Internet Appendix for "Twin Picks: Disentangling the Determinants of Risk-Taking in Household Portfolios"

LAURENT E. CALVET and PAOLO SODINI*

This Internet Appendix provides a detailed description of the Swedish twin panel, reviews some of the main theoretical determinants of the risky share, and verifies the robustness of the empirical results to alternative assumptions and variables. The appendix is organized as follows. Section I presents the data and estimation methodology. Section II discusses the connection between the risky share and financial wealth in a variety of habit formation models. Section III theoretically analyzes the joint impact of human capital and habit on risk-taking. Section IV compares the empirical results obtained for identical and fraternal twins. Section V reports a battery of robustness checks. Section VI shows that our results are unchanged when we control for measurement error and individual fixed effects. Section VII provides a full treatment of the aggregation procedure.

I. Data and Estimation Methodology

A. The Swedish Data Set

A.1. Swedish Twin Registry

The Swedish Twin Registry, which is administered by the Karolinska Institute in Stockholm, is the largest twin database in the world. It was founded to study the impact of smoking and alcohol consumption on the health of Swedish residents. The registry consists of two surveys:

*Citation format: Calvet, Laurent E., and Paolo Sodini, 2013, Internet Appendix for "Twin Picks: Disentangling the Determinants of Risk-Taking in Household Portfolios," *Journal of Finance* [DOI STRING] Please note: Wiley-Blackwell is not responsible for the content or functionality of any supporting information supplied by the author. Any queries (other than missing material) should be directed to the authors of the article.

SALT for twins born between 1886 and 1958, and STAGE for twins born between 1959 and 1990. The SALT survey was conducted between March 1998 and March 2002, and STAGE between May 2005 and March 2006. Response rates for those eligible (still alive and living in Sweden) were 65% for the 1886 to 1925 cohort, 74% for the 1926 to 1958 cohort, and 60% for the 1959 to 1990 cohort.

The twin registry provides the genetic relationship (fraternal or identical) of each pair,[1] and the intensity of communication between the twins. We also obtain for each twin in SALT the following physiological and lifestyle variables: weight, height, blood pressure, self-assessed physical health, mental health, smoking habits, and alcohol and coffee consumption. We refer the reader to Lichtenstein et al. (2006) and Pedersen, Lichtenstein, and Svedberg (2002) for detailed descriptions of the Swedish Twin Registry.

A.2. Swedish Wealth Registry

The twin database allows us to identify twin pairs in the wealth registry compiled by Statistics Sweden, which we have used in earlier work (Calvet, Campbell, and Sodini (CCS, 2007, 2009*a*, 2009*b*)). The information available on every Swedish resident at the end of each year can be grouped into three main categories: demographic characteristics, income, and disaggregated wealth.

- Demographic information includes age, gender, marital status, nationality, birthplace, education, and municipality. The education variables consist of high school and post-high school dummies.

- The income data comprise total yearly disposable income as well as disaggregated income variables. For capital income, the database reports the interest or dividend that has been earned on each bank account or each security. For labor income, the database reports gross labor income and business sector.

- The wealth data include the worldwide assets owned by the resident on December 31 of each year, including bank accounts, mutual funds, stocks, and real estate. Holdings are provided for each property, account, or security. The database also records debt outstanding at year-end and contributions made during the year to private pension savings.

This administrative data set is available because Sweden levied both a wealth tax and an income tax during the sample period. The Swedish tax authority and Statistics Sweden had a parliamentary mandate to collect disaggregated records of income and assets, using statements from employers and financial institutions that were verified by taxpayers.

We focus on the set of households for which all characteristics are available. As we mention in Section I.A of the paper, we filter out households that own less than 3,000 Swedish kronor ($339) in financial wealth, have yearly disposable income lower than 1,000 kronor ($113), or are headed by an adult younger than 25. These rules imply the elimination of 79 twin pairs in 1999, 70 pairs in 2000, 59 pairs in 2001, and 63 pairs in 2002. We also extract from the Swedish Wealth Registry a random subsample of 30,000 households satisfying the above criteria.

B. *Measuring Labor Income and Human Capital*

We adopt the specification of labor income used in Cocco, Gomes, and Maenhout (2005). The log of household h's real income in year t is given by

$$\log(L_{h,t}) = a_h + b' x_{h,t} + \nu_{h,t} + \varepsilon_{h,t},$$

where a_h is a household fixed effect, $x_{h,t}$ is a vector of characteristics, $\nu_{h,t}$ is an idiosyncratic random permanent component, and $\varepsilon_{h,t}$ is an idiosyncratic temporary shock distributed as $\mathcal{N}(0, \sigma^2_{\varepsilon,h})$. The permanent component $\nu_{h,t}$ follows a random walk,

$$\nu_{h,t} = \nu_{h,t-1} + \xi_{h,t},$$

where $\xi_{h,t} \sim \mathcal{N}(0, \sigma^2_{\xi,h})$ is the shock to permanent income in period t. The Gaussian innovations $\varepsilon_{h,t}$ and $\xi_{h,t}$ are white noise and are uncorrelated with each other at all leads and lags.

All income measures are deflated to 1993 prices using the consumer price index published by Statistics Sweden. The vector of characteristics $x_{h,t}$ include household size, marital status, age, and unemployment and business dummies. Age and the unemployment and business dummies refer to the household head, who is defined as the household member with the highest income in 2002.

We classify households by the head's age and education level. Since the vast majority of

Swedish residents retire at 65, we distinguish between two age groups: less than 65, or at least 65. We also consider three levels of educational attainment: (1) basic or missing education, (2) high school education, and (3) post-high school education. For each of the six groups, we estimate the income process on the 1993 to 2002 panel of nonfinancial disposable income, which is defined as disposable income minus after-tax interest and dividends.

B.1. Estimation

We estimate the coefficients a_h and b by regressing log income on characteristics and a household fixed effect. To measure $\sigma^2_{\xi,h}$ and $\sigma^2_{\varepsilon,h}$, we define the income growth innovation $u_{h,t}$ as the difference between income growth, $\log(L_{h,t}/L_{h,t-1})$, and the fitted value, $b'(x_{h,t}-x_{h,t-1})$. The sample variance of the cumulative residual,

$$v_{d,h} = Var(u_{h,t-d+1} + ... + u_{h,t}),$$

is an estimate of $d\sigma^2_{\xi,h} + 2\sigma^2_{\varepsilon,h}$. As in Carroll and Samwick (1997), we estimate $\sigma^2_{\xi,h}$ and $\sigma^2_{\varepsilon,h}$ by running the OLS regression of $(v_{1,h}; ...; v_{n,h})'$ on

$$\begin{pmatrix} 2 & 2 \\ \vdots & \vdots \\ n & 2 \end{pmatrix}.$$

We use $n = 5$ throughout our analysis.

B.2. Permanent Income

Let $\mu_{\nu,h,t} = \mathbb{E}_t(\nu_{h,t})$ and $\sigma^2_{\nu,h,t} = Var_t(\nu_{h,t})$, respectively, denote the permanent component's mean and variance conditional on current and past income. The conditional moments satisfy the recursion

$$\mu_{\nu,h,t} = \mu_{\nu,h,t-1} + \frac{\sigma^2_{\nu,h,t-1} + \sigma^2_{\xi,h}}{\sigma^2_{\nu,h,t-1} + \sigma^2_{\xi,h} + \sigma^2_{\varepsilon,h}}(\ell_{h,t} - \mu_{\nu,h,t-1}), \tag{IA.1}$$

$$\sigma^2_{\nu,h,t} = \sigma^2_{\varepsilon,h}\frac{\sigma^2_{\nu,h,t-1} + \sigma^2_{\xi,h}}{\sigma^2_{\nu,h,t-1} + \sigma^2_{\xi,h} + \sigma^2_{\varepsilon,h}}, \tag{IA.2}$$

where $\ell_{h,t} = \log(L_{h,t}) - a_h - b'x_{h,t}$ denotes the difference between log income and its fitted value.[2] For all t, we set $\sigma^2_{\nu,h,t}$ equal to the steady state[3]

$$\sigma^2_{\nu,h} = \frac{1}{2}\left(\sqrt{\sigma^4_{\xi,h} + 4\sigma^2_{\varepsilon,h}\sigma^2_{\xi,h}} - \sigma^2_{\xi,h}\right).$$

We assume that permanent income coincides with actual income at date 0 ($\mu_{\nu,h,0} = 0$), and iterate forward the relation: $\mu_{\nu,h,t} = \mu_{\nu,h,t-1} + (\ell_{h,t} - \mu_{\nu,h,t-1})\sigma^2_{\nu,h}/\sigma^2_{\varepsilon,h}$.

B.3. Expected Human Capital

We choose components of $x_{h,t}$ that are constant over time. The only exception is age, which is fully predictable. Under these simplifying assumptions, $x_{h,t+n}$ is known with certainty at date t. Hence,

$$\begin{aligned}\mathbb{E}_t(L_{h,t+n}) &= e^{a_h+b'x_{h,t+n}}\mathbb{E}_t\left(e^{\nu_{h,t+n}+\varepsilon_{h,t+n}}\right)\\ &= e^{a_h+b'x_{h,t+n}+\mathbb{E}_t(\nu_{h,t+n})+0.5\sigma^2_{\varepsilon,h}+0.5Var_t(\nu_{h,t+n})}.\end{aligned}$$

The relation $\nu_{h,t+n} = \nu_{h,t} + \xi_{h,t+1} + ... + \xi_{h,t+n}$ implies that $Var_t(\nu_{h,t+n}) = Var_t(\nu_{h,t}) + n\sigma^2_{\xi,h}$, and therefore

$$\mathbb{E}_t(L_{h,t+n}) = e^{a_h+b'x_{h,t+n}+\mu_{\nu,h,t}+0.5(\sigma^2_{\varepsilon,h}+\sigma^2_{\nu,h}+n\sigma^2_{\xi,h})}$$

for all $n \geq 1$. Expected human capital is given by

$$HC_{h,t} = \sum_{n=1}^{T_h} \pi_{h,t,t+n}\frac{e^{a_h+b'x_{h,t+n}+\mu_{\nu,h,t}+0.5(\sigma^2_{\varepsilon,h}+\sigma^2_{\nu,h}+n\sigma^2_{\xi,h})}}{(1+r)^n}, \qquad \text{(IA.3)}$$

where T_h denotes the difference between 100 and the age of household h at date t, and $\pi_{h,t,t+n}$ denotes the probability that the household head h is alive at $t+n$ conditional on being alive at t. We make the simplifying assumption that no individual lives longer than 100. The survival probability is estimated using the life table provided by Statistics Sweden.

B.4. Beta of Income Innovation with Respect to Portfolio Return

Let $\omega_{j,h,t}$ denote the weight of asset j in household h's risky portfolio at the end of year t. The estimation of $\beta_{h,t}$ is based on the static portfolio with time-invariant weights $(\omega_{j,h,t})_j$.

By construction, the static portfolio coincides with the household's risky portfolio at t but not necessarily at the end of other years. The return on the static portfolio between years $s-1$ and s is given by $r_s^{(t)} = \sum_j \omega_{j,h,t} r_{j,s}$, where $r_{j,s}$ denotes the annual return on asset j. We estimate the beta coefficient $\beta_{h,t}$ by regressing the income growth innovation $u_{h,s}$ on $r_s^{(t)}$ over the longest set of consecutive years for which the return and income data are available.

C. *Bank Account Imputation*

In the Swedish Wealth Registry, the balance of a bank account is frequently unreported when the account yields less than 100 Swedish kronor (or \$11) during the year. As in CCS (2007, 2009*a*, 2009*b*), we impute the balance of every household for which no bank account data are available.

The imputation rule is obtained from the subsample of about 250,000 individuals for which we observe the bank account balance even though the earned interest is less than 100 kronor. Specifically, we regress the balance onto age and squared age of household head, household size, real estate wealth, level and squared level of household disposable income, and financial wealth other than bank accounts. The coefficient of determination is modest ($R^2 = 1.2\%$) but the regression coefficients are highly significant.

We use the regression coefficients to impute the account balances of individual household members and then aggregate up the imputed amounts to infer the household bank account balance. This imputation method is used throughout the main text and the Internet Appendix.

II. Portfolio Selection in the Presence of Habit

The equation

$$w_{h,t} = w_{h,t}^* \left(1 - \frac{\lambda_h X_{h,t}}{F_{h,t}}\right) \tag{IA.4}$$

holds in a variety of habit formation contexts, such as

1. two-period settings with a fixed subsistence level, as in ch. 6 of Campbell and Viceira (2002),

2. external habit models with an infinite horizon and a constant $X_{h,t}$, as in Brunnermeier and

Nagel (2008),

3. the internal habit formation model of Constantinides (1990), in which habit is a weighted average of past consumption.

The proof of (IA.4) is provided below for each specification. For notational simplicity, we suppress the household index h in this section.

A. *Static Case*

We consider an investor living two periods. At date $t = 0$, the investor is endowed with financial wealth F, which she can invest either in a riskless asset with net return R_f or in a risky asset with random return R_m. The investor consumes at date $t = 1$. The utility over final consumption is $u(c - X)$, where

$$u(c) = c^{1-\gamma}/(1-\gamma)$$

and X is a known subsistence or habit level.

At date $t = 0$, the investor solves the static portfolio optimization problem

$$\max_{w} \mathbb{E}\left[u(C - X)\right]$$

subject to the budget constraint $C = F[1 + R_f + w(R_m - R_f)]$. Surplus consumption can be rewritten as

$$\begin{aligned} C - X &= \left(F - \frac{X}{1+R_f}\right)(1+R_f) + wF(R_m - R_f) \\ &= (F - \lambda X)\left[1 + R_f + w^*(R_m - R_f)\right], \end{aligned}$$

where $\lambda = 1/(1 + R_f)$ and $w^* = w(1 - \lambda X/F)^{-1}$. Since u is a power function, terminal utility satisfies

$$u(C - X) = (F - \lambda X)^{1-\gamma}\, u\left[1 + R_f + w^*(R_m - R_f)\right].$$

The risky share w maximizes $\mathbb{E}\left[u(C - X)\right]$ if and only if $w^* = w(1 - \lambda X/F)^{-1}$ maximizes $\mathbb{E}\left\{u\left[1 + R_f + w^*(R_m - R_f)\right]\right\}$. Thus, w^* is the optimal risky share of the CRRA investor. We conclude that $w = w^*(1 - \lambda X/F)$.

B. External Habit

A similar logic applies to the external habit formation model considered by Brunnermeier and Nagel (2008). Assume that the agent consumes and trades assets every period $t = 0, ..., \infty$. Her utility is $\mathbb{E}_0 \left[\sum_{t=0}^{\infty} \delta^t u(C_t - X)\right]$, where C_t denotes period-t consumption, X a fixed external habit or subsistence level, and δ a subjective discount rate ($0 < \delta < 1$). Every period t, the agent can trade a riskless asset with net return R_f or a stock with random return $R_{m,t}$.

The agent solves the consumption-portfolio problem

$$\max_{\{C_t, w_t, F_t\}} \mathbb{E}_0 \left[\sum_{t=0}^{\infty} \delta^t u(C_t - X)\right] \tag{IA.5}$$

subject to the sequential budget constraints

$$F_{t+1} = F_t[1 + R_f + w_t(R_{m,t+1} - R_f)] - C_{t+1}.$$

We consider the change of variables $C_t^* = C_t - X$ and $F_t^* = F_t - X/R_f$ for all t. The budget constraint can then be rewritten as

$$\begin{aligned} F_{t+1}^* &= (F_t^* + X/R_f)[1 + R_f + w_t(R_{m,t+1} - R_f)] - (C_{t+1}^* + X) - X/R_f \\ &= F_t^*(1 + R_f) + (F_t^* + X/R_f)w_t(R_{m,t+1} - R_f) - C_{t+1}^* + X(1 + R_f)/R_f - X - X/R_f. \end{aligned}$$

Let $w_t^* = (F_t^* + X/R_f)w_t/F_t^*$. Since $X(1 + R_f)/R_f - X - X/R_f = 0$, the renormalized variables satisfy the usual budget constraint

$$F_{t+1}^* = F_t^* \left[1 + R_f + w_t^*(R_{m,t+1} - R_f)\right] - C_{t+1}^*. \tag{IA.6}$$

The plan $\{(C_t, w_t, F_t)\}_{t=0}^{\infty}$ solves (IA.5) if and only $\{(C_t^*, w_t^*, F_t^*)\}_{t=0}^{\infty}$ solves

$$\max_{\{C_t^*, w_t^*, F_t^*\}} \mathbb{E}_0 \left[\sum_{t=0}^{\infty} \delta^t u(C_t^*)\right].$$

subject to the sequential budget constraints (IA.6). Hence, w_t^* coincides with the optimal risky share of a CRRA agent. We conclude that $w_t = w_t^* F_t^*/(F_t^* + X/R_f) = w_t^*(1 - \lambda X/F_t)$.

C. *Internal Habit*

We now turn to the internal habit formation model of Constantinides (1990). Time is continuous and the representative agent has utility

$$\mathbb{E}_0 \left[\int_0^{+\infty} e^{-\delta t} u(C_t - X_t) dt \right].$$

Internal habit is defined as a function of lagged consumption,

$$X_t = e^{-at} X_0 + b \int_0^t e^{-a(t-s)} C_s ds. \tag{IA.7}$$

The parameter a quantifies persistence, and b the sensitivity of the habit to consumption. The investor can continuously trade a riskless asset with constant instantaneous rate r_f and a stock whose price P_t follows a geometric Brownian motion.

The agent solves

$$\max_{\{C_t, w_t, F_t\}} \mathbb{E}_0 \left[\int_0^{+\infty} e^{-\delta t} u(C_t - X_t) dt \right] \tag{IA.8}$$

subject to the budget constraint

$$dF_t = F_t \left[r_f dt + w_t \left(\frac{dP_t}{P_t} - r_f dt \right) \right] - C_t dt.$$

The habit (IA.7) follows the diffusion

$$dX_t = (bC_t - aX_t)dt.$$

We let

$$\lambda = \frac{1}{r_f + a - b}$$

and consider the change of variables

$$C_t^* = \frac{r_f + a}{r_f + a - b}(C_t - X_t), \tag{IA.9}$$

$$w_t^* = w_t F_t / (F_t - \lambda X_t), \tag{IA.10}$$

$$F_t^* = F_t - \lambda X_t. \tag{IA.11}$$

With the new variables, the law of motion of internal habit becomes

$$\begin{aligned} dX_t &= \left[b \left(\frac{r_f + a - b}{r_f + a} C_t^* + X_t \right) - aX_t \right] dt \\ &= \left[b \frac{r_f + a - b}{r_f + a} C_t^* + (b - a) X_t \right] dt. \end{aligned}$$

Renormalized financial wealth F_t^* satisfies

$$\begin{aligned} dF_t^* &= (F_t^* + \lambda X_t) r_f dt + F_t^* w_t^* \left(\frac{dP_t}{P_t} - r_f dt \right) - \left(\frac{r_f + a - b}{r_f + a} C_t^* + X_t \right) dt - \lambda dX_t \\ &= r_f F_t^* dt + F_t^* w_t^* \left(\frac{dP_t}{P_t} - r_f dt \right) - \left(\frac{r_f + a - b}{r_f + a} C_t^* + X_t \right) dt + \frac{r_f}{r_f + a - b} X_t dt \\ &\quad - \left(\frac{b}{r_f + a} C_t^* + \frac{b - a}{r_f + a - b} X_t \right) dt \end{aligned}$$

and therefore

$$dF_t^* = F_t^* \left[r_f dt + w_t^* \left(\frac{dP_t}{P_t} - r_f dt \right) \right] - C_t^* dt. \tag{IA.12}$$

The plan $\{(C_t, w_t, F_t)\}_{t=0}^{\infty}$ maximizes (IA.8) if and only if $\{(C_t^*, w_t^*, F_t^*)\}_{t=0}^{\infty}$ defined by (IA.9) to (IA.11) maximizes $\mathbb{E}_0 \left[\int_0^{+\infty} e^{-\delta t} u(C_t^*) dt \right]$ under the usual budget constraint (IA.12). We conclude that (C_t^*, w_t^*, F_t^*) is the optimal solution of a CRRA agent. Hence, $w_t = w_t^*(1 - \lambda X_t / F_t)$.

III. Portfolio Selection in the Presence of Human Capital and Habit

In this section, we discuss the joint impact of human capital and habit on the asset allocation of individual investors. We begin by assuming that human capital is riskless, and then show by calibration how the results are modified in the presence of income risk.

A. *Asset Allocation in the Absence of Income Risk*

A.1. External Habit

We consider a variant of the external habit formation model in Brunnermeier and Nagel (2008), in which liquid wealth includes both physical and human capital. As in Section II.B of this Internet Appendix, the agent has utility

$$\mathbb{E}_0\left[\sum_{t=0}^{\infty}\delta^t\frac{(C_t-X)^{1-\gamma}}{1-\gamma}\right],$$

where C_t denotes period-t consumption and X a fixed external habit. Every period t, the agent can trade a riskless asset with net return R_f and a stock with random return $R_{m,t}$. The agent receives an exogenous stream of labor income L_t, which is assumed to be tradable and riskless. We denote by $HC_t = \sum_{n=1}^{\infty} L_{t+n}(1+R_f)^{-n}$ the market value of future income. The agent's budget constraint is now

$$F_{t+1} = L_{t+1} + F_t[1 + R_f + w_t(R_{m,t+1} - R_f)] - C_{t+1}. \tag{IA.13}$$

In the absence of habit ($X = 0$), the agent has CRRA utility. If the market return $R_{m,t+1}$ is lognormal, the optimal share of *total* liquid wealth allocated to risky assets is $w_t^* \approx S_m/(\gamma\sigma_m)$, where S_m denotes the stock's Sharpe ratio and σ_m the volatility of the stock's log return.

In the presence of habit, the agent's utility maximization problem has a solution if the household's overall resources exceed the cost of maintaining the habit over an infinite horizon,

$$F_t + HC_t > \lambda X, \tag{IA.14}$$

where $\lambda = 1/R_f$. This condition is a direct implication of the sequential budget constraint (IA.13). We refer to λX as the *habit liability.* If condition (IA.14) holds, the investor allocates a fraction $w_t^*[1 - \lambda X/(F_t + HC_t)]$ of *total wealth* to risky assets.[4] The corresponding fraction of *financial wealth* is

$$w_t = w_t^*\left(1 - \frac{\lambda X}{F_t + HC_t}\right)\frac{F_t + HC_t}{F_t},$$

or equivalently,

$$w_t = w_t^*\left(1 - \frac{\lambda X - HC_t}{F_t}\right). \tag{IA.15}$$

The financial wealth elasticity of the risky share is therefore

$$\eta_t = \frac{d\log(w_t)}{d\log(F_t)} = \frac{(\lambda X - HC_t)/F_t}{1 - (\lambda X - HC_t)/F_t}, \tag{IA.16}$$

which is positive if the habit liability exceeds human capital: $\lambda X > HC_t$.

We infer from (IA.16) that the habit liability λX satisfies

$$\lambda X = HC_t + \frac{\eta_t}{1+\eta_t} F_t, \tag{IA.17}$$

and from (IA.15) that the risky share is

$$w_t = \frac{w_t^*}{1+\eta_t}. \tag{IA.18}$$

Equations (IA.17) and (IA.18) can be used to impute the habit liability and the risky share from the elasticity η_t, financial wealth F_t, and human capital HC_t.

In the Swedish data set, η_t is about 0.223, average financial wealth F_t about \$45,000, and average human capital HC_t about \$760,000 when the discount rate R_f is set equal to 3%. The imputed cost of maintaining the habit over an infinite horizon is

$$\begin{aligned} \lambda X &= \$760,000 + \frac{0.223}{1.223}\$45,000 \\ &= \$768,200. \end{aligned}$$

Since the interest rate is $R_f = 3\%$, the yearly habit is

$$X = 3\% \times 768,205 = \$23,000,$$

when human capital is taken into account. This estimate seems reasonable since it is close to average consumption and income in Sweden. By contrast, when human capital is not taken account, λX is \$8,200 and the yearly habit is only \$250 per year; habit then only has a negligible effect on the asset allocation. Human capital is therefore essential to reconcile our micro estimates with representative-agent habit formation models in which the habit-to-consumption ratio is close to unity (e.g., Campbell and Cochrane (1999)).

The model is also consistent with the measured risky share. Assume, for instance, that the curvature is $\gamma = 3$, the stock's Sharpe ratio is $S_m = 0.4$, and the standard deviation of the stocks's log return is $\sigma_m = 0.2$. The risky share w_t^* of the corresponding CRRA investor is then equal to $2/3$. With habit, risky share is $w_t = 0.667/1.223 = 0.572$, which is consistent with Table I. Overall, the measured financial wealth elasticity of the risky share implies reasonable levels of external habit and the risky share when human capital is taken into account.

A.2. Internal Habit

Human capital can similarly be incorporated into the internal habit model of Constantinides (1990). The notation is the same as in Section II.C of this Internet Appendix. If consumption grows deterministically at rate g (so that $C_t = C_0 e^{gt}$), the internal habit satisfies

$$X_t = e^{-at} X_0 + \frac{bC_t}{a+g}[1 - e^{-(a+g)t}].$$

The habit-to-consumption ratio is therefore

$$X_t/C_t = b/(a+g) \tag{IA.19}$$

in a steady state.

The investor can continuously trade a riskless asset with constant instantaneous rate r_f and a stock whose price P_t follows a geometric Brownian motion. We assume that liquid wealth includes both financial and riskless human capital. Analogous to the external habit formation case, the risky share is

$$w_t = w_t^* \left(1 - \frac{\lambda X_t}{F_t + HC_t}\right) \frac{F_t + HC_t}{F_t}, \tag{IA.20}$$

where $\lambda = 1/(r_f + a - b)$. The financial wealth elasticity of the risky share is given by

$$\eta_t = \frac{d\log(w_t)}{d\log(F_t)} = \frac{(\lambda X_t - HC_t)/F_t}{1 - (\lambda X_t - HC_t)/F_t}.$$

Imputed habit is therefore

$$X_t = (r_f + a - b)\left(HC_t + \frac{\eta_t}{1+\eta_t} F_t\right), \tag{IA.21}$$

and the imputed risky share is again $w_t = w_t^*/(1+\eta_t)$.

In the aggregate habit formation literature, the parameters a and b are generally close to each other and range between 0.1 and 0.6 (see, for instance, Table I in Constantinides (1990)). Assume, for instance, that $a = 0.35$, $b = 0.34$, and aggregate consumption grows at rate $g = 2\%$. The benchmark internal habit (IA.19) in the Swedish data set is

$$X_t = \frac{b}{a+g} C_t = \frac{0.34}{0.35+0.02} \$32,400 = \$29,800.$$

We set the log interest rate $r_f = \log(1 + R_f)$ equal to $\log(1 + 3\%) = 2.96\%$. The imputed habit (IA.21) is therefore

$$\begin{aligned} X_t &= (0.0296 + 0.35 - 0.34)\left(\$760,000 + \frac{0.223}{1.223}\$45,000\right) \\ &= \$30,400, \end{aligned}$$

which is close to the benchmark. The imputed risky share is unchanged at 0.572.

The financial wealth elasticity of the risky share measured on micro data implies reasonable levels of the (external or internal) habit and the risky share when human capital is taken into account. These results obtain under the assumption that income is deterministic. We now investigate how these results are modified when labor income is stochastic.

B. *Asset Allocation in the Presence of Income Risk*

The relation between financial wealth and the risky share is generally ambiguous in the presence of both habit and labor income. Equations (IA.15) and (IA.20) show that the habit channel dominates if habit is sufficiently high. When income is risky, the habit channel also dominates through a complementary mechanism (Polkovnichenko (2007)). Habit imposes a binding upper bound on the risky share, which is determined by the worst realization of human capital and asset returns. As financial wealth goes up, the constraint becomes progressively looser and the risky share increases. In this subsection, we develop this logic in a two-period portfolio selection model that includes both human capital and habit. Our static model is a simplified version of Polkovnichenko's dynamic analysis.

The investor has financial wealth F at date $t = 0$ and receives stochastic labor income L at $t = 1$. We denote by $L_{\min}$ the minimal value of L. As in Section II.A of this Internet Appendix, consumption takes place at date $t = 1$. The investor has expected utility

$$\mathbb{E}\left[\frac{(C - X)^{1-\gamma}}{1-\gamma}\right], \tag{IA.22}$$

where C denotes terminal consumption at date $t = 1$ and X is a habit or subsistence level. At date $t = 0$, the agent invests her financial wealth F in a riskless asset with net return R_f and a stock with random net return R_m. We denote by $R_{\min}$ the lowest possible return on the stock.

We assume limited liability and no arbitrage, which implies that $-1 \leq R_{\min} < R_f$. We also assume that labor income and the stock return are independent.

Let w denote the share of the agent's financial wealth invested in the stock. Short sales and borrowing are ruled out, so that $w \in [0,1]$. The investor selects the value of w that maximizes (IA.22) under the budget constraint $C = L + F[1 + R_f + w(R_m - R_f)]$. The optimal risky share must be such that $C \geq X$ almost surely, or equivalently,

$$L_{\min} + F[1 + R_f + w(R_{\min} - R_f)] \geq X. \tag{IA.23}$$

To emphasize the connection with the dynamic models in previous subsections, we let $\lambda = 1/(1 + R_f)$ and $HC_{\min} = \lambda L_{\min}$. The feasibility constraint (IA.23) can be rewritten as $w \leq \omega(F; X, HC_{\min})$, where

$$\omega(F; X, HC_{\min}) = \frac{1}{\lambda(R_f - R_{\min})} \left[1 - \frac{\lambda X - HC_{\min}}{F}\right].$$

If the habit liability exceeds the minimum level of human capital, $\lambda X > HC_{\min}$, the function $\omega(F; X, HC_{\min})$ increases from zero to $1/\lambda(R_f - R_{\min}) \geq 1$ as financial wealth varies from $\lambda X - HC_{\min}$ to $+\infty$.

Intuition suggests that if $HC_{\min}$ is low, the optimal risky share coincides with $\omega(F; X, HC_{\min})$ on a range of financial wealth levels, and then converges to the CRRA solution w^* as $F \to \infty$. If instead $HC_{\min}$ is high compared to the habit, the effect of human capital dominates and the risky share is a decreasing function of financial wealth. We verify these intuitions in a set of simulations. The choice of parameters is guided by the following considerations. We set $\gamma = 5$ and normalize the habit to unity, $X = 1$. We assume that labor income L has a mean $\bar{L}$ equal to 1.5 and a standard deviation σ_L equal to 0.2. The mean corresponds to a habit-to-average income ratio $\bar{L}/X$ equal to 2/3, which is in line with the literature; for instance, Polkovnichenko (2007) chooses a habit-to-average consumption ratio of 0.6. The worst possible level of income, $L_{\min}$, ranges between 0.6 and 1.1, so that $L_{\min}/\bar{L}$ ranges between 0.40 and 0.73. To complete the specification, we assume that labor income is a Bernoulli random variable that can take the low value $L_{\min}$ with probability $1 - p$ and the high value $L_{\max}$ with probability p. The quantities $L_{\max}$ and p are implicitly defined by the conditions $\sigma_L = \sqrt{(L_{\max} - \bar{L})(\bar{L} - L_{\min})}$ and $\bar{L} = pL_{\max} + (1 - p)L_{\min}$.[5] The net interest rate R_f is set equal to 3%. We also assume that the stock return is lognormal: $\log(1 + R_m) \sim \mathcal{N}(\mu_m, \sigma_m^2)$, where $\mu_m = 0.08$ and $\sigma_m = 0.20$.

Figure IA.1 illustrates the theoretical relation between the risky share and financial wealth. For low to moderate values of $L_{\min}$, the risky share strongly increases in financial wealth and then stabilizes, as the habit formation model predicts. The risky share is hump-shaped for intermediate values of $L_{\min}$: the feasibility constraint ceases to be binding and the impact of human capital dominates at medium wealth levels. For $L_{\min} = 1.1$, the risky share decreases with financial wealth, as the human capital model predicts.

In Figure IA.2, we illustrate how the financial wealth elasticity of the risky share varies with financial wealth itself. We observe that the elasticity decreases with financial wealth under most specifications. For $L_{\min} = 1.1$, the elasticity falls down to -0.6 and then increases to zero as financial wealth varies from 0 to $+\infty$.

Overall, the theoretical models presented in this section imply that in the presence of human capital and habit, the relation between the risky share and financial wealth is positive under a wide range of conditions. The main requirement is that the lowest possible realization of human capital be lower than the habit liability, which seems very reasonable for most individual investors. Under this condition, the risky share increases with financial wealth on a broad (and possibly unbounded) range of financial wealth levels, consistent with the empirical evidence.

IV. Comparison of Identical and Fraternal Twins

A. Summary Statistics and ACE Decomposition

In the first six columns of Table IA.I, we report the mean, standard deviation, and twin correlation of observable characteristics computed over the subsamples of identical and fraternal twins. As one would expect, the pairwise correlations of all characteristics are substantially higher for identical twins than for fraternal twins. Standard deviations are correspondingly lower in the subsample of identical twins.

In the last two columns of Table IA.I, we report the results of an ACE decomposition, a linear model of genetic effects that has been widely used in medicine and is now starting to be used in household finance (Barnea, Cronqvist, and Siegel (2010), Cesarini et al. (2009, 2010)). In ACE, the characteristic $x_{i,j}$ of twin j in pair i is the sum of a genetic component $a_{i,j}$, a common component c_i, and an idiosyncratic component $\varepsilon_{i,j}$,

$$x_{i,j} = a_{i,j} + c_i + \varepsilon_{i,j}.$$

The genetic, common, and idiosyncratic components are assumed to be uncorrelated. Thus, ACE does not take into account interactions between genetic and environmental variables, which have been shown to be empirically important (Ridley (2003)). ACE also assumes that the pairwise correlation of the genetic component, $Corr(a_{i,1}; a_{i,2})$, equals one for identical twins and 1/2 for fraternal twins. In the simplest specifications, the genetic component has the same unconditional variance in the group of identical twins as in the group of fraternal twins. Similarly, the variance of the common component, σ_c^2, and the variance of the idiosyncratic component, σ_ε^2, are assumed to be the same in both groups.

The pairwise correlation of the characteristics, $Corr(x_{i,1}; x_{i,2})$, is

$$\begin{aligned} \rho^{MZ} &= \frac{\sigma_c^2 + \sigma_a^2}{\sigma_c^2 + \sigma_a^2 + \sigma_\varepsilon^2} \text{ for monozygotic twins, and} \\ \rho^{DZ} &= \frac{\sigma_c^2 + \sigma_a^2/2}{\sigma_c^2 + \sigma_a^2 + \sigma_\varepsilon^2} \text{ for dizygotic twins.} \end{aligned}$$

The differences

$$2(\rho^{MZ} - \rho^{DZ}) = \frac{\sigma_a^2}{\sigma_c^2 + \sigma_a^2 + \sigma_\varepsilon^2} \text{ and } 2\rho^{DZ} - \rho^{MZ} = \frac{\sigma_c^2}{\sigma_c^2 + \sigma_a^2 + \sigma_\varepsilon^2}$$

quantify the contributions of the genetic and common components to the cross-sectional variance of the characteristic according to ACE.

The genetic component seems empirically important for most characteristics, including the risky share, financial wealth, education, and income risk. The estimated contribution of the common component is negative for seven characteristics, for which $\rho^{DZ} \leq \rho^{MZ}/2$. This observation suggests that the simple ACE decomposition cannot be applied to these variables.

In Table IA.II, we sort twins by communication frequency and report the ACE decomposition of the risky share in each group. We consider both the risky share itself ("No controls") and the residual of a regression of the risky share on characteristics ("With controls"), both in levels (Panel A) and in logs (Panel B). We observe that in all cases, the genetic component is substantially larger among frequent communicators than among infrequent communicators. This finding suggests that the so-called genetic component of an ACE decomposition is unlikely to be purely driven by genes.

B. *Regression with Heterogeneous Elasticity*

In Table IA.III, we separately estimate for identical twins and fraternal twins the panel regressions with wealth-dependent elasticity reported in Table V of the main text. The elasticity strongly decreases with financial wealth in both twin subsamples.

V. Robustness Checks

A. *Year-by-Year Regressions*

Table IA.IV reports year-by-year estimates of the twin pair fixed effects regression. The estimates of financial wealth elasticity of the risky share tend to decline over time from 0.28 in 1999 to 0.23 in 2001 and 0.12 in 2002. The relation between risk-taking and financial wealth weakened as the bear market took hold. The financial wealth elasticity of the risky share is nonetheless significantly positive in all years.

B. *Normalized Wealth Ratios*

Economic theory suggests that the risky share is a function of

- the financial wealth-to-human capital ratio (Merton (1971)),
- the financial wealth-to-habit liability ratio (Constantinides (1990), Campbell and Cochrane (1999)),
- the financial wealth-to-real estate ratio (Flavin and Yamashita (2002)).

By contrast, models based on the "spirit of capitalism" imply that financial wealth may directly impact individual utility and the risky share. The twin data set allows us measure the relative importance of each channel for the financial wealth elasticity risky share.

We estimate regressions of the log risk share on renormalized wealth ratios and other characteristics estimated on the set of all twins (Table IA.V) and on the set of identical twins (Table IA.VI). The coefficients on the financial wealth-to-commercial real estate ratio, the financial wealth-to-human capital ratio, and the financial wealth-to-habit ratio have the signs predicted by theory. Commercial real estate and internal habit are significant in the sample of all twins and lose significance in the subsample of identical twins, consistent with the smaller size of the identical twin subsample. Perhaps more strikingly, the financial wealth-to-human capital ratio is insignificant in the full sample but is significant in the subsample of identical twins, for which our procedure best controls for latent heterogeneity. Financial wealth as a standalone variable has a positive coefficient that is significant at the 10% level in the full sample. This finding suggests that some durable goods and consumption commitments may be missing from the analysis, or that models based the capitalistic spirit are indeed correct in assuming that financial wealth has a direct impact on the risky share independent of other assets held by the household. The financial wealth coefficient may also be related to different levels of financial literacy or different access to investment opportunities across households.

The table provides a decomposition of the financial wealth elasticity of the risky share reported in the main text. The coefficient on standalone financial wealth is 0.17, the coefficient on the financial wealth-to-internal habit ratio is 0.09, and the coefficient on the financial wealth to external habit ratio is -0.04, which add up to the 0.22 estimate reported in the main text. Internal habit is a sizeable contributor, but it cannot fully explain the financial wealth elasticity of the risky share reported in the main text.

C. Human Capital

Financial theory suggests that households facing liquidity constraints should use a higher discount rate than unconstrained households (e.g., Cvitanić and Karatzas (1992) and Teplá (2000)). For this reason, we recompute human capital (IA.3) with the discount rate $r = 5\%$ when the twin in the household is less than 35 years old, and $r = 3\%$ otherwise. We report the corresponding risky share regressions in Table IA.VII (all twins) and IA.VIII (identical twins). The results are very similar to those reported in Tables II and III of the main text.

Low financial wealth is another proxy for leverage constraints. We therefore recompute human capital by using a discount rate of 5% for households in the bottom half of the financial wealth distribution, and a discount rate of 3% for households in the top half. The corresponding results are reported in Tables IA.IX (all twins) and IA.X (identical twins). The results are once again similar to those reported in the main text.

D. External Habit

In the main text, a household's external habit is proxied by the three-year average income in the household's municipality. Another and perhaps finer proxy for external habit is the average income of households in the same municipality *and* the same age group. In Table IA.XI, we report the risky share regressions based on this alternative proxy. The external habit coefficient remains insignificant.

E. Education

The risky share regressions reported in the main text include a high school dummy and a dummy for post-high school education. In Table IA.XII, we decompose the post-high school dummy as the sum of three dummy variables corresponding to (1) incomplete undergraduate training, (2) an undergraduate degree but no post-graduate education, and (3) some post-graduate education. The three dummies are mutually exclusive, and the second dummy refers to all forms of undergraduate education, including university, college, and vocational training. All the education variables are insignificant.

F. Marital Status

Thus far, we have grouped individuals into households if they live together, regardless of their marital status. In Table IA.XIII, we reestimate the regression when marital status in included as a control. Our results are unchanged and the marriage dummy is insignificant.

G. Age

It is sometimes suggested that genetic effects matter less with age. In Table IA.XIV, we reestimate the twin regression on four age groups. The financial wealth elasticity of the risky share remains significantly positive and close to 0.2 in all groups. The effects of other characteristics are generally robust, albeit with less significance than in Table II due to the smaller size of each age group. Leverage, income risk, internal habit, and family size have a negative impact on the risky share. The beta of income growth relative to the risky portfolio return, β_h, is significant and positively related to risk-taking for investors between 35 and 45, and is insignificant in the other three age groups.

In Table IA.XV, we estimate a parametric specification that includes age and age squared as explanatory variables of elasticity. The two age coefficients are now insignificant, which suggests that the variations reported in Table IA.XIV are insignificant and that the financial wealth elasticity of the risky share is approximately constant with age. Overall, Tables IA.XIV and IA.XV show that our main findings hold consistently in all age groups.

H. Communication Between Twins

Tables IA.XVI and IA.XVII report yearly twin pair fixed effects regressions computed on the subsamples of frequent and infrequent communicators. Table IA.XVI considers all twins, while Table IA.XVII focuses on identical twins. The first and third set of columns of each table assume a constant financial wealth elasticity of the risky share and are therefore the complete version of the regressions reported in Table IV of the main text. The second and fourth set of columns of each table allow the elasticity to vary across financial wealth quartiles. The coefficients on all characteristics are fully consistent with the empirical regularities documented in the main text and in the rest of this Internet Appendix.

I. Local Interactions

A household's asset holdings may be driven not only by the household's own preferences and characteristics, but also by social interactions with the household's neighbors, friends, and coworkers. Table IA.XVIII reports the cross-sectional variance of the risky share within and between Swedish municipalities. The variance of the risky share (in logs or in levels) within Swedish municipalities is about 30 times larger than the variance between municipalities. This analysis does not control for heterogeneity in observable characteristics. We therefore recompute the variance decomposition for the residual of the yearly twin pair fixed effects regression reported in the third set of columns of Table II. The variance of the residual within municipalities is now

80 times larger than its variance across municipalities. Thus, local interactions do not appear to be the main drivers of risk-taking.

In Table IA.XIX, we reestimate the twin regressions by including as controls the average log risky share and the average log financial wealth of households in the same municipality. The average financial wealth elasticity is again estimated at 0.22, and the impact of the other characteristics remains largely unchanged. The municipality log risky share has a positive and significant coefficient of about 0.35. This result should be taken with caution, however, since the econometric analysis of social interactions is fraught with difficulties (e.g., Manski (2000)). While we leave the full investigation of social interactions in risk-taking for further research, we conclude that social interactions within municipalities do not alter the relation between risk-taking and own characteristics.

J. Alternative Elasticity Specifications

J.1. Elasticity as a Function of Own Characteristics

In the main text, we specify the risky share as

$$\log(w_{i,j,t}) = \alpha_{i,t} + \eta_{i,t} f_{i,j,t} + \gamma' x_{i,j,t} + \varepsilon_{i,j,t},$$

where the financial wealth elasticity of the risky share $\eta_{i,t}$ is a function of the average characteristics of the pair:

$$\eta_{i,t} = \eta_0 + \eta_1 f_{i,t} + \psi' x_{i,t}.$$

We adopt this specification because it is the linear analogue of the bin regressions in Table V. In Table IA.XX, we reestimate the panel when the elasticity is specified as a function of the *own* characteristics of each household in pair. Our results are robust to this alternative specification.

J.2. Impact of Yearly Twin Pair Fixed Effects on the Elasticity

We now investigate whether there is a relation between the elasticity $\eta_{i,t}$ and the overall propensity to take risk, as measured by the fixed effect $\alpha_{i,t}$. For instance, if one interprets $\alpha_{i,t}$ as a measure of risk tolerance, one might ask if there is a relation between risk tolerance and the financial wealth elasticity of the risky share. In Table IA.XXI, we reestimate a twin regression in which the twin pair fixed effect $\alpha_{i,t}$ (obtained from the regression reported in the third set of columns of Table II) is used as an explanatory variable of the elasticity,

$$\eta_{i,t} = \eta_0 + \eta_1 f_{i,t} + \eta_2 \alpha_{i,t} + \psi' x_{i,t}.$$

The impact of $\alpha_{i,t}$ is negative and significant. Individual investors with a high propensity to take risk tend to also have a low financial wealth elasticity of the risky share.

K. *Randomly Matched Pairs*

In Table IA.XXII, we reestimate the twin regressions on a group of randomly matched pairs. The coefficients reported in Panel A are similar to the yearly fixed effects coefficients reported in the last set of columns of the panel (and in the last columns of Table II, Panel A). In particular, educational attainment is strongly significant with randomly matched pairs, in contrast to the insignificant coefficients obtained with actual twins.

The adjusted R^2 and the fixed effect share ω_α^2 are substantially lower with randomly matched pairs than with actual twins. We obtain $R^2 = 11.4\%$ (compared to $R^2 = 18.0\%$ with actual twin pairs) when financial wealth is the only characteristic, and 12.8% (compared to 19.1% with actual pairs) when all characteristics are included. In the variance decomposition reported in Panel B, the contribution of the fixed effect ω_α^2 hovers around 2.6% across specifications, as compared to the 9.1% to 9.7% values obtained with actual twins. These findings confirm that twin pair fixed effects are quantitatively important and modify the measured impact of education on risk-taking.

L. *Tobit Regression*

Short sale constraints preclude most households from holding financial portfolios with a negative share of risky assets, and debt is by definition excluded from gross financial wealth. For these reasons, the risky share of every household in our sample is contained between zero and one: $w_{h,t} \in [0, 1]$ for all h, t. This restriction is taken explicitly into account in the estimation methods used in main text. We now consider a Tobit model of the risky share:

$$w_{h,t} = \begin{cases} 0 & \text{if} \quad w^*_{h,t} < 0, \\ w^*_{h,t} & \text{if} \quad 0 \leq w^*_{h,t} \leq 1, \\ 1 & \text{if} \quad w^*_{h,t} > 1, \end{cases}$$

where the latent variable $w^*_{h,t}$ is a linear function of yearly fixed effects and household characteristics,

$$w^*_{h,t} = \alpha_t + \zeta f_{h,t} + \gamma' x_{h,t} + \varepsilon_{h,t}.$$

The ζ coefficient quantifies the impact of financial wealth on the probability of participation in risky asset markets *and* the level of the risky share conditional on entry. The vector γ plays a similar role for other household characteristics.

In Table IA.XXIII, we estimate the Tobit model on the set of participating and nonparticipating households using standard (maximum likelihood) estimation. Regression (1) shows that the average financial wealth coefficient ζ is positive and strongly significant. Regression (2) allows the coefficient ζ to vary with wealth. We report that ζ is nearly invariant across financial wealth quantiles. The impact of characteristics other than financial wealth is analogous to earlier cross-sectional findings. Risky investing is positively correlated with residential real estate, human capital, and education, and negatively related to commercial real estate, leverage, income risk, entrepreneurship, unemployment, habit, and family size.

Since $\zeta_{h,t} = dw_{h,t}/df_{h,t}$ and $\eta_{h,t} = d\log(w_{h,t})/df_{h,t}$, the relation between the financial wealth coefficient measured in Table IA.XXIII and the financial wealth elasticity of the risky share considered in the main text is

$$\eta_{h,t} = \zeta_{h,t}/w_{h,t}. \tag{IA.24}$$

In the last set of columns of each regression, we report the elasticity $\eta_{h,t}$ implied by (IA.24). As one expects, the implied elasticity is higher than that reported in the main text, since it captures the impact of financial wealth on both the probability of participation and the asset allocation conditional on entry.

In Table IA.XXIV, we estimate a Tobit specification with yearly twin pair fixed effects. That is, we consider the latent variable

$$w^*_{i,j,t} = \alpha_{i,t} + \zeta f_{i,j,t} + \gamma' x_{i,j,t} + \varepsilon_{i,j,t},$$

and, as previously, define the risky share as $w_{i,j,t} = 0$ if $w^*_{i,j,t} < 0$, $w_{i,j,t} = w^*_{i,j,t}$ if $w^*_{i,j,t} \in [0,1]$, and $w_{i,j,t} = 1$ if $w^*_{h,t} > 1$. Since there are 42,766 yearly twin pair fixed effects in our sample, the standard (maximum likelihood) estimation method is not feasible. For this reason, we employ the estimation methodology of Alan et al. (2011), a two-sided extension of Honoré's (1992) one-sided Tobit estimator. The financial wealth coefficient ζ is once again strongly significant and nearly invariant across wealth quantiles. The other coefficients are mainly in line with our earlier results.

The financial wealth coefficient ζ of the Tobit model can be conveniently interpreted in the context of habit formation models. The risky share $w_{h,t} = w^*_{h,t}\,(1 - \lambda_{h,t} X_{h,t}/F_{h,t})$ implies that

$$\zeta_{h,t} = w^*_{h,t} \frac{\lambda_h X_{h,t}}{F_{h,t}}.$$

The invariance of $\zeta_{h,t}$ across wealth quantiles suggests that the habit is proportional to financial wealth, which seems intuitively plausible and is also consistent with the theoretical models of Constantinides (1990) and others. Overall, the Tobit analysis confirms the validity of the main results reported in the main text and the Internet Appendix.

M. Bank Account Imputation

As is explained in Section I.C of this Internet Appendix, all the results reported so far are based on the imputation of unreported bank account balances from household characteristics. We check the robustness of our results by using another approach introduced in the Appendix of CCS (2007), which takes advantage of the comprehensive nature of the data. We estimate the aggregate value of missing bank balances by taking the difference between (a) the aggregate household deposits reported to the Swedish Central Bank, and (b) the aggregate bank balances in the Swedish Wealth Registry. The implied average balance is assigned to each missing observation. In Table IA.XXV, we report regression (2) of Table VI using the constant imputation method. All our results are robust to this alternative specification of bank account balances. We conclude that the bank imputation method is not a cause for concern.

N. Individual-Level Regressions

In the main text and in all previous sections of the Internet Appendix, we group Swedish residents by living units and investigate the relation between household risk-taking and household variables such as financial wealth, real estate, and consumption habit. We now investigate if the main results of the paper hold when finances are studied at the individual level using only individual data, excluding any information about other adults. Twins that participate in risky asset markets at the household level but not at the individual level are now excluded from the sample, which results in a smaller sample size than in the rest of the paper.

In Table IA.XXVI, we regress an individual's risky share on own financial, habit, and demographic characteristics. The gender dummy variable is equal to unity for a man. The financial wealth elasticity of the risky share is positive and strongly significant in all specifications. The risky share is negatively related to commercial real estate, leverage, entrepreneurship, unemployment, habit, and the number of children, consistent with the results of our household regressions.

In Table IA.XXVII, we allow the elasticity to vary across financial wealth quantiles. The financial wealth elasticity of the risky share strongly decreases with financial wealth, consistent with Table V of the main text. In Table IA.XXVIII, we estimate the linear elasticity specifications considered in Table VI. The elasticity decreases with financial wealth and increases with internal habit and the number of children, which confirms the robustness of the regularities documented in the main text.

Tables IA.XXVI to XXIX show that individual regressions are generally consistent with household-level regressions. Significance tends to be slightly weaker for individuals, which we attribute to the smaller size of the participating twin subsample; a complementary explanation is that measurement error is likely more acute for individual variables than for household variables. Perhaps more importantly, all adjusted R^2 coefficients are lower for individual regressions. These various findings confirm that it is preferable to study finances at the household level rather than at the individual level, just as financial theory implies.

VI. Controlling for Measurement Error and Individual Fixed Effects

A. Measurement Error

Financial wealth and the risky share are observed with measurement error. For instance, households experience high-frequency variation in their cash balances at the end of the year, which is partly unrelated to the asset allocation of the financial portfolio. For this reason, we consider the instrumental variable estimation of the twin specification,

$$\begin{aligned}
\log(w_{i,1,t}) &= \alpha_{i,t} + \eta f_{i,1,t} + \gamma' x_{i,1,t} + \varepsilon_{i,1,t}, \\
\log(w_{i,2,t}) &= \alpha_{i,t} + \eta f_{i,2,t} + \gamma' x_{i,2,t} + \varepsilon_{i,2,t}.
\end{aligned}$$

We begin with a few definitions. The *passive risky return* $r_{h,t}$ is the proportional change in value of a household's risky portfolio if the household does not trade risky assets during the year. Similarly, *passive financial wealth* is the financial wealth the household has if it does not trade, save, or dissave during the year. Formally, the log of passive financial wealth is defined as

$$f^p_{h,t} = \phi(F_{h,t-1}, w_{h,t-1}, r_{h,t}, r_{f,t}),$$

where $\phi(F, w, r, r_f) = \log\{[w(1+r) + (1-w)(1+r_f)]F\}$.

In Table IA.XXIX, we instrument log financial wealth with log passive financial wealth. In the first regression, the average elasticity η is estimated to be 0.28, which is slightly higher than the 0.22 value reported in earlier tables. The second regression reestimates the elasticity η in every financial wealth quartile. Consistent with Section III of the main text, the measured elasticity strongly decreases with financial wealth, and the impact of other characteristics is qualitatively unchanged. Internal habit now has a strongly significant negative coefficient.

Table VI of the main text reports within-estimates of

$$\log(w_{i,j,t}) = \alpha_{i,t} + (\eta_0 + \eta_1 f_{i,t} + \psi' x_{i,t}) f_{i,j,t} + \gamma' x_{i,j,t} + \varepsilon_{i,j,t}. \tag{IA.25}$$

In Table IA.XXX, we control for measurement error in financial wealth by conducting the instrumental variable estimation of (IA.25). For each twin, we use as instruments the twin's passive financial wealth, passive financial wealth interacted with demeaned passive financial wealth, and passive financial wealth interacted with demeaned characteristics. The elasticity is again a decreasing function of financial wealth and an increasing function of internal habit. In contrast to Table VI, internal habit remains significant once other characteristics are controlled for. The results of Sections II and III are documented even more strongly when we control for measurement error.

B. Individual Fixed Effects

Twin regressions may be contaminated by fixed effects that are specific to each household in a pair, which by definition twin pair fixed effects cannot capture. We now propose two robustness checks.

B.1. Health and Lifestyle

Barsky et al. (1997) show that risk aversion is empirically related to lifestyle variables such as smoking and drinking. In Table IA.XXXI, we verify the robustness of our results to individual fixed effects by including data on the lifestyle and health of each twin as controls. Because we only obtain these variables for the SALT survey, we reestimate the risky share regression on the subset of twins born between 1886 and 1958. The empirical regularities documented in Sections II and III are generally robust to the inclusion of this new set of controls.

Health and lifestyle variables are mainly insignificant at the 5% level, which is partly due to the smaller number of observations. Alcohol drinking is positively and significantly related to the risky share $w_{h,t}$ and its elasticity $\eta_{h,t}$, while depression and high blood pressure have a negative relation. Coffee, tobacco, regular physical exercise, height, and weight are insignificant. Overall, Table IA.XXXI confirms the robustness of our elasticity estimates, and shows that risk-taking is linked positively to alcohol consumption and negatively to depression and high blood pressure.

In a recent working paper, Korniotis and Kumar (2012) document that tall individuals select more aggressive asset allocations and obese individuals less aggressive asset allocations than the average investor. These regularities are documented in multiple cross-sectional surveys conducted in several European countries and the U.S. Korniotis and Kumar conjecture that height and obesity act as cross-sectional proxies for family background, quality of upbringing, genes, beauty, and physical and mental health, which in turn affect investment horizons and attitudes toward risk (Cesarini et al. (2010), Rosen and Wu (2003)). The Swedish twin data set allows us to control for yearly fixed effects as well as for physical and mental health. Since twins generally have similar family background, upbringing, physical beauty, and genes, all these features are picked up by the yearly twin pair fixed effects. Height and obesity are insignificant in Table IA.XXXI, which indicates that these physical attributes have no causal impact on the risky share. Our findings confirm Korniotis and Kumar's (2012) conjecture that obesity and height do not matter *per se* but instead act as cross-sectional proxies for important latent characteristics that drive investment decisions.

B.2. Dynamic Panel Estimation

We now relate time variation in a household's risky share to time variation in its financial wealth (Brunnermeier and Nagel (2008), Chiappori and Paiella (2011), CCS (2009*a*)). This method controls for household-specific fixed effects and naturally applies to any household, not just a household with a twin. We assume that the risky share satisfies $\log(w_{h,t}) = \alpha_h + \delta_{0,t} + +\eta f_{h,t} + \varepsilon_{h,t}$, where α_h is a household fixed effect and $\delta_{0,t}$ is a yearly fixed effect. We eliminate the household fixed effect by taking the first time-difference,

$$\Delta_t \log(w_{h,t}) = \delta_t + \eta \Delta_t(f_{h,t}) + \Delta_t(\varepsilon_{h,t}). \tag{IA.26}$$

As discussed in CCS (2009*a*), the estimation of (IA.26) must take into account two related issues. First, households display inertia in portfolio rebalancing. When a household saves in the form of cash during the year, its risky share tends to fall mechanically. For this reason, we need to include variables that capture passive risky share variations. Second, since the error $\varepsilon_{h,t-1}$ has an impact on the following period's financial wealth $f_{h,t}$, the regressor $\Delta_t(f_{h,t})$ and the error term $\Delta_t(\varepsilon_{h,t})$ in (IA.26) are correlated. A natural solution is to instrument changes in financial wealth.

In the first set of columns of Table IA.XXXII, we estimate the specification

$$\Delta_t \log(w_{h,t}) = \delta_t + \eta \Delta_t(f_{h,t}) + \kappa \Delta_t \log(w^p_{h,t}) + \Delta_t(\varepsilon_{h,t})$$

with the following two instruments: (a) the change in financial wealth in the absence of period $t-1$

rebalancing, $\phi(F_{h,t-1}, w^p_{h,t-1}, r_{h,t}, r_{f,t}) - f_{h,t-1}$,[6] and (b) the period $t-1$ log passive risky share, $\log(w^p_{h,t-1})$.[7] The elasticity η is estimated at 0.22, which is consistent with the twin regressions of Section II. The change in the log passive share has a significantly positive coefficient, confirming that there is inertia in portfolio rebalancing. In the second set of columns, we report that η strongly decreases with financial wealth. In the third and fourth set of columns, we reestimate these specifications in the presence of all controls, which are computed at the end of year $t-1$ to avoid endogeneity problems. The average elasticity of the risky share increases slightly to 0.23, and the elasticity is once again a strongly decreasing function of financial wealth.

The dynamic panel and twin regressions are strongly complementary. On the one hand, the dynamic method controls for household fixed effects but requires valid instruments, which is a source of concern and can hamper applicability to a large set of explanatory variables. Twin regressions, on the other hand, can be estimated by standard panel methods, and the results of this section suggest that they are not severely contaminated by household-specific fixed effects. Overall, the robustness checks reported in this section confirm that the financial wealth elasticity of the risky share has a positive average and decreases strongly with financial wealth among participants.

VII. Aggregate Implications

A. *Fixed Participation Methodology*

We now present the full methodology used to compute the aggregate estimates reported in Section V of the main text. The analysis is based on a fixed year t, and time indices are henceforth suppressed. We focus for now on the set of households $\mathcal{P}$ that initially take financial risk, and we do not consider exit from and entry to risky asset markets.

At the end of a given year, each household h is characterized by its risky share w_h, financial wealth F_h, and other observable attributes x_h.

We consider an exogenous change in the cross-sectional distribution of financial wealth. After the shock, each household h has financial wealth $F^*_h = F_h e^{\Delta f_h}$ and selects the new risky share

$$w^*_h = w_h e^{\eta_h \Delta f_h},$$

where η_h denotes the household's financial wealth elasticity of the risky share. We consider three scenarios for η_h.

SCENARIO 1: *Every investor has CRRA utility:* $\eta_h = 0$ *for all* h.

SCENARIO 2: *Investors have a homogeneous and strictly positive elasticity:* $\eta_h = \eta > 0$ *for all* h.

SCENARIO 3: *The financial wealth elasticity of the risky share is a linear function of financial wealth and characteristics:* $\eta_h = \eta_0 + \eta_1(f_h - \bar{f}) + \psi'(x_h - \bar{x})$ *for all* h*, where* $\bar{f}$ *and* $\bar{x}$ *respectively denote the cross-sectional mean of financial wealth and other characteristics in the year of interest. We write the elasticity more compactly as*

$$\eta_h = \theta'(z_h - \bar{z}),$$

where $\theta = (\eta_0, \eta_1, \psi')'$*,* $z_h = (1, f_h, x_h')'$*, and* $\bar{z} = (0, \bar{f}, \bar{x}')'$*.*

The choice of the parameters used for Scenarios 2 and 3 is discussed below.

Under these assumptions, we can easily compute the aggregate holdings of participants before and after the shock. Aggregate financial wealth is initially $F = \sum_{h\in\mathcal{P}} F_h$, of which $F_R = \sum_{h\in\mathcal{P}} w_h F_h$ is invested in risky assets. After the shock, aggregate wealth becomes $F^* = \sum_{h\in\mathcal{P}} F_h e^{\Delta f_h}$, and aggregate risky wealth $F_R^* = \sum_{h\in\mathcal{P}} w_h^* F_h^* = \sum_{h\in\mathcal{P}} w_h F_h e^{(1+\eta_h)\Delta f_h}$. The elasticity of aggregate risky wealth is therefore

$$\xi = \log\left[\frac{\sum_{h\in\mathcal{P}} w_h F_h e^{(1+\eta_h)\Delta f_h}}{\sum_{h\in\mathcal{P}} w_h F_h}\right] \Bigg/ \log\left[\frac{\sum_{h\in\mathcal{P}} F_h e^{\Delta f_h}}{\sum_{h\in\mathcal{P}} F_h}\right]. \tag{IA.27}$$

Since asset prices are fixed, ξ is the elasticity of the aggregate demand for risky assets in response to exogenous changes in household wealth. The elasticity ξ generally depends on the households' initial risky shares $(w_h)_{h\in\mathcal{P}}$, initial levels of financial wealth $(F_h)_{h\in\mathcal{P}}$, growth rates $(\Delta f_h)_{h\in\mathcal{P}}$, and elasticities $(\eta_h)_{h\in\mathcal{P}}$.

B. Endogenous Participation Methodology

Let $\mathcal{N}$ denote the set of households that do not initially participate. Every household $h \in \mathcal{P} \cup \mathcal{N}$ is specified by its risky share w_h, financial wealth F_h, and other observable characteristics

x_h. The initial aggregate financial wealth is $F = \sum_{h \in \mathcal{P} \cup \mathcal{N}} F_h$, of which $F_R = \sum_{h \in \mathcal{P}} w_h F_h$ is invested in risky assets.

The key additional ingredient is the probability $\Lambda(\phi' z_h)$ that a household participates in risky asset markets, where $\Lambda(u) = 1/(1 + e^{-u})$ denotes the logistic function.

We next consider a shock to the cross-sectional distribution of financial wealth. After the shock, every household holds $F_h^* = F_h e^{\Delta f_h}$. If $\Delta f_h \leq 0$, the probability that a household in $\mathcal{N}$ enters after the shock is zero; if instead $\Delta f_h > 0$, the household enters with probability

$$p_h^*(\phi) = \frac{\Lambda(\phi' z_h^*) - \Lambda(\phi' z_h)}{1 - \Lambda(\phi' z_h)}$$

and selects the imputed risky share $w_h^* = e^{\chi' z_h^*}$, where $z_h^* = (1, f_h + \Delta f_h, x_h')'$. Conversely, a household in $\mathcal{P}$ maintains its participation in risky asset markets with probability

$$p_h^*(\phi) = \min[1; \Lambda(\phi' z_h^*)/\Lambda(\phi' z_h)]$$

and then selects the risky share $w_h^* = w_h e^{\eta_h \Delta f_h}$.

Under these assumptions, aggregate financial wealth is $F^* = \sum_{h \in \mathcal{P} \cup \mathcal{N}} F_h^*$, and risky financial wealth $F_R^* = \sum_{h \in \mathcal{P} \cup \mathcal{N}} p_h^*(\phi) w_h^* F_h^*$. The aggregate elasticity

$$\xi = \frac{\log(F_R^*/F_R)}{\log(F^*/F)}$$

is then readily available.

C. *Choice of Parameters*

The parameters η, θ, ϕ, and χ are obtained from regressions estimated on subsamples of Swedish residents in the year of interest.

- We estimate either the constant elasticity specification $\log(w_{i,j}) = \alpha_{i,j} + \eta f_{i,j} + \gamma' x_{i,j} + \varepsilon_{i,j}$ or the heterogeneous elasticity specification $\log(w_{i,j}) = \alpha_{i,j} + [\eta_0 + \eta_1(f_{i,j} - \bar{f}) + \psi'(x_{i,j} - \bar{x})] f_{i,j} + \gamma' x_{i,j} + \varepsilon_{i,j}$ on the set of participating twins in the year of interest. The results reported in the main text are based on 2001 estimates. In this Internet Appendix, we conduct robustness checks based on other years.

– The logit participation regression $\mathbb{E}(y_h|z_h) = \Lambda(\phi' z_h)$ is estimated on a random sample of households. The logit estimator $\hat{\phi}$ is asymptotically normal with estimated variance-covariance matrix $\hat{V}_\phi$.

– We run the cross-sectional regression of the log risky share on financial wealth and other characteristics, $\mathbb{E}[\log(w_h)|z_h] = \chi' z_h$, on an independent subsample of participating households observed in the year of interest. The estimator $\hat{\chi}$ is normal with estimated variance-covariance matrix $\hat{V}_\chi$.

The resulting estimators $\hat{\theta}, \hat{\phi}$, and $\hat{\chi}$ are mutually independent because they are estimated on independent samples. For the same reason, the estimators $\hat{\eta}, \hat{\phi}$, and $\hat{\chi}$ are mutually independent, which simplifies the construction of confidence intervals in the next subsection.

D. *Confidence Bands*

We now derive the confidence intervals of the aggregate elasticity estimates obtained under Scenario 3. Analogous and simpler results hold for Scenario 2. Under fixed participation, the aggregate elasticity estimator is

$$\hat{\xi} = X(\hat{\theta}) = \left[\log\left(\frac{F^*}{F}\right)\right]^{-1} \log\left[\frac{\sum_h w_h F_h^* e^{\Delta f_h \hat{\theta}'(z_h - \bar{z})}}{F_R}\right].$$

By the delta method, the variance of $\hat{\xi}$ is consistently estimated by

$$\hat{\sigma}_\xi^2 = \frac{\partial X}{\partial \theta'}(\hat{\theta})\, \hat{V}_\theta\, \frac{\partial X}{\partial \theta}(\hat{\theta}),$$

where

$$\frac{\partial X}{\partial \theta}(\hat{\theta}) = \left[F_R^* \log\left(\frac{F^*}{F}\right)\right]^{-1} \sum_{h \in \mathcal{P}} w_h^*\, F_h^*\, \Delta f_h\, (z_h - \bar{z}).$$

The confidence interval is therefore $[\hat{\xi} - 1.96\,\hat{\sigma}_\xi; \hat{\xi} + 1.96\,\hat{\sigma}_\xi]$.

We turn to the endogenous participation case and consider a positive shock to the cross-sectional distribution of financial wealth. Let $\hat{\omega} = (\hat{\theta}', \hat{\phi}', \hat{\chi}')'$. The aggregate elasticity is

$$\hat{\xi} = Z(\hat{\omega}) = \frac{1}{\log\left(\frac{F^*}{F}\right)} \log\left[\frac{\sum_{h \in \mathcal{P}} w_h F_h^* e^{\Delta f_h \hat{\theta}'(z_h - \bar{z})} + \sum_{h \in \mathcal{N}} p_h(\hat{\phi}) F_h^* e^{\hat{\chi}' z_h}}{F_R}\right].$$

The delta method implies the following property.

PROPOSITION 1: *The variance of* $\hat{\xi}$ *is consistently estimated by*

$$\hat{\sigma}_{\xi}^2 = \frac{\partial Z}{\partial \theta'}(\hat{\omega})\hat{V}_{\theta}\frac{\partial Z}{\partial \theta}(\hat{\omega}) + \frac{\partial Z}{\partial \phi'}(\hat{\omega})\hat{V}_{\phi}\frac{\partial Z}{\partial \phi}(\hat{\omega}) + \frac{\partial Z}{\partial \chi'}(\hat{\omega})\hat{V}_{\chi}\frac{\partial Z}{\partial \chi}(\hat{\omega}), \tag{IA.28}$$

where

$$\frac{\partial Z}{\partial \theta} = \frac{1}{F_R^* \log\left(\frac{F^*}{F}\right)} \sum_{h\in\mathcal{P}} w_h^* \, F_h^* \, \Delta f_h \, (z_h - \bar{z}), \tag{IA.29}$$

$$\frac{\partial Z}{\partial \phi} = \frac{1}{F_R^* \log\left(\frac{F^*}{F}\right)} \sum_{h\in\mathcal{N}} [1 - p_h(\hat{\phi})] w_h^* F_h^* [\Lambda(\hat{\phi}' z_h^*) z_h^* - \Lambda(\hat{\phi}' z_h) z_h], \tag{IA.30}$$

$$\frac{\partial Z}{\partial \chi} = \frac{1}{F_R^* \log\left(\frac{F^*}{F}\right)} \sum_{h\in\mathcal{N}} p_h(\hat{\phi}) \, w_h^* \, F_h^* \; z_h^*. \tag{IA.31}$$

Proof: We differentiate Z and obtain (IA.29), (IA.31), and

$$\frac{\partial Z}{\partial \phi} = \frac{1}{F_R^* \log\left(\frac{F^*}{F}\right)} \sum_{h\in\mathcal{N}} w_h^* \, F_h^* \, \frac{\partial p_h}{\partial \phi}(\hat{\phi}).$$

Since

$$p_h(\hat{\phi}) = \frac{\Lambda(\hat{\phi}' z_h^*) - 1}{1 - \Lambda(\hat{\phi}' z_h)} + 1, \tag{IA.32}$$

and $\Lambda'(u) = \Lambda(u)[1 - \Lambda(u)]$ for all u, we infer that

$$\frac{\partial p_h}{\partial \phi}(\hat{\phi}) = \frac{1 - \Lambda(\hat{\phi}' z_h^*)}{1 - \Lambda(\hat{\phi}' z_{h,t})} [\Lambda(\hat{\phi}' z_h^*) z_h^* - \Lambda(\hat{\phi}' z_h) z_h].$$

We conclude from (IA.32) that (IA.30) holds.

Since the regressions are estimated independently from each other, the variance-covariance matrix of $\hat{\omega} = (\hat{\theta}', \hat{\phi}', \hat{\chi}')'$ is block diagonal with diagonal elements $\hat{V}_{\theta}$, $\hat{V}_{\phi}$, and $\hat{V}_{\chi}$. We conclude that (IA.28) holds. ■

E. *Yearly Estimates*

In Figures 1 and 2 of the main text, we consider 20 financial wealth quantiles and compute the aggregate elasticity ξ corresponding to an exogenous wealth shock that affects only households in a quantile. Figures 1 and 2 are based on 2001 estimates. We now verify the robustness of our results to other years.

In Figure IA.3, we illustrate ξ for each quantile and each year in our sample when the set of participants is fixed. The curves are qualitatively similar in all years. The preferred linear elasticity specification generally implies a higher aggregate elasticity ξ than the heterogeneous CRRA specification. The few exceptions are due to negative values of the linear elasticity $\eta_h(f_h, x_h)$ for households with large financial wealth, which suggests that the specification of η_h could be improved.

In Figure IA.4, we report yearly estimates of the aggregate elasticity when participation changes are taken into account. The results are qualitatively similar to Figure 2 in the main text.

All elasticities so far have been calculated using yearly estimates of η (constant elasticity case) and η_0, η_1, and ψ (linear elasticity). We next illustrate the aggregate elasticity when η, η_0, η_1, and ψ are assumed to be constant over time. In Figure IA.5, we illustrate the aggregation results for the estimates reported in the third column of Table II. In Figure IA.6, we instead use the estimates in the last column of Table VI. The results are nearly identical to those reported in Figures IA.3 and IA4, which shows that our results are strongly robust to the choice of estimation method.

F. Homogeneous Wealth Shock

In Table IA.XXXIII, we report the aggregate elasticity to a homogeneous wealth shock $\Delta(f_h) = g$ for each year and scenario.

In the heterogeneous CRRA case (Scenario 1), the aggregate elasticity equals unity when the set of participants is fixed. When participation is endogenous, the entry of new participants in response to a positive wealth shock implies that $F_R^* > e^g F_R$, and therefore $\xi > 1$. Table IA.XXXIII shows that deviations of ξ from unity are modest and do not exceed a few percentage points.

When the elasticity η is a constant common to all households in all years (Scenario 2), aggregate risky wealth is $F_R^* = e^{g(1+\eta)} F_R$, and the aggregate elasticity satisfies

$$\xi = 1 + \eta.$$

The aggregate elasticity is slightly higher in the presence of participation effects. Once again, the deviations of ξ from unity are most pronounced under this scenario.

The heterogeneous elasticity specification (Scenario 3), which is the most consistent with the micro evidence, provides aggregate elasticity estimates that remain close to unity, whether one considers a homogeneous shock or concentrated shocks that affect only specific quantiles.

G. Impact of Negative Wealth Shocks

Entry and exit imply that aggregate elasticity is in principle sensitive to the sign of the financial wealth shock. Figure 2 of the main text illustrates the impact of a 10% increase in the wealth of all households in a particular quantile. In Figure IA.7, we report the equivalent curve for a −10% wealth shock. Figures 2 and IA.7 are nearly identical. The explanation is that participation turnover is limited and only has a modest impact on aggregate elasticity.

REFERENCES

Alan, Sule, Bo E. Honoré, Luojia Hu, and Søren Leth-Petersen, 2011, Estimation of panel data regression models with two-sided censoring or truncation, Working paper, Princeton University.

Barnea, Amir, Henrik Cronqvist, and Stephan Siegel, 2010, Nature or nurture: What determines investor behavior? *Journal of Financial Economics* 98, 583–604.

Barsky, Robert, Thomas Juster, Miles Kimball, and Matthew Shapiro, 1997, Preference parameters and behavioral heterogeneity: An experimental approach in the Health and Retirement Study, *Quarterly Journal of Economics* 112, 537–579.

Brunnermeier, Markus, and Stefan Nagel, 2008, Do wealth fluctuations generate time-varying risk aversion? Micro-evidence on individuals' asset allocation, *American Economic Review* 98, 713–736.

Calvet, Laurent E., John Y. Campbell, and Paolo Sodini, 2007, Down or out: Assessing the welfare costs of household investment mistakes, *Journal of Political Economy* 115, 707–747.

Calvet, Laurent E., John Y. Campbell, and Paolo Sodini, 2009*a*, Fight or flight? Portfolio rebalancing by individual investors, *Quarterly Journal of Economics* 124, 301–348.

Calvet, Laurent E., John Y. Campbell, and Paolo Sodini, 2009*b*, Measuring the financial sophistication of households, *American Economic Review Papers and Proceedings* 99, 393–398.

Campbell, John Y., and John Cochrane, 1999, By force of habit: A consumption-based explanation of aggregate stock market behavior, *Journal of Political Economy* 107, 205–251.

Campbell, John Y., and Luis Viceira, 2002, *Strategic Asset Allocation: Portfolio Choice for Long-Term Investors* (Oxford University Press).

Carroll, Christopher D., and Andrew Samwick, 1997, The nature of precautionary wealth, *Journal of Monetary Economics* 40, 41–71.

Cesarini, David, Christopher Dawes, Magnus Johannesson, Paul Lichtenstein, and Björn Wallace, 2009, Genetic variation in preferences for giving and risk-taking, *Quarterly Journal of Economics* 124, 809–842.

Cesarini, David, Magnus Johannesson, Paul Lichtenstein, Sandewall Örjan, and Björn Wallace, 2010, Genetic variation in financial decision making, *Journal of Finance* 65, 1725–1754.

Chiappori, Pierre-André, and Monica Paiella, 2011, Relative risk aversion is constant: Evidence from panel data, *Journal of the European Economic Association* 9, 1021–1052.

Cocco, Joao, Francisco Gomes, and Pascal Maenhout, 2005, Consumption and portfolio choice over the life cycle, *Review of Financial Studies* 18, 491–533.

Constantinides, George, 1990, Habit formation: A resolution of the equity premium, *Journal of Political Economy* 98, 519–543.

Cvitanić, Jakša, and Ioannis Karatzas, 1992, Convex duality in constrained portfolio optimization, *Annals of Applied Probability* 2, 767–818.

Flavin, Marjorie, and Takashi Yamashita, 2002, Owner-occupied housing and the composition of the household portfolio, *American Economic Review* 92, 345–362.

Honoré, Bo E., 1992, Trimmed LAD and least squares estimation of truncated and censored regression models with fixed effects, *Econometrica* 60, 533–565.

Korniotis, George, and Alok Kumar, 2012, Stature, obesity, and portfolio choice, Working paper, University of Miami.

Lichtenstein, Paul, Patrick F. Sullivan, Sven Cnattingius, Margaret Gatz, Sofie Johanson, Eva Carlström, Camilla Björk, Magnus Svartengren, Alicja Volk, Lars Klareskog, Ulf de Faire, Martin Schalling, Juni Palmgren, and Nancy L. Pedersen, 2006, The Swedish Twin Registry in the third millenium: An update, *Twin Research and Human Genetics* 9, 875–882.

Manski, Charles, 2000, Economic analysis of social interactions, *Journal of Economic Perspectives* 14, 115–136.

Merton, Robert C., 1971, Optimum consumption and portfolio rules in a continuous-time model, *Journal of Economic Theory* 3, 373–413.

Pedersen, Nancy L., Paul Lichtenstein, and Pia Svedberg, 2002, The Swedish Twin Registry in the third millenium, *Twin Research and Human Genetics* 5, 427–432.

Polkovnichenko, Valery, 2007, Life cycle portfolio choice with additive habit formation preferences and uninsurable labor income risk, *Review of Financial Studies* 20, 83–124.

Ridley, Matthew, 2003. *Nature Via Nurture: Genes, Experience, and What Makes Us Human* (Harper Collins, New York, NY).

Rosen, Harvey, and Stephen Wu, 2003, Portfolio choice and health status, *Journal of Financial Economics* 72, 457–484.

Teplá, Lucie, 2000, Optimal portfolio policies with borrowing and shortsale constraints, *Journal of Economic Dynamics and Control* 24, 1623–1639.

Notes

[1]The genetic relationship is determined by DNA markers or, when not available, by responses to the question: "During your childhood, were you and your twin partner alike as two peas in a pod or not more alike than siblings in general?" The answer to this question has been shown to be consistent with DNA evidence in 99% of pairs.

[2]Assume that $\mathbb{E}_{t-1}(\nu_{h,t-1})$ and $Var_{t-1}(\nu_{h,t-1})$ are known. As of date $t-1$, the permanent component $\nu_{h,t} = \nu_{h,t-1} + \xi_{h,t}$ has conditional mean $\mathbb{E}_{t-1}(\nu_{h,t}) = \mu_{\nu,h,t-1}$ and variance $Var_{t-1}(\nu_{h,t}) = Var_{t-1}(\nu_{h,t-1}) + \sigma^2_{\xi,h} = \sigma^2_{\nu,h} + \sigma^2_{\xi,h}$. The observed innovation $\ell_{h,t} = \nu_{h,t} + \varepsilon_{h,t}$ and the permanent component $\nu_{h,t}$ are jointly normal, which implies that (IA.1) holds and that

$$Var_t(\nu_{h,t}) = Var_{t-1}(\nu_{h,t}) \left\{ 1 - [Corr_{t-1}(\nu_{h,t};\ell_{h,t})]^2 \right\}.$$

Since $Var_{t-1}(\nu_{h,t}) = \sigma^2_{\nu,h,t-1} + \sigma^2_{\xi,h}$ and $[Corr_{t-1}(\nu_{h,t};\ell_{h,t})]^2 = (\sigma^2_{\nu,h,t-1} + \sigma^2_{\xi,h})/(\sigma^2_{\nu,h,t-1} + \sigma^2_{\xi,h} + \sigma^2_{\varepsilon,h})$, we conclude that (IA.2) holds as well.

[3]We set $\sigma^2_{\nu,h}$ equal to zero if the argument of the square root, $\sigma^4_{\xi,h} + 4\sigma^2_{\varepsilon,h}\sigma^2_{\xi,h}$, has a negative estimate.

[4]The variables $C^*_t = C_t - X$, $F^*_t = F_t + HC_t - X/R_f$, and $w^*_t = w_t F_t / F^*_t$ satisfy the usual sequential budget constraint $F^*_{t+1} = F^*_t \left[1 + R_f + w^*_{t+1}(R_{m,t+1} - R_f)\right] - C^*_{t+1}$. As in Section II.B of this Internet Appendix, we conclude that $\{(C^*_t, w^*_t, F^*_t)\}_{t=0}^{\infty}$ coincides with the optimal consumption-investment plan of a CRRA investor.

[5]That is, $L_{\max} = \bar{L} - \sigma^2_L/(\bar{L} - L_{\min})$ and $p = (\bar{L} - L_{\min})/(L_{\max} - L_{\min})$.

[6]The instrument coincides with the passive log return on the portfolio of cash and risky financial assets, $\log[w^p_{h,t-1}(1 + r_{h,t}) + (1 - w^p_{h,t-1})(1 + r_f)]$.

[7]CCS (2009*a*) follows a similar method to estimate an adjustment model of portfolio rebalancing, in which the financial wealth elasticity of the target risky share is assumed to be constant.

Table IA.I
Summary Statistics and ACE Decomposition

The first two sets columns report the mean, standard deviation, and twin correlation of observable characteristics computed over the subsample of households with identical adult twins and the subsample of households with fraternal adult twins. As in Table I of the main text, the calculations are based on pairs that both participate in risky asset markets. In the last set of columns, we report the results of an ACE decomposition, a linear model of genetic effects used in medicine. All variables are described in Appendix Table A.

	Identical Twins			Fraternal Twins			ACE Decomposition	
	Mean	Standard deviation	Twin correlation	Mean	Standard deviation	Twin correlation	Genetic component	Common component
Financial characteristics								
Risky share	0.541	0.289	0.266	0.543	0.291	0.149	23.41%	3.23%
Financial wealth ($)	44,730	69,070	0.418	47,611	73,877	0.269	29.89%	11.92%
Residential real estate wealth ($)	103,058	97,935	0.424	99,787	92,841	0.272	30.45%	11.97%
Commercial real estate wealth ($)	15,360	59,361	0.327	19,661	68,399	0.208	23.89%	8.81%
Leverage ratio	0.770	1.756	0.251	0.658	1.522	0.140	22.14%	2.96%
Human capital and income risk								
Log human capital	811,926	534,178	0.543	737,697	508,616	0.445	19.72%	34.63%
Permanent income risk	-0.001	0.063	0.118	-0.002	0.098	0.013	21.00%	-9.23%
Transitory income risk	0.051	0.250	0.137	0.063	0.405	0.027	22.07%	-8.38%
Beta of income innovation w.r.t. portfolio return	0.030	0.396	0.113	0.012	0.532	0.024	17.83%	-6.56%
Entrepreneur dummy	0.031	0.172	0.347	0.038	0.192	0.050	59.39%	-24.67%
Unemployment dummy	0.089	0.284	0.190	0.081	0.274	0.071	23.77%	-4.76%
Habit								
Internal habit ($)	36,408	16,919	0.418	35,903	16,925	0.235	36.57%	5.21%
External habit ($)	25,606	3,416	0.461	25,343	3,121	0.362	19.65%	26.40%
Demographic characteristics								
High school dummy	0.398	0.489	0.649	0.360	0.480	0.387	52.38%	12.52%
Post-high school dummy	0.871	0.335	0.511	0.830	0.375	0.312	39.71%	11.38%
Number of adults	1.727	0.445	0.280	1.729	0.445	0.089	38.16%	-10.21%
Number of children	1.032	1.086	0.468	0.993	1.116	0.375	18.50%	28.28%
Wealth-weighted gender index	0.530	0.323	0.378	0.548	0.325	0.029	69.71%	-31.92%
Number of observations	17,054			38,844				
Number of twin pairs	2,545			5,849				

Table IA.II
ACE Decomposition and Communication

The table reports the ACE decomposition of the risky share for frequent and infrequent communicators in the sample of all twins. We consider both the risky share itself (“No controls’’) and the residual of a regression of the risky share (“With controls”), both in levels (Panel A) and in logs (Panel B).

A. Risky Share

	No Controls		With Controls	
	Genetic Component	Common Component	Genetic Component	Common Component
Frequent communicators	28.19%	8.99%	31.52%	-4.22%
Infrequent communicators	8.53%	6.42%	12.21%	-4.31%

B. Log Risky Share

	No Controls		With Controls	
	Genetic Component	Common Component	Genetic Component	Common Component
Frequent communicators	36.26%	-1.23%	39.72%	-10.47%
Infrequent communicators	2.08%	6.21%	1.62%	2.21%

Table IA.III

Identical vs. Fraternal Twins

Yearly twin pair fixed effects

In the table, we separately estimate for identical twins and fraternal twins the panel regressions with wealth-dependent elasticity reported in Table V of the main text. For each subsample, the log risky share is regressed on (1) yearly twin pair fixed effects, (2) financial wealth interacted with dummies for financial wealth quantiles, and (3) other characteristics. All variables are described in Appendix Table A.

	Identical Twins		Fraternal Twins	
	Estimate	*t*-stat	Estimate	*t*-stat
Financial wealth quartile				
Lowest	0.253	7.29	0.353	17.40
2	0.227	8.50	0.243	14.30
3	0.192	6.94	0.167	10.10
4	0.141	5.05	0.121	7.39
Log residential real estate wealth	0.000	-0.10	0.002	0.81
Log commercial real estate wealth	-0.003	-0.89	-0.005	-1.67
Leverage ratio	-0.002	-0.76	-0.004	-1.00
Human capital and income risk				
Log human capital	0.030	2.26	-0.006	-0.40
Permanent income risk	-0.754	-2.55	-0.167	-0.69
Transitory income risk	-0.050	-1.06	-0.047	-0.99
Beta of income innovation w.r.t. portfolio return	-0.011	-0.34	0.036	1.19
Entrepreneur dummy	-0.135	-1.53	-0.275	-4.43
Unemployment dummy	-0.012	-0.24	-0.087	-2.42
Habit				
Log internal habit	-0.066	-1.13	-0.040	-1.07
Log external habit	0.099	0.68	0.002	0.02
Demographic characteristics				
High school dummy	0.085	1.33	0.027	0.67
Post-high school dummy	0.039	0.78	0.033	1.16
Number of adults	-0.032	-0.60	-0.144	-3.98
Number of children	-0.085	-4.27	-0.051	-3.64
Wealth-weighted gender index	0.011	0.18	-0.093	-2.66
Adjusted R^2	25.15%		17.73%	
Number of observations	17,054		38,844	
Number of twin pairs	2,545		5,849	

Table IA.IV
Year-by-Year Regressions
Twin pair fixed effects

The table reports year-by-year regressions of the log risky share on household characteristics in the presence of twin pair fixed effects. The estimation is based on participating households with an adult twin. All variables are described in Appendix Table A.

	1999		2000		2001		2002	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.280	25.90	0.248	24.10	0.226	18.70	0.117	8.01
Log residential real estate wealth	0.002	0.58	0.004	1.41	0.003	0.95	0.000	0.03
Log commercial real estate wealth	-0.007	-2.43	-0.005	-2.07	-0.005	-1.66	-0.004	-1.26
Leverage ratio	-0.004	-1.07	-0.004	-1.63	-0.009	-1.93	-0.010	-1.89
Human capital and income risk								
Log human capital	-0.019	-0.73	0.006	0.40	0.001	0.08	0.018	1.31
Permanent income risk	-0.007	-0.02	-0.348	-1.40	-0.228	-0.91	-0.449	-1.51
Transitory income risk	-0.054	-0.99	-0.103	-1.90	-0.044	-1.12	-0.091	-1.39
Beta of income innovation w.r.t. portfolio return	0.040	0.90	0.022	0.56	-0.003	-0.14	0.084	2.84
Entrepreneur dummy	-0.281	-4.24	-0.274	-4.73	-0.299	-4.40	-0.173	-2.18
Unemployment dummy	-0.099	-2.28	-0.020	-0.54	-0.071	-1.71	-0.125	-2.41
Habit								
Log internal habit	-0.139	-3.17	-0.074	-2.06	-0.102	-2.57	-0.041	-0.85
Log external habit	0.052	0.49	-0.015	-0.17	0.146	1.35	-0.032	-0.23
Demographic characteristics								
High school dummy	0.063	1.59	0.042	1.13	0.046	1.10	0.033	0.67
Post-high school dummy	0.033	1.04	0.002	0.08	0.066	2.11	0.053	1.50
Dummy for unavailable education data	0.867	1.67	0.340	1.21	0.517	2.79	0.986	1.50
Number of adults	-0.075	-1.95	-0.091	-2.62	-0.051	-1.33	-0.051	-1.12
Number of children	-0.055	-3.86	-0.064	-4.75	-0.047	-3.29	-0.033	-1.89
Wealth-weighted gender index	-0.037	-1.00	-0.076	-2.16	-0.105	-2.68	-0.087	-1.95
Adjusted R^2	22.15%		20.27%		17.25%		13.44%	
Number of observations	13,718		14,702		14,164		13,314	
Number of twin pairs	6,859		7,351		7,082		6,657	

Table IA.V

Regression of the Log Risky Share on Characteristics (All twins)

Normalized real estate, human capital, and habit

The table reports regressions of the log risky share on financial wealth, normalized wealth ratios, and other characteristics in the presence of yearly twin pair fixed effects (first three sets of columns) or yearly fixed effects (last set of columns). The estimation is based on participating households with an adult twin. All variables are described in Appendix Table A.

	Yearly Twin Pair Fixed Effects						Yearly Fixed	
	(1)		(2)		(3)		(4)	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.196	24.60	0.088	1.02	0.171	1.92	0.078	1.40
Log of financial wealth/residential real estate			0.000	0.10	-0.002	-1.03	-0.005	-2.97
Log of financial wealth/commercial real estate			0.007	3.16	0.005	2.43	0.008	6.04
Leverage ratio			-0.006	-2.49	-0.006	-2.46	-0.007	-2.84
Human capital and income risk								
Log of financial wealth/human capital			0.004	0.31	-0.002	-0.19	-0.020	-2.10
Permanent income risk			-0.222	-1.10	-0.276	-1.32	-0.384	-2.31
Transitory income risk			-0.060	-1.58	-0.073	-1.79	-0.120	-2.86
Beta of income innovation w.r.t. portfolio return			0.034	1.39	0.027	1.09	0.032	1.37
Entrepreneur dummy			-0.295	-5.61	-0.257	-4.89	-0.200	-4.93
Unemployment dummy			-0.081	-2.74	-0.075	-2.55	-0.090	-3.89
Habit								
Log of financial wealth/internal habit			0.166	6.42	0.089	2.82	0.111	5.30
Log of financial wealth/external habit			-0.042	-0.49	-0.038	-0.44	0.059	1.06
Demographic characteristics								
High school dummy					0.046	1.33	0.116	5.27
Post-high school dummy					0.037	1.50	0.066	4.60
Number of adults					-0.071	-2.38	-0.110	-5.30
Number of children					-0.050	-4.37	-0.037	-5.02
Wealth-weighted gender index					-0.076	-2.49	-0.029	-1.33
Adjusted R^2	17.99%		18.79%		19.10%		11.50%	
Number of observations	55,898		55,898		55,898		55,898	
Number of twin pairs	8,394		8,394		8,394		8,394	

Table IA.VI
Regression of the Log Risky Share on Characteristics (Identical Twins)
Normalized real estate, human capital, and habit

The table reports regressions of the log risky share on financial wealth, normalized wealth ratios, and other characteristics in the presence of yearly twin pair fixed effects (first three sets of columns) or yearly fixed effects (last set of columns). The estimation is based on participating households with an adult identical twin. All variables are described in Appendix Table A.

	Yearly Twin Pair Fixed Effects						Yearly Fixed	
	(1)		(2)		(3)		(4)	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.184	12.60	0.147	1.01	0.236	1.59	-0.001	-0.02
Log of financial wealth/residential real estate			0.001	0.31	0.000	-0.03	-0.005	-1.94
Log of financial wealth/commercial real estate			0.005	1.18	0.004	1.03	0.008	3.21
Leverage ratio			-0.002	-1.07	-0.003	-1.14	-0.002	-1.08
Human capital and income risk								
Log of financial wealth/human capital			-0.022	-1.64	-0.030	-2.25	-0.039	-3.07
Permanent income risk			-0.664	-2.13	-0.770	-2.57	-0.425	-1.75
Transitory income risk			-0.045	-0.94	-0.073	-1.48	-0.097	-1.56
Beta of income innovation w.r.t. portfolio return			0.004	0.12	-0.007	-0.23	-0.020	-0.81
Entrepreneur dummy			-0.141	-1.58	-0.133	-1.49	-0.037	-0.60
Unemployment dummy			-0.023	-0.46	-0.013	-0.27	-0.041	-1.12
Habit								
Log of financial wealth/internal habit			0.155	3.22	0.096	1.72	0.124	3.33
Log of financial wealth/external habit			-0.079	-0.54	-0.099	-0.69	0.141	1.46
Demographic characteristics								
High school dummy					0.090	1.40	0.116	2.87
Post-high school dummy					0.041	0.81	0.061	2.39
Number of adults					-0.009	-0.17	-0.059	-1.61
Number of children					-0.082	-4.15	-0.059	-4.73
Wealth-weighted gender index					0.007	0.12	-0.004	-0.09
Adjusted R^2	24.33%		24.62%		25.02%		11.39%	
Number of observations	17,054		17,054		17,054		17,054	
Number of twin pairs	2,545		2,545		2,545		2,545	

Table IA.VII

Regression of the Log Risky Share on Characteristics (All Twins)

Human capital of the young computed with a high discount rate

The table reports regressions of the log risky share on human capital, financial wealth, and other characteristics in the presence of yearly twin pair fixed effects. Human capital is computed with a real discount rate of 5% when the twin is less than 35 years old, and a real discount rate of 3% otherwise. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). All other variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.223	24.60		
Financial wealth quartile				
Lowest			0.331	18.90
2			0.243	16.80
3			0.171	12.30
4			0.129	9.07
Log residential real estate wealth	0.002	1.03	0.001	0.66
Log commercial real estate wealth	-0.005	-2.43	-0.004	-1.91
Leverage ratio	-0.006	-2.46	-0.003	-1.12
Human capital and income risk				
Log human capital (r=5% if age < 35yrs, 3% if age ≥ 35)	0.002	0.18	0.001	0.05
Permanent income risk	-0.276	-1.31	-0.241	-1.17
Transitory income risk	-0.073	-1.78	-0.050	-1.26
Beta of income innovation w.r.t. portfolio return	0.027	1.09	0.027	1.08
Entrepreneur dummy	-0.257	-4.89	-0.250	-4.76
Unemployment dummy	-0.075	-2.55	-0.065	-2.24
Habit				
Log internal habit	-0.089	-2.82	-0.044	-1.40
Log external habit	0.038	0.44	0.038	0.44
Demographic characteristics				
High school dummy	0.046	1.33	0.041	1.19
Post-high school dummy	0.037	1.50	0.034	1.39
Number of adults	-0.071	-2.38	-0.112	-3.70
Number of children	-0.050	-4.37	-0.060	-5.23
Wealth-weighted gender index	-0.076	-2.49	-0.070	-2.32
Adjusted R^2	19.10%		19.72%	
Number of observations	55,898		55,898	
Number of twin pairs	8,394		8,394	

Table IA.VIII

Regression of the Log Risky Share on Characteristics (Identical Twins)

Human capital of the young computed with a high discount rate

The table reports regressions of the log risky share on human capital, financial wealth, and other characteristics in the presence of yearly twin pair fixed effects. Human capital is computed with a real discount rate of 5% when the twin is less than 35 years old, and a real discount rate of 3% otherwise. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in the regression (2). All other variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult identical twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.207	12.00		
Financial wealth quartile				
Lowest			0.253	7.29
2			0.227	8.50
3			0.191	6.94
4			0.141	5.05
Log residential real estate wealth	0.000	0.03	0.000	-0.10
Log commercial real estate wealth	-0.004	-1.03	-0.003	-0.89
Leverage ratio	-0.003	-1.14	-0.002	-0.76
Human capital and income risk				
Log human capital (r=5% if age < 35yrs, 3% if age ≥ 35)	0.030	2.17	0.029	2.17
Permanent income risk	-0.759	-2.50	-0.742	-2.48
Transitory income risk	-0.072	-1.45	-0.049	-1.03
Beta of income innovation w.r.t. portfolio return	-0.007	-0.23	-0.011	-0.34
Entrepreneur dummy	-0.133	-1.49	-0.135	-1.53
Unemployment dummy	-0.013	-0.27	-0.012	-0.24
Habit				
Log internal habit	-0.096	-1.72	-0.066	-1.13
Log external habit	0.100	0.69	0.099	0.68
Demographic characteristics				
High school dummy	0.090	1.40	0.085	1.33
Post-high school dummy	0.041	0.81	0.039	0.78
Number of adults	-0.009	-0.16	-0.032	-0.59
Number of children	-0.082	-4.15	-0.085	-4.27
Wealth-weighted gender index	0.007	0.11	0.011	0.18
Adjusted R^2	25.02%		25.15%	
Number of observations	17,054		17,054	
Number of twin pairs	2,545		2,545	

Table IA.IX

Regression of the Log Risky Share on Characteristics (All Twins)

Human capital of low wealth-households computed with a high discount rate

The table reports regressions of the log risky share on human capital, financial wealth, and other characteristics in the presence of yearly twin pair fixed effects. Human capital is computed with a real discount rate of 5% for households in the bottom half of the financial wealth distribution, and a real discount rate of 3% otherwise. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). All other variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.223	24.60		
Financial wealth quartile				
Lowest			0.331	18.90
2			0.244	16.80
3			0.171	12.20
4			0.129	9.07
Log residential real estate wealth	0.002	1.03	0.001	0.66
Log commercial real estate wealth	-0.005	-2.43	-0.004	-1.92
Leverage ratio	-0.006	-2.46	-0.003	-1.12
Human capital and income risk				
Log human capital (r=5% if financial wealth < median, 3% otherwise)	-0.001	-0.08	-0.002	-0.18
Permanent income risk	-0.241	-1.16	-0.211	-1.03
Transitory income risk	-0.067	-1.67	-0.045	-1.15
Beta of income innovation w.r.t. portfolio return	0.027	1.09	0.027	1.08
Entrepreneur dummy	-0.257	-4.89	-0.250	-4.76
Unemployment dummy	-0.075	-2.55	-0.066	-2.24
Habit				
Log internal habit	-0.087	-2.75	-0.042	-1.34
Log external habit	0.038	0.44	0.038	0.44
Demographic characteristics				
High school dummy	0.045	1.32	0.041	1.18
Post-high school dummy	0.037	1.51	0.034	1.39
Number of adults	-0.071	-2.36	-0.111	-3.69
Number of children	-0.050	-4.36	-0.060	-5.22
Wealth-weighted gender index	-0.076	-2.49	-0.070	-2.32
Adjusted R^2	19.10%		19.72%	
Number of observations	55,898		55,898	
Number of twin pairs	8,394		8,394	

Table IA.X

Regression of the Log Risky Share on Characteristics (Identical Twins)

Human capital of low wealth-households computed with a high discount rate

The table reports regressions of the log risky share on financial wealth, human capital, and other characteristics in the presence of yearly twin pair fixed effects. Human capital is computed with a real discount rate of 5% for households in the bottom half of the financial wealth distribution, and a real discount rate of 3% otherwise. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). All other variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult identical twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.205	11.90		
Financial wealth quartile				
Lowest			0.252	7.27
2			0.225	8.41
3			0.190	6.86
4			0.141	5.03
Log residential real estate wealth	0.000	0.03	0.000	-0.10
Log commercial real estate wealth	-0.004	-1.03	-0.003	-0.89
Leverage ratio	-0.003	-1.14	-0.002	-0.76
Human capital and income risk				
Log human capital (r=5% if financial wealth < median, 3% otherwise)	0.027	1.97	0.026	1.93
Permanent income risk	-0.717	-2.34	-0.693	-2.28
Transitory income risk	-0.066	-1.34	-0.042	-0.88
Beta of income innovation w.r.t. portfolio return	-0.007	-0.23	-0.011	-0.33
Entrepreneur dummy	-0.133	-1.49	-0.136	-1.53
Unemployment dummy	-0.013	-0.27	-0.012	-0.24
Habit				
Log internal habit	-0.094	-1.68	-0.064	-1.10
Log external habit	0.100	0.69	0.100	0.69
Demographic characteristics				
High school dummy	0.089	1.39	0.085	1.32
Post-high school dummy	0.041	0.81	0.040	0.78
Number of adults	-0.008	-0.15	-0.031	-0.58
Number of children	-0.082	-4.15	-0.085	-4.26
Wealth-weighted gender index	0.007	0.11	0.011	0.17
Adjusted R^2	25.02%		25.14%	
Number of observations	17,054		17,054	
Number of twin pairs	2,545		2,545	

Table IA.XI
Regression of the Log Risky Share on Characteristics
External habit computed on age-municipality groups

The table reports regressions of the log risky share on financial wealth, external habit, and other characteristics in the presence of yearly twin pair fixed effects. External habit is proxied by the average income of households in the same municipality *and* the same age group. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). The estimation is based on the sample of participating households with an adult twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.223	24.60		
Financial wealth quartile				
Lowest			0.331	18.90
2			0.243	16.80
3			0.171	12.30
4			0.129	9.07
Log residential real estate wealth	0.002	1.02	0.001	0.67
Log commercial real estate wealth	-0.005	-2.42	-0.004	-1.91
Leverage ratio	-0.006	-2.46	-0.003	-1.12
Human capital and income risk				
Log human capital	0.002	0.19	0.001	0.06
Permanent income risk	-0.277	-1.32	-0.242	-1.19
Transitory income risk	-0.073	-1.79	-0.050	-1.27
Beta of income innovation w.r.t. portfolio return	0.027	1.10	0.027	1.08
Entrepreneur dummy	-0.257	-4.89	-0.250	-4.76
Unemployment dummy	-0.075	-2.55	-0.066	-2.25
Habit				
Log internal habit	-0.089	-2.84	-0.045	-1.42
Log external habit (age and municipality groups)	0.041	0.59	0.034	0.50
Demographic characteristics				
High school dummy	0.046	1.33	0.041	1.19
Post-high school dummy	0.037	1.50	0.034	1.39
Number of adults	-0.071	-2.37	-0.111	-3.70
Number of children	-0.050	-4.38	-0.060	-5.23
Wealth-weighted gender index	-0.076	-2.49	-0.070	-2.32
Adjusted R^2	19.10%		19.72%	
Number of observations	55,898		55,898	
Number of twin pairs	8,394		8,394	

Table IA.XII
Regression of the Log Risky Share on Characteristics
Higher education variables

The table reports regressions of the log risky share on financial wealth, education variables, and other characteristics in the presence of yearly twin pair fixed effects. The post-high school dummy defined in Appendix Table A is decomposed as the sum of (a) a dummy variable for incomplete undergraduate training, (b) a dummy variable for an undergraduate degree but no post-graduate education, and (c) a dummy variable for post-graduate education. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). All other variables are described in Appendix Table A. The estimation is based on participating households with an adult twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.223	24.60		
Financial wealth quartile				
Lowest			0.331	18.90
2			0.243	16.80
3			0.171	12.20
4			0.129	9.07
Log residential real estate wealth	0.002	1.02	0.001	0.66
Log commercial real estate wealth	-0.005	-2.40	-0.004	-1.89
Leverage ratio	-0.006	-2.49	-0.003	-1.15
Human capital and income risk				
Log human capital	0.002	0.21	0.001	0.08
Permanent income risk	-0.277	-1.33	-0.243	-1.19
Transitory income risk	-0.074	-1.82	-0.051	-1.30
Beta of income innovation w.r.t. portfolio return	0.027	1.10	0.027	1.09
Entrepreneur dummy	-0.258	-4.90	-0.251	-4.77
Unemployment dummy	-0.075	-2.54	-0.065	-2.23
Habit				
Log internal habit	-0.092	-2.94	-0.048	-1.53
Log external habit	0.038	0.43	0.037	0.43
Demographic characteristics				
High school dummy	0.046	1.34	0.042	1.21
Undergraduate dropout dummy	0.024	0.93	0.021	0.80
3-yr undergraduate (college or vocational) degree dummy	0.047	1.52	0.050	1.62
Post-graduate education dummy	0.050	0.60	0.041	0.50

Table IA.XII – *Continued*

Number of adults	-0.069	-2.30	-0.109	-3.62
Number of children	-0.050	-4.38	-0.060	-5.24
Wealth-weighted gender index	-0.077	-2.52	-0.071	-2.34
Adjusted R^2	19.11%		19.73%	
Number of observations	55,898		55,898	
Number of twin pairs	8,394		8,394	

Table IA.XIII
Regression of the Log Risky Share on Characteristics
Marital status

The table reports yearly twin pair fixed effects regressions of the log risky share on financial wealth, marital status, and other characteristics. The marriage dummy variable is equal to one if adults in the household are married, and is equal to zero otherwise. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). All other variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.205	11.90		
Financial wealth quartile				
Lowest			0.331	18.90
2			0.243	16.80
3			0.172	12.30
4			0.129	9.09
Log residential real estate wealth	0.000	0.03	0.001	0.64
Log commercial real estate wealth	-0.004	-1.03	-0.004	-1.92
Leverage ratio	-0.003	-1.14	-0.003	-1.14
Human capital and income risk				
Log human capital	0.027	1.97	0.001	0.05
Permanent income risk	-0.717	-2.34	-0.241	-1.18
Transitory income risk	-0.066	-1.34	-0.050	-1.29
Beta of income innovation w.r.t. portfolio return	-0.007	-0.23	0.027	1.08
Entrepreneur dummy	-0.133	-1.49	-0.250	-4.77
Unemployment dummy	-0.013	-0.27	-0.065	-2.22
Habit				
Log internal habit	-0.094	-1.68	-0.046	-1.45
Log external habit	0.100	0.69	0.035	0.41
Demographic characteristics				
High school dummy	0.089	1.39	0.041	1.19
Post-high school dummy	0.041	0.81	0.034	1.40
Number of adults	-0.008	-0.15	-0.134	-3.50
Number of children	-0.082	-4.15	-0.060	-5.19
Marriage dummy	0.031	0.99	0.029	0.92
Wealth-weighted gender index	0.007	0.11	-0.070	-2.32
Adjusted R^2	19.11%		19.72%	
Number of observations	17,054		55,898	
Number of twin pairs	8,394		8,394	

Table IA.XIV
Age
Yearly twin pair fixed effects

The table reports yearly twin pair fixed effects regressions of the log risky share on financial wealth and other characteristics estimated for four age groups (1) twins aged less than 35 years, (2) twins between 35 and 45, (3) twins between 45 and 55, and (4) twins older than 55. The estimation is based on the sample of participating households with an adult twin. All variables are described in Appendix Table A.

	Less than 35		35-45		45-55		Older than 55	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.223	8.76	0.255	13.70	0.220	14.80	0.194	11.30
Log residential real estate wealth	-0.002	-0.38	0.001	0.23	0.001	0.35	0.010	1.98
Log commercial real estate wealth	-0.007	-1.00	-0.004	-1.05	-0.004	-1.09	-0.007	-1.59
Leverage ratio	-0.007	-1.40	-0.002	-0.48	-0.012	-2.25	-0.001	-0.55
Human capital and income risk								
Log human capital	0.024	1.81	0.025	1.30	-0.044	-1.39	0.004	0.09
Permanent income risk	-0.439	-1.29	-0.535	-1.52	0.212	0.50	-0.309	-0.61
Transitory income risk	-0.081	-1.27	-0.111	-1.76	0.005	0.05	-0.061	-0.53
Beta of income innovation w.r.t. portfolio return	0.090	0.84	0.090	2.45	-0.021	-0.55	0.006	0.30
Entrepreneur dummy	-0.377	-2.25	-0.233	-2.61	-0.268	-2.82	-0.243	-2.57
Unemployment dummy	-0.059	-0.99	-0.004	-0.07	-0.126	-2.25	-0.104	-1.66
Habit								
Log internal habit	-0.003	-0.04	-0.148	-2.40	-0.065	-1.16	-0.061	-0.87
Log external habit	0.050	0.20	-0.151	-0.89	0.076	0.55	0.202	1.09
Demographic characteristics								
High school dummy	0.172	1.02	0.096	1.25	0.021	0.38	0.015	0.24
Post-high school dummy	0.028	0.49	-0.010	-0.22	0.033	0.76	0.109	1.95
Number of adults	-0.168	-2.12	0.065	1.03	-0.054	-1.07	-0.145	-2.47
Number of children	-0.074	-2.13	-0.086	-4.09	-0.020	-1.14	-0.103	-2.89
Wealth-weighted gender index	0.064	0.88	-0.186	-2.89	-0.058	-1.12	-0.106	-1.73
Adjusted R^2	25.89%		21.89%		16.23%		15.99%	
Number of observations	8,382		14,374		20,134		13,008	
Number of twin pairs	1,368		2,057		2,888		2,081	

Table IA.XV

Relation Between Elasticity and Age

Age squared interacted with financial wealth – Yearly twin pair fixed effects

The table reports yearly twin pair fixed effects regressions of the log risky share on (1) household characteristics, and (2) financial wealth interacted with age, age squared, and other characteristics. All variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	Direct Effect		Interacted	
	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics				
Log financial wealth	0.222	25.20	-0.105	-11.20
Log residential real estate wealth	0.002	0.84	0.007	2.65
Log commercial real estate wealth	-0.004	-1.97	-0.002	-0.96
Leverage ratio	0.000	0.01	0.004	1.20
Human capital and income risk				
Log human capital	-0.003	-0.25	0.018	1.30
Permanent income risk	-0.118	-0.56	-0.353	-1.48
Transitory income risk	-0.019	-0.43	-0.037	-0.65
Beta of income innovation w.r.t. portfolio return	0.031	1.06	-0.018	-0.69
Entrepreneur dummy	-0.240	-4.58	-0.040	-0.80
Unemployment dummy	-0.059	-2.02	0.052	1.59
Habit				
Log internal habit	-0.008	-0.26	0.003	0.10
Log external habit	0.027	0.32	-0.036	-0.45
Demographic characteristics				
High school dummy	0.038	1.13	0.049	1.69
Post-high school dummy	0.026	1.05	-0.011	-0.51
Age			-0.004	-0.47
Age squared			0.000	1.02
Number of adults	-0.102	-3.35	0.120	3.71
Number of children	-0.070	-6.00	0.071	6.22
Wealth-weighted gender index	-0.054	-1.72	0.061	1.85
Adjusted R^2	20.71%			
Number of observations	55,898			
Number of twin pairs	8,394			

Table IA.XVI
Communication (All Twins)
Yearly twin pair fixed effects

The table reports yearly twin pair fixed effects regressions of the log risky share on financial wealth and other characteristics computed on the subsample of households with frequently communicating twins and on the subsample of households with infrequently communicating twins. Log financial wealth is a standalone variable in regressions (1) and (3), and is interacted with dummies for financial wealth quartiles in regressions (2) and (4). All other variables are described in Appendix Table A.

	Infrequent Communication				Frequent Communication			
	(1)		(2)		(3)		(4)	
	Estimate	*t*- stat	Estimate	*t*- stat	Estimate	*t*- stat	Estimate	*t*- stat
Log financial wealth	0.241	11.00			0.205	8.18		
Financial wealth quartile								
Lowest			0.253	7.29			0.353	17.40
2			0.227	8.50			0.243	14.30
3			0.192	6.94			0.167	10.10
4			0.141	5.05			0.121	7.39
Log residential real estate wealth	0.006	1.09	0.000	-0.10	-0.002	-0.42	0.002	0.81
Log commercial real estate wealth	-0.005	-0.73	-0.003	-0.89	-0.001	-0.09	-0.005	-1.67
Leverage ratio	-0.004	-0.73	-0.002	-0.76	-0.005	-1.50	-0.004	-1.00
Human capital and income risk								
Log human capital	0.027	1.10	0.030	2.26	-0.033	-1.39	-0.006	-0.40
Permanent income risk	-0.558	-1.36	-0.754	-2.55	0.738	1.33	-0.167	-0.69
Transitory income risk	-0.095	-0.94	-0.050	-1.06	0.178	1.36	-0.047	-0.99
Beta of income innovation w.r.t. portfolio return	0.029	0.47	-0.011	-0.34	-0.010	-0.63	0.036	1.19
Entrepreneur dummy	-0.322	-2.33	-0.135	-1.53	-0.291	-2.18	-0.275	-4.43
Unemployment dummy	-0.188	-2.20	-0.012	-0.24	-0.017	-0.25	-0.087	-2.42
Habit								
Log internal habit	-0.104	-1.42	-0.066	-1.13	-0.112	-1.45	-0.040	-1.07
Log external habit	0.077	0.38	0.099	0.68	0.732	2.55	0.002	0.02
Demographic characteristics								
High school dummy	0.028	0.31	0.085	1.33	0.040	0.48	0.027	0.67
Post-high school dummy	0.071	1.17	0.039	0.78	0.104	1.47	0.033	1.16
Number of adults	-0.181	-2.22	-0.032	-0.60	0.114	1.49	-0.144	-3.98
Number of children	-0.029	-1.05	-0.085	-4.27	-0.075	-2.63	-0.051	-3.64
Wealth-weighted gender index	-0.093	-1.23	0.011	0.18	-0.087	-1.05	-0.093	-2.66
Adjusted R^2	15.32%		16.73%		27.33%		27.67%	
Number of observations	8,898		17,054		8,878		38,844	
Number of twin pairs	1,385		1,385		1,376		1,376	

Table IA.XVII
Communication (Identical Twins)
Yearly twin pair fixed effects

The table reports yearly twin pair fixed effects regressions of the log risky share on financial wealth and other characteristics computed on the subsample of households with frequently communicating identical twins and on the subsample of households with infrequently communicating identical twins. Log financial wealth is a standalone variable in regressions (1) and (3), and is interacted with dummies for financial wealth quartiles in regressions (2) and (4). All other variables are described in Appendix Table A.

	Infrequent Communication				Frequent Communication			
	(1)		(2)		(3)		(4)	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.220	5.45			0.240	5.47		
Financial wealth quartile								
Lowest			0.258	4.34			0.427	4.24
2			0.217	4.23			0.273	3.81
3			0.210	2.67			0.165	2.26
4			0.164	2.08			0.185	3.39
Log residential real estate wealth	0.018	1.86	0.017	1.71	-0.013	-1.48	-0.016	-1.72
Log commercial real estate wealth	0.007	0.68	0.007	0.68	-0.010	-1.14	-0.009	-1.02
Leverage ratio	0.002	0.62	0.003	0.95	-0.007	-2.19	-0.006	-2.11
Human capital and income risk								
Log human capital	0.183	1.29	0.174	1.22	-0.089	-1.29	-0.082	-1.19
Permanent income risk	-1.294	-1.39	-1.172	-1.23	2.956	2.39	2.825	2.30
Transitory income risk	-0.385	-2.46	-0.327	-1.89	0.829	3.49	0.825	3.53
Beta of income innovation w.r.t. portfolio return	-0.092	-1.38	-0.099	-1.49	-0.259	-2.09	-0.259	-2.08
Entrepreneur dummy	-0.132	-0.66	-0.153	-0.77	0.068	0.25	0.063	0.22
Unemployment dummy	0.009	0.08	0.017	0.14	0.201	1.87	0.208	1.95
Habit								
Log internal habit	-0.061	-0.30	-0.042	-0.20	0.037	0.24	0.029	0.20
Log external habit	-0.365	-1.35	-0.360	-1.33	0.088	0.17	0.012	0.02
Demographic characteristics								
High school dummy	0.325	1.72	0.318	1.64	-0.025	-0.15	-0.014	-0.09
Post-high school dummy	-0.045	-0.29	-0.041	-0.27	-0.001	0.00	-0.010	-0.08
Number of adults	-0.048	-0.30	-0.057	-0.36	0.133	1.03	0.081	0.60
Number of children	-0.094	-2.10	-0.099	-2.12	-0.105	-2.02	-0.109	-2.10
Wealth-weighted gender index	-0.156	-1.00	-0.153	-0.99	-0.119	-0.79	-0.088	-0.58
Adjusted R^2	14.95%		15.02%		40.24%		40.83%	
Number of observations	2,822		2,822		2,422		2,422	
Number of twin pairs	419		419		370		370	

Table IA.XVIII
Variance Decomposition Within and Across Municipalities

The table reports the cross-sectional variance of the risky share within and between Swedish municipalities. The first column is based on the risky share in levels, and the second column on the risky share in logs. The third column is based on the residual of the yearly twin pair fixed effects risky share regression reported in the third set of columns of Table II.

	Risky share	Log risky share	Residual
Variance between municipalities	0.25%	2.93%	0.52%
Variance within municipalities	7.93%	98.64%	41.25%
Total variance	8.18%	101.57%	41.78%

Table IA.XIX
Impact of Average Wealth and Risky Share in Municipality

Yearly twin pair fixed effects

The table reports twin regressions of a household's log risky share on (a) the household's characteristics, and (b) the average log risky share and the average log financial wealth in the household's municipality. All variables are based on Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.222	24.60		
Financial wealth quartile				
Lowest			0.330	18.90
2			0.242	16.70
3			0.172	12.30
4			0.128	9.03
Log residential real estate wealth	0.002	1.08	0.002	0.71
Log commercial real estate wealth	-0.005	-2.28	-0.004	-1.80
Leverage ratio	-0.006	-2.49	-0.003	-1.15
Human capital and income risk				
Log human capital	0.002	0.19	0.001	0.06
Permanent income risk	-0.271	-1.31	-0.237	-1.17
Transitory income risk	-0.072	-1.78	-0.049	-1.26
Beta of income innovation w.r.t. portfolio return	0.028	1.13	0.028	1.11
Entrepreneur dummy	-0.256	-4.87	-0.249	-4.74
Unemployment dummy	-0.074	-2.52	-0.065	-2.22
Habit				
Log internal habit	-0.088	-2.81	-0.044	-1.38
Log external habit	-0.215	-1.54	-0.227	-1.63
Demographic characteristics				
High school dummy	0.046	1.33	0.041	1.20
Post-high school dummy	0.035	1.42	0.032	1.32
Number of adults	-0.071	-2.37	-0.112	-3.71
Number of children	-0.050	-4.31	-0.060	-5.17
Wealth-weighted gender index	-0.077	-2.51	-0.071	-2.34
Local interactions				
Average log risky share in municipality	0.356	3.46	0.342	3.36
Average log financial wealth in municipality	0.116	1.95	0.123	2.09
Adjusted R^2	19.19%		19.80%	
Number of observations	55,898		55,898	
Number of twin pairs	8,394		8,394	

Table IA.XX
Financial Wealth Elasticity of the Risky Share
Interacted own characteristics

The table reports yearly twin pair fixed effects regressions of a household's log risky share on the household's financial wealth, other characteristics, and financial wealth interacted with the household's *own* characteristics (as compared to the *pair* average characteristics used in Table VI of the main text). Financial wealth is interacted with itself and internal habit in regression (1), and with all characteristics in regression (2). All variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	(1)				(2)			
	Direct Effect		Interacted		Direct Effect		Interacted	
	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat	Estimate	t-stat
Financial characteristics								
Log financial wealth	0.217	24.80	-0.065	-13.50	0.236	25.30	-0.071	-14.20
Log residential real estate wealth	0.002	1.09			0.005	1.99	0.004	2.82
Log commercial real estate wealth	-0.004	-1.95			-0.005	-2.15	0.000	-0.06
Leverage ratio	-0.001	-0.52			0.011	1.03	0.006	1.66
Human capital and income risk								
Log human capital	0.000	0.00			-0.015	-1.16	-0.013	-1.87
Permanent income risk	-0.249	-1.22			-0.065	-0.31	-0.061	-0.57
Transitory income risk	-0.058	-1.44			-0.023	-0.52	0.014	0.61
Beta of income innovation w.r.t. portfolio return	0.027	1.07			0.027	1.07	-0.005	-0.48
Entrepreneur dummy	-0.266	-5.09			-0.255	-4.83	-0.009	-0.27
Unemployment dummy	-0.072	-2.48			-0.058	-2.00	0.034	1.77
Habit								
Log internal habit	-0.088	-2.68	0.126	8.88	-0.016	-0.47	0.047	2.83
Log external habit	0.017	0.20			-0.022	-0.24	0.011	0.21
Demographic characteristics								
High school dummy	0.044	1.29			0.033	0.99	0.007	0.33
Post-high school dummy	0.033	1.36			0.024	0.99	-0.013	-0.92
Number of adults	-0.083	-2.70			-0.092	-3.04	0.110	6.02
Number of children	-0.056	-4.94			-0.066	-5.84	0.064	8.88
Wealth-weighted gender index	-0.061	-2.02			-0.061	-2.02	0.019	1.00
Adjusted R^2	20.34%				21.55%			
Number of observations	55,898				55,898			
Number of twin pairs	8,394				8,394			

Table IA.XXI
Impact of the Pair Fixed Effect on the Financial Wealth Elasticity of the Risky Share

The table reports yearly twin pair fixed effects regressions of the log risky share on (a) financial wealth, (b) other characteristics, and (c) financial wealth interacted with financial wealth, other characteristics, and yearly twin pair fixed effects (obtained from the regression reported in the third set of columns of Table II). All characteristics are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	Direct Effect		Interacted	
	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics				
Log financial wealth	0.219	27.20	-0.092	-10.30
Log residential real estate wealth	0.003	1.19	0.007	2.94
Log commercial real estate wealth	-0.005	-2.10	-0.002	-0.90
Leverage ratio	0.000	-0.11	0.003	1.23
Yearly twin pair fixed effect			-0.116	-5.24
Human capital and income risk				
Log human capital	-0.001	-0.09	-0.016	-1.32
Permanent income risk	-0.151	-0.70	-0.113	-0.49
Transitory income risk	-0.033	-0.71	-0.002	-0.03
Beta of income innovation w.r.t. portfolio return	0.031	1.07	-0.014	-0.54
Entrepreneur dummy	-0.250	-4.79	-0.035	-0.70
Unemployment dummy	-0.060	-2.09	0.046	1.46
Habit				
Log internal habit	-0.020	-0.62	0.018	0.63
Log external habit	0.016	0.19	-0.042	-0.54
Demographic characteristics				
High school dummy	0.038	1.13	0.036	1.28
Post-high school dummy	0.027	1.10	-0.011	-0.51
Number of adults	-0.088	-2.93	0.130	4.05
Number of children	-0.065	-5.62	0.056	5.52
Wealth-weighted gender index	-0.051	-1.65	0.067	2.01
Adjusted R^2	21.47%			
Number of observations	55,898			
Number of twin pairs	8,394			

Table IA.XXII
Randomly Matched Pairs

Panel A reports regressions of the log risky share on household characteristics for a sample of randomly matched pairs. Regressions (1) to (3) include yearly twin pair fixed effects, while regression (4) includes only yearly fixed effects. Panel B reports variance decomposition of the log risky share for each of the four regressions reported in Panel A. All variables are described in Appendix Table A.

Panel A: Regression Coefficients

	Yearly Twin Pair Fixed Effects						Yearly Fixed	
	(1)		(2)		(3)		(4)	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.198	28.00	0.223	26.90	0.216	25.80	0.231	38.80
Log residential real estate wealth			0.003	1.18	0.005	2.28	0.005	2.99
Log commercial real estate wealth			-0.010	-5.08	-0.008	-4.37	-0.008	-6.20
Leverage ratio			-0.006	-2.08	-0.007	-2.40	-0.007	-2.85
Human capital and income risk								
Log human capital			0.014	1.28	0.022	1.87	0.020	2.13
Permanent income risk			-0.277	-1.69	-0.369	-2.12	-0.384	-2.32
Transitory income risk			-0.091	-2.70	-0.117	-3.15	-0.120	-2.87
Beta of income innovation w.r.t. portfolio return			0.036	1.48	0.026	1.08	0.032	1.37
Entrepreneur dummy			-0.179	-3.26	-0.136	-2.49	-0.200	-4.96
Unemployment dummy			-0.105	-3.42	-0.084	-2.74	-0.090	-3.91
Habit								
Log internal habit			-0.170	-7.01	-0.122	-4.38	-0.111	-5.38
Log external habit			-0.031	-0.37	-0.066	-0.80	-0.059	-1.08
Demographic characteristics								
High school dummy					0.122	4.57	0.116	5.56
Post-high school dummy					0.064	3.25	0.066	4.64
Number of adults					-0.078	-2.79	-0.110	-5.33
Number of children					-0.035	-3.57	-0.037	-5.16
Wealth-weighted gender index					-0.003	-0.10	-0.029	-1.36
Adjusted R^2	11.39%		12.27%		12.82%		11.50%	
Number of observations	55,898		55,898		55,898		55,898	
Number of twin pairs	8,394		8,394		8,394		8,394	

Table IA.XXII – *Continued*

Panel B: Variance Decomposition	Yearly Twin Pair			Yearly
	(1)	(2)	(3)	(4)
Adjusted R^2	11.39%	12.27%	12.82%	11.50%
Contribution of the variance of:				
Fixed effect (ω_{α}^2)	3.04%	2.58%	2.56%	1.12%
Log financial wealth (ω_f^2)	7.03%	8.98%	8.38%	9.61%
Other observable characterics (ω_x^2)		1.03%	1.54%	1.89%
Contribution of the covariance of:				
Fixed effect and financial wealth (2 $\omega_{\alpha,f}$)	1.33%	1.44%	1.37%	0.31%
Fixed effect and other characteristics (2 $\omega_{\alpha,x}$)		0.25%	0.30%	0.11%
Financial wealth and other characteristics (2 $\omega_{f,x}$)		-2.01%	-1.33%	-1.54%

Table IA.XXIII
Tobit Regression of the Risky Share on Characteristics
Yearly fixed effects

The table reports yearly fixed effects Tobit regressions of the risky share on financial wealth and other characteristics estimated on the set of participating and non-participating households with an adult twin. Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). For each specification, we report the (standard) maximum likelihood estimate and *t*-stat of each parameter, as well as the implied financial wealth elasticity of the risky share, η. All variables are described in Appendix Table A.

	(1)			(2)		
	Estimate	*t*-stat	Implied η	Estimate	*t*-stat	Implied η
Log financial wealth	0.161	98.30	0.386			
Financial wealth quartile						
Lowest				0.188	46.10	1.453
2				0.199	55.10	0.505
3				0.192	58.40	0.372
4				0.182	60.60	0.286
Log residential real estate wealth	0.003	7.03		0.003	6.00	
Log commercial real estate wealth	-0.003	-6.79		-0.002	-4.97	
Leverage ratio	-0.003	-5.98		-0.002	-3.88	
Human capital and income risk						
Log human capital	0.023	6.14		0.021	5.95	
Permanent income risk	-0.345	-4.71		-0.310	-4.57	
Transitory income risk	-0.088	-4.18		-0.076	-3.98	
Entrepreneur dummy	-0.067	-5.78		-0.063	-5.49	
Unemployment dummy	-0.025	-4.08		-0.019	-3.17	
Habit						
Log internal habit	-0.062	-9.28		-0.049	-7.33	
Log external habit	-0.032	-1.88		-0.025	-1.48	
Demographic characteristics						
High school dummy	0.052	8.84		0.050	8.59	
Post-high school dummy	0.031	6.70		0.032	6.89	
Dummy for unavailable education data	0.046	0.67		0.036	0.53	
Number of adults	-0.021	-3.34		-0.041	-6.50	
Number of children	-0.009	-3.96		-0.017	-8.19	
Wealth-weighted gender index	-0.014	-2.11		-0.013	-1.93	
Pseudo R^2	37.40%			40.30%		
Number of observations	85,532			85,532		
Number of twin pairs	11,721			11,721		

Table IA.XXIV
Tobit Regression of the Risky Share on Characteristics
Yearly twin pair fixed effects

The table reports yearly twin pair fixed effects Tobit regressions of the risky share on financial wealth and other characteristics estimated on the set of participating and non-participating households with an adult twin. The estimation is based on the methodology of Alan et al. (2011). Log financial wealth is a standalone variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). For each specification, we report a point estimate and *t*-statistic for each parameter, as well as the implied financial wealth elasticity of the risky share, η. All variables are described in Appendix Table A.

	(1)			(2)		
	Estimate	*t*-stat	Implied η	Estimate	*t*-stat	Implied η
Log financial wealth	0.162	90.50	0.387			
Financial wealth quartile						
Lowest				0.175	36.20	1.357
2				0.186	43.90	0.473
3				0.180	46.50	0.350
4				0.173	48.50	0.273
Log residential real estate wealth	0.001	1.72		0.000	1.08	
Log commercial real estate wealth	-0.004	-8.91		-0.004	-7.75	
Leverage ratio	-0.007	-9.02		-0.004	-4.88	
Human capital and income risk						
Log human capital	0.011	3.61		0.010	3.36	
Permanent income risk	-0.257	-4.93		-0.243	-4.68	
Transitory income risk	-0.061	-4.48		-0.055	-4.01	
Entrepreneur dummy	-0.077	-6.37		-0.071	-5.96	
Unemployment dummy	-0.012	-1.90		-0.010	-1.66	
Habit						
Log internal habit	-0.044	-6.30		-0.036	-5.21	
Log external habit	0.002	0.09		0.006	0.33	
Demographic characteristics						
High school dummy	0.017	2.82		0.016	2.60	
Post-high school dummy	0.033	6.31		0.031	6.07	
Dummy for unavailable education data	0.144	1.95		0.112	1.69	
Number of adults	-0.032	-5.03		-0.047	-7.38	
Number of children	-0.026	-11.60		-0.033	-14.50	
Wealth-weighted gender index	-0.017	-2.72		-0.018	-2.88	
Number of observations	85,532			85,532		
Number of twin pairs	11,721			11,721		

Table IA.XXV
Impact of Constant Bank Imputation
Yearly twin pair fixed effects

The table reports yearly twin pair fixed effects regressions of the log risky share on financial wealth, other characteristics, and financial wealth interacted with other characteristics. In the main text and the rest of the Internet Appendix, bank account balances are imputed from household characteristics. In this table, we construct all variables by assigning the same bank account balance to each missing observation. The constant imputed value is the normalized aggregate value of missing bank account balances, which we compute by taking the difference between (a) the aggregate household deposits reported to the Swedish Central bank and (2) the aggregate bank balances in the Swedish Wealth Registry. The estimation is based on the sample of participating households with an adult twin.

	Direct Effect		Interacted	
	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics				
Log financial wealth	0.330	38.90	-0.263	-25.90
Log residential real estate wealth	0.002	1.16	0.003	1.19
Log commercial real estate wealth	0.001	0.73	-0.002	-1.13
Leverage ratio	-0.005	-1.21	0.003	0.51
Human capital and income risk				
Log human capital	-0.004	-0.40	-0.020	-1.70
Permanent income risk	-0.021	-0.11	-0.030	-0.13
Transitory income risk	0.005	0.13	0.064	1.23
Beta of income innovation w.r.t. portfolio return	0.033	1.11	-0.033	-1.19
Entrepreneur dummy	-0.147	-3.37	-0.005	-0.11
Unemployment dummy	-0.081	-3.08	0.057	1.87
Habit				
Log internal habit	0.075	2.52	0.109	3.85
Log external habit	0.061	0.80	-0.030	-0.40
Demographic characteristics				
High school dummy	0.033	1.06	0.028	1.00
Post-high school dummy	0.028	1.27	-0.032	-1.59
Number of adults	0.007	0.26	0.092	3.00
Number of children	0.050	4.90	0.050	5.18
Wealth-weighted gender index	-0.013	-0.45	0.077	2.43
Adjusted R^2	34.58%			
Number of observations	55,898			
Number of twin pairs	8,394			

Table IA.XXVI
Individual-Level Regression of the Log Risky Share on Characteristics

Panel A reports regressions of a twin's log risky share on the twin's financial wealth and other characteristics. Regressions (1) to (3) include yearly twin pair fixed effects, while regression (4) includes only yearly fixed effects. Panel B reports variance decomposition of the log risky share for each of the four regressions reported in Panel A. The calculations are based on the sample of participating adult twins. All variables are described in Appendix Table A.

Panel A: Regression Coefficients

	Yearly Twin Pair Fixed Effects						Yearly Fixed	
	(1)		(2)		(3)		(4)	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.139	14.87	0.148	15.14	0.145	14.92	0.158	25.79
Log residential real estate wealth			-0.003	-1.63	-0.002	-1.02	0.002	1.16
Log commercial real estate wealth			-0.011	-2.99	-0.009	-2.48	-0.012	-5.81
Leverage ratio			-0.005	-2.79	-0.005	-2.72	-0.006	-3.49
Human capital and income risk								
Log human capital			-0.005	-0.40	-0.004	-0.28	-0.001	-0.13
Permanent income risk			-0.092	-0.52	-0.103	-0.58	-0.112	-1.00
Transitory income risk			-0.031	-0.68	-0.026	-0.58	-0.055	-1.88
Beta of income innovation w.r.t. portfolio return			0.023	1.56	0.022	1.48	0.031	2.06
Entrepreneur dummy			-0.242	-3.54	-0.203	-3.01	-0.204	-4.19
Unemployment dummy			-0.098	-2.86	-0.099	-2.91	-0.093	-3.40
Habit								
Log internal habit			-0.107	-3.14	-0.066	-1.83	-0.094	-4.09
Log external habit			0.067	0.56	0.044	0.37	-0.115	-1.65
Demographic characteristics								
High school dummy					0.072	1.89	0.082	3.35
Post-high school dummy					0.007	0.23	0.052	2.98
Number of children					-0.015	-1.27	-0.004	-0.55
Gender					-0.119	-4.16	-0.078	-4.50
Adjusted R^2	16.72%		17.38%		17.66%		7.79%	
Number of observations	38,468		38,468		38,468		38,468	
Number of twin pairs	5,957		5,957		5,957		5,957	

Table IA.XXVI – *Continued*

Panel B: Variance Decomposition				
	Yearly Twin Pair			Yearly
	(1)	(2)	(3)	(4)
Adjusted R^2	16.72%	17.38%	17.66%	7.79%
Contribution of the variance of:				
Fixed effect (ω_α^2)	11.70%	11.40%	11.48%	1.07%
Log financial wealth (ω_f^2)	4.12%	4.66%	4.47%	5.32%
Other observable characterics (ω_x^2)		0.96%	1.36%	1.45%
Contribution of the covariance of:				
Fixed effect and financial wealth ($2\ \omega_{\alpha,f}$)	0.92%	1.13%	1.02%	0.27%
Fixed effect and other characteristics ($2\ \omega_{\alpha,x}$)		-0.06%	-0.25%	0.18%
Financial wealth and other characteristics ($2\ \omega_{f,x}$)		-0.71%	-0.42%	-0.50%

Table IA.XXVII
Individual Elasticity of the Risky Share Across Financial Wealth Quantiles

The table reports yearly twin pair fixed effects regressions of a twin's log risky share on the twin's financial wealth interacted with dummies for financial wealth quartiles and other characteristics. The estimation is based on the sample of participating adult twins. All variables are described in Appendix Table A.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Financial wealth quartile				
Lowest	0.353	18.11	0.350	17.64
2	0.114	7.65	0.115	7.67
3	0.064	4.02	0.073	4.53
4	0.054	2.90	0.069	3.67
Log residential real estate wealth			-0.002	-1.12
Log commercial real estate wealth			-0.008	-2.13
Leverage ratio			-0.002	-1.02
Human capital and income risk				
Log human capital			-0.008	-0.62
Permanent income risk			-0.020	-0.12
Transitory income risk			0.002	0.05
Beta of income innovation w.r.t. portfolio return			0.023	1.53
Entrepreneur dummy			-0.190	-2.78
Unemployment dummy			-0.083	-2.48
Habit				
Log internal habit			-0.029	-0.82
Log external habit			0.065	0.56
Demographic characteristics				
High school dummy			0.066	1.74
Post-high school dummy			0.005	0.18
Dummy for unavailable education data			0.538	1.64
Number of children			-0.020	-1.74
Gender			-0.118	-4.21
Adjusted R^2	18.38%		19.12%	
Number of observations	38,468		38,468	
Number of twin pairs	5,957		5,957	

Table IA.XXVIII
Individual Financial Wealth Elasticity of the Risky Share

The table reports yearly twin pair fixed effects regressions of a twin's log risky share on the twin's financial wealth, other characteristics, and financial wealth interacted with the twin's characteristics. Financial wealth is interacted with itself and internal habit in regression (1), and with all characteristics in regression (2). The estimation is based on the sample of participating adult twins. All variables are described in Appendix Table A.

	(1)				(2)			
	Direct Effect		Interacted		Direct Effect		Interacted	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.135	14.20	-0.109	-10.70	0.136	14.24	-0.105	-9.51
Log residential real estate wealth	-0.003	-1.24			-0.002	-1.15	0.002	0.73
Log commercial real estate wealth	-0.007	-2.01			-0.008	-2.09	0.001	0.36
Leverage ratio	-0.002	-1.25			0.000	-0.04	0.003	1.20
Human capital and income risk								
Log human capital	-0.010	-0.76			-0.007	-0.50	-0.012	-0.83
Permanent income risk	0.042	0.24			0.020	0.12	0.102	0.66
Transitory income risk	0.022	0.50			0.017	0.40	0.041	1.05
Beta of income innovation w.r.t. portfolio return	0.022	1.50			0.021	1.39	-0.031	-1.36
Entrepreneur dummy	-0.192	-2.82			-0.183	-2.72	-0.091	-1.27
Unemployment dummy	-0.088	-2.63			-0.085	-2.53	0.025	0.62
Habit								
Log internal habit	-0.008	-0.22	0.044	1.88	-0.009	-0.24	0.047	1.54
Log external habit	0.054	0.46			0.071	0.61	-0.310	-3.00
Demographic characteristics								
High school dummy	0.064	1.70			0.064	1.70	0.044	1.23
Post-high school dummy	0.002	0.07			-0.001	-0.03	-0.005	-0.18
Number of children	-0.018	-1.56			-0.018	-1.56	0.021	1.82
Gender	-0.123	-4.37			-0.122	-4.34	0.019	0.77
Adjusted R^2	18.90%				19.07%			
Number of observations	38,468				38,468			
Number of twin pairs	5,957				5,957			

Table IA.XXIX
Instrumental Variable Estimation of the Constant and Piecewise-Constant Elasticity Specifications
Yearly twin pair fixed effects

The table reports instrumental variable regressions of the log risky share on household characteristics in the presence of yearly twin pair fixed effects. Financial wealth is an explanatory variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). Log passive financial wealth is used as an instrument in both regressions. All variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.280	37.30		
Financial wealth quartile				
Lowest			0.474	23.90
2			0.295	16.40
3			0.223	12.50
4			0.153	9.23
Log residential real estate wealth	0.002	1.27	0.001	0.69
Log commercial real estate wealth	-0.007	-4.33	-0.006	-3.47
Leverage ratio	-0.003	-1.11	0.005	1.93
Human capital and income risk				
Log human capital	0.009	0.91	0.006	0.64
Permanent income risk	-0.333	-2.37	-0.290	-2.07
Transitory income risk	-0.087	-2.96	-0.056	-1.90
Beta of income innovation w.r.t. portfolio return	0.015	1.15	0.016	1.20
Entrepreneur dummy	-0.261	-6.87	-0.252	-6.63
Unemployment dummy	-0.067	-2.61	-0.054	-2.10
Habit				
Log internal habit	-0.164	-6.97	-0.108	-4.49
Log external habit	0.044	0.70	0.041	0.65
Demographic characteristics				
High school dummy	0.036	1.56	0.030	1.30
Post-high school dummy	0.029	1.53	0.024	1.28
Number of adults	-0.057	-2.53	-0.115	-5.08
Number of children	-0.046	-5.40	-0.062	-7.16
Wealth-weighted gender index	-0.094	-4.23	-0.083	-3.74
Adjusted R^2	25.40%		25.71%	
Number of observations	40,424		40,424	
Number of twin pairs	7,940		7,940	

Table IA.XXX
Instrumental Variable Estimation of the Linear Elasticity Specification
Yearly twin pair fixed effects

The table reports instrumental variable regressions of the log risky share on household characteristics in the presence of yearly twin pair fixed effects. Log financial wealth is an explanatory variable in regression (1), and is interacted with dummies for financial wealth quantiles in regression (2). Log passive financial wealth is used as an instrument in both regressions. All variables are described in Appendix Table A. The estimation is based on the sample of participating households with an adult twin.

	(1)				(2)			
	Direct Effect		Interacted		Direct Effect		Interacted	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Financial characteristics								
Log financial wealth	0.282	37.70	-0.084	-10.60	0.293	36.80	-0.079	-9.56
Log residential real estate wealth	0.002	1.12			0.003	1.89	0.007	3.29
Log commercial real estate wealth	-0.006	-3.77			-0.006	-3.78	-0.002	-1.07
Leverage ratio	0.002	0.95			0.015	3.08	0.012	3.56
Human capital and income risk								
Log human capital	0.010	1.02			0.010	1.03	-0.006	-0.49
Permanent income risk	-0.327	-2.34			-0.296	-2.00	-0.043	-0.27
Transitory income risk	-0.075	-2.55			-0.075	-2.40	0.038	0.92
Beta of income innovation w.r.t. portfolio return	0.014	1.07			0.018	1.29	-0.017	-1.02
Entrepreneur dummy	-0.263	-6.95			-0.256	-6.71	-0.007	-0.15
Unemployment dummy	-0.062	-2.45			-0.052	-2.03	0.074	2.27
Habit								
Log internal habit	-0.144	-5.93	0.122	6.93	-0.128	-5.13	0.050	1.97
Log external habit	0.037	0.58			0.030	0.48	-0.027	-0.40
Demographic characteristics								
High school dummy	0.034	1.50			0.033	1.46	0.064	2.75
Post-high school dummy	0.024	1.29			0.020	1.05	-0.038	-2.06
Number of adults	-0.077	-3.35			-0.078	-3.37	0.053	1.91
Number of children	-0.053	-6.22			-0.063	-7.32	0.046	4.73
Wealth-weighted gender index	-0.086	-3.86			-0.075	-3.30	0.064	2.30
Adjusted R^2	26.07%				26.52%			
Number of observations	40,424				40,424			
Number of twin pairs	7,940				7,940			

Table IA.XXXI
Health and Lifestyle Variables
Yearly twin pair fixed effects

The table reports yearly twin pair fixed effects regressions of the log risky share on financial, demographic, health, and lifestyle characteristics. The estimation is based on the sample of participating households with an adult twin. The health and lifestyle variables refer to the twin in the household. Log financial wealth is an explanatory variable in regression (1), and is interacted with dummies for financial wealth quartiles in regression (2). All other financial and demographic variables are described in Appendix Table A.

	(1)		(2)	
	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.222	20.90		
Financial wealth quartile				
Lowest			0.319	15.60
2			0.217	13.40
3			0.180	9.65
4			0.125	7.31
Log residential real estate wealth	0.004	1.39	0.003	0.95
Log commercial real estate wealth	-0.005	-1.98	-0.004	-1.59
Leverage ratio	-0.006	-1.91	-0.004	-1.12
Human capital and income risk				
Log human capital	-0.038	-1.86	-0.039	-1.92
Permanent income risk	0.186	0.79	0.205	0.85
Transitory income risk	0.008	0.19	0.032	0.70
Beta of income innovation w.r.t. portfolio return	-0.005	-0.23	-0.006	-0.31
Entrepreneur dummy	-0.260	-4.11	-0.254	-4.00
Unemployment dummy	-0.111	-2.73	-0.106	-2.62
Habit				
Log internal habit	-0.086	-2.21	-0.040	-1.00
Log external habit	0.080	0.78	0.072	0.70
Demographic characteristics				
High school dummy	0.042	1.08	0.036	0.95
Post-high school dummy	0.032	1.01	0.028	0.91
Number of adults	-0.066	-1.81	-0.106	-2.87
Number of children	-0.043	-3.07	-0.050	-3.59
Wealth-weighted gender index	-0.108	-2.77	-0.099	-2.55

Table IA.XXXI–*Continued*

Lifestyle				
Regular smoker	-0.009	-0.34	-0.015	-0.57
Alcohol drinker	0.067	2.12	0.060	1.90
Coffee drinker	0.060	1.28	0.062	1.32
Exercise level	-0.008	-0.44	-0.009	-0.51
Physical attributes				
Height	-0.001	-0.55	-0.001	-0.71
Overweight	-0.031	-1.12	-0.037	-1.36
Obese	-0.049	-0.95	-0.043	-0.84
Mental health				
Eating disorder (EDNOS)	0.005	0.15	0.010	0.34
Anxiety (GAD)	0.088	0.99	0.080	0.90
Depression symptoms	-0.096	-2.32	-0.093	-2.29
Major depression	0.028	0.96	0.026	0.91
Health conditions				
Indifferent or bad self-assessed health	-0.029	-0.85	-0.026	-0.76
Deterioration of self-assessed health over past 5 years	-0.005	-0.17	-0.004	-0.14
Recurrent headaches and migraines	0.001	0.05	-0.001	-0.04
High blood pressure	-0.068	-1.96	-0.071	-2.08
Adjusted R^2	17.75%		18.35%	
Number of observations	36,258		36,258	
Number of twin pairs	5,354		5,354	

Table IA.XXXII
Dynamic Panel

This table reports the instrumental variable regression of changes in the log risky share on changes in financial wealth, changes in the log passive share, and household characteristics. The estimation is based on households with an adult twin that participate in risky asset markets at the end of two consecutive years. Yearly fixed effects are included in all the regressions. Characteristics are taken at the beginning of the period and are the same as in the third set of columns of Table II in the main text.

	No Controls				With Controls			
	(1)		(2)		(3)		(4)	
	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat	Estimate	*t*-stat
Log financial wealth	0.225	4.91			0.232	4.90		
Financial wealth quartile								
Lowest			0.454	2.81			0.456	2.74
2			0.420	3.16			0.408	3.09
3			0.333	3.35			0.340	3.39
4			0.037	0.74			0.028	0.52
Change in log passive share	0.097	3.21	0.088	2.82	0.097	3.24	0.088	2.82
Number of observations	38,467		38,467		38,467		38,467	

Table IA.XXXIII
Elasticity of Aggregate Risky Financial Wealth
Homogeneous wealth shock

This table reports the aggregate elasticity to a homogeneous wealth shock when the economy is populated by: a) a representative CRRA investor, b) heterogeneous CRRA investors, c) investors with a constant financial wealth elasticity of the risky share, and d) investors with a linear financial wealth elasticity of the risky share. The calculations are based on yearly estimates of the elasticity specification (Panel A) and panel estimates (Panel B).

Panel A: Yearly Estimates of the Elasticity Specification

	Fixed Set of Participants				With Entry and Exit			
	1999	2000	2001	2002	1999	2000	2001	2002
CRRA representative investor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heterogeneous CRRA	1.000	1.000	1.000	1.000	1.025	1.020	1.023	1.030
Constant financial wealth elasticity of the risky share	1.280	1.248	1.226	1.117	1.282	1.249	1.228	1.123
Linear financial wealth elasticity of the risky share	1.084	1.059	1.087	0.965	1.110	1.079	1.111	0.996

Panel B: Panel Estimates of the Elasticity Specification

	Fixed Set of Participants				With Entry and Exit			
	1999	2000	2001	2002	1999	2000	2001	2002
CRRA representative investor	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Heterogeneous CRRA	1.000	1.000	1.000	1.000	1.023	1.016	1.024	1.042
Constant financial wealth elasticity of the risky share	1.223	1.223	1.223	1.223	1.225	1.224	1.225	1.227
Linear financial wealth elasticity of the risky share	1.034	1.037	1.059	1.073	1.057	1.054	1.084	1.116

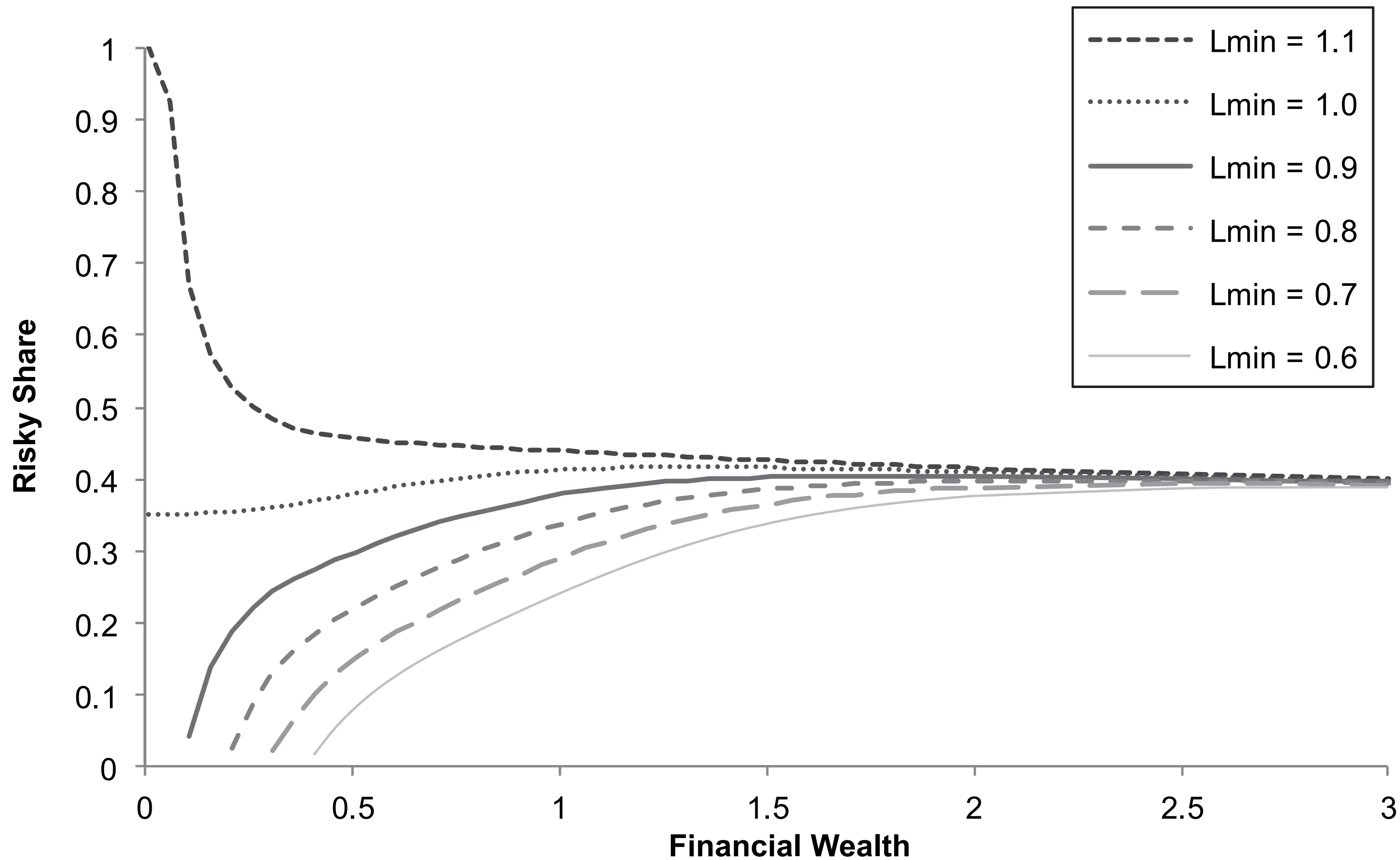

Figure IA.1. Theoretical link between financial wealth and the risky share. The figure illustrates how the risky share varies with financial wealth in the calibrated portfolio model with human capital and habit developed in section III of this Internet Appendix.

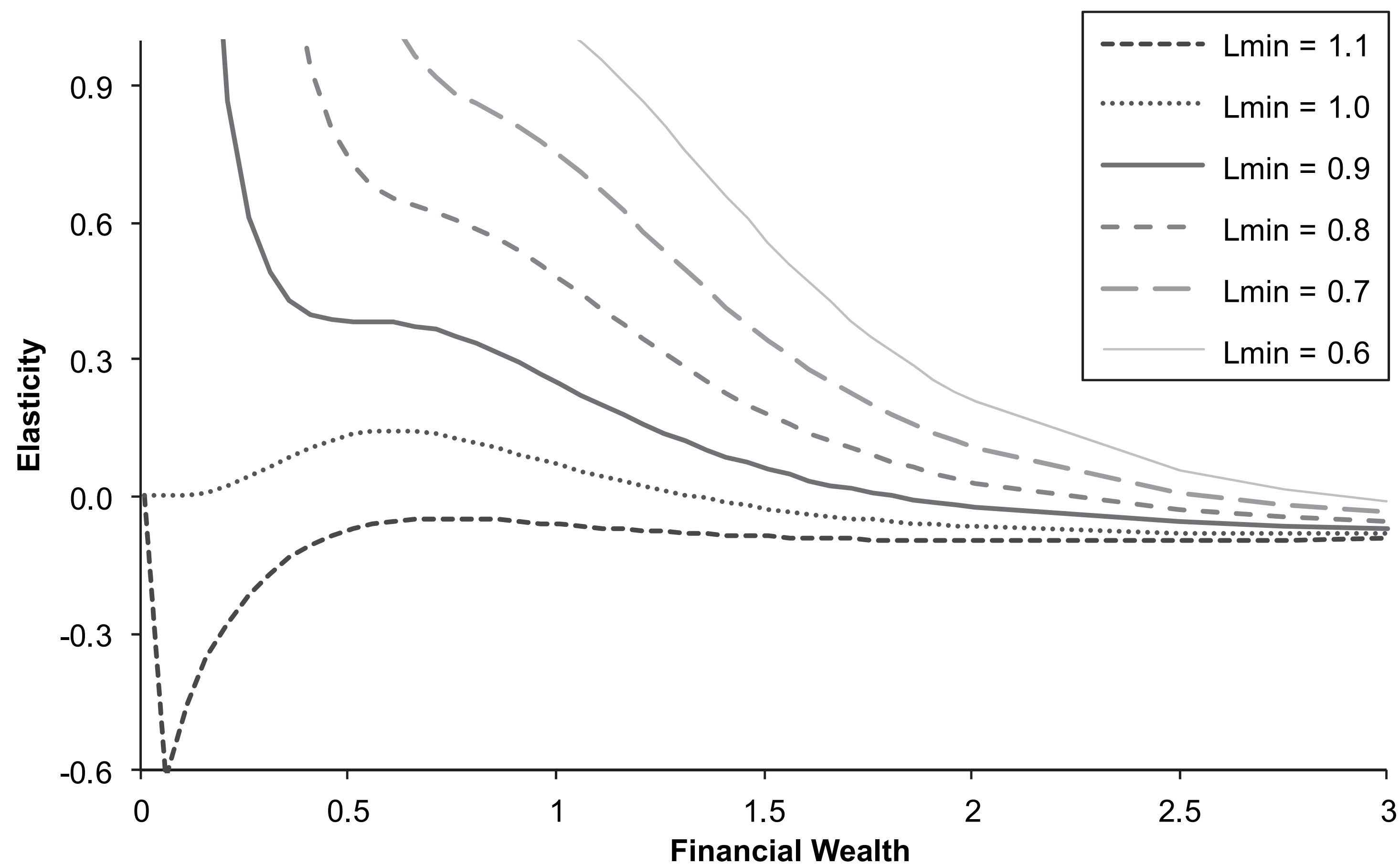

Figure IA.2. Theoretical link between financial wealth and the financial wealth elasticity of the risky share. The figure illustrates how the financial wealth elasticity of the risky share varies with financial wealth itself in the calibrated portfolio model with human capital and habit developed in section III of this Internet Appendix.

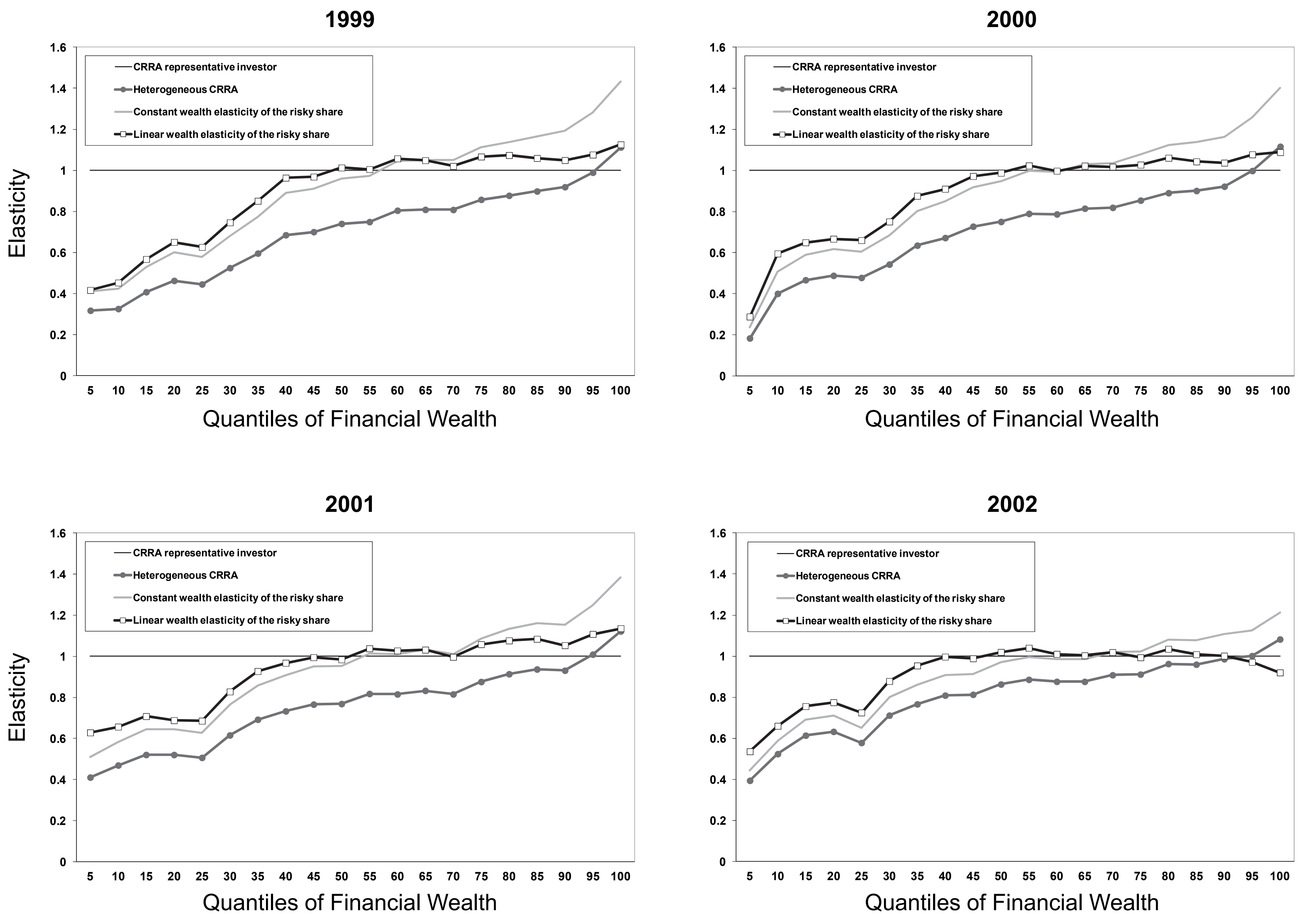

Figure IA.3. Year-by-year estimates of the aggregate elasticity of participants. The figure illustrates year by year estimates of the elasticity of aggregate risky wealth with respect to the aggregate wealth of participating households. The set of participants before and after the shock is fixed in each yearly simulation.

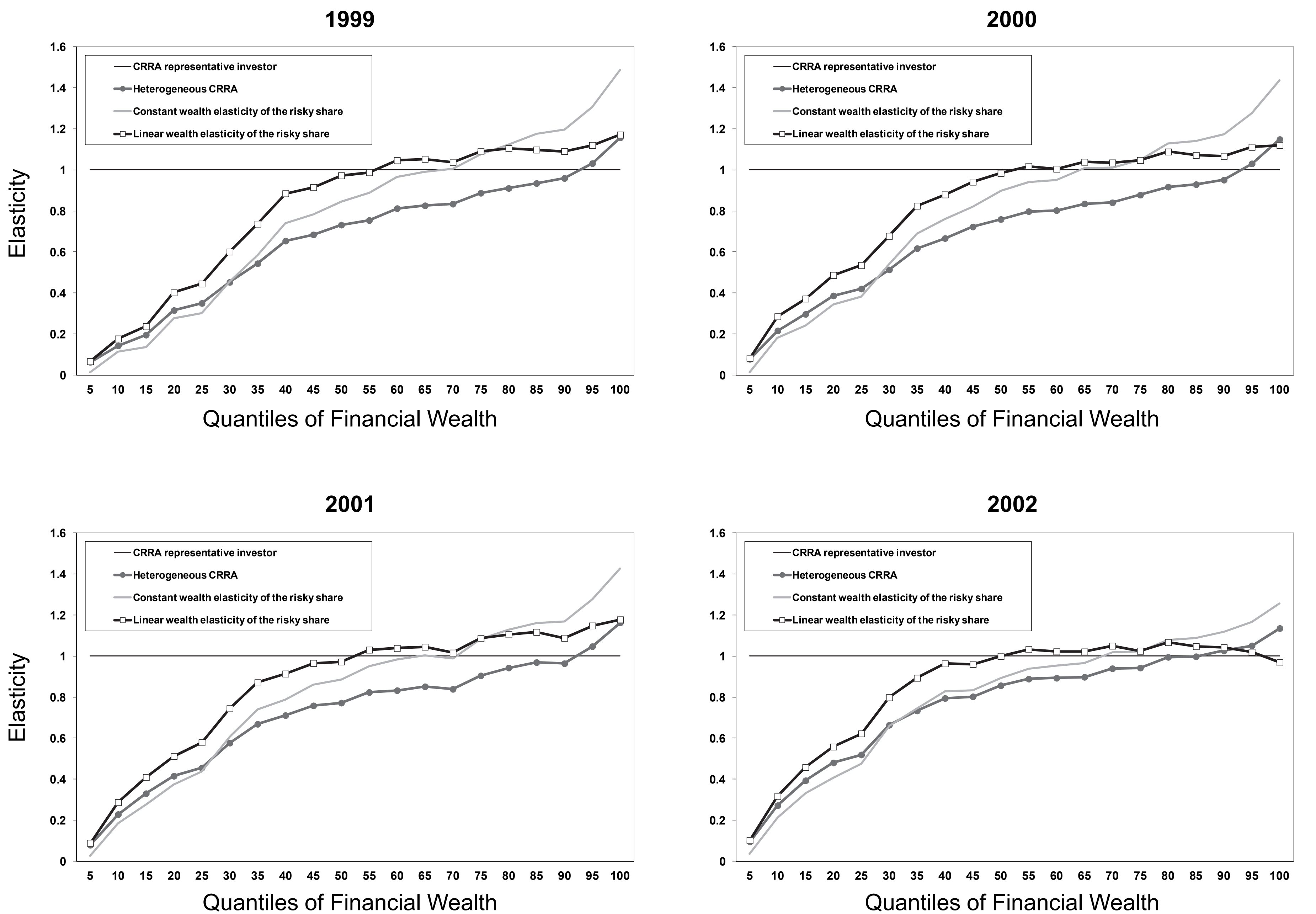

Figure IA.4. Year-by-year estimates of the aggregate elasticity of participating and nonparticipating households. The figure illustrates year by year estimates of the elasticity of aggregate risky wealth with respect to the aggregate financial wealth of all households. The set of participants before and after the shock is endogenous.

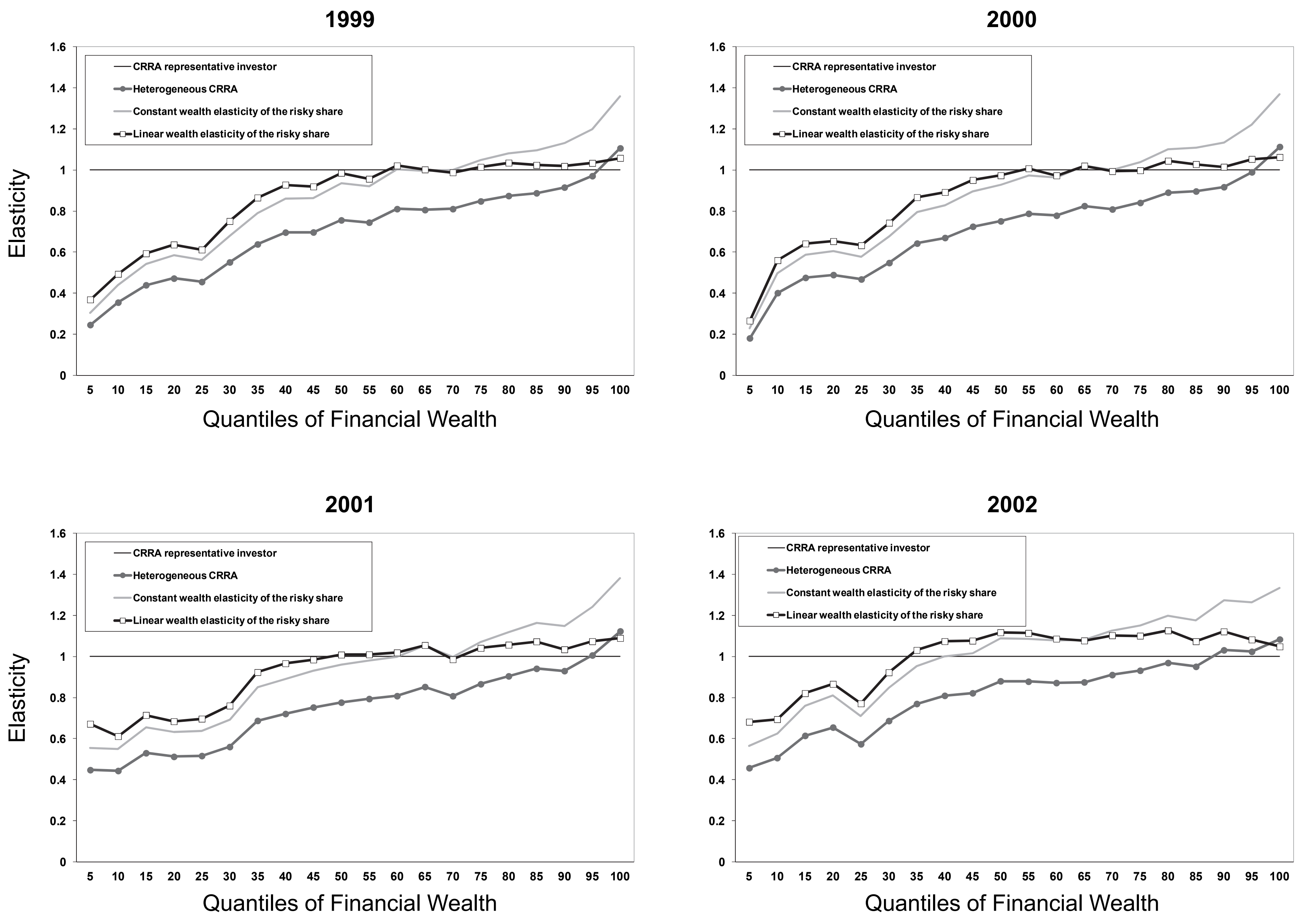

Figure IA.5. Aggregate elasticity of participants computed from panel estimates. The figure illustrates yearly estimates of the elasticity of aggregate risky wealth with respect to the aggregate wealth of participating households. Individual elasticities are computed using panel estimates of the elasticity specifications. The set of participants is fixed in each yearly simulation.

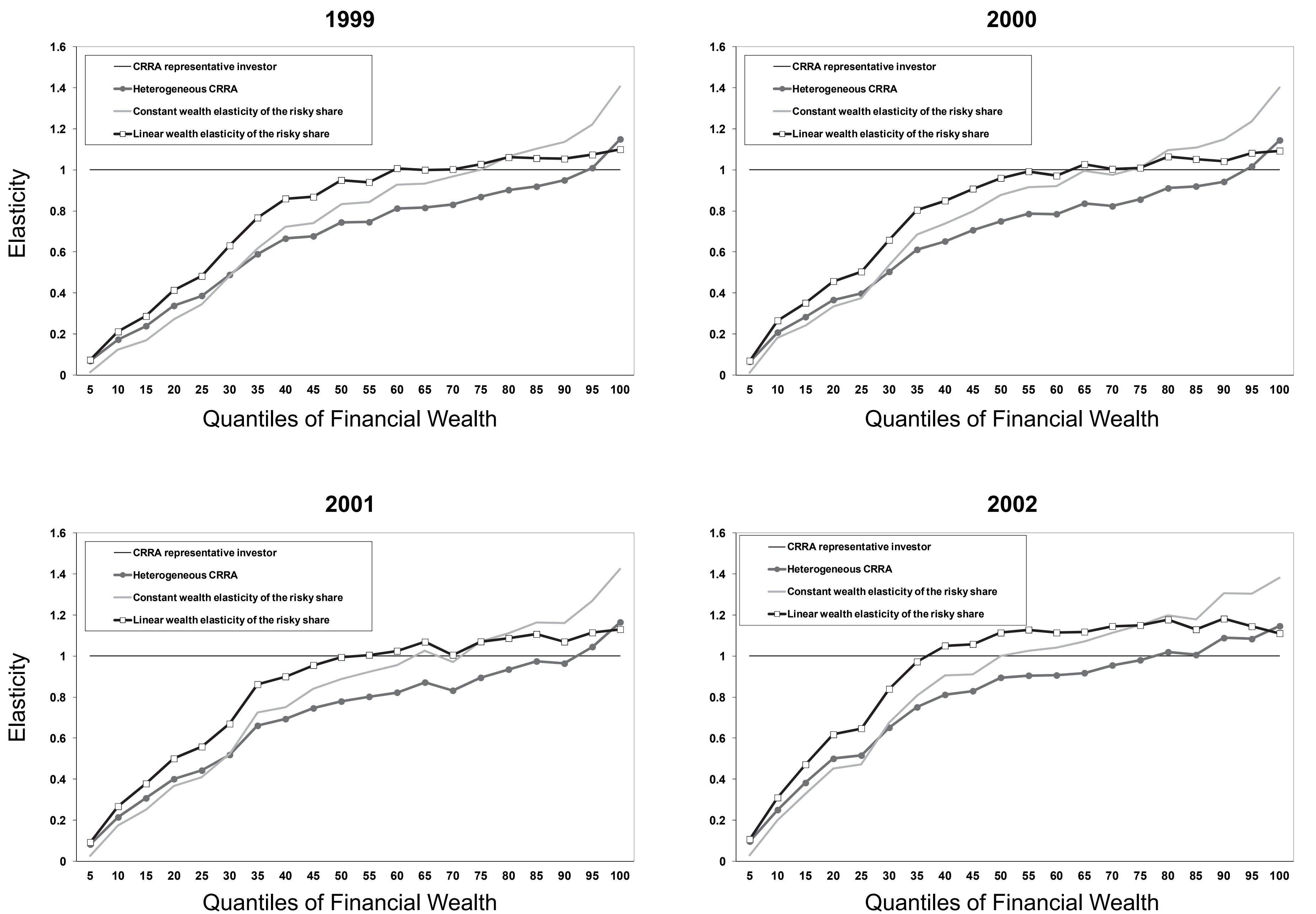

Figure IA.6. Aggregate elasticity of all households computed from panel estimates. The figure illustrates yearly estimates of the aggregate elasticity of participating and nonparticipating households. Individual elasticities are computed using panel estimates of the elasticity specifications. The set of participants before and after the shock is endogenous.

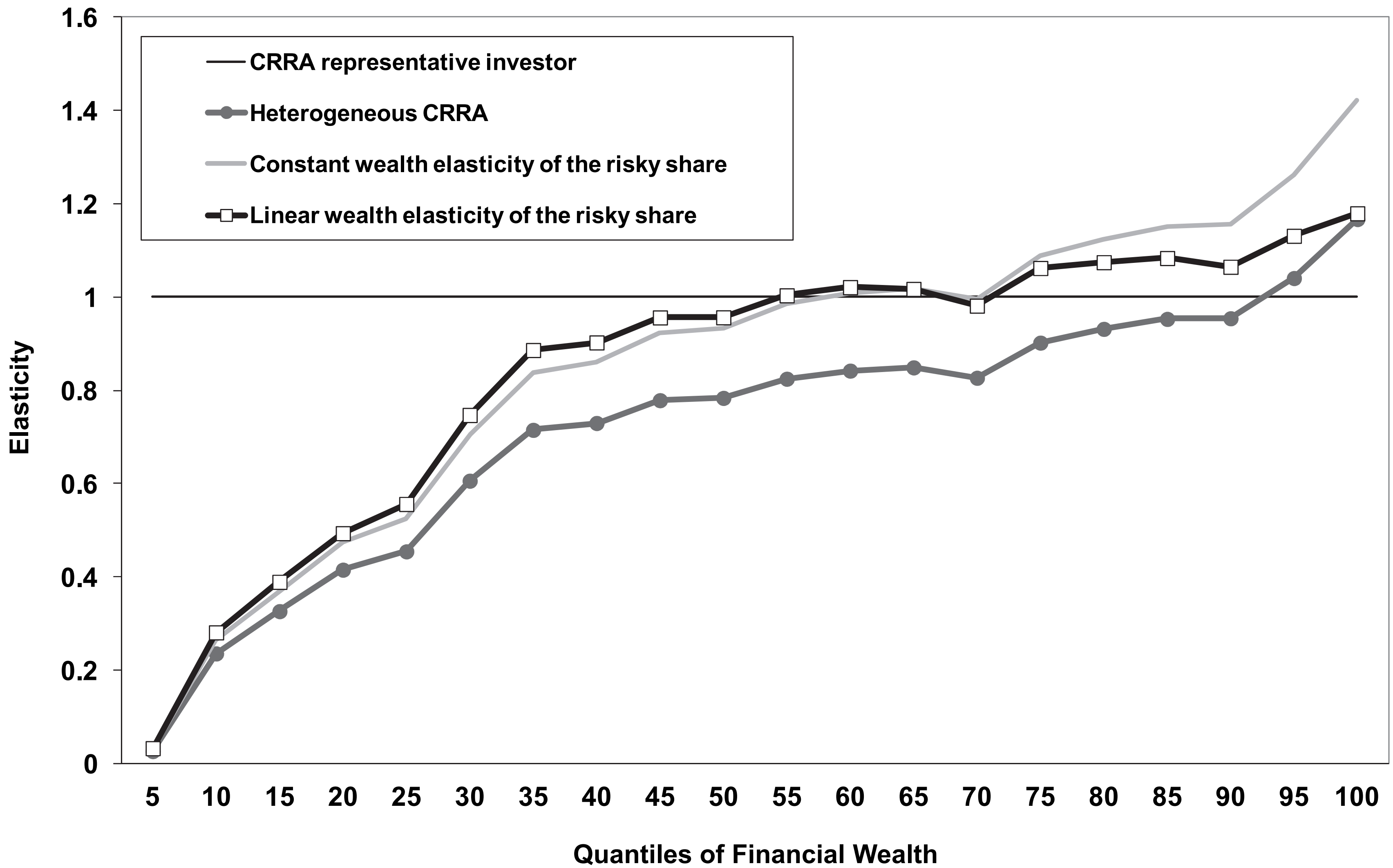

Figure IA.7. Aggregate elasticity in response to a negative wealth shock with exit. This figure illustrates the elasticity of aggregate risky financial wealth with respect to negative shocks to the financial wealth of participating and nonparticipating households. The set of participants is endogenous and all results are reported for the year 2001.