Moderate Trust and Maximum Perfomance on Financial Investments

Decory Edwards*

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Abstract

This paper documents a nonlinear relationship between trust and economic performance, measured as returns to net wealth. I use the RAND Longitudinal version of the Health and Retirement Study to construct return measures over the period 2002–2022 from observed capital income, asset values across waves, debt, and transaction-related information. I estimate this hump-shaped relationship between trust and returns to net wealth in standard OLS regressions for average returns, pooled OLS, and panel OLS regression models; the latter two models chosen with the intent to characterize the individual, persistent component of returns. The estimated level of trust that maximizes returns is consistently in the range of about 6 to 7 on a 1–10 scale, and this result is stable across the standard, pooled, and Correlated Random Effects (CRE) specifications. These patterns persists even after controlling for risk exposure via portfolio composition, which is important since individuals are found to earn different returns on average even among riskless assets.

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1 Introduction

A large literature argues that trust matters for aggregate economic outcomes, including long-run growth Algan and Cahuc 2010. At the micro level, Butler, Giuliano, and Guiso 2016 show that economic performance is not simply increasing in trust: income is maximized at intermediate levels. This paper starts from that result and asks whether a similar nonlinearity appears for realized household investment returns.

The literature offers much justification regarding the link between trust and economic growth. The argument in this paper is that this link should be even stronger for measures of economic performance regarding investment behavior. Inherent in financial environments where borrowing and lending is mediated throgh contracting between borrowers and lenders regarding a delayed payoff is the *promise of future repayment*. If trust is too low, households may miss out on high-return opportunities (this is not a surprising result given the documented equity premium puzzle). On the other hand, if trust is too high, investors may be too ambitious and get cheated more often. Frankly, if this "right amount of trust" mechanism results in a hump-shaped relationship between income and trust, then this fact about the nature of financial contracting should imply that the hump-shaped relationship is especially pronounced for returns.

Recent evidence using Norwegian administrative data documents persistent idiosyncratic return differences across households and scale dependence with wealth Fagereng et al. 2020. Related work using U.S. panel data also emphasizes a persistent return component and its relevance for inequality and life-cycle outcomes Daminato and Pistaferri 2024. These findings motivate an interest in documenting this persistent component and exlaining it with observable household characteristics.

Replicating the Norwegian measurement environment in the U.S. is difficult. U.S. researchers typically combine survey data with partial administrative information, rather than observing a full administrative panel of wealth flows at the population level Kennickell 2017. In this paper, I use the publicly-available HRS RAND Longitundinal 2022 version of the data, which is unusually useful for this question because it contains the *core ingredients needed to construct returns over time: capital income, asset values across waves, debt, and transaction-related information* as well as a *measure of trust with nonmissing responses from a significant subset of the sample.*

I verify whether the hump-shaped relationsip appears in the HRS for trust and average income from 2002-2022. I then test for a comparable hump shape regarding trust and returns to net wealth over the same period. Since trust is observed in one wave, I follow the literature such as Lesmeister, Limbach, and Goergen 2019 and treat trust as time-invariant in pooled and panel regession models. The main results of the paper is that I not only recover the hump-shaped relationship between trust and returns to net wealth, but also control for it while characterizing the persistent component of returns across respondents.

The rest of the paper proceeds as follows. Section **??** reviews the relevant literature on trust, household returns, and panel methods for time-invariant regressors. Section **??** describes the HRS data, the construction of trust, income, wealth, portfolio shares, and return measures, and presents the main descriptive statistics. Section **??** presents the main empirical results, including the income results, the average-return and pooled specifications, and the panel evidence on persistent heterogeneity in returns. Section **??** extends the analysis by controlling for risk exposure through portfolio shares and shows that the main trust results are robust to this adjustment. Section **??** concludes. Additional material is collected in Appendix **??**.

2 Literature Review

This work builds on the literature interested in empirical estimates of the rate of return across broad and narrow asset classes, measures of trust and its detereminants, and well as the statistical relationship between trust and economic performance.

2.1 Trust

This paper draws from the literature regarding the detereminants of trust. An example of this is Alesina and Ferrara 2000. Key takeaway is that the standard demographic control variables (age, race, education, gender) as well as living in a community with much heterogeneity in terms of either race or income. This paper is different in that, I let the available survey responses in 2020 guide the set of demographic control variables used to explain the general trust measure, which found in the Appendix.

This paper primarily seeks to contribute to the trust literature regarding the empirical relationship between measures of trust and economic performance. Guiso, Sapienza, and Zingales 2008 finds that trust can lead to greater stock market participation. Guiso, Sapienza, and Zingales 2004 finds that measures of social capital and trust leads to greater use of financial instruments like checks, as well as poortfolio diversification away from holding cash and towards holding stocks and other assets. Notably, Haran Rosen, Lusardi, and Mitchell 2025 uses the specially-designed modules on trust from the HRS 2020 wave to study retirement security. They identify aggregate measures of trust; in particular, *Trust in Financial Institutions* is a measure of trust that should be relevant for returns, if it isolates the portion of trust that matters for financial contracting. Additionally, the authors identify the set of financial literacy questions in the same wave of the survey.

The paper in this literature on trust and economic performance which serves as a key motivation is Butler, Giuliano, and Guiso 2016. The authors find that the relationship between trust and income is hump-shaped; *an intermediate level of trust is associated with the maximal level of income.* The key differences between what is done there is that the measure of economic performance in my paper is returns to net wealth and that I focus on the panel structure of the dataset to describe the individual fixed effect for the return measure. The return measures can be interpreted as an investor performance in their financial contracting behavior within a given asset/portfolio class.

Alsan and Wanamaker 2018 find that the 1972 public revelation of the Tuskegee Syphilis Study lead to lower trust in black males in medical institutions, ultimately leading to worse health outcomes over a lifetime. Algan and Cahuc 2010 find that aggregate trust has a large positive causal effect on GDP per capita by showing that a measure of inherited trust by second generation immigrants in the U.S. is strongly correlated with aggregate trust in the origin country (and is persistent across generations). These papers serve as insspiration for attempts at identifying the causal effects of trust on returns, although the HRS data was unfavorable in terms of results in this direction.

2.2 Returns

An important work in the literature on empirical estimates of the rate of return is Fagereng et al. 2020 which characterizes the persistent component of returns for indivdiuals in Nowegian population data. This work also provides estimates of the distribution of returns within narrowly defined asset class, as well as for net wealth, which can serve as a useful benchmark for comparison. The HRS RAND product is publicly available survey data, which is much lower in quality that population-level administrative tax data for this sort of project. That said, we are able to produce estimates of the distribution of returns (for asset classes and portfolios) and the individual fixed effect for returns to net wealth which can be directly compared to those same objects computed using the Norwegian data. Crucially, although this paper guides much of the measurement and regression modeling choices, the focus of my paper is on the hump-shaped relationship between trust and returns and the role of trust in financial agreeements, which this paper makes no comment on.

Daminato and Pistaferri 2024 also documents the persistent component of returns in the PSID, and then use the data to calibrate a return-earnings process within a life cycle model of consumption-saving behavior. The authors present a standard method for computing returns using the PSID. Due to this dataset'sstructure being very similar to the HRS, I define return measures in this paper almost identically. Again, although this work largely informs choice made in my paper, the main difference is my interest in the trust measure (which the PSID does not measure in any wave of its survey).

2.3 Panel regression techniques for time-invariant regressors

The empirical techniques chosen in this paper are driven by the fact that the HRS only asks respondents about trust for a single wave of the survey. For this reason, I treat trust as time-invariant in the sample. Although there is empirical evidence to support this assumption, it is worth noting. Another defense of this assumption is that, the education variable in the HRS (years of schooling) is also treated as time-invariant in the RAND version of the dataset. Since education is generally thought of to be important for returns (or at least, its covariates) dealing with time-invariant regressors in the panel setting is likely unaviodable when using this dataset.

Moreover, since the individual persistent component of returns is the empirical obect of interest for studies measuring the rate of return, dropping the time-invariant regressors (i.e. trust) to capture latent time variation with the indivdiual component would be at odds with establishing a hump-shaped relationship between trust and returns using the data. This is the central modeling issue of this paper, abd for which the following papers help address. Baltagi and Liu 2026 offers an example of the general panel regression environment which fits the issues of the HRS well. Wooldridge 2019 offers a useful discussion on the Hausmann test and selecting between panel regression models. Bollen and Brand 2010 does the same for the Mundlak version of the model where time-varying regressors are allowed to covary with the individual fixed effect component.

3 Data

For the statistical analysis in this paper, I use the RAND Longitudinal version of the Household Retirement Survey (HRS) public data. I focus on the years 2002-2022; as this time horizon was filled with many economically relevant events (GFC, Covid), we can be creative regarding how to assess the accuracy of the data measured here. This is useful because, although there are many sources of income data to compare resuults to, there are less counterparts like this for return measures. The variables of interest fall into the categories: i) income, ii) wealth and portfolio composition, iii) returns, iv) trust, v) demographics, and vi) other controls.

3.1 Asset classes and portfolio definitions

The HRS asks a number of questions aimed at measuring household wealth and portfolio composition in the sample. I collect data on i) **interest income and dividends**, ii) **capital gains**, iii)

net investment flows, and iv) **previous period wealth holdings**, all of which are necessary to define the desired measure of household returns. Since population-level administration data on these objects for individual taxpayers is not available in the U.S., it is important to understand each component needed in the return calculation. This will help to determine whether or not our measured distribution of returns in this dataset is sensible. To understand what portfolios are accruing returns, we will let the structure of the HRS questions guide how we define returns to specific asset classes (and collections of them) that the survey collects data for.

3.1.1 Interest income and dividends

The HRS RAND longitudinal file has a distinctive way in which interest income and dividends received on major asset classes, like stocks and bonds, private business, and real estate, is measured. In particular, there is a variable in the survey which measures "household capital income":

- ...is the sum of household capital income received over the last calendar year, including business or farm income, self-employment earnings, gross rent, dividend and interest income, trust funds or royalties, and other asset income.

This particular feature of the data is the driving factor for the key modeling assumptions of this paper regarding measuring returns: asset classes are defined as narrowly as they can be given observation of interest income and dividends on those assets. For example, although we see capital gains for stocks, business, bonds, and real estate, we do not observe interest income or dividends on these assets individually. Thus, the narrowest asset class defined in this paper will be called "core assets" and will be comprised of these assets.

The RAND version of the data offers a number of variables measuring pension and annuity income as well as other forms of retirement income. I use this to construct a measure of returns to retirement assets and to define a broader notion of portfolio returns by considering returns to core and retirement assets.

A key assumption is that there are no interest income or dividends earned on residential assets[1]. With this assumption, we can consider interest income and dividends on the entire portfolio as the same as interest income and dividends on the portfolio with just core and retirement assets. Thus, to compute a measure of returns to net wealth, I need to add in the remaining available capital gains per asset class (for those that receive no interest income).

[1] Or on any of the asset classes for which capital gains are available for.

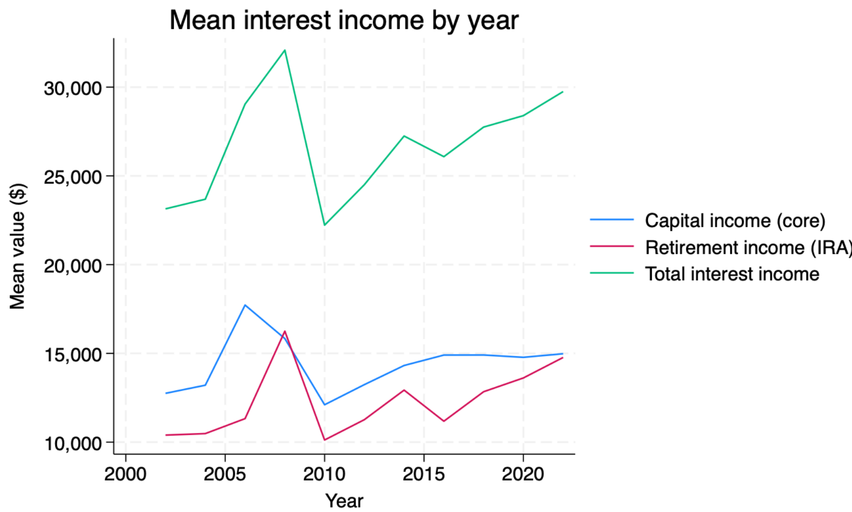

Figure 1: Interest income mean by year

3.1.2 Capital gains

The possible asset classes for which capital gains can be computed in the HRS are i) primary residences, ii) secondary residences, iii) other real estate, iv) private business, v) IRA/Keogh (or "retirement"), vi) stocks/mutual funds, vii) bonds, viii) checking/savings/money market, ix) cds/t-bills, x) vehicles, xi) other assets. The possible liabilities are i) mortgages on primary residence, ii) mortgage on secondary residence, iii) other home loans, and iv) total other debt.

Capital gains for each asset class are computed as the estimated change in valuation across survey waves. The general trend is that these changes move substantially over time. In the panel (Figure 2), business, stocks, and other real estate all show large cyclical swings and end the sample at levels above where they begin, while safe assets (bonds + checking/savings + CDs/T-bills) are flatter and lower-volatility by comparison.

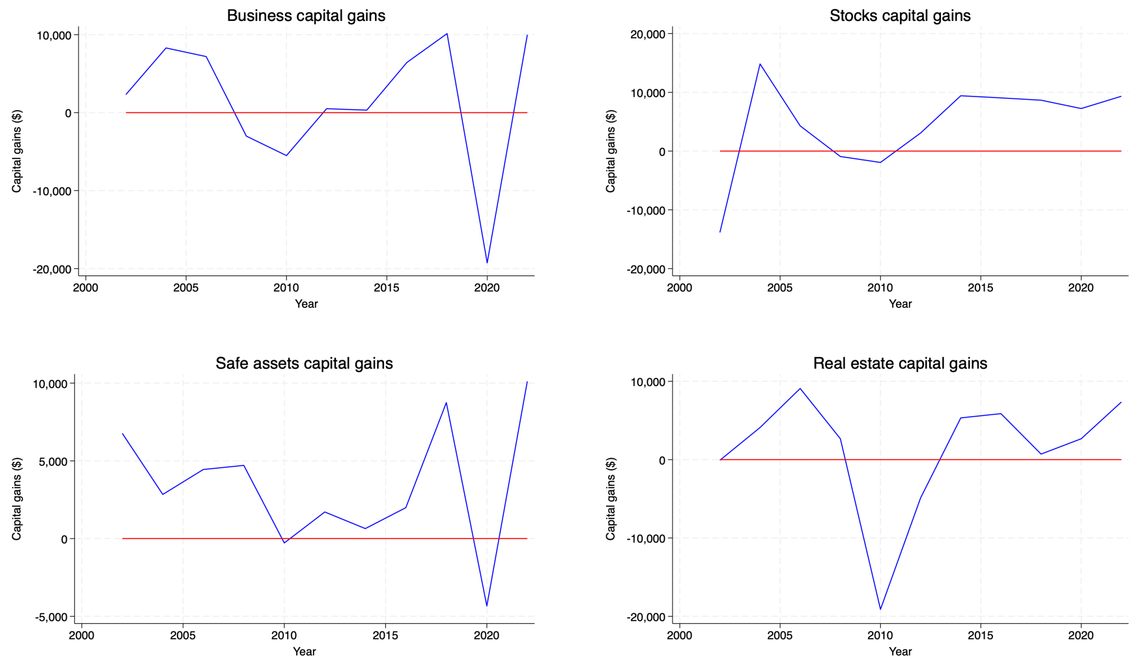

Figure 2: Capital gains in core assets, by year

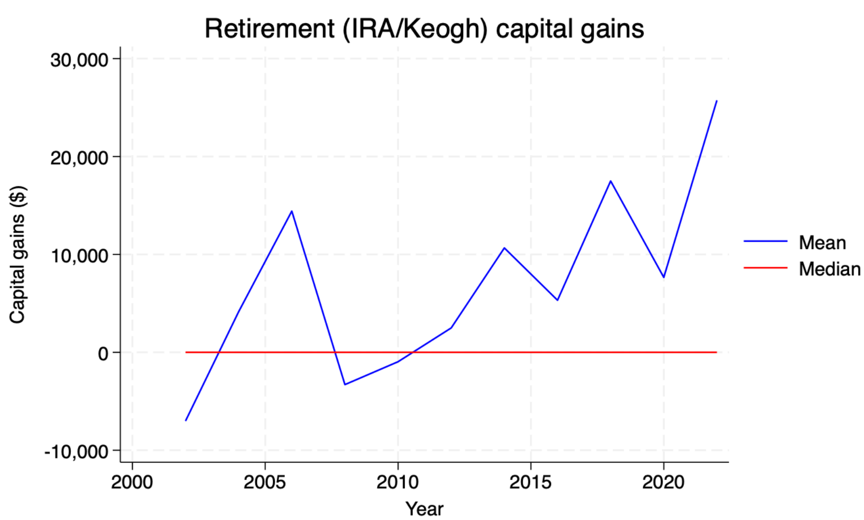

Figure 3: Capital gains in retirement assets, by year

Another feature that is apparent by taking a look at capital gains is that, most respondent hold no assets in a particular class. This can be seen by the red median line at 0 for most waves. In the residential panel (Figure 4), the primary-residence series is much larger in level and volatility than the secondary-residence series, and only primary residence shows a clearly positive median in some years. This is another sign that the data is sensible so far – large amount of non-participation despite evidence of returns is consistent with the empirically documented equity premium puzzle.

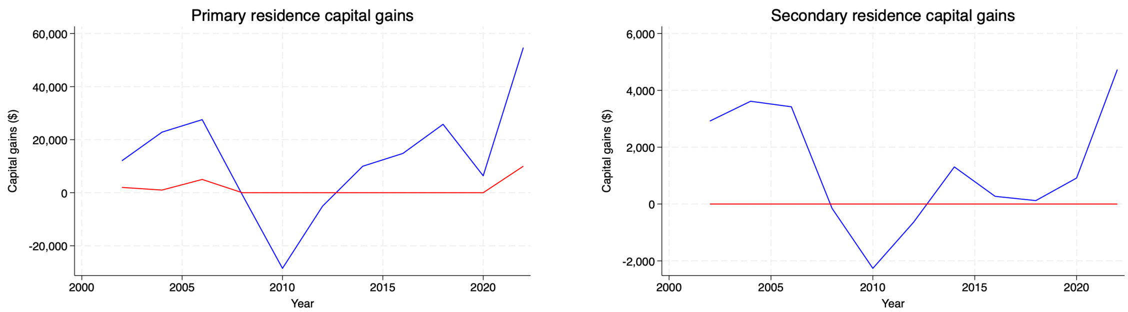

Figure 4: Capital gains in residential assets, by year

Notably, the synchronized dip around 2008–2010 for primary residence, secondary residence, and other real estate is also a good sign regarding how reliably measured the data is.

3.1.3 Net investment flows

Net investment flows are vital in computing returns accurately because capital gains and interest income can miss other flows of value into a given asset class. In the HRS dataset, net investment flows are the only variable relevant to the returns calculation that RAND did not clean and process. For this reason, there are substantially less observation for this variable per asset class than the others. To work around this, I do two things. First, I process the net investment flow per asset class myself by using the associated flag variable (asking yes or no if an individual has "bought or sold since the previous wave") for each variable. Second, I assume that if an individual receives interest income on that asset class, but their flow in nonmissing, then the nonmissing flow to that asset class is treated as 0.[2]

With this in mind, I present a figure of net investment flows into the assets available in the dataset. As you can see, the magnitudes for flows into a given class are comparable. I use these flows to construct net investment flows into i) **core assets**, ii) **retirement assets**, iii) **residential assets**, iv) **core and residential assets**, and v) **net wealth**.

[2]Non-missing interest income (and capital gains) indicate participation within an asset class.

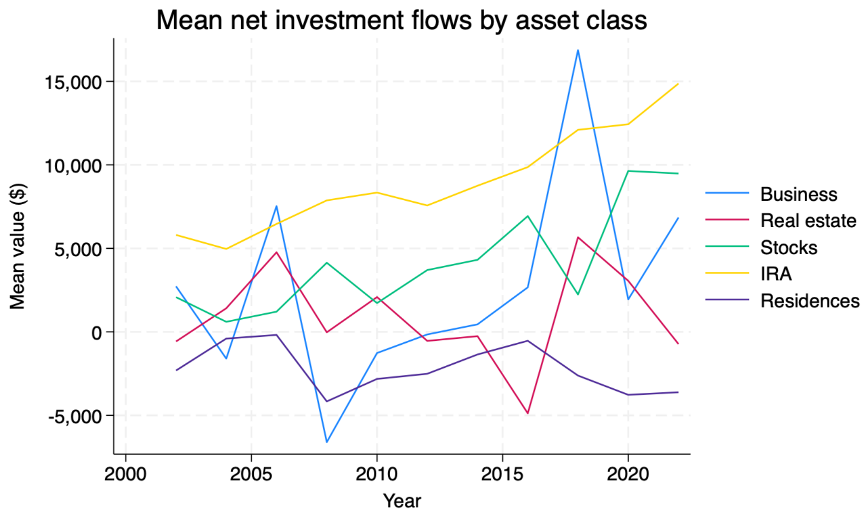

Figure 5: Flows by asset, mean by year

3.1.4 Defining wealth for assets and portfolios

The final component needed for the returns calculations is the wealth held by a respondent (in the previous period). This is caclulated as the total stock in the asset (core, retirement, and residential) and summing among these creates the stock of wealth in the given portfolios (core and retirement assets, net wealth). Figure 6 shows mean wealth within these narrowly defined asset classes for each year of the sample. Interestingly, retirement assets seem to perform the worst in terms of average returns. Core assets seem to offer the best performance, and all asset classes see a downward dive leading up to 2010 – historically accurate in the context of investment performance during the global financial crisis.

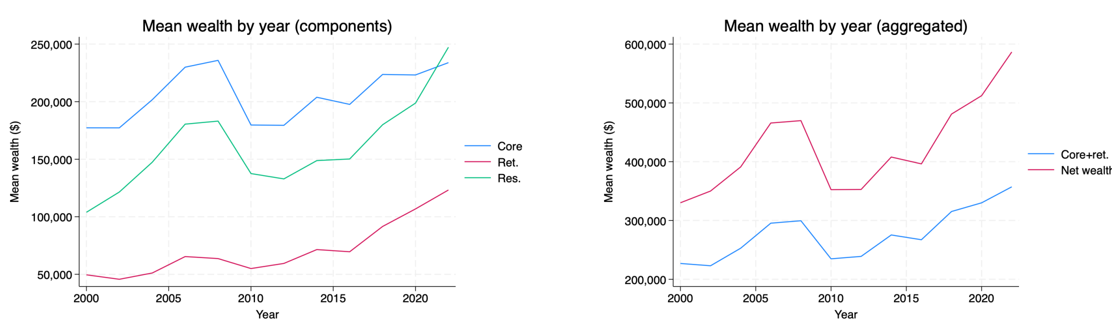

Figure 6: Mean wealth by year

I follow recent literature using Norwegian administrative tax data at the population level and and using PSID in terms of the components used to construct a measure of returns. However, I take seriously the structure of the dataset I am working with(the HRS RAND longitudinal file) in defining the portfolio/asset class for which the returns are being accrued to. As mentioned before, core assets is the most narrowly defined asset class here because interest income and dividends does not disaggregate into the asset classes: stocks, bonds, private business, IRA/Keogh.

The following formula from Daminato and Pistaferri 2024 serves as motivation for the return measures defined using the HRS data:

$$r_t = \frac{y_t^c + cg_t - F_t - y_t^d}{A_{t-1} + .5F_t}$$

where y_t^c interest income and dividends, capital gains cg_t measured as the difference between reported stock across waves, F_t net investment flows, y_t^d payments on debt (in the RAND longitudinal file, the variables were mentioned are all in net terms so this variable was 0), and A_{t-1} total net wealth at beginning of previous period.

3.1.5 Narrow asset classes

Recall that we only see interest income and dividends for core assets and retirement assets. Since this is an important component of the returns calculation, we construct the narrowest return measure on core assets. To do so, I keep track of all asset classes captured in the capital gains variable[3] and aggregate the capital gains and net investment flows for this group of assets.

Returns to core assets are given by

$$r_{it}^{core} = \frac{y_{it}^{core} + cg_{it}^{core} - F_{it}^{core}}{A_{i,t-1}^{core} + .5F_{it}^{core}}$$

where y_{it}^{core} is the interest income and dividents on the core assets, cg_{it}^{core} are the capital gains on the core assets[4], F_{it}^{core} are the net investment flows on core assets, and importantly, $A_{i,t-1}^{core}$ is the total value of the core assets in the previous period.

The rest of the return measures are defined similarly. In the HRS data, we can see income on retirement assets as well. This allows us to define a return measure for retirement assets:

$$r_{it}^{ret} = \frac{y_{it}^{ret} + cg_{it}^{ret} - F_{it}^{ret}}{A_{i,t-1}^{ret} + .5F_{it}^{ret}}$$

where y_{it}^{ret} is the interest income and dividents on the retirement assets, cg_{it}^{ret} are the capital gains on the retirement assets, F_{it}^{ret} are the net investment flows on retirement assets, and $A_{i,t-1}^{ret}$ is the total value of the retirement assets in the previous period.

Based on the modules offered in a given wave of the survey, assume that there are no interest income or dividends to either primary and secondary residential assets, so that the interest income and dividends accrued to residential assets is 0 in a given period ($y_{it}^{res} = 0$). With this in mind, returns to residential assets are defined as:

$$r_{it}^{res} = \frac{cg_{it}^{res} - F_{it}^{res}}{A_{i,t-1}^{res} + .5F_{it}^{res}}$$

[3]Those asset classes are: other real estate, business/farm, stocks/mutual funds, bonds, checking/savings, and CDs/t-bills.

[4]where the capital gains for each asset class is $V_{it} - V_{i,t-1}$, where V_{it} is the value of the asset (business or stock or real estate) for the i-th respondent in the t-th wave of the survey.

where $cg^{res}_{i,t}$ are the capital gains on the residential assets, $F^{res}_{i,t}$ are the net investment flows on residential assets (including improvement costs), and $A^{res}_{i,t-1}$ is the total value of the residential assets in the previous period.

3.1.6 Broad asset classes

After defining returns for narrow asset classes (i.e. returns to a single asset), I also define return measure for portfolios (returns on multiple assets). The first is for returns to both core and retirement assets:

$$r^{coret}_{it} = \frac{y^{coret}_{it} + cg^{coret}_{it} - F^{coret}_{it}}{A^{coret}_{i,t-1} + .5F^{coret}_{it}}$$

where y^{coret}_{it} is the interest income and dividends on core and retirement assets, cg^{coret}_{it} are the capital gains on core and retirement assets, F^{coret}_{it} are the net investment flows on core and retirement assets, and $A^{coret}_{i,t-1}$ is the total value of core and retirement assets in the previous period.

Returns to net wealth is given by

$$r^{net}_{it} = \frac{y^{net}_{it} + cg^{net}_{it} - F^{net}_{it}}{A^{net}_{i,t-1} + .5F^{net}_{it}}$$

where y^{net}_{it} is the interest income and dividends on core and retirement assets, cg^{net}_{it} are the capital gains on all available asset classes in the survey, F^{net}_{it} are the net investment flows on assets for which it is relevant in the survey (stocks, bonds, business, IRA, residences, and real estate), and $A^{net}_{i,t-1}$ is the total value of the available assets minus liabilities in the previous period[5].

3.1.7 The distribution of measured returns

I present the means for the return measures in the following figure 7. I group them by the returns at the asset level (core, retirement, residential) and at the portfolio level (core, core and retirement, net wealth).

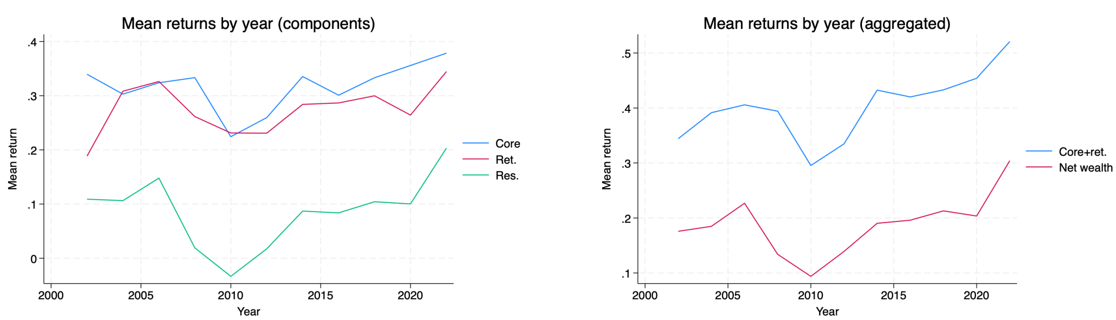

Figure 7: Mean returns by year

[5]Mortgages on secondary residences are left out of the list of liabilities since it was an optional question in some waves of the survey.

Figure 8 shows the distribution of returns across person-years, pooled over survey waves (2002–2022), for the three asset classes: core, retirement, and residential.

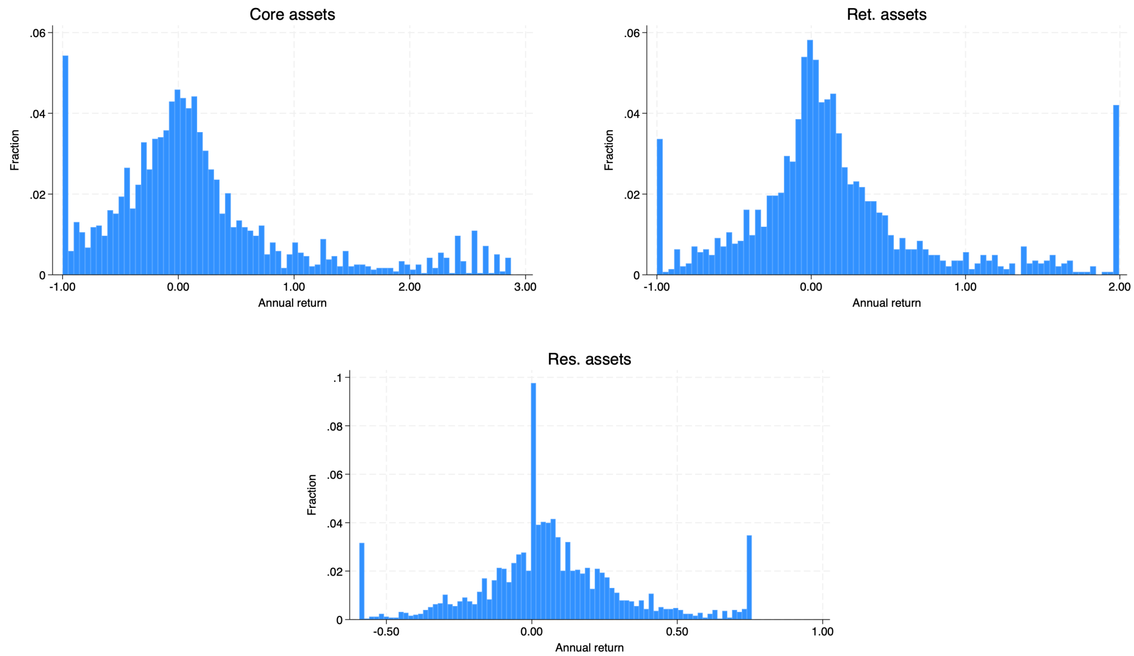

Figure 8: Returns histogram, components (pooled across survey years)

Figure 9 shows the distribution of returns across person-years, pooled over survey waves (2002–2022), for the two portfolio measures used below: core and retirement assets together, and net wealth. In general, this attempt is encouraging, as its shape (in particular, for returns to net wealth) closely resembles early estimates of the empirical distribution of individual realized returns in the Norwegian population data.

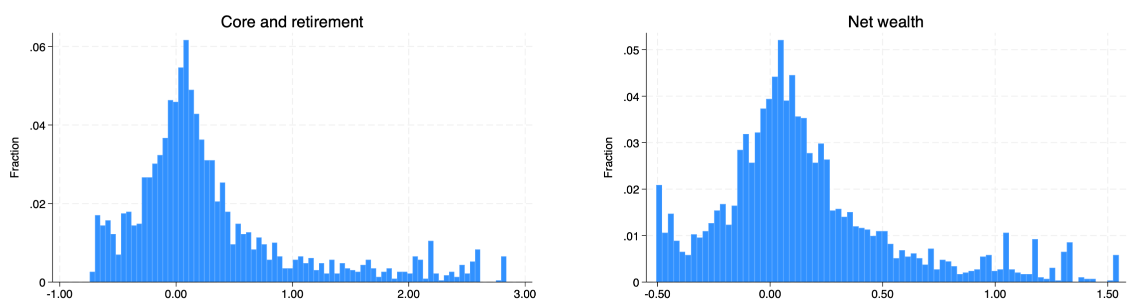

Figure 9: Returns histogram, core and retirement vs. net wealth (pooled across survey years)

Table 1: Returns to assets/portfolios

Returns to	Mean	SD	Skewness	Kurtosis	P1	P50	P99
Core assets	0.3144	1.6144	7.75	141.08	-1.0000	0.0060	6.9373
Residential assets	0.0829	0.5502	5.87	101.59	-1.0000	0.0351	2.0332
Retirement assets	0.2725	1.2087	7.26	141.05	-1.0000	0.0550	5.1884
Core and retirement assets	0.3962	1.1969	6.43	143.91	-1.0000	0.1087	5.0139
Net wealth	0.1841	0.6963	10.75	444.56	-0.7831	0.0700	2.7839

3.2 Demographic variables

I am interested in the relationship between trust and economic performance as the literature is, however in my setting the measure of economic performance is the return to net wealth. If a hump-shaped relationship is reasonable for income, it is even more plausible for returns: there is an inherent (and possibly explicit) level of trust between borrower and lender when forming credit contracts.

The HRS offers a suite of trust questions in "Section V: Modules" section of the 2020 survey. There are a total of 8 questions, asking respondents to say on a scale of 1-10 "how much do you trust people in general?" and of their trust in other features of American life relating to healthcare, finance, and media. These questions were only asked in that year. This is an issue, since the panel structure of the HRS allows me to estimate the persistent component of returns, variation in the trust measure would be ideal if it matters for trust. That said, in the panel setting, we can assume that trust, like education, is fixed over time.[6]

Table 2 summarizes the baseline (education categories and labor-force participation) and extended (gender, race/ethnicity, US birthplace, and census region) set of control variables relevant for the regression models.

[6]Literature on trust talks about how history of being cheated or treated fairly form individuals' trust over time. If this is true and at some point, one learns enough an forms their trust level, then a sample with an overrepresentation of older household is a reasonable environment to assume constant trust levels.

Table 2: Sample Demographics

	(1)	(2)
Panel A: Education categories and labor force		
Share: Less HS	0.183	0.192
Share: HS Grad	0.258	0.291
Share: Some College	0.247	0.242
Share: College	0.158	0.135
Share: Postgrad	0.154	0.141
Share in labor force	0.305	0.373
Panel B: Gender, marital status, race/ethnicity, birthplace, and census region		
Share female	0.537	0.554
Share married	0.630	0.681
Share: NH White	0.612	0.680
Share: NH Black	0.198	0.163
Share: Hispanic	0.149	0.121
Share: NH Other	0.038	0.035
Share born in U.S.	0.833	0.877
Share: Northeast	0.147	0.129
Share: Midwest	0.198	0.231
Share: South	0.448	0.451
Share: West	0.205	0.182

Column (1) reports shares for the 2020 cross-section; column (2) reports shares pooled across all survey years.

3.3 Descriptive statistics for returns to net wealth

Since the regression analysis focuses on returns to net wealth, Figure 10, Table 3, Table 4, and Figure 11 describe the distribution of returns conditional on net wealth, age, and years of schooling.

3.3.1 Return vs. net wealth

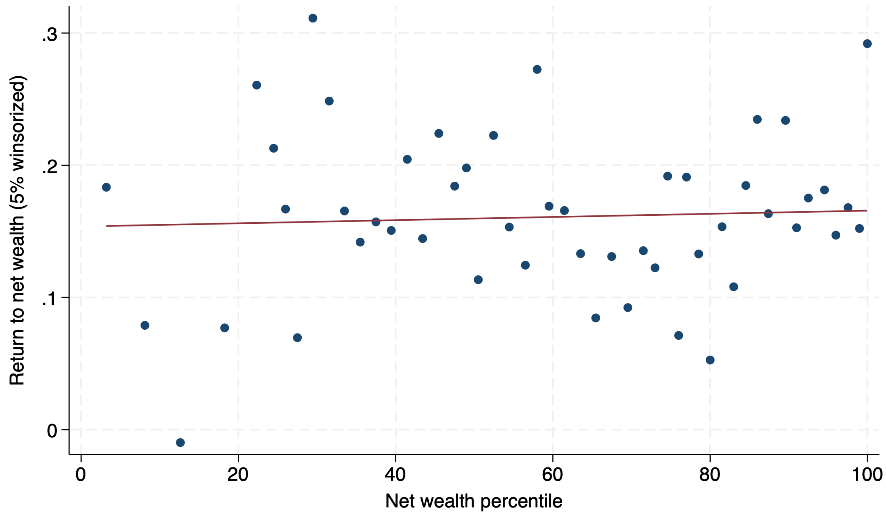

Figure 10: Return to net wealth vs. net wealth percentile

3.3.2 Returns by age and education

Tables 3 and 4 report mean returns (and N, SD) by age bin and by education category.[7]

Table 3: Return to Net Wealth by Age Bin

Age bin (years)	N	Mean	SD
30–34	1	-0.4655	.
35–39	5	0.2799	0.6294
40–44	7	-0.0688	0.5094
45–49	14	0.0794	0.3828
50–54	47	0.1480	0.4688
55–59	178	0.1482	0.4011
60–64	660	0.1800	0.4331
65–69	756	0.1932	0.4089
70–74	575	0.1256	0.3594
75–79	394	0.1398	0.3682
80–84	213	0.1133	0.3619
85–89	65	0.2430	0.4537
90–94	4	0.5089	0.8286

Return to net wealth (5% winsorized), pooled person-years. Age bins are 5-year groups.

[7] Age bins are 5-year groups with lower bounds shown in the first column.

Table 4: Return to Net Wealth by Education Category

Education category	N	Mean	SD
Less HS	559	0.1788	0.4200
HS Grad	848	0.1546	0.3978
Some College	706	0.1673	0.4195
College	394	0.1497	0.3868
Postgrad	412	0.1479	0.3575

Return to net wealth (5% winsorized), pooled person-years. Education categories are constructed from RAND HRS years of education: Less HS (< 12), HS Grad ($= 12$), Some College (13–15), College ($= 16$), Postgrad (> 16).

3.3.3 Return vs. labor force participation status

Figure 11 shows the mean returns to net wealth conditional on labor foce paritipation status. Following the global financial crisis of 2008, it seems that returns are higher on average conditional on being employed in general.

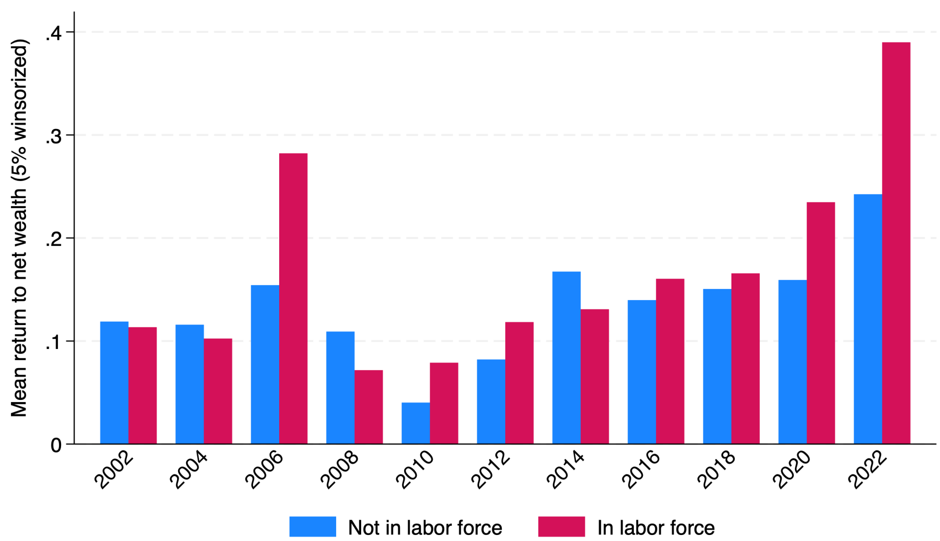

Figure 11: Mean return to net wealth and labor-force status by survey year

3.4 Trust and returns to net wealth

The scatterplot for trust and returns to net wealth suggest there is some evidence of a hump-shaped relationship.

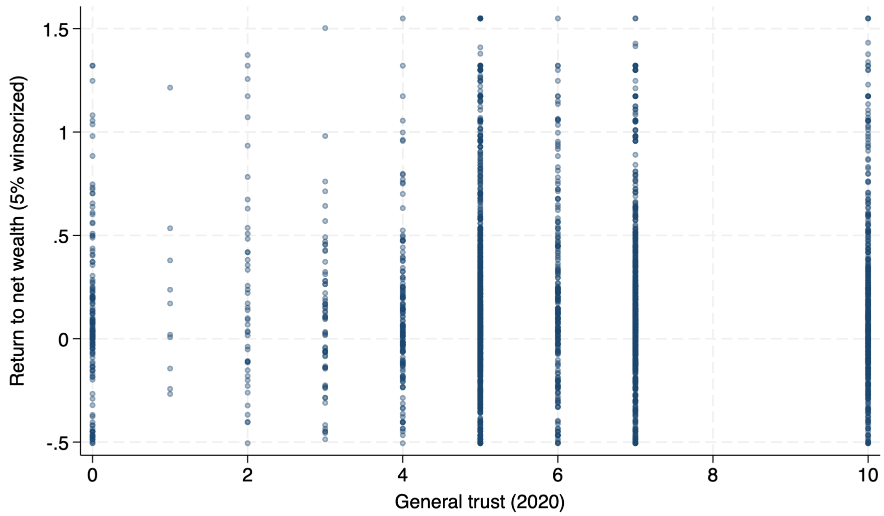

Figure 12: Returns to net wealth vs. trust pooled across survey years

3.5 Portfolio composition

Table 5 shows that participation is highest in safe assets, residential assets, and the broader core-asset grouping, while direct participation in business and other real estate is much less common. In terms of composition, residential assets account for the largest average share of household balance sheets, followed by core assets and then retirement assets. Debt is also economically important in the pooled sample: over half of person-years involve some debt, and the leverage measures show a long right tail, especially for long-term and total debt.

Table 5: Participation and Portfolio Composition

Statistic	Mean	SD	P1	P50	P99	Obs
Fraction with business assets	0.093	0.290	0.000	0.000	1.000	205,771
Fraction with stocks assets	0.262	0.440	0.000	0.000	1.000	205,771
Fraction with safe assets	0.827	0.378	0.000	1.000	1.000	205,743
Fraction with other real estate assets	0.149	0.356	0.000	0.000	1.000	205,771
Fraction with retirement assets	0.384	0.486	0.000	0.000	1.000	205,769
Fraction with residential assets	0.808	0.394	0.000	1.000	1.000	205,769
Fraction with core assets	0.859	0.348	0.000	1.000	1.000	205,743
Fraction with long-term debt	0.363	0.481	0.000	0.000	1.000	205,771
Fraction with other debt	0.335	0.472	0.000	0.000	1.000	205,766
Fraction with some debt	0.533	0.499	0.000	1.000	1.000	205,766
Share in private business	0.030	0.121	0.000	0.000	0.683	205,771
Share in stocks/mutual funds	0.059	0.151	0.000	0.000	0.741	205,771
Share in safe assets	0.116	0.210	0.000	0.032	1.000	205,743
Share in other real estate	0.041	0.131	0.000	0.000	0.683	205,771
Share in retirement assets	0.096	0.184	0.000	0.000	0.798	205,769
Share in residential assets	0.463	0.344	0.000	0.454	1.000	205,769
Share in core assets	0.270	0.301	0.000	0.143	1.000	205,743
Share in core and retirement assets	0.366	0.330	0.000	0.306	1.000	205,741
Leverage, Long-term debt	0.601	5.921	0.000	0.000	8.583	205,771
Leverage, Other debt	0.343	11.333	0.000	0.000	5.000	205,766
Leverage, Total debt	0.944	12.888	0.000	0.005	14.330	205,766

All shares are expressed as fractions of gross wealth. Participation is the fraction of person-years with a strictly positive holding. Leverage ratios can exceed one when liabilities exceed gross assets.

Table 6 shows that asset composition shifts sharply across the wealth distribution. At the bottom, balance sheets are dominated by debt, with very little exposure to business, stocks, or other real estate. Moving up the distribution, risky assets become more important: stocks, business wealth, and other real estate all rise with wealth, and at the very top business ownership becomes especially prominent. This is consistent with the idea that observed portfolio exposure is highly heterogeneous across households.

Table 6: Asset Composition by Wealth (Core) Fractiles

Fractile	Real est.	Business	Stocks	Safe assets	Mortgage debt	Other home loans	Other debt
Bottom 10%	0.000	0.000	0.000	0.000	1.073	0.031	0.678
10–20%	0.000	0.000	0.000	0.001	1.099	0.017	2.471
20–50%	0.002	0.001	0.004	0.140	1.059	0.080	0.725
50–90%	0.055	0.035	0.077	0.142	0.173	0.013	0.024
90–95%	0.130	0.106	0.208	0.110	0.037	0.004	0.004
95–99%	0.162	0.151	0.245	0.093	0.029	0.004	0.003
99–99.9%	0.193	0.233	0.262	0.074	0.014	0.003	0.003
99.9–99.99%	0.255	0.363	0.173	0.063	0.008	0.001	0.001
Top 0.01%	0.105	0.576	0.203	0.057	0.002	0.000	0.000

Mean share of gross wealth in core assets in each of the asset/liability classes, computed as fractile of the core wealth distribution. Fractile boundaries are based on rank within the full person-year sample. Safe assets = bonds + checking/saving.

The broader portfolio aggregates in Table 7 tell a similar story. Residential wealth is the dominant asset for much of the middle of the distribution, while core assets take over at the top, and retirement assets are largest in the upper-middle and upper-tail groups rather than at the very top. Debt shares fall rapidly with wealth, so leverage is concentrated in the lower part of the distribution.

Table 7: Portfolio Composition by Net-Wealth Fractiles

Fractile	Core	Residential	Retirement	Long debt	Other debt	Total debt
Bottom 10%	0.225	0.352	0.033	2.938	1.460	4.398
10–20%	0.408	0.128	0.011	1.196	1.070	2.267
20–50%	0.186	0.606	0.050	0.262	0.060	0.322
50–90%	0.301	0.483	0.148	0.064	0.007	0.071
90–95%	0.460	0.290	0.202	0.028	0.002	0.030
95–99%	0.535	0.235	0.184	0.022	0.002	0.024
99–99.9%	0.646	0.190	0.124	0.015	0.002	0.017
99.9–99.99%	0.689	0.200	0.068	0.007	0.000	0.007
Top 0.01%	0.477	0.126	0.217	0.003	0.000	0.003

Mean share of gross wealth in each broad asset/liability class, computed within pooled net-wealth fractiles. Core = business + stocks + bonds + checking/savings + other real estate. Total debt = long-term debt + other debt.

These composition patterns matter in Section **??**, where I revisit the main specifications by using the portfolio shares as a proxy for risk exposure.

4 Results

The presence of hump-shaped empirical relationship between earnings and trust in the HRS data is important because it aligns with previous literature Butler, Giuliano, and Guiso 2016. Given the oversampling of older and retired households by the HRS, this is an important first step towards using the dataset to argue a similar pattern trust and returns.

I focus the statistical analysis on returns to net wealth only. [8] Again, with more retirees in the sample, an analysis of retirement assets may take more creative efforts. That said, I show that trust is predictive for the raw measure of returns to net wealth, and the relationship is robust to different trimming and winsorization choices. Due to the number of outliers in the sample, I present the results for a top and bottom winsorization of 5% for returnns to net wealth. [9]

4.1 Trust and average returns to net wealth

I begin the analysis of the empirical relationship between the average returns to net wealth over the period 2002-2022 and the 2020 trust measure. This is captured by the regression equation

$$\bar{r}_i^{net} = X_i'\beta + \varepsilon_i.$$

Trust in ths model is assumed to be an invariant characteristic about households (measured in a single wave, but the same across waves) that influences economic decisions over time so that it matters for long-run returns. [10]

[8] The results for the smaller portfolio compositions (core, retirement, residential, and core and retirement) are largely insignificant across specifications (though the results are more encouraging when retirement assets are excluded).

[9] This is important given the difficulty with computing returns in the U.S. due to lack of available data on flows in and out of narrowly defined asset classes.

[10] Lesmeister, Limbach, and Goergen 2019 is an example of work which also assumes trust is time invariant.

Table 8: Trust and Average Returns to Net Wealth

	(1)	(2)	(3)	(4)
Trust	0.01**	0.07***	0.04***	0.04***
	(0.00)	(0.01)	(0.02)	(0.02)
Trust^2		−0.01***	−0.00**	−0.00**
		(0.00)	(0.00)	(0.00)
In labor force			0.09***	0.10***
			(0.03)	(0.03)
HS Grad			0.06	0.05
			(0.04)	(0.04)
Some College			0.07	0.05
			(0.04)	(0.04)
College			0.09*	0.07
			(0.05)	(0.05)
Postgrad			0.05	0.04
			(0.05)	(0.05)
Female				−0.04
				(0.02)
NH Black				0.03
				(0.04)
Hispanic				−0.10**
				(0.05)
NH Other				−0.02
				(0.08)
Born in U.S.				−0.02
				(0.04)
Midwest				−0.01
				(0.04)
South				0.03
				(0.04)
West				0.13***
				(0.04)
Married				−0.00
				(0.03)
_cons	0.15***	0.04	0.06	0.01
	(0.03)	(0.04)	(0.07)	(0.09)
N	750.00	750.00	595.00	592.00
Adj. R^2	0.01	0.03	0.07	0.09
Trust joint p	.	0.00	0.03	0.02
Age joint p	.	.	0.08	0.11
Wealth joint p	.	.	0.30	0.14
Race joint p	.	.	.	0.11
Region joint p	.	.	.	0.01
Educ. joint p	.	.	0.40	0.69

OLS. Heteroskedasticity-robust standard errors. Columns *(3)–(4)* add wealth deciles, age bins, labor force, and education; column *(4)* adds gender, race, region, immigration status, and marital status.

First, allowing for the hump-shaped relationship between trust and returns by adding the quadratic term for trust not only increases the predictive power of returns, but considerably increases the explained variation of the model. Second, as for other variables which reject the null hypothesis of no significant effect on returns, wealth and age add the most to explained variation, followed by labor force participation status and years of education. These controls represent the minimal, baseline specification of the model, captured by column 3 in the table. 8. A final specification, with additional demographic variables, is robust to the hump-shaped relationship, as well as the predictive power of labor force participation status for returns.[11]

4.2 Pooled regression model

With the implicit assumption that the 2020 trust measure is constant for respondents, then the hump-shaped relationship holds between trust and long-run, average returns to net wealth in the HRS data. A key object of analysis in the empirical heterogeneous returns literature is the estimated persistent component of returns. To build toward this, we move to the panel regression model

$$r_{it}^{net} = \lambda_t + X_{it}'\beta + \varepsilon_{it}.$$

In table 9, I show that the hump-shaped relationship persists in the pooled baseline model and with the maximal set of controls.

[11] As we will see later, Race and Gender are variables which predict trust well, so they are additional demographic variables which may be of interest here.

Table 9: Pooled OLS of Returns to Net Wealth on Trust

	(1)	(2)
Trust	0.03***	0.03***
	(0.01)	(0.01)
Trust^2	−0.00**	−0.00**
	(0.00)	(0.00)
In labor force	0.03**	0.03**
	(0.02)	(0.02)
Married	−0.07***	−0.06***
	(0.02)	(0.02)
HS Grad	−0.06**	−0.06**
	(0.03)	(0.03)
Some College	−0.05**	−0.05**
	(0.03)	(0.03)
College	−0.10***	−0.11***
	(0.03)	(0.03)
Postgrad	−0.10***	−0.10***
	(0.03)	(0.03)
Female		−0.03*
		(0.02)
NH Black		0.05*
		(0.03)
Hispanic		−0.00
		(0.03)
NH Other		0.01
		(0.03)
Born in U.S.		0.02
		(0.02)
_cons	−0.57***	−0.61***
	(0.04)	(0.06)
N	2919.00	2899.00
Adj. R^2	0.04	0.04
Trust joint p	0.01	0.00
Age joint p	0.00	0.00
Wealth joint p	0.00	0.00
Race joint p	.	0.28
Region joint p	.	0.11
Year joint p	0.00	0.00
Educ. joint p	0.01	0.00

Person-year OLS. Standard errors clustered by household. Column *(1)*: baseline controls (wealth, age, labor force, education, year effects). Column *(2)*: adds gender, race, region, immigration status, and marital status.

Interestingly, not only do the variables in the minimal set of controls (wealth, age, labor force participation, education), but the year dummies, race, gender, and marital status all show significant predictive power for returns to net wealth in the pooled regression. Furthermore, adding the full set of controls increases the (unadjusted) R-squared by almost one-fourth.

4.3 Panel regression models

4.3.1 The Fixed Effects (FE) model

The next step is to allow for individual fixed effects in the panel regression so that the error term ε_{it} can be written as

$$\varepsilon_{it} = \alpha_{it} + e_{it},$$

where e_{it} may possibly be serially correlated. Notably, the predictive power of any the time-invariant regressors (trust, education, race, gender, region, immigration status) will be absorbed by the individual fixed effect term. Table 10 reports two within-household specifications that differ only in which *time-varying* controls are added on top of the same wealth-decile indicators, five-year age-bin fixed effects, and survey-year fixed effects (those blocks enter both columns but are summarized by joint tests in the lower panel rather than coefficient-by-coefficient). Column *(1)* isolates labor-force participation as the only time-varying demographic shown in the body of the table. Column *(2)* adds marital status and wave-specific census region (relative to Northeast), with the joint tests for marital status and region reported alongside the tests for age bins, wealth deciles, and years.

Table 10: Panel OLS with Individual Fixed Effects

	(1)	(2)
In labor force	0.03***	0.03***
	(0.00)	(0.00)
Married		−0.05***
		(0.01)
Census region: Midwest		−0.02
		(0.03)
Census region: South		−0.03
		(0.02)
Census region: West		−0.07**
		(0.03)
_cons	−0.25	−0.21
	(0.16)	(0.18)
N	102894.00	102348.00
Within R^2	0.18	0.18
ρ	0.66	0.65
σ_u	0.46	0.45
σ_e	0.33	0.33
Age joint p	0.00	0.00
Wealth joint p	0.00	0.00
Year joint p	0.00	0.00
Region joint p	.	0.14

Within (household) fixed-effects estimator. Standard errors clustered by household. Time-invariant regressors absorbed. Column *(1)*: wealth deciles, age-bins, labor force, and year FE. Column *(2)*: Additional controls include time-varying marital status and census region. Reported ρ, σ_u, and σ_e are variance-component estimates from the FE decomposition.

The parameters ρ, σ_u, and σ_e are of particular interest, as they summarize the variance decomposition of the error term in the panel regression. In this framework, σ_u denotes the standard deviation of the unobserved individual-specific component, α_i, capturing persistent differences in returns across individuals. The parameter σ_e is the standard deviation of the idiosyncratic error term, ε_{it}, reflecting within-individual variation over time that is not explained by the included covariates.

The parameter ρ represents the fraction of the total variance attributable to the individual-specific component, defined as

$$\rho = \frac{\sigma_u^2}{\sigma_u^2 + \sigma_e^2}.$$

A high value of ρ indicates that a substantial share of the variation in returns arises from persistent differences across individuals, providing evidence of heterogeneity in returns across respondents.

The within-R^2 measures the proportion of within-individual variation in returns explained by the time-varying regressors—how much of the deviation of an individual's returns from their own mean is accounted for by observables.

Focus on the second column of Table 10. There remains substantial within-person variation not captured by time-varying regressors $\sigma_e^2(= .33)$. Heterogeneity across individuals captured by $\sigma_u^2(= .45)$ is larger than in the RE or CRE specifications reported below, which explains why ρ is much higher here ($\rho = .65$). The within-R^2 in that column is (= .18). Because time-invariant regressors are absorbed by the household fixed effects, the estimated individual-specific component captures persistent heterogeneity across households, including variation that would otherwise load on time-invariant observables.

Figure 13 shows the distribution of estimated fixed effects from the column *(2)* first-stage FE specification (the same extended time-varying controls as in that column), analogous to how Figure 15 reports the CRE individual effect when time-invariant controls are included. In this setting, where time-invariant factors like education and trust are absorbed, the estimated distribution is particularly comparable to empirical estimates of the same object using Norwegian population data from 2004-2015 by Fagereng et al. 2020 and using the PSID from 1999-2019 by Daminato and Pistaferri 2024.

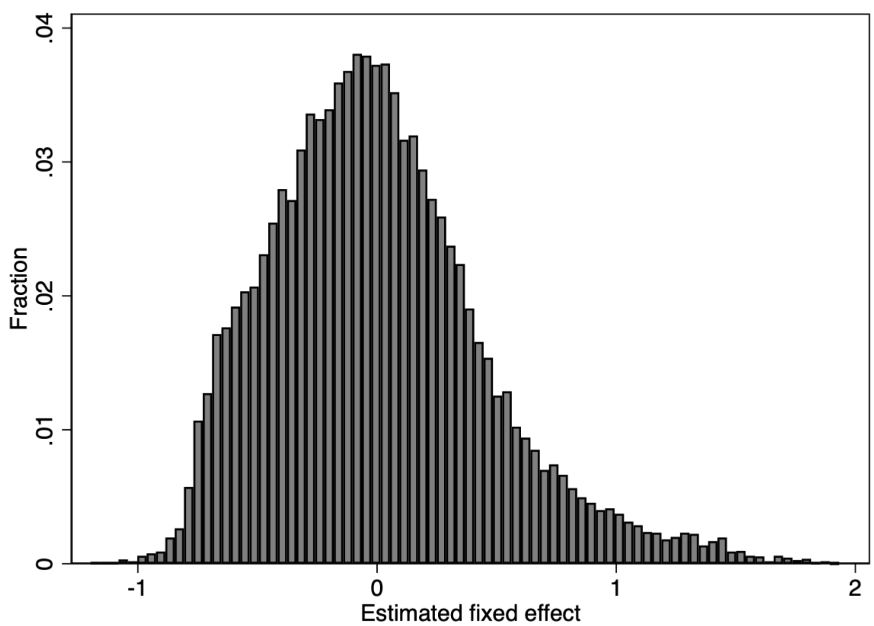

Figure 13: Distribution of estimated fixed effect (FE) with extended set of controls.

Another result from the literature documeting heterogeneity in the rate of return is **scale dependence**: that the heterogeneity in returns is increasing in wealth. As we can see from 14, there is a strong relationship between returns and wealth.

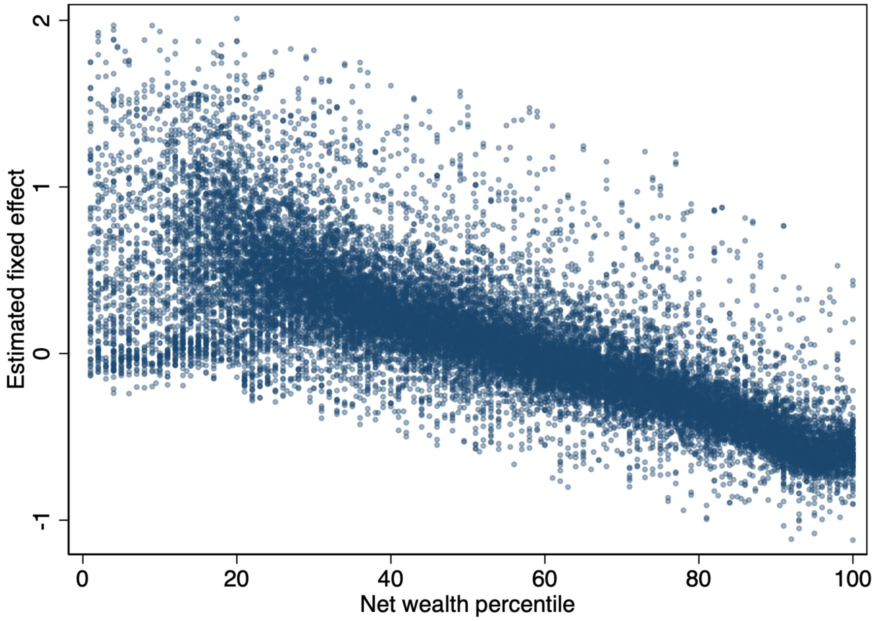

Figure 14: Estimated fixed effect vs. net wealth percentile (extended controls).

It is a bit unsavory to show that a suite of factors, including the hump-shaped trust relationship, matter for explaining the variation in trust, but then to exclude them when characterizing the persistent component of returns. Said differently, we would like to control for these differences when describing how individuals differ in their returns on average.

To move in this direction, I begin by regressing the estimated fixed effect onto the time-invariant variables which were excluded from the regression once the indivdiual fixed effect was accounted for in the model. In table 11, race and education seem to have the most predictive power regarding variation in the predicted individual effects.

Table 11: Explaining Estimated Fixed Effect with Time-Invariant Controls

	(1)	(2)
Trust	−0.01	0.01
	(0.02)	(0.02)
Trust^2	0.00	−0.00
	(0.00)	(0.00)
HS Grad	−0.13**	−0.05
	(0.05)	(0.06)
Some College	−0.13**	−0.08
	(0.06)	(0.06)
College	−0.40***	−0.30***
	(0.07)	(0.08)
Postgrad	−0.49***	−0.37***
	(0.06)	(0.06)
Female		0.02
		(0.04)
NH Black		0.25***
		(0.05)
Hispanic		0.26***
		(0.06)
NH Other		0.05
		(0.07)
Born in U.S.		0.08
		(0.05)
_cons	0.36***	−0.03
	(0.06)	(0.09)
N	575.00	573.00
Adj. R^2	0.12	0.17
Trust joint p	0.57	0.85
Race joint p	.	0.00
Educ. joint p	0.00	0.00

Cross-sectional OLS of predicted household fixed effects on time-invariant regressors. Heteroskedasticity-robust standard errors. The dependent variable in column *(1)* is the fixed effect from the Table 10 column *(1)* specification; in column *(2)* it is the fixed effect from column *(2)* of that table (so time-varying marital status and census region are already part of the first-stage FE when forming the left-hand side). Column *(1)*: education categories and trust; column *(2)*: adds gender, race/ethnicity, US-born, and census region.

4.3.2 The Random Effects (RE) model

The model with fixed effects is one specification of the general panel regression model, when the term capturing the latent time-invariant variation affecting returns for individuals α_i is possibly correlated with the observable, time-varying variables X_{it}. The Random Effects (RE) model allows for estimation and inference in a similar setting by assuming that the α_i's are normally distributed with some constant variance, but that $Cov(\alpha_i, X_{it}) = 0$.

Since it is not clear that this persistent component capturing differences in returns is uncorrelated with factors like wealth, age, and labor force particiaption, this is an assumption which should be tested to determine if the RE model is the right one for empirical relationship between trust and returns that we are after. The p-value for the test-statistic with controls ($p < .01$) and without controls ($p < .01$) strongly reject that the estimated coeffients are efficeint under the RE model. This suggests that it is not preferred over the standard fixed effects model, with all time-invariant explanatory power captured by α_i.

That said, one can still describe the variance structure of the estimated fixed effect in the RE setting. Focus on the second column of Table 12. There is significant within-person variation not captured by time-varying regressors $\sigma_e^2 (= .36)$. However, the estimates of heterogeneity across individuals captured by σ_u^2 is much smaller here ($= .18$). These two features combined explains why the value for ρ is much closer to 0 here than in the FE model. That said, a value of $\rho = .20$ still represents substaintial heterogeneity.

Table 12: The RE Model for Trust and Returns to Net Wealth

	(1)	(2)
Trust	0.02*	0.02*
	(0.01)	(0.01)
Trust^2	−0.00	−0.00
	(0.00)	(0.00)
In labor force	0.03	0.03
	(0.02)	(0.02)
Married	−0.09***	−0.08***
	(0.02)	(0.02)
HS Grad	−0.06*	−0.05
	(0.03)	(0.03)
Some College	−0.07*	−0.06*
	(0.03)	(0.03)
College	−0.16***	−0.15***
	(0.04)	(0.04)
Postgrad	−0.18***	−0.17***
	(0.04)	(0.04)
Female		−0.03
		(0.02)
NH Black		0.08**
		(0.03)
Hispanic		0.04
		(0.04)
NH Other		0.01
		(0.04)
Born in U.S.		0.03
		(0.03)
_cons	−0.56***	−0.63***
	(0.05)	(0.07)
N	2919.00	2899.00
Within R^2	0.10	0.11
ρ	0.21	0.20
σ_u	0.19	0.18
σ_e	0.36	0.36
Trust joint p	0.18	0.08
Age joint p	0.00	0.00
Wealth joint p	0.00	0.00
Race joint p	.	0.09
Region joint p	.	0.58
Year joint p	0.00	0.00
Educ. joint p	0.00	0.00

Random-effects GLS. Standard errors clustered by household. Within R^2 reported. ρ, σ_u, and σ_e are variance-component estimates from the RE decomposition. Joint tests are Wald tests for the indicated covariate blocks.

4.3.3 The Correlated Random Effects (CRE) model

The rejection of the RE model is informative, but it does not help with the issue that we would like to account for the variation of time-invariant factors (like education and trust) while still characterizing the persistent component of returns for individuals. To do so, we move to the

Correlated Random Effects (CRE) model, where the assumption of is $Cov(\alpha_i, X_{it}) = 0$ relaxed; the persistent component and time-varying factors are allowed to be correlated.

First, recall that the FE model is equivalent to demeaning within individuals:

$$r_{it}^{net} = \alpha_i + \lambda_t + X_{it}'\beta + \varepsilon_{it},$$

For each individual i, take the time average:

$$\bar{r}_i^{net} = \alpha_i + \bar{\lambda}_i + \bar{X}_i'\beta + \bar{\varepsilon}_i,$$

Then subtract from the original equation:

$$r_{it}^{net} - \bar{r}_i^{net} = \left(\lambda_t - \bar{\lambda}_i\right) + \left(X_{it} - \bar{X}_i\right)' \beta + \left(\varepsilon_{it} - \bar{\varepsilon}_i\right),$$

Notice that the individual fixed effect is eliminated by this transformation. As a result, any time-invariant regressors are also removed from the model.

The correlated random effects (CRE) model instead augments the regression with the individual-specific means of the time-varying regressors:

$$r_{it}^{net} = \alpha_i + \lambda_t + X_{it}'\beta + \bar{X}_i'\theta + \varepsilon_{it},$$

where $\bar{X}_i$ denotes the within-individual averages of the regressors. The term $\bar{X}_i'\theta$ explicitly captures the correlation between the unobserved individual component α_i and the observed variables $X_{i,t}$. The null hypothesis of the Mundlak test (that the coefficients on these mean variables $\bar{X}_i'\theta$ are jointly zero) is strongly rejected ($p < .01$) for the model with and without controls. This suggests favor of the CRE model over the standard FE model. The key finding of this paper is that, *the coefficeints on the trust coefficients are statistically significant in the CRE setting, where the persistent component of returns can be estimated as well.* This can be seen in Table 13.

Table 13: **The CRE (Mundlak) Model for Trust and Returns to Net Wealth**

	(1)	(2)
Trust	0.03***	0.03***
	(0.01)	(0.01)
Trust^2	−0.00***	−0.00***
	(0.00)	(0.00)
In labor force	0.01	0.01
	(0.02)	(0.02)
Married	−0.04	−0.03
	(0.04)	(0.04)
HS Grad	0.02	−0.00
	(0.02)	(0.03)
Some College	−0.00	−0.02
	(0.03)	(0.03)
College	0.01	−0.01
	(0.03)	(0.04)
Postgrad	−0.00	−0.01
	(0.03)	(0.03)
Female		−0.03**
		(0.02)
NH Black		−0.01
		(0.03)
Hispanic		−0.07**
		(0.03)
NH Other		−0.05
		(0.04)
Born in U.S.		0.02
		(0.02)
_cons	−0.67***	−0.62***
	(0.21)	(0.22)
N	2919.00	2899.00
Within R^2	0.15	0.15
ρ	0.16	0.15
σ_u	0.16	0.15
σ_e	0.36	0.36
Trust joint p	0.01	0.02
Age joint p	0.00	0.00
Wealth joint p	0.00	0.00
Race joint p	.	0.14
Region joint p	.	0.18
Year joint p	0.00	0.00
Educ. joint p	0.87	0.96

Random effects with Mundlak means of time-varying regressors. Standard errors clustered by household. Within R^2 reported. ρ, σ_u, and σ_e are variance-component estimates from the RE decomposition of the augmented CRE specification.

With the estimated individual fixed effect being a key empirical object of this paper, the interpretation of the variance structure is important here. Focus on the second column of Table 13. Much like the FE and RE models, there is significant within-person variation not captured by time-varying regressors $\sigma_e^2(=.36)$. Moreover, the estimates of heterogeneity across individuals captured by σ_u^2 are smallest here $(=.15)$. These two features combined explains why the value for $\rho = .15$, documenting significant cross-sectional variation.

Figure 15 shows the distribution of the estimated CRE individual effect from the specification when controls are included. The estimated distribution is comparable estimated the using Norwegian population data and using the PSID, though less so than the FE model (especially near the center of the distriution).

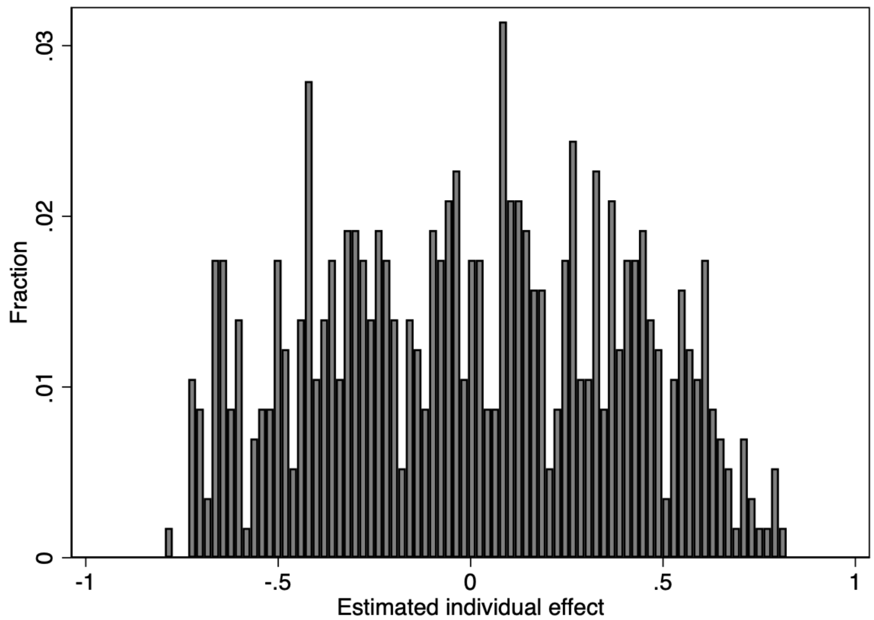

Figure 15: Distribution of Estimated Fixed Effect (CRE) with extended set of controls..

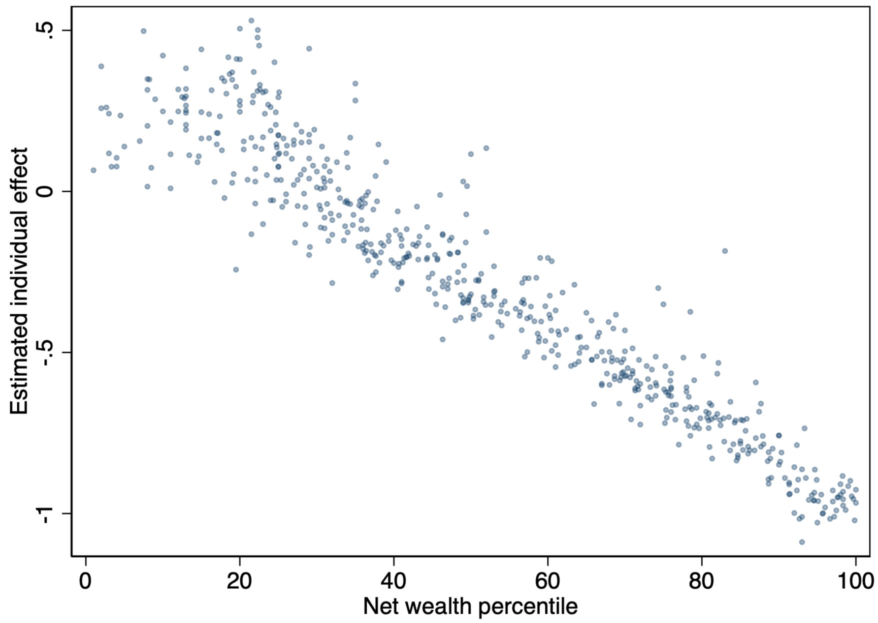

Figure 16: Estimated CRE individual effect vs. net wealth percentile (extended controls).

Figure 16 shows the same basic pattern for the CRE individual effect. The relationship is flatter than in the FE case, but the estimated persistent component still rises with wealth percentile, again suggesting scale dependence in returns.

4.4 Which level of trust maximizes returns?

By choosing to model the hump-shaped relationship between trust and returns using a combination of a linear and quadratic terms, I can describe the level of trust which maximizes returns to net wealth in the following way. Starting from

$$r_{it}^{net} = \alpha_i + \lambda_t + X_{it}'\beta + \varepsilon_{it},$$

holding controls fixed, the implied marginal effect of trust is

$$\frac{\partial r_{it}^{net}}{\partial \, Trust_i} = \beta_1 + 2\beta_2 \, Trust_i.$$

Setting this derivative to zero gives the critical point $Trust^* = -\beta_1/(2\beta_2)$. When $\hat{\beta}_1 \geq 0$ and $\hat{\beta}_2 \leq 0$, the fitted relationship in trust is concave (hump-shaped), and the estimated trust level that maximizes fitted returns to net wealth is $Trust^* = -\hat{\beta}_1/(2\hat{\beta}_2)$, reported as $(Trust)^*$ in the Table 14.

Table 14: The Level of Trust which Maximizes Returns

	Avg returns	Pooled	RE	CRE
Panel A: Without controls				
N	595	2,919	2,919	2,919
Both sig?	Yes	Yes	No	Yes
Joint test	0.0251	0.0062	0.1808	0.0088
$(Trust)^*$	6.7002	6.8860	6.7574	6.3383
SE$(Trust)^*$	0.9311	0.8357	1.4156	0.5472
p$(Trust)^*$	0.0000	0.0000	0.0000	0.0000
Conf. Interv.	[4.8753, 8.5251]	[5.2482, 8.5239]	[3.9829, 9.5319]	[5.2659, 7.4107]
Panel B: With controls				
N	592	2,899	2,899	2,899
Both sig?	Yes	Yes	No	Yes
Joint test	0.0201	0.0018	0.0770	0.0181
$(Trust)^*$	7.0701	7.6088	7.5538	6.5934
SE$(Trust)^*$	1.1220	1.1067	1.7324	0.6601
p$(Trust)^*$	0.0000	0.0000	0.0000	0.0000
Conf. Interv.	[4.8711, 9.2691]	[5.4397, 9.7779]	[4.1583, 10.9493]	[5.2996, 7.8871]

Panel A: minimal time-invariant controls (education only in panel specifications). Panel B: full demographics. Trust* computed as $-\hat{\beta}_1/(2\hat{\beta}_2)$; standard errors, p-values for H_0 : Trust$^* = 0$, and 95% confidence intervals use the delta method (`nlcom` in Stata). "Both sig?" indicates both trust terms significant at 10% in separate tests; joint test is Wald on both trust terms.

In general, the level of trust which maxmimizes returns to net wealth is between 6 and 7. When controls are added, the maximal level of trust is generally higher than when controls are excluded for each regression model tested. Because $Trust^*$ is a nonlinear function of $\hat{\beta}_1$ and $\hat{\beta}_2$, Stata uses the delta method to approximate its standard error. I use this to report the standard error on the estimated maximal level of trust, as well as 95% confidence intervals, and p-values which test $H_0 : Trust^* = 0$.

5 Extension: controlling for risk exposure

The key point about the documented persistent component to returns is that, even when controlling for risk preferences and exposure, individuals systematic earn different returns on the same assets[12]. Moreover, the descriptive statistics for mean returns show that returns do not seem stable over the time period (ex. Global Financial Crisis). To address this concern, I re-estimate the cross-section (average returns) and panel (FE and CRE) specifications after augmenting the set of controls with portfolio-share variables (core assets, IRA assets, residential assets, long-term debt, and other debt) fully interacted with year dummies.

5.1 Trust and average returns

I begin with the analysis of trust and average returns, now adding 2020 portfolio shares as an attempt at controlling for risk exposure by estimating the cross-sectional regression equation

$$\bar{r}_i^{net} = X_i'\beta + \sum_{j=1}^{J} \gamma_j s_{ji} + \varepsilon_i.$$

Table 15 shows that the hump-shaped relationship between trust and average returns survives this extension in both the baseline and extended specifications: the trust coefficients remain individually significant, and the joint test on the linear and quadratic trust terms is rejected in both columns.

[12]This point is further corroborated by evidence of heterogeneity in returns on safe assets like deposit accounts. An example from the academic literature is Deuflhard, Georgarakos, and Inderst 2014, but one can compare rates offered on deposit account at commercial banks like Bank of America versus local banks and see similar discrepancies in everyday life.

Table 15: Trust and Average Returns to Net Wealth with Portfolio-Share Controls

	(1)	(2)
Trust	0.04***	0.04***
	(0.01)	(0.01)
Trust^2	−0.00***	−0.00***
	(0.00)	(0.00)
Share core	−0.18***	−0.16**
	(0.07)	(0.07)
Share IRA	−0.12	−0.07
	(0.08)	(0.08)
Share residential	−0.13**	−0.11**
	(0.06)	(0.05)
Share long-term debt	−0.05	−0.05
	(0.03)	(0.03)
Share other debt	0.00	−0.00
	(0.00)	(0.01)
In labor force	0.05*	0.05*
	(0.03)	(0.02)
HS Grad	−0.02	−0.02
	(0.03)	(0.03)
Some College	−0.02	−0.03
	(0.03)	(0.03)
College	−0.05	−0.06*
	(0.03)	(0.03)
Postgrad	−0.06	−0.07**
	(0.03)	(0.03)
Female		−0.03*
		(0.02)
NH Black		0.02
		(0.03)
Hispanic		−0.05
		(0.03)
NH Other		0.06
		(0.06)
Married		−0.00
		(0.02)
Born in U.S.		0.01
		(0.03)
Midwest		−0.04
		(0.03)
South		0.03
		(0.03)
West		0.05
		(0.03)
_cons	0.03	0.04
	(0.07)	(0.08)
N	439.00	437.00
Adj. R^2	0.14	0.17
Trust joint p	0.00	0.00
Age joint p	0.00	0.02
Wealth joint p	0.03	0.01
Region joint p	.	0.00
Share (asset) joint p	0.03	0.05

OLS. Heteroskedasticity-robust standard errors. Trust and portfolio shares are measured in 2020; dependent variable is average returns to net wealth (winsorized). Column *(1)* uses the baseline controls from the main text plus asset and debt shares; column *(2)* adds the full demographic controls. For readability, footer rows for joint tests with $p \geq 0.10$ are omitted from the final presentation, though the underlying regressions include the full control set.

Relative to the corresponding average-return specifications in Table 8, adding shares increases model fit substantially: the adjusted R^2 in the baseline model rises from .07 to .14 and from .09 to .17 in the extended model. This suggests that portfolio composition explains a meaningful share of the cross-sectional variation in average returns. At the same time, the trust coefficients are essentially unchanged in sign and remain jointly significant, which is important for interpretation: controlling for observed portfolio shares improves fit, but it does not eliminate the hump-shaped relationship between trust and long-run returns. Furthermore, the Wald test on the coefficeints for the asset classes being jointly zero is rejected, suggesting that the proxies for risk exposure are predictive of returns to net wealth.

5.2 Augmenting the FE model

I next add the portfolio-share controls to the panel regression model with respondent-level fixed effects. Since the FE model absorbs the time-invariant trust measure, the point here is not to estimate trust itself, but to see how much these proxies for risk exposure help explain within-respondent variation in returns.

Let j index asset classes.

$$r_{it}^{net} = \alpha_i + \lambda_t + X_{it}'\beta + \sum_{j=1}^{J} \left[\gamma_j s_{jit} + \sum_{t' \in \mathcal{T} \setminus \{t_0\}} \delta_{jt'} \left(s_{jit} \cdot 1\{t = t'\} \right) \right].$$

Table 16 shows the results of the estimation after adding the additional controls relevant to risk exposure. Relative to Table 10, adding the share controls increases the within-R^2 from .18 to .20 in both columns. The variance structure changes only modestly: ρ falls from .66 and .65 to .64 and .63, while σ_u stays around .46–.47 and σ_e rises slightly from about .33 to .35. Thus, *controlling for risk exposure does not effect the estimated distribution of fixed effects much.* This is useful information, since the indivdiual fixed effect is estimated after removing all time-varying variation from returns.

Table 16: Panel OLS with Individual Fixed Effects and Portfolio-Share Controls

	(1)	(2)
In labor force	0.02	0.01
	(0.02)	(0.02)
Share core	0.36	0.36
	(0.22)	(0.23)
Share IRA	−0.05	−0.05
	(0.22)	(0.22)
Share residential	0.17	0.18
	(0.20)	(0.20)
Share long-term debt	−0.43	−0.42
	(0.26)	(0.26)
Share other debt	−0.74**	−0.74**
	(0.35)	(0.34)
Married		−0.04
		(0.05)
Midwest		0.01
		(0.11)
South		−0.06
		(0.07)
West		−0.06
		(0.10)
_cons	−0.80**	−0.76**
	(0.34)	(0.35)
N	2886.00	2868.00
Within R^2	0.20	0.20
ρ	0.64	0.63
σ_u	0.47	0.46
σ_e	0.35	0.35
Age joint p	0.00	0.00
Wealth joint p	0.00	0.00
Year joint p	0.01	0.01
Share (debt) joint p	0.01	0.01
Share core×year p	0.02	0.03
Share IRA×year p	0.00	0.00
Share res×year p	0.01	0.02
Share debt-other×year p	0.00	0.00

Within (household) fixed-effects estimator. Standard errors clustered by household. Column *(1)* adds time-varying portfolio shares and share x year interactions to the baseline FE specification; column *(2)* adds the extended time-varying controls. Reported ρ, σ_u, and σ_e are variance-component estimates from the FE decomposition. In the final table presentation, joint-test rows with $p \geq 0.10$ are omitted for readability, but all share and interaction terms remain in the regression.

The joint tests on the remaining control variables also show a robustness to the risk controls. Age, wealth, and year effects remain strongly significant. The asset-share levels are not jointly significant, but the debt-share block is. Over time, the interaction terms for core shares, IRA shares, residential shares, and other debt are jointly significant, while the interaction for long-term debt is not.

5.2.1 Augmenting the CRE model

The correlated random effects specification is the key panel model of interest here, since it retains the time-invariant trust measure while still allowing the persistent component to be correlated with the observed time-varying regressors.

Table 17: The CRE (Mundlak) Model with Portfolio-Share Controls

	(1)	(2)
Trust	0.03***	0.03***
	(0.01)	(0.01)
Trust^2	−0.00***	−0.00***
	(0.00)	(0.00)
Share core	0.23	0.24
	(0.20)	(0.20)
Share IRA	−0.11	−0.11
	(0.19)	(0.19)
Share residential	0.12	0.12
	(0.18)	(0.18)
Share long-term debt	−0.45*	−0.46*
	(0.26)	(0.25)
Share other debt	−0.26*	−0.26
	(0.16)	(0.16)
HS Grad	−0.00	−0.01
	(0.02)	(0.02)
Some College	−0.00	−0.01
	(0.03)	(0.03)
College	0.01	−0.01
	(0.03)	(0.03)
Postgrad	−0.00	−0.01
	(0.03)	(0.03)
In labor force	0.01	0.01
	(0.02)	(0.02)
Married	−0.03	−0.02
	(0.04)	(0.04)
Female		−0.03**
		(0.02)
NH Black		−0.01
		(0.03)
Hispanic		−0.06**
		(0.03)
NH Other		−0.02
		(0.03)
Born in U.S.		0.01
		(0.02)
Midwest		−0.00
		(0.02)
South		0.02
		(0.02)
West		0.05*
		(0.03)
_cons	−0.33	−0.28
	(0.26)	(0.27)
N	2886.00	2866.00
Within R^2	0.19	0.19
ρ	0.11	0.11
σ_u	0.12	0.12
σ_e	0.35	0.35
Trust joint p	0.00	0.00
Age joint p	0.00	0.00
Wealth joint p	0.00	0.00
Year joint p	0.00	0.00
Share (debt) joint p	0.04	0.04
Share core×year p	0.00	0.01
Share IRA×year p	0.00	0.00
Share res×year p	0.01	0.01
Share debt-long×year p	0.00	0.01
Share debt-other×year p	0.00	0.00

Random effects with Mundlak means of the time-varying regressors, augmented with portfolio-share levels and share x year interactions. Standard errors clustered by household. Column *(1)* uses the baseline time-invariant controls; column *(2)* adds the full demographic controls. Reported ρ, σ_u, and σ_e are variance-component estimates from the augmented CRE specification. Footer rows for joint tests with $p \geq 0.10$ are omitted in the final table display for readability.

The trust results survive this extension. The coefficients on trust remain positive on the linear term and negative on the quadratic term, and the joint test on the trust terms is still rejected in both columns. Relative to Table 13, adding shares raises the within-R^2 from .15 to .19 in both columns. At the same time, ρ falls from .16 and .15 to .11, which suggest a smaller share of the total variance is attributed to the persistent component after controlling for risk. Furthermore, σ_u declines from about .15–.16 to .12, which implies that less unexplained variation is being attributed to persistent respondent-level differences. In other words, some of the previous variation across respondents has now been explained by risk exposure. Lastly, σ_e remains around .35–.36.

The joint tests again show that the interaction structure does most of the work. The debt-share block is jointly significant, while the asset-share levels are not. But the interactions for core shares, IRA shares, residential shares, long-term debt, and other debt are all jointly significant. By contrast, the broader time-invariant blocks for education, race, and census region are not.

The key takeaway is that *controlling for risk exposure in the CRE model increases explained variability, while retaining the hump-shaped relationship between trust and returns. The estiamted persistent component is estimated more accurately in terms of a smaller stndard deviation across respondents and a lower share of the total variance attributed to the persistent component.*

5.3 Maximizing returns with trust

As in the main text, I summarize the implied interior turning point of the quadratic trust specification by reporting the trust level that maximizes fitted returns. Because the FE model absorbs the time-invariant trust measure, the relevant comparison here is between the average-return model and the CRE model. Table 18 shows that the turning-point calculations remain economically reasonable and statistically well determined in both baseline and extended specifications.

Table 18: The Level of Trust which Maximizes Returns with Portfolio-Share Controls

	Avg returns	CRE
Panel A: Baseline controls		
N	439	2,886
Both sig?	Yes	Yes
Joint test	0.0050	0.0021
(*Trust*)*	6.2593	6.3272
SE(*Trust*)*	0.5366	0.4895
p(*Trust*)*	0.0000	0.0000
Conf. Interv.	[5.2076, 7.3110]	[5.3678, 7.2867]
Panel B: Extended controls		
N	437	2,866
Both sig?	Yes	Yes
Joint test	0.0018	0.0050
(*Trust*)*	6.6659	6.5955
SE(*Trust*)*	0.6099	0.6103
p(*Trust*)*	0.0000	0.0000
Conf. Interv.	[5.4707, 7.8612]	[5.3992, 7.7917]

Trust* is computed as $-\hat{\beta}_1/(2\hat{\beta}_2)$ from the share-augmented quadratic specifications. Standard errors, p-values for H_0 : Trust* = 0, and 95% confidence intervals use the delta method. "Both sig?" indicates whether the linear and quadratic trust terms are each significant at 10%, while "Joint test" reports the Wald test on the two trust terms.

The estimated trust-maximizing values remain in the same moderate range emphasized in the main results. In the average-return regressions, the turning point lies around 6.3 in the baseline specification and 6.7 in the extended one; in the CRE regressions, it lies around 6.3 and 6.6. Compared with Table 14, these values move only modestly once portfolio shares are added, with the CRE turning point especially stable. The confidence intervals remain fairly tight, and all reported turning points are statistically different from zero. Substantively, this reinforces the main conclusion: even after conditioning on detailed portfolio composition and its time-varying association with returns, the fitted relationship still suggests that households with moderate trust levels earn the highest returns to net wealth.

5.4 The estimated distribution of fixed effects

A final, but important comparison, is to take a look at the distribution of estimated fixed effects from the FE and CRE models with the full set of control variables extended to control for risk exposure. Figure 17 shows the final estimates of this persistent component of returns to net wealth across respondents in the survey. Interestingly, the estimated distribution from the CRE model seems to be less skewed than other empirical estimates suggest.

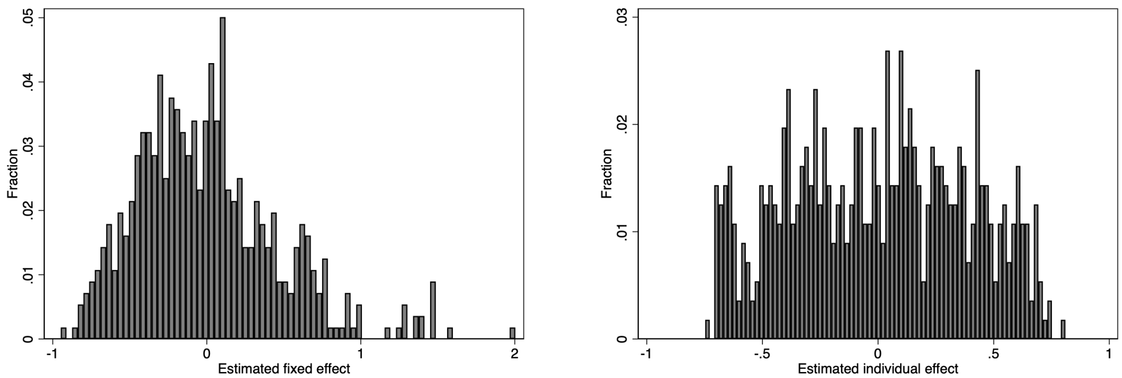

Figure 17: Distributions of estimated FE (left) and CRE (right) effects with portfolio-share controls included.

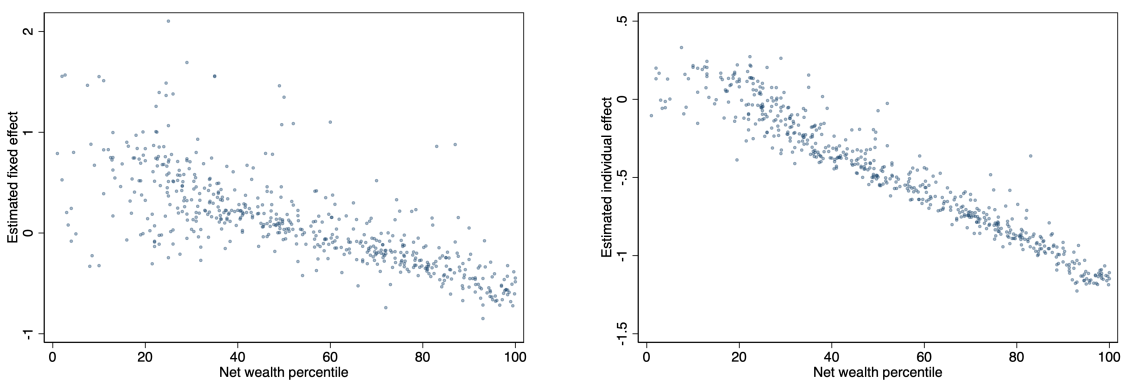

Figure 18: Estimated FE (left) and CRE (right) individual effects vs. net wealth percentile, with portfolio-share controls.

Figure 18 shows that this scale dependence remains after controlling for portfolio shares. In both the FE and CRE versions, the estimated individual effect still tends to rise with wealth percentile, so observed risk exposure does not eliminate the positive relationship between persistent returns and wealth.

6 Conclusion

There is much empirical evidence of a positive relationship between trust and economic performance, at the aggregate and individual level. The results of this paper are in line with this literature.

In particular, the RAND longitudinal product version of the HRS contains enough information to create a measure of returns to net wealth. Respondent-level returns exhibit significant heterogeneity, and the persistent component of individual returns is estimated and comparable to the distribution across indivdiuals using the Norwegian population data Fagereng et al. 2020. Moreover, the returns to net wealth exhibit strong evidence of a moderate amount of trust being associated with the maximal level of returns, as Butler, Giuliano, and Guiso 2016 shows for household income and trust.

The remaining sections of this paper discuss findings relevant to the use of this HRS RAND product that are excluded from the main analysis but can be found along with the rest of the supplementary material for this project.

6.1 Drawbacks and limitations

A first limitation is that the HRS variables used in this paper do not all come from the same source. Most of the demographic, income, and wealth variables come from the cleaned and harmonized RAND HRS Longitudinal File, but net investment flows must be imported wave-by-wave from the HRS core public files. In the later surveys, these asset-change questions appear in the questionnaire as Section R (for example, the 2020 module is Section R: Asset Change). This creates a discrepancy in coverage between the standard RAND variables and the flow variables. To partly address this, I use the associated asset-change flags to set some missing flow amounts equal to zero when respondents explicitly report no purchase, sale, contribution, or withdrawal since the previous interview. This increases the usable flow sample, but the flow variables remain much thinner than the core RAND measures.

A second limitation is that the trust variables are only observed in 2020. This cannot be overstated. For general trust, there are 900 unique respondents with nonmissing values in the cross section, which is much smaller than the sample available for the standard RAND demographic and wealth variables. In the panel setting, the overlap between nonmissing returns to net wealth and nonmissing general trust is 4,115 person-years in total, ranging from 176 observations in 2002 to 565 in 2020. As a result, the trust analysis is much more sample-constrained than the analogous descriptive and regression exercises for returns, wealth, or demographics.

6.2 Robustness checks

Labor income does not exhibit the same robust hump-shaped relationship as total income. In the conclusion regressions, the joint test on the trust terms is insignificant for average labor income in both the baseline and extended specifications, and it is only marginal in the 2020 cross section once the full set of controls is added. This weaker pattern is consistent with the HRS sample itself, which oversamples older and retired households and is therefore less naturally suited to labor-income variation than to broader measures of household resources.

Within narrower asset classes and portfolio definitions, the trust relationship is not robust in the way it is for returns to net wealth. In the cross section, the uncontrolled specifications for core, IRA, residential, and core-plus-IRA returns sometimes show a hump-shaped pattern, but those results disappear once the baseline controls are added. In that sense, the evidence outside net wealth is best viewed as suggestive at most rather than stable across specifications.

Even for returns to net wealth, the other trust measures generally do not reproduce the main result. The individual domain measures, the government-trust aggregates, and the simple average of trust in financial institutions are not jointly significant in the corresponding average-return regressions. The only partial exception is the first principal component for trust in financial institutions, which is weakly significant in the baseline specification, but that evidence disappears once the extended controls are included.

Financial literacy adds some information, but it does not overturn the trust results. In the recent extensions, the inflation item matters in the average-return specification, and the literacy score is significant in the FE second-stage regressions for the persistent component. In the CRE model, adding the literacy items one at a time still leaves the trust terms significant for the interest and inflation questions, although broader literacy bundles are less stable. Taken together, financial literacy explains some additional variation in returns, but it does not subsume the main trust relationship.

I also explored an instrumental-variables interpretation using depression-based measures and an indicator for non-Hispanic Black as excluded instruments for trust. The first stages are relevant in the sense that these variables predict trust, and the Kleibergen-Paap underidentification tests reject the null that the excluded instruments are irrelevant for trust. However, the endogeneity tests do not reject exogeneity of trust, the weak-identification diagnostics are only borderline, and the weak-instrument-robust Anderson-Rubin tests remain insignificant across the main specifications, meaning the IV exercises do not provide robust evidence that instrumented trust has a causal effect on returns. When the model is overidentified, the overidentification restrictions are not rejected, but the second-stage trust coefficients remain imprecise and unstable. Taken together, these exercises do not provide persuasive evidence for a causal 2SLS interpretation of the effect of trust on returns to net wealth.

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Appendix A Determinants of trust

The focus of this paper is the general trust measure. Table 19 describes the set of controls and determinants of general trust. The first column include standard demographics (gender, education, marital status, and race/ethnicity) while the second column adds variables more unique to the 2020 wave of the HRS questionnaire such as hometown population size and the "Potential for Deception" measures for social security, medicare/medicaid, banks, financial advisors, mutual funds, and insurance companies. The third column adds health conditions, insurance coverage, life insurance, and marital history.

Table 19: Determinants of General Trust

	(1)	(2)	(3)
Female	0.26	0.60***	0.61***
	(0.17)	(0.22)	(0.23)
Years of education	0.04	0.00	−0.00
	(0.03)	(0.05)	(0.05)
Married	0.38**	−0.01	−0.13
	(0.18)	(0.24)	(0.26)
NH Black	−1.06***	−1.19***	−1.25***
	(0.22)	(0.31)	(0.31)
Hispanic	−0.43	−0.38	−0.39
	(0.27)	(0.40)	(0.40)
NH Other	−0.17	−1.00	−1.26*
	(0.31)	(0.63)	(0.64)
Depression	−0.17***	−0.14**	−0.12*
	(0.04)	(0.06)	(0.06)
Small/med city (10k-100k)		0.00	−0.10
		(0.29)	(0.29)
Large metro (100k+)		0.10	0.08
		(0.29)	(0.29)
Deception: Social Security		−0.00	0.00
		(0.00)	(0.00)
Deception: Medicare/Medicaid		0.00	0.00
		(0.00)	(0.00)
Deception: Banks		−0.00	−0.00*
		(0.00)	(0.00)
Deception: Financial advisors		−0.00	−0.00
		(0.00)	(0.00)
Deception: Mutual funds		0.00	0.00
		(0.00)	(0.00)
Deception: Insurance companies		−0.00	−0.00*
		(0.00)	(0.00)
Health conditions			−0.06
			(0.09)
Covered by Medicare			−0.01
			(0.35)
Covered by Medicaid			−0.25
			(0.37)
Has life insurance			0.39*
			(0.23)
Number of reported divorces			−0.07
			(0.13)
Number of reported times being widowed			−0.11
			(0.32)
Constant	2.83	1.02	1.54
	(1.83)	(0.83)	(0.94)
Observations	894.00	502.00	493.00
Adj. R^2	0.11	0.14	0.15
Deception joint p	.	0.62	0.40

OLS. Heteroskedasticity-robust standard errors. Column *(1)*: demographics plus depression. Column *(2)*: adds population size, wealth deciles, labor force, region, born in U.S., and six "Potential for Deception" items. Column *(3)*: adds health conditions, Medicare/Medicaid, life insurance, and marital history. Age-bin fixed effects included but omitted from display.

As Alesina and Ferrara 2000 suggests, demographic variables tend to determine trust. In the HRS data, the estimated coefficients for non-Hispanic Black and for marital status have the strongest significance; the race coefficient is negative, consistent with Alsan and Wanamaker 2018. Depression is negative and significant across specifications.

Appendix B Measures of income

Labor income is a narrow measure only capturing earnings and unemployment income. Total income is a more broad measure including retirement and capital income. Figure 19 shows that, for the time period, mean incomes are relatively flat over the period. Moreover, the discrepancy between mean labor and total income is likely driven by the oversampling of older and retired households by the HRS.

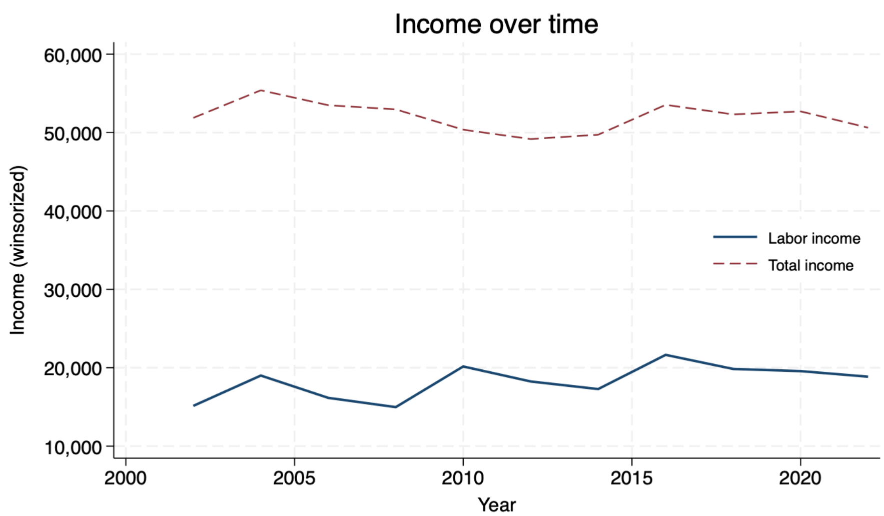

Figure 19: Income over time

In particular, I pooled the observations of the survey together to get a sense of the distribution of incomes measured in the survey. This is captured by Table 20.

Table 20: Income Distribution Summary Statistics

Variable	Obs	Mean	SD	P50	P95	Min	Max
Labor income	204,952	18,330	37,032	0	97,924	0	215,261
Total income	204,952	52,004	68,036	29,103	177,498	0	457,548

Real USD, winsorized; summary over person-years.

An important finding in the literature on earnings in the U.S. is that it is generally hump-shaped over the lifecycle. It is a good sign then that Figure 20 displays this pattern.

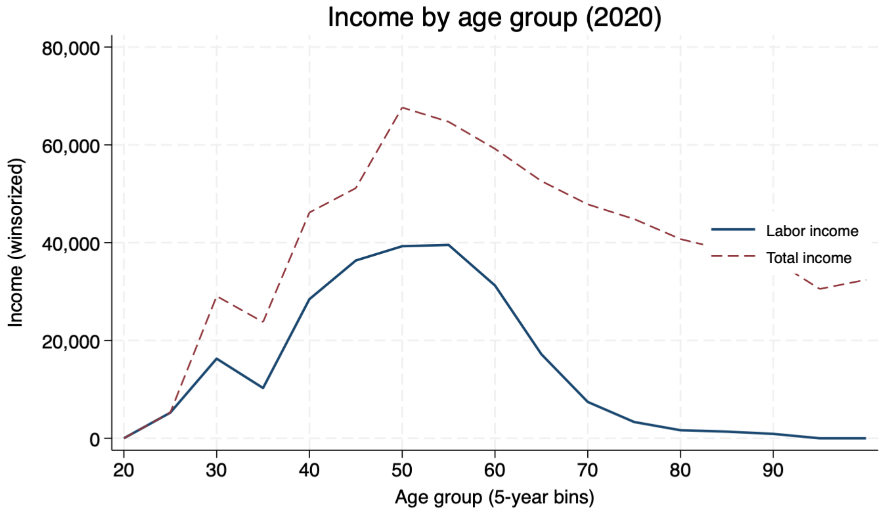

Figure 20: Income by age group (2020)

Another empirical finding in the literature on earnings is that on average individuals with more education earn higher income. The trend captured in Table 21 suggests that the earnings data is in line with what one would expect regarding earnings for a representative survey in the U.S.[13]

Table 21: Mean Income by Education Group

Education	Labor income	Total income	Obs
No hs	6,075	23,987	44,654
Hs	12,590	39,601	63,826
Some college	20,298	53,483	47,390
4yr degree	32,779	82,578	24,820
Grad	37,445	104,066	23,091

Real USD, winsorized. No hs = <12y; Hs = 12y; Some college = 13–15y; 4yr = 16y; Grad = 17+y.

[13] Although the HRS oversamples older households, I use the provided respondent-level weights for this interpretation of the summary statistics of the data.

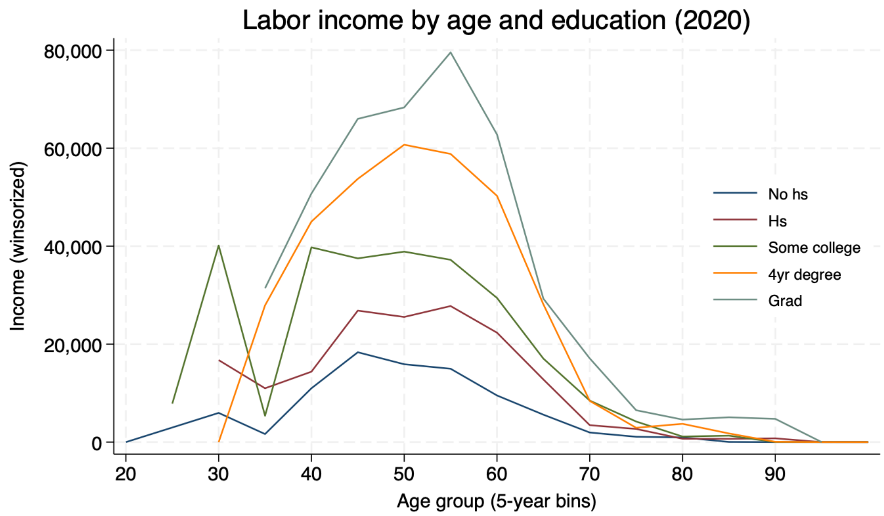

Figure 21: Labor income by age and education (2020)

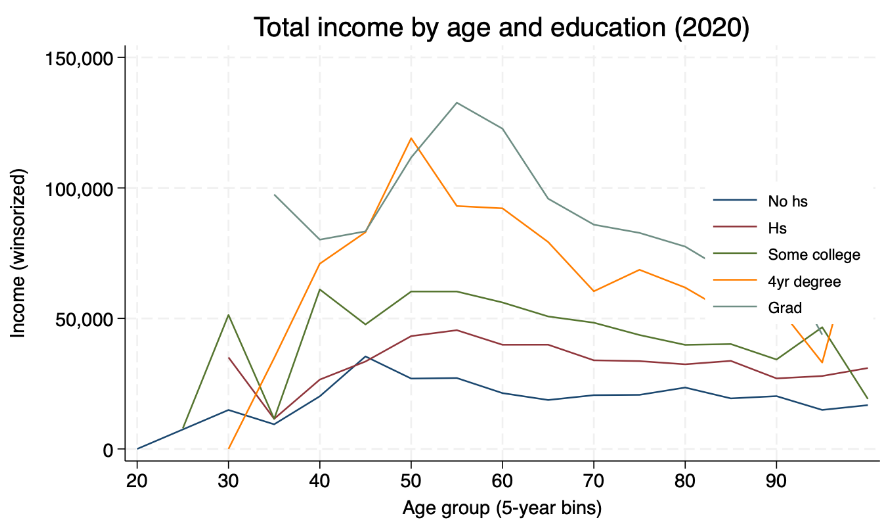

Figure 22: Total income by age and education (2020)

Appendix C Trust and total income

This section is an attempt to test whether the hump-shaped relationship between trust and income in Butler, Giuliano, and Guiso 2016 holds for the 2020 HRS cohort. I focus the analysis of the empirical relationship between both income and returns and trust on a subset of measures. For income, I omit the analysis for labor income. I also exclude the analysis of the log of total income. Labor income results are not statistically significant. Given the oversampling of older, retired households, lack of predictive power for trust on labor income is not alarming. Total income results are robust to both log and IHS transformations.

In Table 22, we see the coefficients for both the linear and quadratic terms are significant; the predictive power survives even when the additional controls important for explaining income are included. Since the goal is to uncover whether there is a maximal level of trust regarding economic performance, then we care about the significance of both trust coefficients. Here, we reject the hypothesis that both coefficients are 0.[14]

Table 22: Trust and Total Income (2020)

	(1)	(2)	(3)	(4)
Trust	0.03***	0.19***	0.00	0.05**
	(0.01)	(0.02)	(0.01)	(0.02)
Trust^2		−0.02***		−0.00**
		(0.00)		(0.00)
Female			−0.27***	−0.27***
			(0.04)	(0.04)
Years of education			0.07***	0.07***
			(0.01)	(0.01)
Married			0.14***	0.14***
			(0.04)	(0.04)
Born in U.S.			0.02	0.02
			(0.07)	(0.07)
In labor force			0.50***	0.49***
			(0.05)	(0.05)
NH Black			−0.24***	−0.23***
			(0.05)	(0.05)
Hispanic			−0.24***	−0.23***
			(0.07)	(0.07)
NH Other			−0.27***	−0.27***
			(0.09)	(0.09)
Constant	0.83***	0.53***	−0.48***	−0.51***
	(0.05)	(0.06)	(0.14)	(0.16)
N	900.00	900.00	890.00	890.00
Adj. R^2	0.01	0.05	0.35	0.35
Trust joint p	.	0.00	.	0.08
Age joint p	.	.	0.00	0.00
Race joint p	.	.	0.00	0.00

Cross-sectional OLS. Heteroskedasticity-robust standard errors. Dependent variable is the inverse hyperbolic sine of deflated, winsorized 2020 total income. Columns *(1)–(2)*: trust only (linear and quadratic). Columns *(3)–(4)*: adds age-bin FE, gender, education, labor force, marital status, US birthplace, and race/ethnicity. Age-bin coefficients omitted from display.

I also conduct the joint Wald test for the null hypotheses that the coefficients on the age bins and race categories are jointly equal to zero. In both cases, the null hypothesis is rejected at conventional significance levels.

With income data available from 2002–2022, I consider the statistical relationship between average total income and trust. This can be seen in Table 23. Not only does the pattern persist,

[14]This rejection of the Wald test for the linear and quadratic trust terms (i.e. reject both coefficients are zero) will be true for most of the models analyzed in this paper.

but the significance is stronger not only for trust coefficients, but for the other explanatory variables as well. Again, the Wald tests on the coefficients for race and age bins are rejected, meaning each matter for long-run total income.

Table 23: Trust and Average Income

	(1)	(2)	(3)	(4)
Trust	0.03***	0.21***	0.00	0.05***
	(0.01)	(0.02)	(0.01)	(0.02)
$Trust^2$		−0.02***		−0.00***
		(0.00)		(0.00)
Female			−0.25***	−0.25***
			(0.04)	(0.04)
Years of education			0.08***	0.08***
			(0.01)	(0.01)
Married			0.20***	0.19***
			(0.04)	(0.04)
Born in U.S.			−0.03	−0.03
			(0.06)	(0.06)
In labor force			0.37***	0.37***
			(0.04)	(0.04)
NH Black			−0.27***	−0.26***
			(0.05)	(0.05)
Hispanic			−0.29***	−0.28***
			(0.06)	(0.06)
NH Other			−0.28***	−0.29***
			(0.08)	(0.08)
Constant	0.90***	0.58***	−0.62***	−0.66***
	(0.05)	(0.05)	(0.15)	(0.17)
N	900.00	900.00	890.00	890.00
Adj. R^2	0.01	0.07	0.42	0.43
Trust joint p	.	0.00	.	0.03
Age joint p	.	.	0.00	0.00
Race joint p	.	.	0.00	0.00

Cross-sectional OLS. Heteroskedasticity-robust standard errors. Dependent variable is the IHS of average total income (deflated, winsorized) over waves 2002–2022. Columns *(1)–(2)*: trust only (linear and quadratic). Columns *(3)–(4)*: adds full controls. Age-bin coefficients omitted from display.