Saving behavior over the life-cycle does not differ across countries. Portfolio choices do.

Frederic Lambert[1]
Banque de France

Matteo Pignatti
New York University and LUISS

August 2008

Abstract

Cross-national comparisons of life-cycle consumption and saving traditionally highlight differences in life-cycle profiles across countries. We focus on two countries, Italy and the United States, for which these differences seem especially large. Using detailed microdata and a partially linear model, we estimate life-cycle profiles for consumption, income, saving and various components of household wealth. We find very little cross-country difference in the pattern for life-cycle saving. In both countries, consumption tracks income and the saving age-profiles are very similar until retirement. On the contrary wealth age-profiles exhibit striking differences most notably as regards the portfolio composition between housing and financial assets. Overall household portfolios at the beginning of life are much more leveraged in the US than in Italy.

JEL Classification Codes: D91, E21, G11.

Keywords: life-cycle saving, portfolio choices, international comparison

[1]Corresponding author: Banque de France, 46-1374 SEMSI, 75049 Paris Cedex 01, France
fjlambert@gmail.com. The views expressed herein are those of the authors and do not necessarily reflect those of the Banque de France. The latest version of the paper will be available at:
http://pagesperso-orange.fr/fjlambert/LambertPignatti2008.pdf

1 Introduction

Cross-country differences in household saving rates have been the subject of numerous papers trying to understand saving behavior and its determinants. In this paper, we focus on household saving behavior and wealth accumulation over the life-cycle. Working with detailed micro-data for Italy and the United States and following the methodology suggested by Fernández-Villaverde and Krueger (2004), we estimate life-cycle profiles for consumption, income, saving and various components of household wealth, controlling for time and/or cohort effects. The objective is to abstract from the effect of business cycle fluctuations and from cohort effects in order to concentrate on the sole effect of age on consumption, saving and wealth accumulation decisions. The estimated age-profiles can then be used as a benchmark for quantitative life-cycle models. We stress the importance of the identification problem that prevents the unrestricted estimation of age, time and cohort effects with repeated cross-sectional data, in particular when there is a trend in the data.

In contradiction with previous cross-national studies (Poterba, 1994, Börsch-Supan and Lusardi, 2003), we find that life-cycle saving behavior does not differ much between these two countries. While the Italian life-cycle profiles for consumption and income are flatter than the US profiles, in both countries consumption tracks income over the life-cycle. As a result median saving age-profiles look very similar. Saving increases at the beginning of life up to age 60 before declining. The drop at retirement is sharper in the US than in Italy, where saving stabilizes after age 70. Until about age 55 however, the age gradients for median profiles are strikingly close in the two countries.

The picture is quite different as regards age-profiles for various wealth components. The age-profiles for home-ownership nearly overlap in the two countries, but the profiles for household indebtedness exhibit marked differences. In particular, the fraction of people with housing-related debt increases dramatically with age until age 40 before sharply declining in the US. The Italian profile, while concave, is much flatter than the US one. As a consequence, the Italian age-profile for financial wealth looks very flat, whereas the US age-profile is clearly convex, decreasing at the beginning of life due to the rise in housing-related debt before increasing after age 40. We relate these differences to the very small proportion of indebted households and credit applicants in Italy and to the significant share of Italian homeowners who have inherited or received as a gift rather than bought their home. Thus while preferences for homeownership may be the same in the two countries, Italian and American households differ in their way of acquiring their home.

Regarding financial assets, those represent a larger share of household portfolios in the US than in Italy. In terms of portfolio composition, US households hold more stocks and other risky

financial assets than Italian ones. US households portfolio are then much more leveraged than Italian ones.

These results are obtained after ensuring full consistency of the various measures of consumption, income and wealth in the two countries. Besides the sensitivity of life-cycle profiles estimates to sampling uncertainty is checked using a bootstrap procedure to construct confidence intervals.

The rest of the paper is organized as follows. Section 2 describes the data and discusses some measurement issues that are relevant for cross-country comparison pruposes. The method used for estimating life-cycle profiles is presented in Section 3. Results are reported in Section 4. Section 5 concludes.

2 The data

This section presents the data sources and discusses some measurement issues relevant for comparison purposes.

2.1 Sources

We use microdata from the Italian Survey of Household Income and Wealth (SHIW) and the United States Consumer Expenditure Survey (CEX) and Survey of Consumer Finances (SCF).

2.1.1 The Survey of Household Income and Wealth

The Survey of Household Income and Wealth is conducted every two years by the Bank of Italy on a representative sample of about 8,000 households. The survey provides detailed data on households' income, consumption and wealth. Although mostly cross-sectional, the survey includes a small panel component starting in 1989: 15% of the households interviewed in 1987 were again interviewed in 1989 and since 1993, about 45% of the households interviewed in a given survey were already interviewed in the previous one.

Since data on financial income and wealth were not collected before 1987, we start our dataset in 1987 and use data from ten waves (1987, 1989, 1991, 1993, 1995, 1998, 2000, 2002, 2004 and 2006). Our dataset include 51,436 households, only 30 of which are followed over the whole period.

All data are deflated using the aggregate consumer price index, including tobacco, not seasonally adjusted, computed by Istat. All figures are expressed in 2000 U.S. dollars. We use the euro/lire fixed exchange rate (1 euro = 1936.27 Italian lire) to convert data before 2002, and the average 2000 euro/dollar exchange rate (1 euro = 0.9232 dollar).

2.1.2 The Consumer Expenditure Survey

The Consumer Expenditure Survey, conducted by the U.S. Bureau of Labor Statistics, is the only microdataset that contains comprehensive information on household expenditures in the United States. It also includes data on household income and wealth. Wealth data are however very often missing and generally considered of poor quality, which is why we rely on the Survey of Consumer Finances for U.S. household portfolio analysis.

The sample unit is a consumer unit, which may include individuals who are not part of the same household but make expenditure decisions jointly.

The CEX is a rotating panel representative of the U.S. population. Each consumer unit is interviewed four times over one year (plus one contact interview during which information on demographic and family characteristics and on the consumer units inventory of major durable goods is collected). Every month, one twelfth of the sample is replaced. Income data are collected only in the first and last interviews (reported data for income relate to income received in the past twelve months).

The data we use cover the period 1984-2003. Households who are interviewed before June of year n are assigned to year $n-1$. We exclude all households that are not interviewed four times or whose income responses are incomplete.[1] Our final dataset includes 64,299 households.

2.1.3 The Survey of Consumer Finances

The Survey of Consumer Finances is a triennial survey of the balance sheet, pension, income, and other demographic characteristics of U.S. households, conducted by the Federal Reserve Board of Governors. We use data from six waves: 1989, 1992, 1995, 1998, 2001 and 2004, representing a total of 24,614 households/observations.

The data from both the CEX and the SCF are deflated using the BLS-compiled consumer price index (all urban consumers, not seasonally adjusted) and expressed in 2000 U.S. dollars.

2.2 Measurement issues

Working with detailed survey data allows us to compute measures of consumption, income and wealth that are consistent across countries. Still there remain some differences, as some data are not collected in the two countries. These differences along with other measurement issues are discussed in the next paragraphs.

[1] There could be a sample selection problem here if all dropped households belonged to the same population group (e.g. minorities). We did not find evidence of such a bias.

2.2.1 Imputed rents

Consumption is computed as the sum of household out-of-pocket expenditures reported in the surveys. While both the SHIW and the CEX surveys include data on non-durable and durable expenditures, the level of detail is greater in the CEX than in the SHIW. To compute consumption of US households from CEX data, we add expenditures on food, alcoholic beverages, tobacco, personal care, utilities, household operations, public transportation, gas and motor oil, apparel, education, reading, health and miscellaneous expenditures (non-durables) and expenditures on owned dwellings, rented dwellings, other lodging expenses, vehicles, entertainment and housefurnishings and equipement (durables). For Italian data, we use the measure of total consumption provided in the structured datasets of the SHIW historical database minus consumption of imputed durables.

This measure of consumption includes the rents paid by tenant households. We also consider an alternative measure of consumption that includes imputed rents for homeowners-occupiers, as is the case in National Income and Product Accounts data (NIPA). Other imputed service flows from the stock of durables are however excluded.

Estimated market rents for homeowner-occupiers are provided by respondents. This variable is missing in the CEX in 1993 and 1994. For these two years, we use an imputation procedure similar to Perri and Krueger (2005). Using data for 1995, we regress the reported market rent on self-reported property values, quadratics in income and non-housing consumption expenditures and a set of household characteristics (age and education of the reference person, region of residence and family composition). We allow for different coefficient values in case property values are not reported. The R^2 is equal to 0.26 and 0.51 for the two regressions. We then use the estimated regression coefficients to predict the rent of owned properties for homeowners in 1993 and 1994.

For consistency, we also compute two measures of income with and without imputed rents. The inclusion or exclusion of imputed rents in both consumption and income is neutral for the measure of saving, defined as household disposable income minus consumption. It however affects the computation of the saving ratio defined as the difference between the logarithms of income and consumption.

Including imputed rents in consumption and income shifts the estimated profiles up but does not modify the shapes of both profiles.

2.2.2 Social security taxes and income measurement

Income is defined as after-tax income. Only net income (i.e. net of taxes and compulsory contributions) is reported in the Italian SHIW. For consistency, we subtract mandatory retirement

contributions (social security taxes and railroad retirement contributions) from after-tax income in US data.

Differences in pension systems may have a significant impact on the shape of income and saving profiles. The Italian pension system was reformed in 1995, but still mostly relies on mandatory contributions. On our sample period (1987-2006), it also provides the main source of income for people above 60. On the contrary the US system depends much on voluntary enrollment in IRA or 401(k) programs, while pensions provided by the mandatory social security system are minimal (OECD, 2001). Everything else being equal, this should increase saving for retirement purposes in the US.

2.2.3 Measurement of net worth

Differences in pension systems may also affect the measurement of household net worth. Net worth is defined as the sum of real assets (real estate, business wealth and valuables) and financial assets minus financial liabilities. In US data, retirement accounts wealth from future pensions (IRAs and thrift-type accounts) is included in financial assets, while loans against pensions are part of financial liabilities. Since most pension wealth in Italy takes the form of a claim to a pension in the future, it is not included in financial wealth, which is therefore lower on average than in the US.

The measure of real assets also differs between the two countries, as it includes the value of owned vehicles in the SCF definition but not in the SHIW one. For consistency, the value of owned vehicle is added to that of valuables in Italian data.

Net worth is then defined as the sum of real wealth (housing wealth, business wealth, valuables and vehicles) and financial wealth (financial assets minus financial liabilities).

In housing wealth, we distinguish between the main residence and other real estate owned. The reason is that for homeowner-occupiers, their main residence is more than just another asset in their portfolios but also an important source of housing services (see above discussion).

Among financial assets, we separately compute direct holdings of stocks[2] and holdings of risky financial assets, widely defined as the sum of stocks, assets held in mutual funds and other managed investment accounts and long-term bonds.

[2]While SCF data allow to compute indirect stockholding in mutual funds and managed investment accounts, such a calculation cannot be done for Italian data as required information on the types of funds or investment accounts is missing.

2.2.4 Household size

All profiles, except those plotted in Figure 7 are not adjusted for household size. This could affect the cross-country comparison if household composition or living arrangements vary across countries over the life-cycle. For instance, we know that the proportion of young adults living with their parents is larger in Italy than in the US. These young individuals are absent from our dataset. If they are poorer in terms of housing or financial wealth or in terms of income than the young individuals included in our dataset, the estimated profiles may suffer a selection bias at young ages. Another bias can arise from differences in the proportion of young heads of households that are married (Banks, Blundell and James, 2002). Married young households tend indeed to have higher income and wealth than single ones, as the income and wealth of both members are summed up.

Adjusting the data for family size does not appear to radically change the shape of the estimated profiles, although it affects the size of the hump in the consumption profiles. However the importance of that effect depends on the adjustment method (Attanasio, Banks, Meghir and Weber, 1999), which is why we mostly report unadjusted profiles.

As a robustness check, we computed consumption and income profiles after adjusting the data for family size with a square root equivalence scale. This scale is used in recent publications by the OECD (e.g. Förster and Mira d'Ercole, 2005) and appears very close to the "mean" equivalence scale used in Fernández-Villaverde and Krueger (2004) for U.S. data. Results were qualitatively similar to the ones presented in Section 4. Adjusting for family size has no impact on saving profiles.

3 Estimation of life-cycle profiles

3.1 Construction of pseudopanels

The absence of a true panel dimension in the surveys prevents us from computing life-cycle profiles using standard panel data econometric techniques. We get around that difficulty by exploiting the repeated nature of the surveys and constructing pseudopanels, grouping households in 5-year cohorts according to the age of the reference person, computing averages and medians of the variables of interest using survey-provided sample weights, and following them over time to generate a balanced panel.

3.2 A partially linear model with time dummies

Following Fernández-Villaverde and Krueger (2004) we use a semi-nonparametric regression to compute life-cycle profiles. In particular, we consider the following partially linear model to control for age and time effects:

$$\bar{y}_{j,t} = \beta_t time_t + m(age_{j,t}) + \varepsilon_{j,t} \tag{1}$$

where $\bar{y}_{j,t}$ denotes the average or the median of the variable of interest (i.e. log consumption, income, saving...) across households of cohort j in year t, $time_t$ is a dummy for year t and $m(age_{j,t})$ is a smooth unparameterized function of the age of cohort j in year t. The error term $\varepsilon_{j,t}$ satisfies the classical assumptions. This combination of a nonparametric function for age and a parametric component for time allows for efficiency gains in the estimation relative to a pure nonparametric specification, while it is robust to model misspecification of the age component.

Let $\boldsymbol{X}$ denote the matrix of time dummies. We choose 1995 as our reference year and drop the corresponding time dummy. Equation (1) can be rewritten as:

$$\bar{\boldsymbol{y}} = \boldsymbol{X}\boldsymbol{\beta} + m(\boldsymbol{age}) + \boldsymbol{\varepsilon} \tag{2}$$

An alternative specification includes cohort effects in addition to time and age effects. Including cohort effects can be motivated by the fact that households born at different times may experience very different living conditions that may shift their consumption or saving patterns at all ages. However collinearity issues between age, time and cohort prevent the unrestricted estimation of the various effects.[3] The standard identifying assumption is to normalize the time effects so that they sum to zero and are orthogonal to a time trend (Deaton and Paxson, 1993). The problem with this specification arises in the presence of a trend in the data, as is likely the case for housing wealth or some components of financial wealth. In that case indeed, the trend will be attributed to a combination of age and cohort effects (Ameriks and Zeldes, 2004, Guiso and Jappelli, 2000, Paxson, 1996).

Figures 1 to 4 illustrate the issue for Italian log consumption and housing wealth profiles. While the estimated age-profiles do not differ much under the two specifications for consumption, results look radically different for housing wealth. In particular, the time trend in housing wealth, due to increasing housing prices, is captured by the age profile under the age, time and cohort effects specification, which results in an implausible increasing housing wealth age-profile and increasing cohort effects (the first cohort in Figures 2 and 4 is the oldest one).

[3] Age enters the regression in the form of a nonlinear function and therefore age, time and cohort are not perfectly collinear. The three variables still remain highly collinear.

In fact, for many variables, there is little reason to assume the presence of cohort effects.[4] While we computed age-profiles for each variable using both specifications, we only report and discuss the results obtained under the age and time effects specification.

The model is estimated using Speckman's two-step estimator (1988). In the first step, the coefficients $\boldsymbol{\beta}$ for the parametric component are estimated with OLS on partial residuals (i.e. residuals from kernel smoothing of both the design matrix $\boldsymbol{X}$ and the response vector $\bar{\boldsymbol{y}}$). In the second step, the nonparametric component is estimated by smoothing the residuals with respect to the parametric part. See Härdle, Müller, Sperlich and Werwatz (2004) for details.

For nonparametric fitting, we use a Nadaraya-Watson kernel weight function with Epanechnikov kernel. We set the bandwith parameter equal to 5. We check that changes in this parameter do not significantly modify our results.

3.3 Assessing the estimates precision with the bootstrap

For the cross-country comparison to be meaningful, we need to check that our age profiles are precisely estimated. We do this using the bootstrap. As discussed in Horowitz (2001) and Fernández-Villaverde and Krueger (2004), the bootstrap provides a better approximation to the distribution of the Speckman estimator than asymptotic theory in small samples.

For each data source, we draw 500 samples with replacement from the survey data to build 500 new pseudopanels, using the survey-provided weights. We then compute the Speckman estimator for each of these datasets. The 95% confidence intervals reported on the figures are obtained by taking the 2.5 and 97.5 percentiles from all the bootstrap replications.[5] The generally small size of the intervals suggest that our profiles are precisely estimated.

4 Results

We now discuss the results of our estimation of life-cycle profiles for Italy and the United States, highlighting similarities and differences.

4.1 Consumption and income profiles

The discussion focuses on median profiles (Figure 5) as cross-country differences in inequalities may bias the comparison of average profiles. Average profiles are reported in Figure 6. We note that they do not differ much from median profiles.

[4] Yet for variables like consumption or earnings, the presence of cohort effects is very likely. However we find that these effects are small and do not significantly affect the estimated age profiles. See Figure 2

[5] Note that in this way, the confidence intervals may not be centered on the point estimates.

The age-profiles for consumption and income exhibit few differences between the two countries. In both cases, consumption tracks income over the life-cycle.

The U.S. consumption profile is clearly hump-shaped, although to a lesser extent when adjusted for family size (Figure 7). Consumption increases until about age 50 before declining. The peak is shifted and the decline in the second part of life is attenuated when consumption is adjusted for family size, an intuitive result as family size decreases when children move out their parents' home.

The pattern in Italy is not very different, with a consumption age-profile that is only slightly increasing until age 50 before declining. In fact, when adjusted for family-size, the Italian consumption age-profiles is flat or even slightly decreasing at the beginning of life. This flatness is surprising and may point to a potential sample selection bias. As argued in Section 2, a significant number of young adults live with their parents in Italy and are therefore not in the sample.

The age-profiles in Figure 11 relate family size to the age of the head of household. While the Italian and US profiles overlap until about age 37, the Italian profile peaks later and remains above the US one afterwards. This explains the stronger impact of the household-size adjustment on the Italian consumption and income profiles than on the US ones.

The relative flatness of the Italian consumption profile can be related to the flatness of the Italian income age-profile compared to the US one. In fact, the profile for consumption at the beginning of life in Italy closely follows the earnings profile and differences in earnings profiles between the two countries are sufficient to account for the differences in the shapes of consumption profiles as shown in Lambert and Pignatti (2007).

Then median life-cycle profiles for saving are very similar between the two countries, in particular as regards the age gradient before retirement. The confidence intervals overlap until after age 55, so that the profiles cannot be deemed different. As pointed out by Börsch-Supan and Lusardi (2003), the saving-ratio age-profile still looks flatter in Italy than in the US. However this difference is entirely due to what happens after retirement.

4.2 Wealth profiles

Tables 1 and 2 summarize the main differences in the portfolio choices of Italian and US households. While 81% of Italian households hold financial assets versus 91% of American ones, they are about three times less likely to hold stocks and five times less likely to hold risky financial assets. 87% of Italian household wealth is held in the form of real assets, in particular housing assets, compared to only 63% of US household wealth. Finally while 75% of US households are indebted, this is the case for only 19% of Italian households. Financial liabilities also

represent a much smaller share of households' total assets in Italy than in the US: 2% versus 15%. All these features are described in great details in Guiso and Jappelli (2000) and Bertaut and Starr-McCluer (2000). We complete the picture by looking at portfolio changes over the life-cycle.

Median life-cycle profiles for net worth are increasing in both countries until age 60, although the age gradients are quite different in Italy and the US (Figure 8). We also find large differences in the profiles for financial wealth. The Italian age-profile for financial wealth looks very flat compared to the profile for housing wealth or to US housing and financial wealth profiles. On the contrary, the US age-profile for financial wealth is convex, decreasing at the beginning of life before increasing. These differences are robust to the exclusion of pension wealth from household net wealth (see discussion in Section 2). The median and mean profiles for financial wealth in the US also exhibit large differences, suggesting important inequalities in the distribution of financial wealth across households.

The differences in the age-profiles for financial wealth translate in the profiles for financial-wealth-to-networth ratio. Similarly the differences in the profiles for housing-wealth-to-networth ratio are mostly driven by the differences in networth, as unconditional profiles for housing wealth look very similar in the two countries, especially in level. Unconditional profiles can however hide differences in participation, i.e. the fraction of households holding a certain kind of asset, or for participating households, in the share of their wealth invested in certain kinds of assets.

Figure 9 reports participation age-profiles. The age-profiles for hometenure (main residence) are very close in the two countries, both in terms of shape and level, a result consistent with similar homeownership ratios in both countries (around 66% - see Table 1). Yet housing-share profiles (value of the main residence over total assets) conditional on owning a house exhibit some differences. While the US profile is clearly V-shaped, the V is much flatter in Italy. In particular, the beginning-of-life decline in housing share is milder. In terms of level, the Italian profile lies constantly above the US one, the reason being the lower share of financial assets in Italian households' total assets. The difference in the conditional housing-wealth-to-networth ratio profiles is even more striking, with a relatively flat Italian profile compared to sharply decreasing US one until age 60, and reflects more the higher level of household debt in the US than the larger share of financial assets.

At all ages, the fraction of indebted households is indeed much higher in the US than in Italy. Table 3 reports the proportion of households with debt and mortgage debt, along with the proportion of credit applicants in the total population according to the SHIW and the SCF. The last figures refer to credit applications in the year preceeding the survey in the case of Italy and in the past five years in the case of the US. Even if we take this difference in the

reference period into account, the gap between the proportion of credit applicants in Italy and the US is huge. Assuming that the households applying for credit are different every year for five consecutive year, the share of credit applicants in the total population over five years in Italy is about one-third of the share in the US. The sources of this difference (differences in preferences affecting the demand side or shortage on the supply side) remain to be identified. The higher proportion of credit-constrained households may point to differences in the supply of credit. While households applying for credit or considering to apply represent a smaller share of the total population in Italy than in the U.S., the proportion of those among them that is borrowing constrained, i.e. totally or partially denied credit or deterred from applying for fear of being so, is larger: 39.5% versus 30.1% in 2004.

Housing-related debt represents most of household debt in both countries: 83% in Italy and 80% in the US. Still the age-profiles for the fraction of indebted households and the fraction of households with housing-related debt, which have a similar shape in Italy, are quite different in the US. In particular, the strong concavity of the US profile for the fraction of households with housing-related debt contrasts with a flatter profile for the fraction of indebted households (whatever the source of that debt) until age 50, and points to sources of indebtedness at young ages other than housing purchase in the US. One source could be education loans (to be checked).

For indebted households, the debt-over-assets ratio decreases with age in both countries (Figure 10), as other assets increase. However the rate of decline is much higher in the US than in Italy, resulting in a steeper profile.

Given the low level of indebtedness and the flatter and lower earnings and income profiles in Italy, how can we explain the similarity in the profiles for hometenure? Looking at the way households acquire their main residence in both Italy and the US, we find that more than a fourth of Italian households actually inherit their house from their parents or receive it as a gift, a proportion that is about 7 times higher than in the US.

Regarding financial assets, the age-profiles for stock market participation or more largely the fraction of agents holding risky financial assets are hump-shaped in both countries. The US profiles lie well above the Italian ones, as was suggested by the figures in Table 1. Conditional on holding stocks though, the share of stocks in % of total financial assets is not very different in the two countries and does not vary much with age, a finding already present in Guiso and Jappelli (2000). Yet the US profile for the share of risky financial assets is much higher than the Italian one. Then given the large differences in debt, US household portfolios appear much more leveraged than Italian ones.

5 Conclusion

This paper documents similarities and differences in the age-profiles for consumption, income, saving and wealth in Italy and the US. In contradition with previous studies, we argue that consumption, income and saving age-profiles are actually very similar between the two countries. In contrast, the structure of household balance sheets over the life-cycle exhibit striking differences, especially as regards the degree of leverage. The argument is provocative but aims at orienting future theoretical work.

The stylized facts about household indebtedness and real estate inheritances outlined in the paper suggest that two different mechanisms of transferring resources between generations may be at work given very similar age-profiles for housing wealth but different life-cycle earnings. One mechanism takes the form of mortgage debt, the other of bequests. Accounting for these differences looks like a challenging but interesting task for a quantitative life-cycle model that incorporates housing, credit constraints and bequests.

References

Ameriks, J. and S. Zeldes (2004). "How do household portfolio shares vary with age?"

Attanasio, O., J. Banks, C. Meghir and G. Weber (1999). "Humps and bumps in lifetime consumption." *Journal of Business and Economic Statistics*, **17**(1), 22–35.

Banks, J., R. Blundell and S. James (2002). "Wealth portfolios in the UK and the US." *NBER Working Paper*, (9128).

Bertaut, C. and M. Starr-McCluer (2000). "Household portfolios in the united states." *Federal Reserve Board of Governors Working Paper*.

Börsch-Supan, A. and A. Lusardi (2003). "Saving: A cross-national perspective." In *Life-Cycle Savings and Public Policy: A Cross-National Study of Six Countries*. Börsch-Supan, Axel.

Deaton, A. and C. Paxson (1993). "Saving, growth and aging in Taiwan." *NBER Working paper*, (4330).

Fernández-Villaverde, J. and D. Krueger (2004). "Consumption over the life cycle: Facts from consumer expenditure survey data."

Förster, M. and M. Mira d'Ercole (2005). "Income distribution and poverty in OECD countries in the second half of the 1990s." *OECD Social, Employment and Migration Working Papers*, (22).

Guiso, L. and T. Jappelli (2000). "Household portfolios in italy." *CEPR Working Paper*, (2549).

Härdle, W., M. Müller, S. Sperlich and A. Werwatz (2004). *Nonparametric and Semiparametric Models*. Springer.

Horowitz, J. (2001). "The bootstrap." In *Handbook of Econometrics, vol. 5*. Heckman J. and Leamer E.

Lambert, F. and M. Pignatti (2007). "What explains cross-country differences in life-cycle consumption? A comparison between Italy and the United States."

OECD, ed. (2001). *Ageing and Income: Financial Resources and Retirement in 9 OECD Countries*.

Paxson, C. (1996). "Saving and growth: Evidence from micro data." *European Economic Review*, **40**, 255–288.

Perri, F. and D. Krueger (2005). "Does income inequality lead to consumption inequality? Evidence and theory."

Poterba, J., ed. (1994). *International Comparisons of Household Saving*.

Speckman, P. (1988). "Kernel smoothing in partial linear models." *Journal of the Royal Statistical Society. Series B*, **50**(3), 413–436.

Figure 1: Log consumption age-profile, based on specification with time dummies only

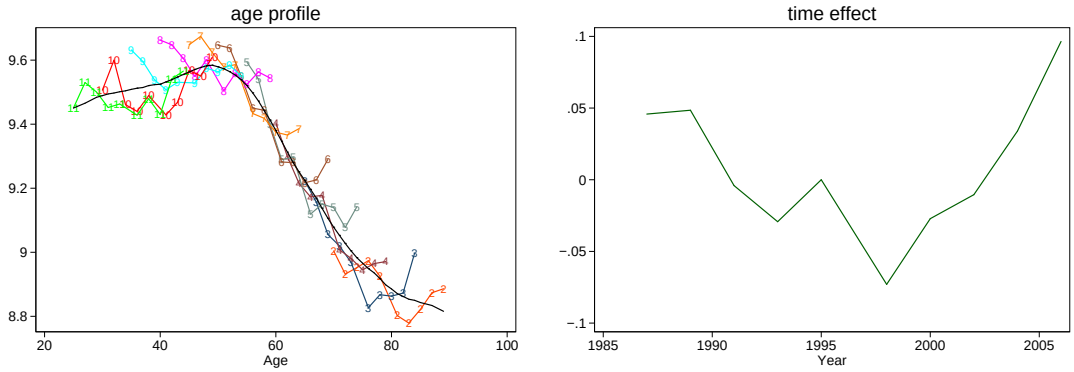


Figure 2: Log consumption age-profile, based on specification with time and cohort dummies

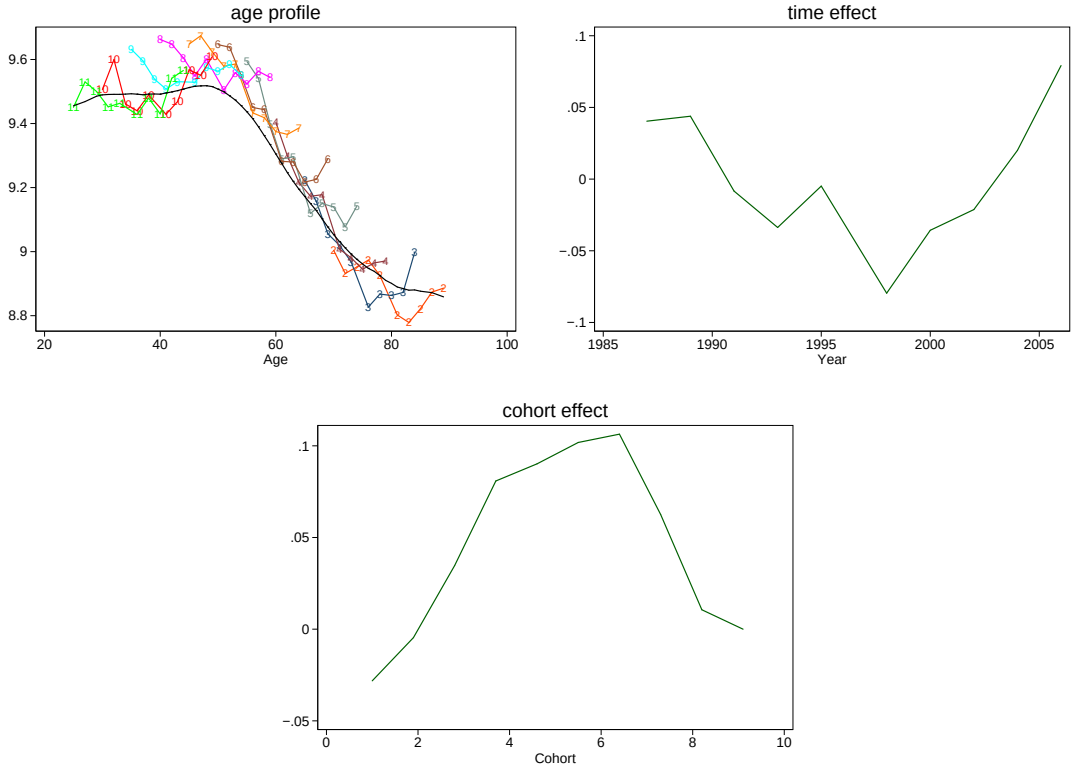


Figure 3: Log housing wealth age-profile (conditional on owning a house), based on specification with time dummies only

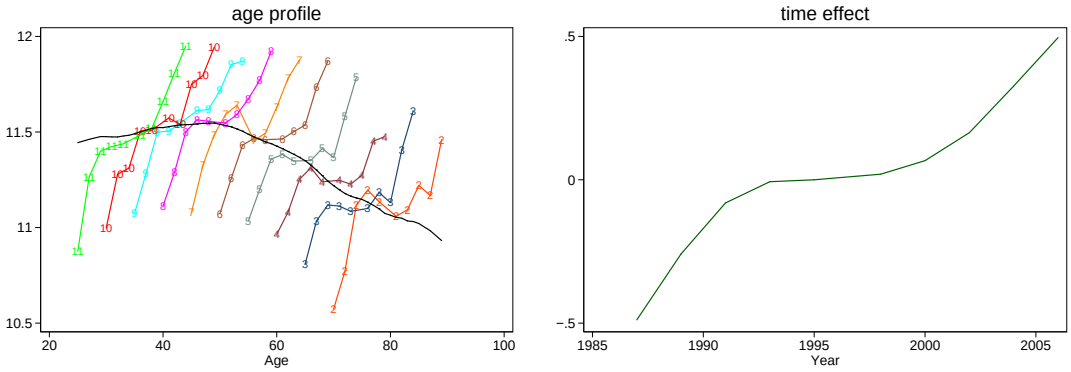


Figure 4: Log housing wealth age-profile (conditional on owning a house), based on specification with time and cohort dummies

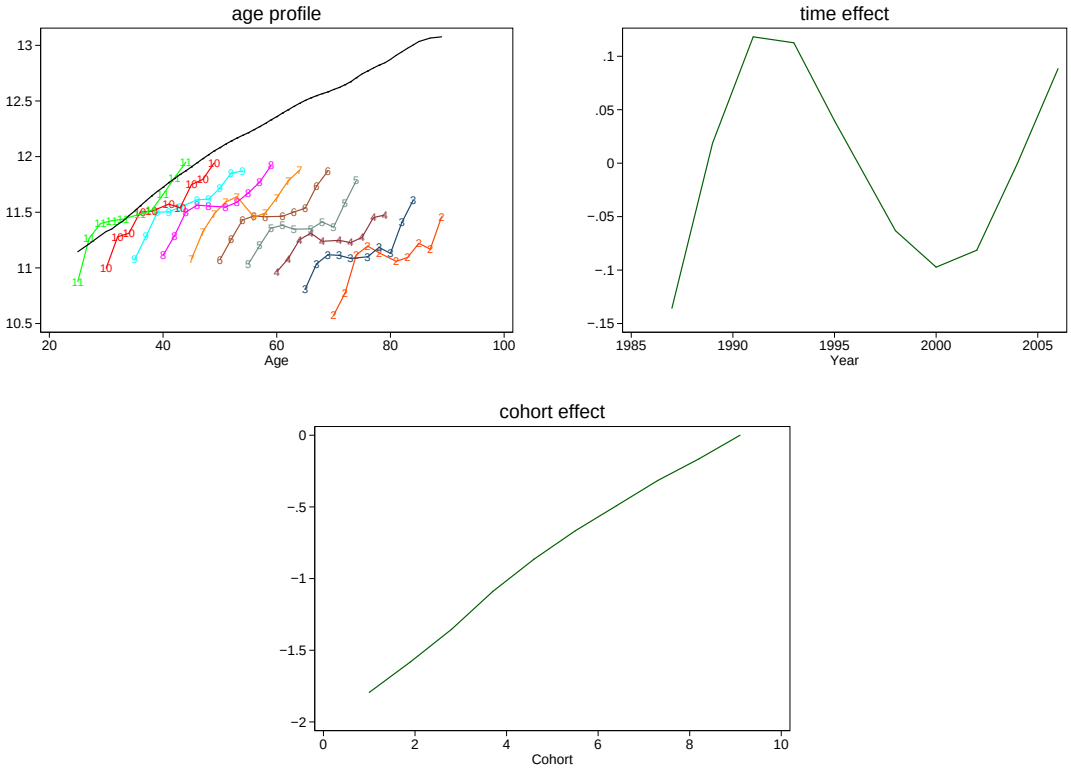


Figure 5: Consumption, income and saving median age-profiles

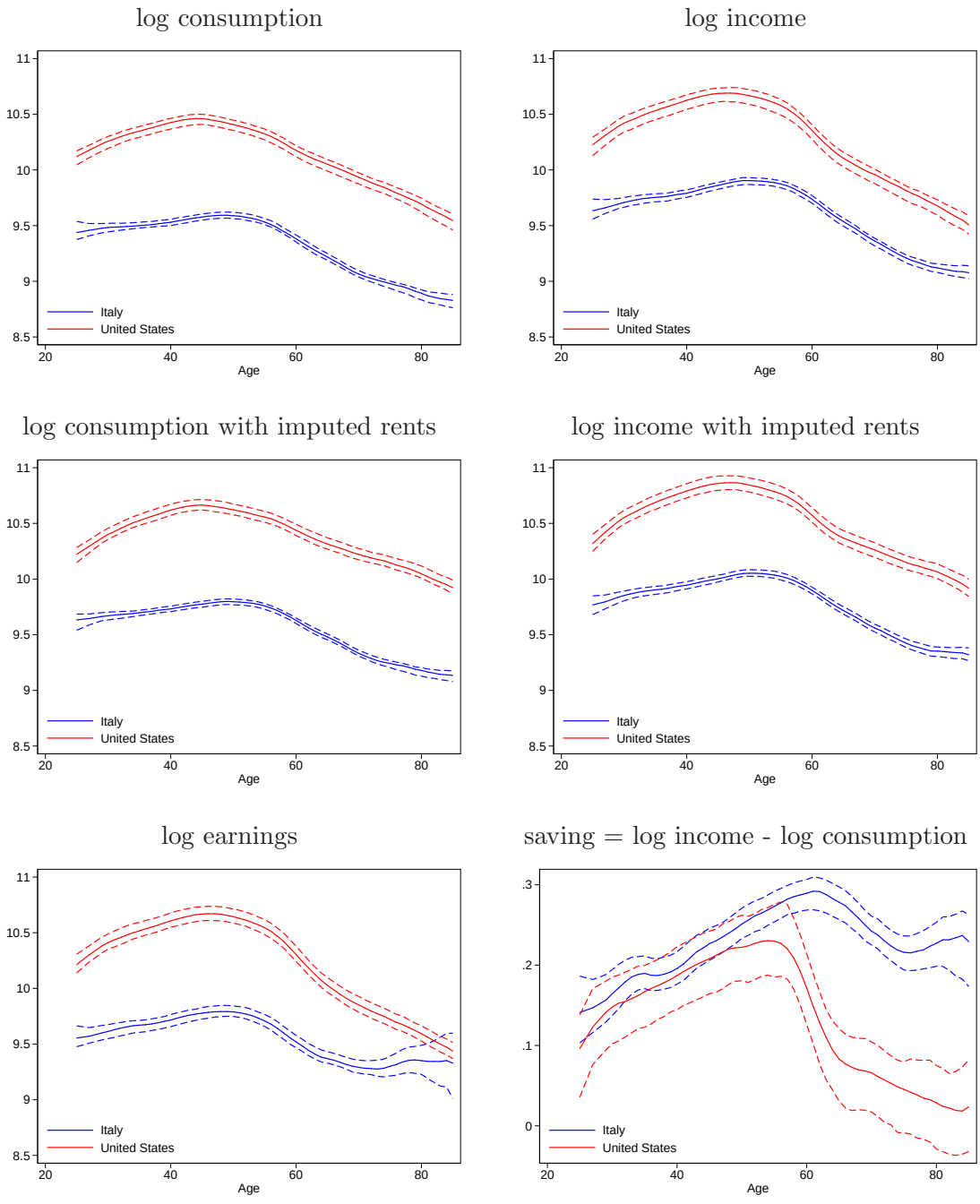


Figure 6: Consumption, income and saving average age-profiles

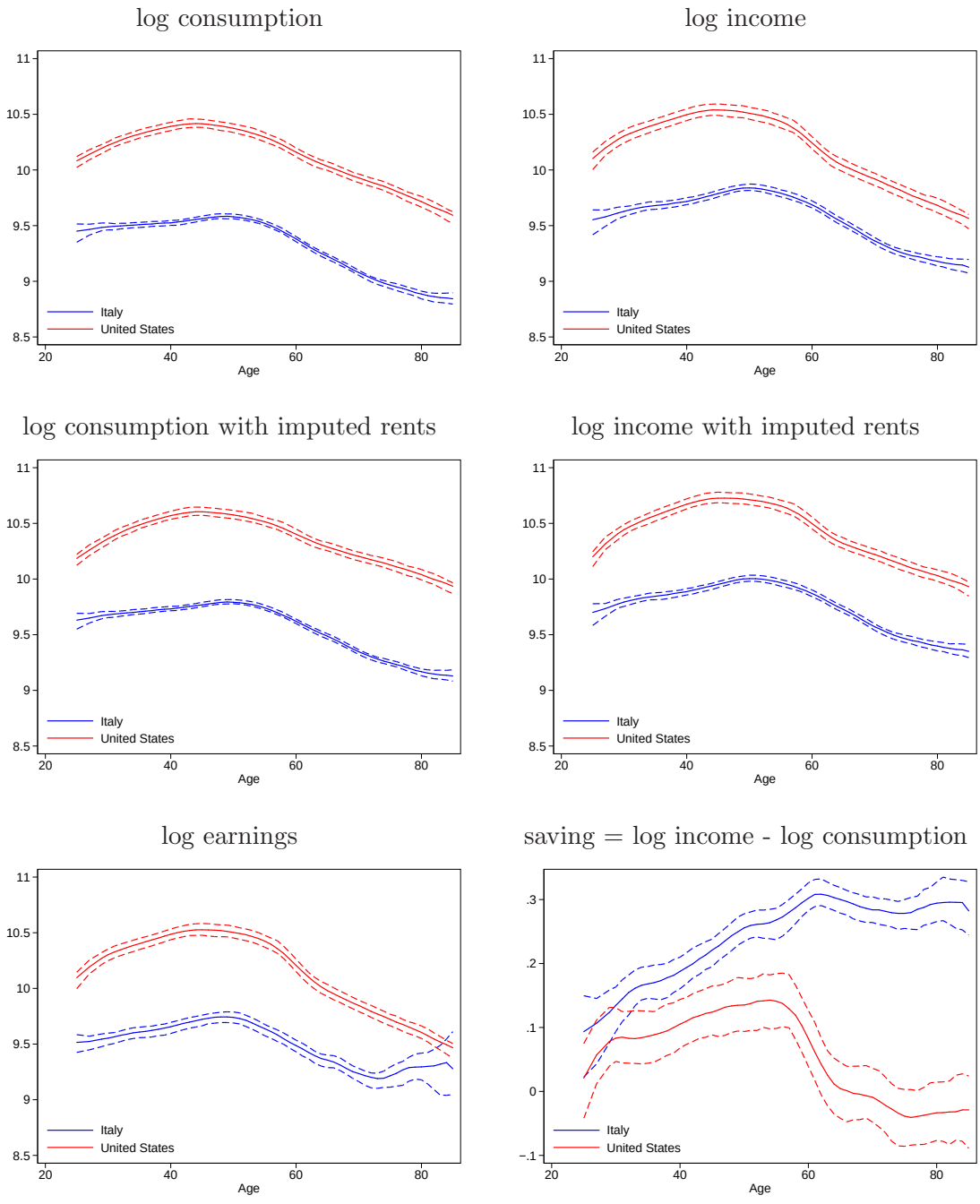
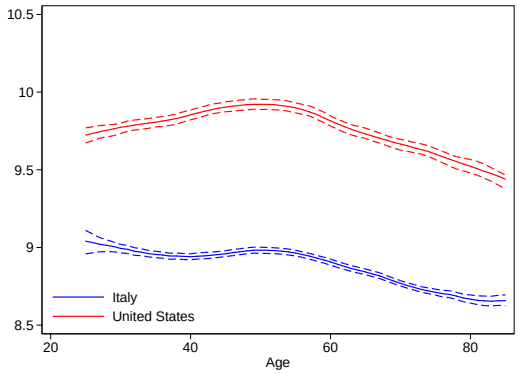
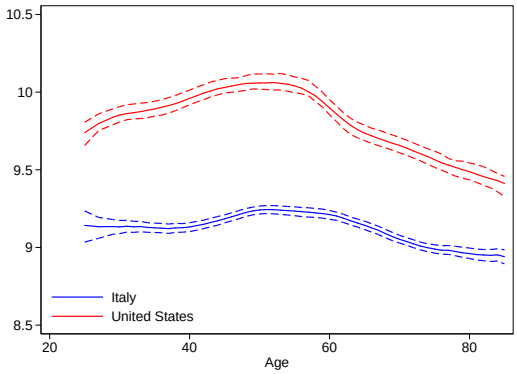


Figure 7: Consumption, income and saving average age-profiles, adult equivalent

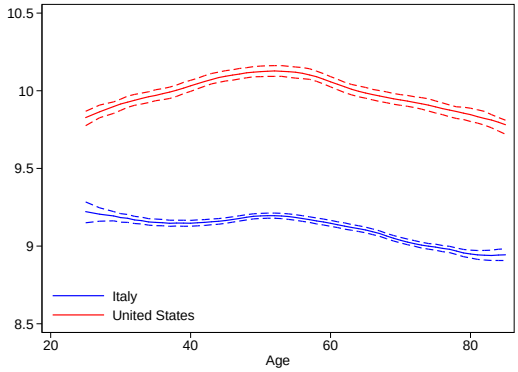
log consumption



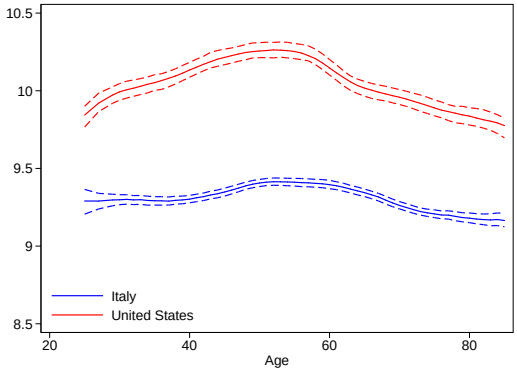
log income



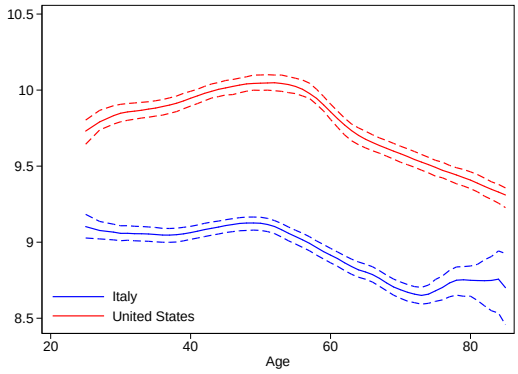
log consumption with imputed rents



log income with imputed rents



log earnings



saving = log income - log consumption

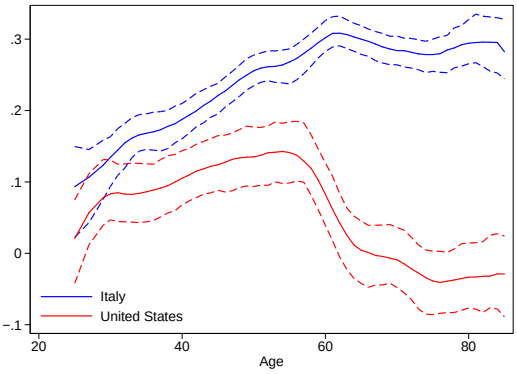
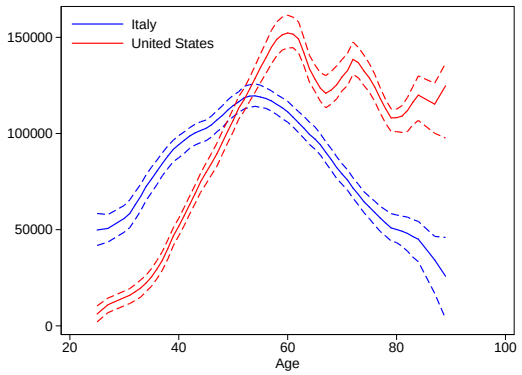
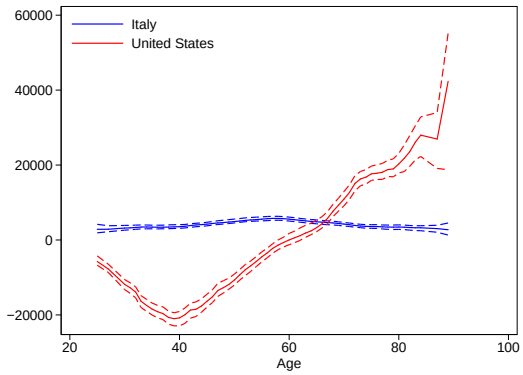


Figure 8: Networth, financial wealth and housing wealth median age-profiles (unconditional profiles)

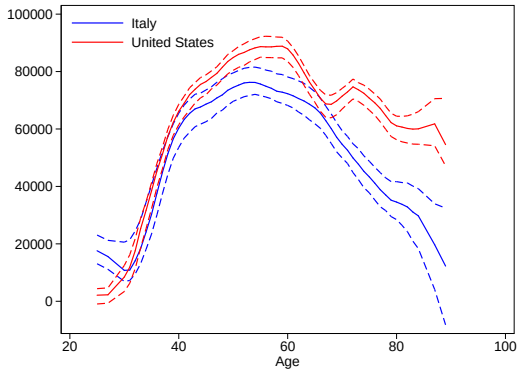
networth



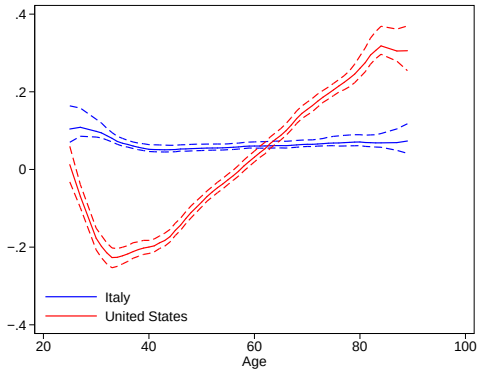
financial wealth



housing wealth



financial wealth to networth ratio



housing wealth to networth ratio

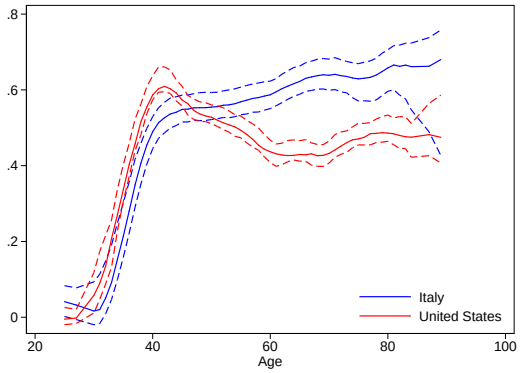
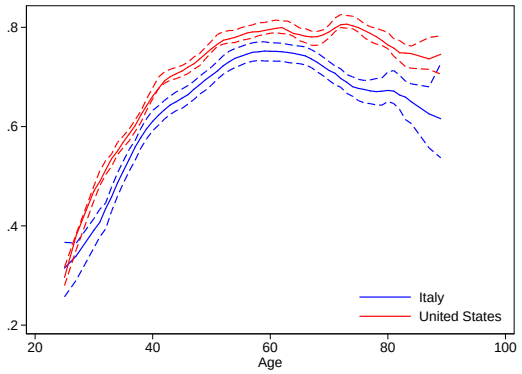
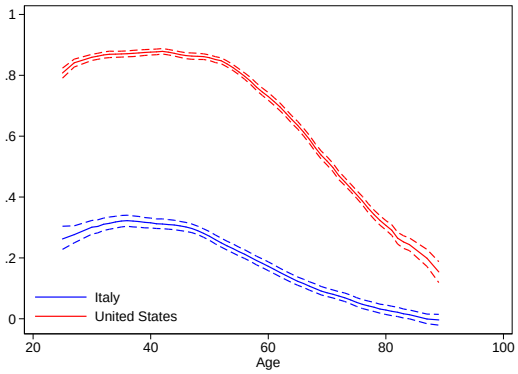


Figure 9: Participation age-profiles

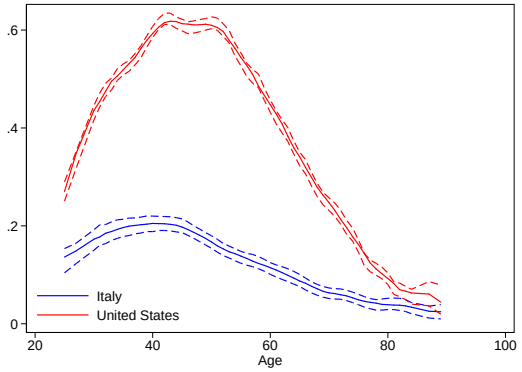
fraction of homeowners



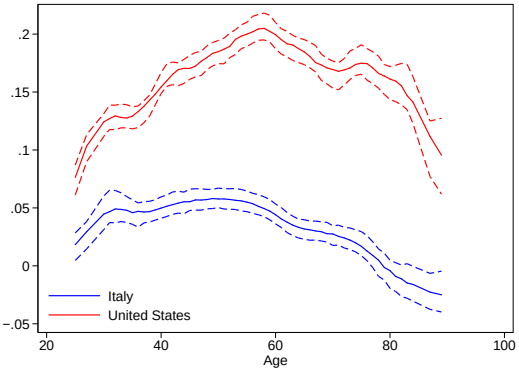
fraction of indebted households



fraction with mortgage or housing debt



fraction with stocks



fraction with risky financial assets

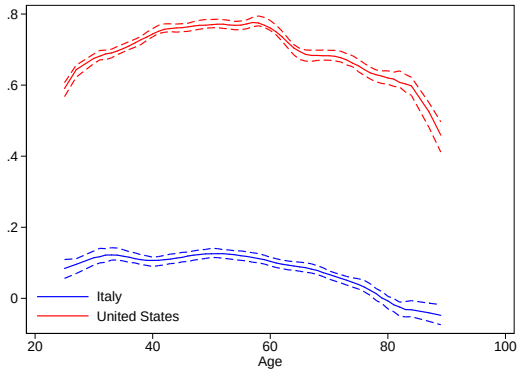
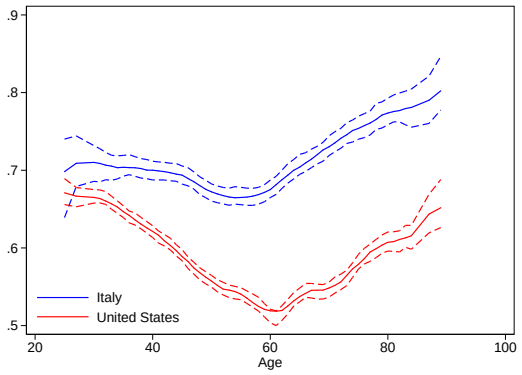
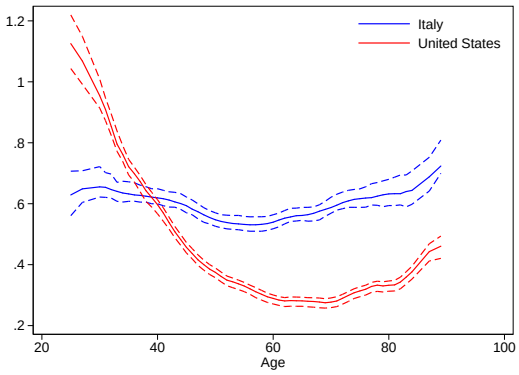


Figure 10: Wealth conditional age-profiles

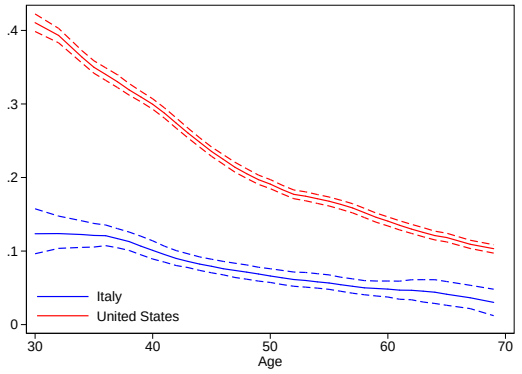
housing share
(value of main residence over total assets)



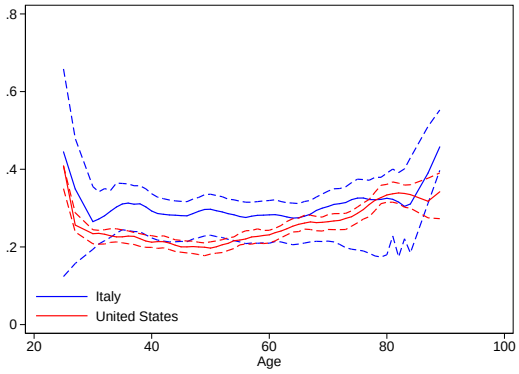
housing wealth to networth ratio



debt-over-assets ratio



stock share
(of total financial assets)



risky financial asset share
(of total financial assets)

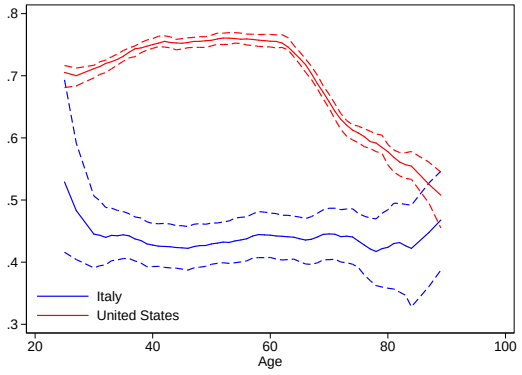


Figure 11: Family size age-profiles

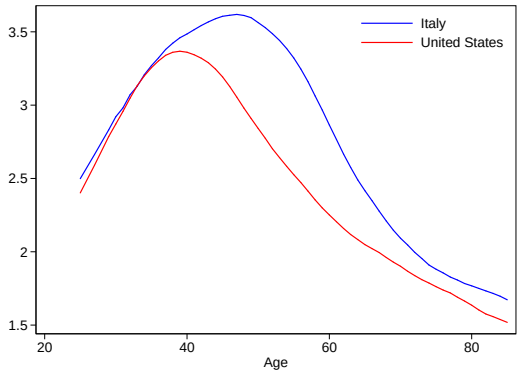


Table 1: Ownership of assets and liabilities 1989-2004
(Percentage of households with holdings)

	Italy	U.S.
Net worth > 0	97.9	89.9
Financial assets	81.1	91.6
Stocks	6.1	18.5
Risky financial assets	13.0	68.9
Real assets	94.9	90.7
Main residence	66.3	66.0
Other real estate	55.1	18.5
Business	14.1	11.5
Debts	19.0	74.6
Housing-related debt	10.5	43.8

Sources: SWIH annual database and SCF.

Table 2: Composition of household wealth 1989-2004
(in % of total assets)

	Italy	U.S.
Financial assets	12.6	36.6
Stocks	0.8	6.9
Risky financial assets	3.1	29.9
Real assets	87.1	63.4
Main residence	54.1	29.6
Other real estate	17.9	12.2
Business	9.4	16.3
Debts	2.1	15.0
Housing-related debt	1.8	12.0
Housing-related debt in % of total debt	82.6	79.9

Sources: SWIH annual database and SCF.

Table 3: Demand for credit in 2004

	Italy	U.S.
Households with debt (% of population)	22.1	76.5
Households with mortgage debt[1] (% of population)	11.9	45.9
Credit applicants[2] (% of population)	4.7	68.7
Rejected applicants[2] (% of population)	0.1	11.3
Partially granted applications[2] (% of population)	0.4	1.7
Deterred applicants[2] (% of population)	2.1	15.8
Borrowing constrained (% of effective or deterred applicants)	39.5	30.1

[1] the Italian figure refers to the percentage of households with housing-related debt

[2] figures refer to the past 12 months for Italy and the past five years for the U.S.

Sources: SWIH annual database and SCF.

Table 4: Acquisition mode of main residence for owner-occupiers 1989-2004 (in %)

	Italy	U.S.
Purchased	52.4	96.0
Inheritance/gift	26.6	4.0
Built	21.0	-

Sources: SWIH annual database and SCF.