial and housing asset shocks can be different: bequest motives (Poterba, 2000), different distributions of assets across income groups, expected permanency of changes of different categories of assets, liquidity reasons (Pissarides, 1978), mismeasurement of wealth (Sousa, 2003), 'psychological factors' (Shefrin and Thaler, 1988), segregation of different kinds of wealth into separate "mental accounts", and utility derived from the property right of an asset as housing services suggest a distinction between the impact of financial wealth and housing wealth on consumption (Case et al., 2005).

From the theoretical point of view, some authors argue that housing wealth effects should be small. Sinai and Souleles (2005) suggest that increases in housing wealth lead to changes in the distribution of consumption more than its aggregate stock. Sousa (2007) highlights the possibility of the use of housing assets as a hedge against unfavorable states. Buiter (2008) shows that housing wealth effects should be of second-order importance, because an increase in value of housing results in higher housing consumption costs which, therefore, offset the housing wealth effect on non-housing consumption. Muellbauer (2008) emphasizes that the positive effect that an increase in housing prices has on non-housing consumption is counter-balanced by a fall on housing consumption and, as a result, housing wealth effects should be modest. More recently, Calomiris et al. (2009) find evidence of a small and insignificant housing wealth effect, reflecting the fact that changes in this component of wealth are typically correlated changes in expected permanent income.

Others suggest that housing wealth effects are large. In the U.S., Carroll et al. (2006) distinguish between short-run and long-run wealth effects by exploring the persistence of consumption growth, and find that housing wealth effects are substantially larger than for stock market wealth. For the U.K., Sousa (2010) finds that while changes in financial wealth appear to be transitory, housing wealth variation seems to be more permanent and have more persistent effects on consumption. Peltonen et al. (2009) show that, in emerging countries, housing wealth effects range between 2.8 and 5.0 cents, and stock market wealth effects lie between 2.6 and 3.0 cents.

Following the abovementioned discussion, I now drive the attention towards the wealth effects on consump-

tion by disaggregating between net financial wealth, that is, gross financial wealth minus total liabilities (excluding mortgage loans), and net housing wealth (that is, gross housing wealth minus mortgage loans).

Table 2 summarizes the results. Column 1 suggests that the long-run elasticity of consumption with respect to net financial wealth is statistically significant and relatively large: a 10% increase in net financial wealth leads to an increase of consumption by 1.2%. The marginal propensity to consume out of financial wealth is also important (1.4 cents per euro). In contrast, both the elasticity of consumption with respect to net housing wealth and the marginal propensity to consume out of net housing wealth are small: a 10% increase in net housing wealth increases consumption by just 0.2%; and consumption increases by 0.15 cents per euro of increase in net housing wealth.

The IV/GMM estimation (Columns 3 to 6) once again confirms the large persistence of consumption: the coefficient associated with the lag of consumption is statistically significant and large in magnitude (0.4770). As a result, the long-run estimates are almost the double of the short-run estimates. For instance, the long-run marginal propensity to consume out of net financial wealth is 1.516, which compares with a short-run marginal propensity to consume of 0.793. As for net housing wealth, both the elasticity of consumption and the marginal propensity to consume are small and not statistically significant.

These findings show that the responsiveness of consumption with respect to financial wealth and housing wealth tends to be smaller for the Euro area than for the U.S. and the U.K. In fact, Sousa (2010) shows that: (i) the long-run elasticity of consumption with respect to net financial wealth is 0.16 in the case of the U.S. and 0.10 in the U.K.; and (ii) a 1% increase in net housing wealth rises consumption by 0.02% in the U.S. and by 0.07% in the U.K.

Table 2. Wealth effects on consumption: net financial wealth versus net housing wealth

	DOLS		IV/GMM			
	Elast.LR	MPCLR	Elast.SR	MPCSR	Elast.LR	MPCLR
Cons(-1)			0.477***			
			[0.069]			
Net fin. wealth	0.123***	1.434***	0.068***	0.793***	0.130***	1.516***
	[0.011]		[0.009]			
Net hous. wealth	0.020**	0.153**	0.005	0.036	0.009	0.068
	[0.009]		[0.005]			
Income	0.688***	59.020***	0.363***	31.092***	0.693***	59.449***
	[0.039]		[0.051]			
Constant	-0.234***		-0.116***			
	[0.014]		[0.021]			

Note: The DOLS estimation includes 1 lead and 1 lag of the explanatory variables. Heteroscedasticity and serial correlation robust standard errors are in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Wealth accumulation emerges as the outcome of household's savings which is driven by a wide range of factors, namely: (i) the provision for retirement and bequest motives; (ii) precautionary reasons; and (iii) the need to reach a target level. Consequently, the investment in housing or financial/business products is the response of consumers to perceptions about the trade-off between return and risk. In the case of housing, it is also normally seen as the only investment that can be funded by borrowing, given its collateral services.

Wealth is not, therefore, money. In fact, money includes paper currency, savings and time accounts, and traveller checks and refers to a specific asset of household's financial wealth. As a result, I disaggregate gross financial wealth into its major components (currency and deposits, debt securities, shares and mutual fund shares, insurance reserves, and other) and look at their effects on consumption.

Table 3. Wealth effects on consumption: dis(aggregate) financial wealth versus (dis)aggregate housing wealth

	DOLS		IV/GMM			
	Elast.LR	MPCLR	Elast.SR	MPCSR	Elast.LR	MPCLR
Cons(-1)			0.580***			
			[0.054]			
Currency + deposits	0.236***	5.753***	0.064***	1.549***	0.151***	3.687***
	[0.061]		[0.026]			
Debt securities	-0.018	-1.553	-0.007	-0.567	-0.016	-1.352
	[0.013]		[0.007]			
Shares + mutual fund shares	0.029**	1.213***	0.007	0.308	0.017	0.735
	[0.012]		[0.005]			
Insurance reserves	-0.105**	-5.316**	-0.012	-0.609	-0.029	-1.451
	[0.053]		[0.020]			
Other	0.036***	14.381*	0.003	0.988	0.006	2.371
	[0.014]		[0.004]			

Table 3 (cont.). Wealth effects on consumption: dis(aggregate) financial wealth versus (dis)aggregate housing wealth

	DOLS		IV/GMM			
	Elast.^{LR}	MPC^{LR}	Elast.^{SR}	MPC^{SR}	Elast.^{LR}	MPC^{LR}
Gr. hous. wealth	-0.064***	-0.439***	-0.029***	-0.197***	-0.068***	-0.468***
	[0.021]		[0.010]			
Net fin. liabilities	0.118***	7.070***	0.024*	1.449*	0.058*	3.448*
	[0.049]		[0.014]			
Mortgage loans	0.093***	7.301***	0.018	1.424	0.043***	3.391***
	[0.029]		[0.012]			
Income	0.656***	56.250***	0.345***	29.557***	0.821***	70.390***
	[0.104]		[0.050]			
Constant	-0.229*		-0.067			
	[0.125]		[0.046]			

Note: The DOLS estimation includes 1 lead and 1 lag of the explanatory variables. Heteroscedasticity and serial correlation robust standard errors are in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

The results are summarized in Table 3. Column 1 suggests that consumption is strongly responsive to changes in currency and deposits: an increase of 10% in the holdings of currency and deposits leads to an increase of 2.4% in consumption. Column 2 shows that the marginal propensities to consume out of currency and deposits and shares and mutual fund shares are important, with magnitudes of, respectively, 5.8 and 1.2 cents per euro. The marginal propensities to consume out of net financial liabilities and out of mortgage loans are also large (respectively, 7.1 and 7.3 cents per euro), probably, reflecting the use of these categories of financial wealth to refinance consumption. Column 3 suggests that consumption exhibits large persistence as the coefficient associated with the lag of consumption is statistically significant and large in magnitude (0.580). This helps explaining the substantial difference in magnitude between the immediate response of consumption to changes in wealth (Columns 3 and 5) and the long-run impact (Columns 4 and 6).

The IV/GMM estimates for the long-run marginal propensities to consume (Column 6) are in line with the DOLS findings, although somewhat smaller (3.7 cents per euro in the case of currency and deposits, and 0.7 cents per euro for shares and mutual fund shares). Similarly, the long-run marginal propensities to consume out of net financial liabilities and out of mortgage loans are also smaller (3.4 cents per euro).

Summing up, this piece of evidence is consistent with the disaggregation between net financial wealth and gross financial wealth and between net housing wealth and gross housing wealth. In fact, it corroborates the idea that households use mortgage loans and net financial liabilities as a way to smooth consumption against fluctuations in their asset wealth.

4.2. Sub-sample analysis. This sub-section compares the wealth effects on consumption in two periods: 1980:1-1993:3 and 1993:4-2007:4. This splits the sample in two sub-samples with roughly the same size, but it also coincides with a major event of the history of the Economic and Monetary Union of the European Union, that is, the Maastricht Treaty. While formally establishing the completion of the EMU as a major objective and setting several economic convergence criteria regarding exchange rate stability, inflation rates, interest rates, and public finances, the Treaty came into force on the 1st of November of 1993.

Table 4 presents a summary of the results. For brevity, we report the long-run elasticities of consumption with respect to net financial wealth and to net housing wealth, which are the figures of interest of the analysis. Columns 1 and 2 report, respectively, the estimates from the DOLS and the IV/GMM estimations for the period of 1980:1-1993:3, while Columns 3 and 4 display the same information for the period of 1993:4-2007:4.

The empirical findings suggest that there was an increase of both wealth effects over time, being particularly important in the case of housing: (i) the long-run elasticity of consumption with respect to financial wealth rose from 0.067 to 0.097; and (ii) consumption has also become more sensitive to changes in housing wealth, as the elasticity increased to 0.051.

In what concerns financial wealth, the results reflect the strong boom of stock markets of the second half of the nineties and the wider stock market participation. In addition, the Maastricht Treaty may have played a prominent role by imposing a strong discipline in the way governments can conduct fiscal policy. In fact, Ardagna (2009) emphasizes the positive effects of public finance consolidation on stock prices. As a result, sounder fiscal positions, in particular, when associated with a permanent fall in government debt, may have had a strong impact on both stock market prices and long-term

government bond rates and, therefore, contributed to a larger financial wealth effect on consumption.

With respect to housing wealth, many factors contributed to the increase of sensitivity of consumption, namely: (i) the easing of liquidity constraints and the smaller borrowing costs (Davey, 2001); (ii) the larger degree of liquidity of housing wealth; and (iii) the rational response of households to an economic environment characterized by lower inflation (Debelle, 2004).

Table 4. Wealth effects on consumption: 1980:1-1993:3 versus 1993:4-2007:4

	1980:1-1993:3		1993:4-2007:4	
	DOLS	IV/GMM	DOLS	IV/GMM
	Elast.^{LR}	Elast.^{LR}	Elast.^{LR}	Elast.^{LR}
Net fin. wealth	0.060*	0.063***	0.097***	0.209***
Net hous. wealth	-0.013	-0.005	0.051***	0.031

Note: The DOLS estimation includes 1 lead and 1 lag of the explanatory variables. Heteroscedasticity and serial correlation robust standard errors are in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

In addition to the results summarized in the previous table, I also perform a very simple exercise: the long-run elasticities of consumption with respect to net financial wealth, net housing wealth and income

are first estimated by DOLS using the smallest number of observations; then, one observation is added at each time and the coefficients are recursively estimated. This exercise provides an idea about the rate of convergence of the coefficients to the "long-run equilibrium" coefficients.

The results can be found in Figure 1. The solid line corresponds to the point estimate while the dashed lines represent the 95 percent confidence bands. It can be seen that, although the elasticities of consumption with respect to net financial wealth and income seem to be fairly stable over time, the responsiveness of consumption with respect to net housing wealth has increased in recent years. Therefore, financial deregulation and innovation in mortgage markets, by allowing an easier access to loans collateralized with housing, easing households' borrowing constraints, and lowering transaction costs, may have played an important role in boosting the sensitivity of consumption with respect to developments in housing wealth. In addition, the exogenous housing demand surge in the late nineties and monetary policy, through its influence on real interest rates, are other potential determinants of the patterns observed for the long-run elasticity of consumption with respect to net housing wealth.
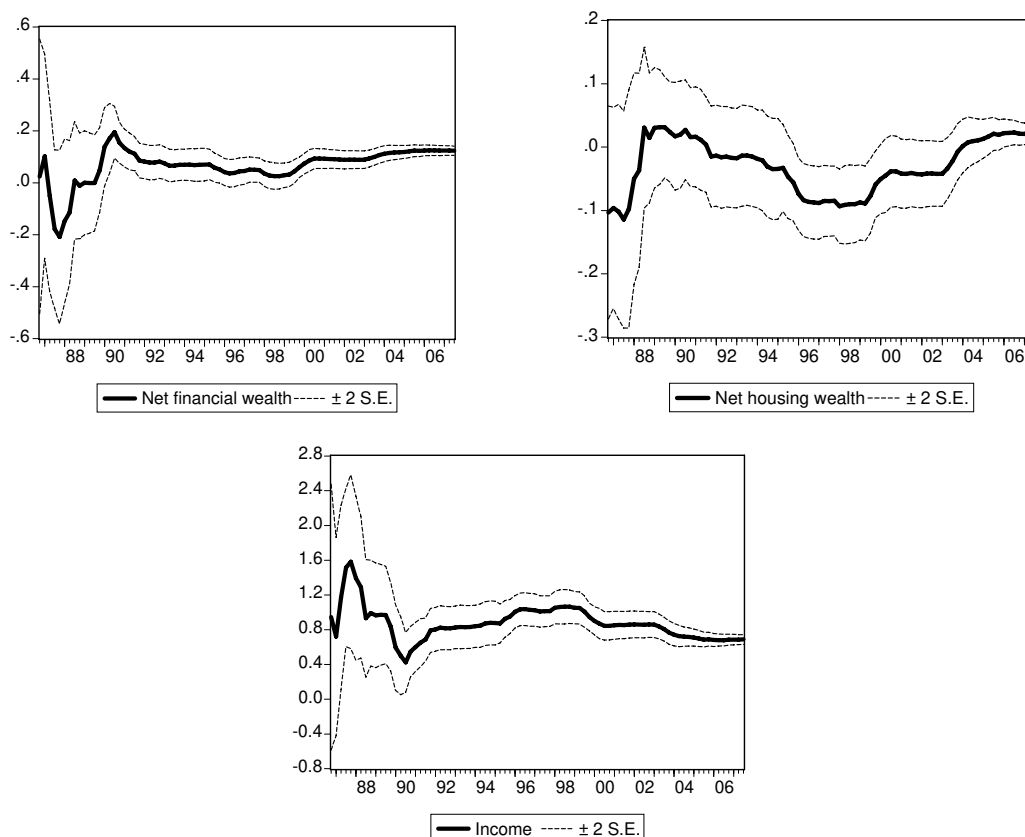

Fig. 1. The recursive estimates for the long-run elasticities of consumption with respect to net financial wealth, net housing wealth and income

Conclusion

In this work, I estimate the magnitude of the effects of different wealth components on consumption in the Euro area as a whole. Using quarterly data for the period of 1980:1-2007:4, I show that: (i) financial wealth effects are relatively large and statistically significant; and (ii) housing wealth effects are virtually nil and not significant.

The marginal propensity to consume out of financial wealth typically ranges between 0.7 cents per euro (immediate response) and 1.9 cents per euro (long-run impact) and consumption is also strongly responsive to changes in financial wealth: a 10% increase in financial wealth leads to an increase of between 0.6% and 1.5% in consumption.

By disaggregating financial wealth into its major components, the estimates show that: (i) wealth effects are particularly large for currency and deposits, and shares and mutual funds; and (ii) consumption seems to be very sensitive to financial liabilities and mortgage loans. This piece of evidence is especially important as it suggests that the volatility of consumption may increase in the outcome of a wider exposure to financial markets. Moreover, it supports the idea that a broader integration of the housing finance system with the capital markets – for instance, through the shift from a regulated system dominated by savings, loans and mutual savings banks to a relatively unregulated system dominated by mortgage bankers and brokers, the process of mortgage securitization, and a greater competitiveness in the primary mortgage market – can also contribute to a larger response of consumption to unexpected wealth variation.

In addition, consumption growth exhibits a strong persistence and responds sluggishly to shocks. As a result, the long-run response of consumption to wealth tends to be substantially larger than its short-run effect. This characteristic of consumption growth that one observes for the Euro area should capture the attention of academics, central banks and governments. In fact, it poses complex challenges, in particular, regarding the amplification of the macroeconomic consequences of a downturn in asset markets.

Finally, the empirical evidence suggests that consumption has become more sensitive with respect to both financial and housing wealth. This may reflect the beneficial effects of public finance consolidation on stock prices. It is also related to the relaxation of credit constraints and increase in liquidity of housing markets.

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