

**Supplemental Online Appendix**

**NOT FOR PUBLICATION**

# A Data Sources and Variable Definitions

## A.1 Data Sources

### A.1.1 Tax returns (TAX)

The main data source is tax returns for all persons in Norway 1993-2015. The tax system is residence based so Norwegians living abroad are not included. The basic income tax unit is an individual, but wealth is jointly taxed for married couples. Cohabitan couples (with or without children) are taxed separately even though they may own assets jointly. The division of assets jointly owned follows the formal ownership shares in the case of housing but can be chosen freely for mortgages. For most households, the division of assets on the tax returns has little consequence as only a small fraction of households actually pay wealth taxes (due to an exception level). All values are measured at December 31st of each year. Some items in the tax records are reported with discounted values used to calculate a household's wealth tax. We revert these items to their initial value.

Most of the information in personal tax records is third-party reported by employers or financial intermediaries such as banks, brokers, insurance companies, or the Norwegian Central Securities Depository (VPS). Components of income and wealth not provided by third parties (e.g., foreign income or dividends not registered in the VPS) are added by the individual and checked by the tax authority. In addition, tax authorities have control routines that flag tax returns with extreme movements in either income or wealth, and these are checked in more detail.

### A.1.2 Shareholder register (SHR)

All private limited companies in Norway must submit information about shareholders and the number of shares each person owns to the Norwegian Tax Administration's Shareholder Register. The register is complete from 2004, and is also searchable online from 2014 (<https://www.aksjeeiere.no/>). The shareholder registry contains information on individuals' and firms' ownership of stocks in all companies in Norway. By combining the number of shares owned individually with the total number of shares, we get the ownership fraction of a particular individual. Some companies are held directly. In this case, the ownership share is the fraction of total shares owned by the individual. However, many companies are owned by other firms which we trace back to the owner. In particular, if an individual owns shares in company A and company A owns shares in company B, the individual's ownership share in company B is equal to that individual's ownership share in company A multiplied with A's ownership share in company B. We compute indirect ownership up to 7 layers. We can also sum up and obtain the number of companies an individual owns shares in through direct and indirect ownership.

### A.1.3 Firm balance sheet and tax return

For the equity value in unlisted firms, we must rely on the assessed value that private businesses report to the tax authorities. This assessed value is derived from firm balance sheets and book values. Balance sheets contain information about total equity (total assets minus total debt), accumulated retained earnings, total revenue, and profits before and after tax. Tax authorities have routines to identify underreporting of assessed values of private businesses. In addition, medium- and larger-sized firms (with turnover above about USD 500,000) are required to have their balance sheet audited by an approved auditing entity.

#### A.1.4 Housing wealth database

Housing wealth is imputed using an ensemble machine learning method on housing transaction data for the period 1993-2015. The imputation includes owner-occupied housing, secondary housing, and cabins (holiday homes). Housing wealth is allocated to individuals according to ownership shares, i.e., the fraction of the house owned by an individual. Construction of housing wealth is described in detail in [Fagereng, Holm and Torstensen \(2020b\)](#).

#### A.1.5 Central population registry and Norwegian educational database

Annual national register since 1964. Contains individual identification numbers, residence, marital status, and highest completed education.

#### A.1.6 Inheritance tax records

Information about inheritances and inter-vivos gifts as derived from Inheritance tax records 1995-2013. The inheritance tax in Norway was abolished in 2014.

### A.2 Variable Definitions

#### A.2.1 Personal and household id, marital status and head of household

Source: *The Central Population Registry [annual, 1964-]*. Every individual has a unique personal ID number. The marital status is either single, married/cohabitant, widow/widower, divorced or separated. Based on a combination of spousal ID and marital status, a household ID number is created. A change in marital status (marriage/divorce) will generate a new household ID. The household ID is used to aggregate up from individual level data to household level data. The head of household is defined as the eldest person.

#### A.2.2 Year of death

Source: *The Central Population Registry [annual, 1964-]*. Wealth is only measured until the year before year of death. A living person will have year of death equal to missing. A household's year of death is defined as the maximum year of death by household ID. If the remaining spouse is still alive, the maximum value will be equal to missing.

#### A.2.3 Educational level

Source: *Norwegian educational database [annual, 1964-]*. Educational level is grouped with the following mapping to the Norwegian Standard Classification of Education (NUS), see <https://www.ssb.no/en/klass/klassifikasjoner/36>.

#### A.2.4 Labor income, self-employment income and transfers

Source: *Tax records and Social Security Administration records [annual, 1993-]*.

**Labor income:** Measures of labor income is comprehensive and includes wages and salaries, bonuses and other irregular payments. All third party reported by employers. Corresponding code in the tax return is TAX 2.1.

**Labor income from self-employment:** Norway has a dual-income tax system where tax on capital is proportional and tax on labor is progressive. To avoid income shifting and

Our classification	NUS-code	Description
1 - Vocational or less	1, 2, 3, 4, 5, 9	Primary, lower secondary, upper secondary
2 - Bachelor	60-63, 69	Humanities, social sciences and other
3 - Bachelor health & STEM	65-68	Health and STEM
4 - Master	70-73, 79, 80-83, 89	Humanities, social sciences and other
5 - Master health & STEM	75, 77-78, 85, 87-88	Health and STEM
6 - Finance	64, 74, 84	Business and administration (all levels)
7 - Law	737101	Law
8 - Medical doctor, dentist	76, 86	Medical doctor, dentist

achieve neutrality in the tax treatment of wage earners and entrepreneurs, the Norwegian dual-income tax splits the income from self-employment and from small companies into an imputed return to capital, taxable as capital income, and a residual income subject to labor income tax. Corresponding codes in the tax return for the labor part are TAX 1.6, TAX 1.7 and TAX 2.7.

**Transfers:** Transfers include unemployment benefits, sickness benefits, paid parental leave, remuneration for participation in various government activity programs, disability benefits, public pensions, and other social welfare payments. Corresponding codes in the tax return are TAX 2.1.7, TAX 2.2 and *sykepenger, foreldrepenger, dagpenger, arbeidsavklaringspenger, tidbegrenset uførestønad, bostøtte og sosialhjelp* from the Social Security Administration (NAV).

### A.2.5 Interest

Source: *Tax records [annual, 1993-]*. Interest income on bank deposits in Norway (TAX 3.1.1), other interest income (TAX 3.1.2), interest on loans to companies (TAX 3.1.3), yields and disbursements from endowment insurance (TAX 3.1.4), interest income on bank deposits abroad (TAX 3.1.11). In addition, we do as in [Fagereng et al. \(2020a\)](#) and impute interest on outstanding claims and private loans using the average rate charged by Norwegian banks on corporate loans and capital gains on bond funds. Interest payments on debt home and abroad (TAX 3.3.1 + TAX 3.3.2).

### A.2.6 Dividends

Source: *Tax records [annual, 1993-]*, *Shareholder registry [annual, 2004-]*, *Firm balance sheet and tax return [annual, 1995-]*. Tax records contain taxable dividends received from stocks and shares registered in the Norwegian Central Securities Depository VPS (TAX 3.1.5), from mutual funds (TAX 3.1.6), and from private equity/Norwegian and foreign shares or unit trusts not registered with the VPS (TAX 3.1.7). From 2004, an alternative value for dividends received from non-listed companies can be obtained by combining a persons share in a company with the company's dividend payout. Using the fraction of an unlisted company ( $k$ ) that an individual ( $i$ ) owns (as measured in the Shareholder registry, and including indirect ownership),  $s_{it}^k$ , and multiplying with dividends from an unlisted company ( $D_t^k$ ), gives us an alternative measure of dividend income as  $\sum_k s_{it}^k D_t^k$ .

Since we have two sources of information about dividends after 2004 - tax returns (TAX), and the combination of shareholder registry (SHR) and firm accounts - there may be conflicting information. 92% of observations are equal in the two datasets, 7% have a positive value in tax records (TAX) and zero in the shareholder registry (SHR) - we assign these dividends to

public equity. I.e. we use tax values (TAX) up to and including 2003, and shareholder registry (SHR) from 2004.

Dividends were not a part of the capital income tax base until 2006, when a tax on dividends were introduced as part of a major tax reform. There were two major consequences of this reform. First, there were clear adjustments prior to the reform as seen in the figure below, where large dividends were taken out prior to the reform. Second, a large number of holding companies were created so that dividends could be paid to the holding company from its subsidiaries, and the ultimate owner could thereby avoid paying dividend tax on the personal income side. In sum, there was an overall shift from dividends to retained earnings after the tax reform on 2006.

### A.2.7 Taxes

Source: *Tax records [annual, 1993-], Inheritance registry [annual, 1995-2013]*.

**Total taxes:** Total taxes paid on labor income, capital income and wealth. It is possible to observe the wealth tax separately (see more about the wealth tax below), but not it is not so straightforward to separate tax on labor income from tax on capital income.

**Labor income tax:** In order to calculate labor income after tax we therefore make the simplifying assumption that tax on labor ( $T^l$ ) can approximated as follows:

$$T_t^l = \left[ 1 - \tau_t^c \left( \frac{Y_t^c}{Y_t^c + Y_t^l} \right) \right] \times (T_t - T_t^w)$$

where  $T^l$  and  $Y^c$  are labor and capital income (as defined in tax records), respectively,  $T$  is total taxes,  $T^w$  is wealth tax, and  $\tau^c$  the flat tax rate on capital income, which was 28 percent until 2014.

**Capital income tax:** Capital tax is approximated as  $T_t^c = \tau_t^c * (\text{interest income} + \text{dividends})$ , where  $\tau^c$  is the flat tax rate on capital income, which was 28 percent until 2014. From 2014 to 2019 the tax rate on capital was gradually reduced downwards to 22 percent.

**Wealth tax:** In 2021, wealth above NOK 1.5 million is taxed at a rate of 0.85 percent, with some important valuation discounts, for example for primary housing. During our sample period, wealth taxation has become more lenient, both through reduced rates and through specific valuation concessions, see [A.4](#).

**Inheritance tax:** Norway had an inheritance tax during most of the studied period. The inheritance registry was digitalized in 1995 and the tax was abolished in 2014, which explains the limited observation period. We observe the exact amount of inheritance taxes paid by each heir.

### A.2.8 Safe assets

Source: *Tax records [annual, 1993-].* Bank deposits in Norwegian banks (TAX 4.1.1) + cash (TAX 4.1.3) + deposits in foreign banks (TAX 4.1.9), bond funds and money market funds (TAX 4.1.5) + bonds (TAX 4.1.7.2), and other financial assets such as out standing claims/loans to friends and family (TAX 4.1.6).

### A.2.9 Public equity

Source: *Tax records [annual, 1993-]*. Mutual funds/stock market funds (TAX 4.1.4) and shares/stocks and shares listed in the Norwegian Central Securities Depository (VPS), (TAX 4.1.7).

### A.2.10 Private equity

Source: *Tax records [annual, 1993-], Shareholder registry [annual, 2004-], Firm balance sheet and tax return [annual, 1995-]*

Private equity in tax returns is measured as firm assessed tax value of shares in non-listed Norwegian firms plus non-listed bonds and options (TAX 4.1.8). A private business is a company that is not listed on a stock exchange and owned by a small number of shareholders. Control of the firm is therefore limited to a few persons. These firms are typically small to medium sized businesses or holding companies. In 2006, Norway introduced a dividend tax at the personal level as part of a major tax reform. One response to this reform was that the number of holding companies increased, as owners would retain their earnings in firms to avoid paying dividend tax. These holding companies are therefore common, especially at the top of the wealth distribution. It is important to account for indirect ownership so that we are able to allocate capital gains onto the ultimate owner. The approach is similar to other papers using Norwegian data ([Alstadsæter et al. \(2018\)](#), [Fagereng et al. \(2020a, 2019\)](#)).

Using the fraction of an unlisted company ( $k$ ) that an individual ( $i$ ) owns (as measured in the Shareholder registry, and including indirect ownership),  $s_{it}^k$ , and multiplying with assessed value of an unlisted company ( $V_t^k$ ), gives us an alternative measure of the overall value of unlisted shares owned as  $\sum_k s_{it}^k V_t^k$ . Correlation between equity values in TAX and SHR is 0.86 for non-zero values in both registers. We use private equity from tax records as our main variable in net wealth to get a consistent measure over time, but make corrections when equity is zero in TAX and positive in SHR.

### A.2.11 Housing

Source: *Dataset from Fagereng, Holm and Torstensen (2020b)*. Tax records contain values for owner-occupied and secondary housing at tax value (TAX 4.3.2). Between 1993 and 2009 these tax values were related to construction value and adjusted irregularly. Since 2010 this value has been imputed using hedonic price regressions. As a consequence there is no measure of housing in tax records that is consistent over time. Instead we use imputed values of housing based on ensemble machine learning methods on housing transaction data as described in detail in [Fagereng, Holm and Torstensen \(2020b\)](#). The imputation includes not only owner-occupied housing, but also secondary housing and cabins (holiday homes). Housing wealth is allocated to individuals according to their ownership shares, i.e., if a married couple has reported that the wife owns 30% and the husband 70%, these ownership shares are used when allocating household values to individuals.

### A.2.12 Other real assets

Source: *Tax records [annual, 1993-]*. Cars and other motor vehicles at tax value (TAX 4.2.5 and TAX 4.2.6), boats at tax value (TAX 4.2.4), and other real estate apart from housing and holiday homes.

### A.2.13 Foreign wealth/offshore tax havens

Source: *Tax records [annual, 1993-]*. Inclusion of foreign wealth varies from country to country, depending on tax treaties.<sup>36</sup> The corresponding tax codes for foreign wealth is deposits in foreign banks (TAX 4.1.9) and foreign real estate (TAX 4.6.11) and debt in foreign banks (TAX 4.8.3.1). These are allocated to deposits, other real estate and liabilities, respectively.

According to [Alstadsæter et al. \(2019\)](#), the richest Scandinavians keep a substantial part of their wealth in offshore tax havens. The wealth of the top 0.01 of Norwegian households increases by about 25 percent if offshore wealth is included. On the other hand, Norwegian tax authorities offer tax amnesty for voluntary disclosure of foreign wealth.<sup>37</sup> Since 2007, an extra NOK 1.5 billion of taxable wealth and income has been disclosed because of this program. The number of amnesty participants picked up significantly in 2009, when G20 countries compelled tax havens to exchange bank information upon request with foreign authorities ([Johannessen and Zucman, 2014](#)) it was negligible before. According to [Alstadsæter et al. \(2019\)](#), the effect of tax amnesty has been quantitatively small; if anything, wealthier tax evaders seem to be slightly less likely to participate in an amnesty.

### A.2.14 Pension wealth & life insurance

More than 80 percent of all pension wealth in Norway is provided through a National Insurance scheme, a pay-as-you go (PAYG) scheme, with a large degree of redistribution from rich to poor. Another 18 percent are covered by employer provided pension plans, and finally 0.3 percent of total pension wealth is held as personal pension plans. Only this tiny fraction of 0.3 percent is reported on the tax return (TAX 4.5.1). The majority of Norwegians have life insurance through their employer. Personal life insurance is reported on tax returns with its repurchase value (TAX 4.5.2).

### A.2.15 Liabilities

Source: *Tax records [annual, 1993-]*. Total debt, i.e. the sum of mortgages, student loans and consumer debt (TAX 4.8).

### A.2.16 Inheritances

Prior to 2014, both inheritances and gifts were subject to taxation and were reported to tax authorities. In 2013, the inheritance and gift tax had a zero rate for taxable amounts up to NOK 470,000 from each donor (around 52,000 USD dollars in 2022). From this level, the rates ranged from 6% to 15% depending on the status of the beneficiary and the size of the taxable amount. The Norwegian inheritance taxation was recipient based, meaning that the total gift and inheritance received by one individual from one donor constituted the tax base (a child inheriting his or her last surviving parent would therefore usually inherit from both parents and thus face an exception level of NOK 940,000). The tax rates and exemption levels have varied over the sample period, see [A.4](#).

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<sup>36</sup><https://www.skatteetaten.no/en/person/taxes/get-the-taxes-right/property-and-belongings/houses-property-and-plots-of-land/countries-with-which-norway-has-established-a-tax-treaty/>

<sup>37</sup><https://www.skatteetaten.no/en/person/taxes/get-the-taxes-right/abroad/income-and-wealth-abroad/undeclared-income-and-wealth-abroad/>

Norway has fairly strict rules on heirship. Under Norwegian laws, the deceased's children and spouse are legally entitled to inheritance from the deceased. The law states the deceased's children are entitled to two thirds of the deceased's total estate, split equally among them.

### A.3 Calculation of Returns

In this section, we describe the main features of the construction of returns, which follows the construction described in [Fagereng et al. \(2020a\)](#) (FGMP thereafter). We calculate returns for total net worth, safe assets, equity, and housing. For consistency with the rest of our empirical results, we compute household-level returns—rather than individual-level returns as in FGMP. In particular, we aggregate all wealth variables and income flows at the household-level. In our measure we consider public equity and private equity as one category. We calculate returns on assets as

$$r_{it}^n = \frac{y_{it}^s + y_{it}^e + y_{it}^h - y_{it}^b}{w_{it}^g + F_{it}^g/2}, \text{ where}$$

- $y_{it}^s$ ,  $y_{it}^e$ , and  $y_{it}^h$  are income from financial assets (e.g. bonds), equity (e.g. stock and private equity), and housing
- $y_{it}^b$  is the sum of interest paid in all forms of debt
- $w_{it}^g$  is the stock of wealth at the beginning of the period
- $F_{it}^g$  is net flows of gross wealth during period (assets yields happen during year and households add/subtract from assets).

We calculate similar returns for safe assets, equity, and housing, which income flows are calculated as follows

- $y_{it}^s$ : interest income
- $y_{it}^e$ : dividend income + capital gains from stock + capital gains from private equity
- $y_{it}^h$ : income from housing + capital gains from housing

To avoid our results to be severely influenced by outliers, we drop returns observations of households with assets below \$500 USD in a given year for a given asset class (i.e., we do this separately for each return type, all assets, safe assets, equity, and housing) and we winsorize top and bottom 0.5% of the distribution of returns in a given year.

Although we follow FGMP quite closely in constructing our measure of returns, we deviate from their construction in three aspects, which we describe below.

**1. Capital gains from housing.** Capital gains from housing are calculated as the annual change in imputed house value (see [A.2.11](#)) in years with no transactions. In years with market transactions, capital gains from housing are set to zero. This is because net transactions are measured directly from housing transaction data (i.e. net saving in housing is calculated based on net transactions at market value in a given year), while capital gains are imputed and it would not add up if we tried to decompose the two parts. Capital gains from housing is also set to zero if housing value is zero in year  $t - 1$  and non-zero in  $t$ , and vice versa if housing value is zero in year  $t$  and non-zero in  $t - 1$ . While FGMP used an hedonic price imputation of housing values, we use the new machine learning method from [Fagereng, Holm and Torstensen \(2020b\)](#).

Imputed income form housing is defined as imputed rent from housing using the rental equivalence approach, and calculated as the aggregate value of owner-occupied housing services from the National Accounts relative to the aggregate value of housing wealth in our sample, which implies a rent-to-value ratio of 2.23 percent (over the period of observation). Total income from housing is thus imputed income plus income from ownership of real asset as measured in the tax returns; taxable income from renting out holiday home (TAX 2.8.3) or property abroad (TAX 2.8.5).

**2. Capital gains and dividends from private equity.** Capital gains on equity is obtained by linking individual and firm data using the shareholder registry (SHR). Balance sheets contain information about total equity (total assets minus total debt), earned capital, dividends, total revenue, profits before, and after tax. We measure unrealized capital gains as the individual's share of their company's retained earnings. Retained earnings in year  $t$  is the part of earned capital that is not paid out as dividends. Using the fraction of a company ( $k$ ) that an individual ( $i$ ) owns (as measured in the SHR),  $s_{it}^k$ , we allocate these earnings to ultimate owners.

Capital gains from mutual funds is obtained by assuming as [Fagereng et al. \(2019\)](#) that mutual funds investors own a composite index fund representative of the Oslo Stock Exchange (OSE) market (80%) and the MSCI World (20%) with price  $q_{t-1}^{mf}$  as measured December 31st of year  $t - 1$ , which we take from the OSE price database. We estimate the shares of mutual fund owned at the end of  $t - 1$  as  $s_{it-1}^{mf} = w_{it-1}^{mf}/q_{t-1}^{mf}$ . Subsequently, yields on mutual funds is calculated as  $y_{it}^{mf} = (q_t^{mf} - q_{t-1}^{mf})s_{it-1}^{mf} + ((q_t^{mf} - \bar{q}_t^{mf})(s_{it}^{mf} - s_{it-1}^{mf}))$  if  $s_{it-1}^{mf} \neq s_{it}^{mf}$ , where  $\bar{q}_t^{mf}$  is the geometric average of the composite index fund price in year  $t$ . For dividends, see subsection [A.2.6](#).

**3. Sample selection.** A last crucial difference between our estimates and those from FGMP is the underlying sample. In our baseline results, we consider a sample of individuals who are 25 years old or more whereas FGMP restrict their sample to those who are between 25 and 75 years old. Second, in our return calculation, we drop returns observations if the asset value is below 750 NOK. Instead, FGMP drop returns observations with financial wealth below USD 500 (about NOK 3,000), or individuals with non-zero private business wealth holdings of less than USD 500.

**Comparing returns across specifications.** As described above, our measure of returns differs from FGMP in several aspects. Despite these differences, however, our estimates are relative close to those presented by FGMP and confirm several of their findings. To see this, we

start by reproducing their sample selection of FGMP in our data and calculate value-weighted cross sectional moments pooling together all available from 2005 to 2015. The results—reported in Panel A of Table A.1—are quite similar to those presented in Table 3 of FGMP. For instance, FGMP report a mean return on assets of 3.8% and a standard deviation of 8.5%. We obtain a mean return of 3.3% and a standard deviation of 20.3%, mostly coming from the larger dispersion on the returns on housing: FGMP mean return on housing is 4.9% with a standard deviation of 6.5% whereas our average is 4.5% with a standard deviation 20.1%. The rest of the estimates are in line with FGMP. We then apply our sample selection. As shown in Panel B of Table A.1, the results do not change much, with the exception of an increase in the returns on equity. Intuitively, our sample selection is somewhat less restrictive, leaving in the sample a larger number households with more volatile returns. The results do not change much if we consider household-level returns and we restrict our attention to a sample of heads of households, independent of sample selection used (Panel C and D).

TABLE A.1 – WEALTH RETURNS

	N 000s	Mean	SD.	Skew.	Kurt.	P1	P5	P10	P50	P90	P95	P99
Panel A: Individual-level returns: FGMP (2005/2015)												
All	27,318	0.034	0.203	0.296	23.974	-0.622	-0.236	-0.103	0.022	0.185	0.292	0.735
Equity	10,072	0.083	0.363	2.463	24.412	-0.793	-0.350	-0.157	0.035	0.374	0.605	1.476
Housing	21,333	0.045	0.201	2.668	30.762	-0.534	-0.229	-0.088	0.025	0.183	0.281	0.811
Safe	27,374	-0.012	0.034	4.787	50.634	-0.061	-0.043	-0.042	-0.017	0.020	0.030	0.104
Panel B: Individual-level returns: This paper (2005/2015)												
All	29,482	0.033	0.202	0.702	19.911	-0.628	-0.241	-0.106	0.022	0.186	0.293	0.740
Equity	8,538	0.119	0.376	2.516	25.905	-0.920	-0.302	-0.119	0.069	0.414	0.643	1.545
Housing	23,558	0.045	0.201	2.619	30.030	-0.533	-0.229	-0.089	0.025	0.184	0.282	0.809
Safe	26,907	0.026	0.026	4.459	41.027	0.000	0.000	0.000	0.024	0.049	0.061	0.127
Panel C: Household-level returns: FGMP (2005/2015)												
All	19,356	0.032	0.183	0.506	16.993	-0.576	-0.228	-0.100	0.022	0.177	0.276	0.655
Equity	7,977	0.084	0.381	3.018	30.796	-0.837	-0.352	-0.157	0.034	0.374	0.608	1.537
Housing	14,550	0.044	0.187	2.246	26.583	-0.504	-0.215	-0.084	0.028	0.179	0.275	0.738
Safe	19,431	-0.013	0.030	3.387	31.369	-0.057	-0.042	-0.042	-0.017	0.020	0.029	0.083
Panel D: Household-level returns: This paper (2005/2015)												
All	20,902	0.030	0.186	0.468	16.887	-0.587	-0.234	-0.103	0.022	0.177	0.276	0.658
Equity	6,968	0.120	0.383	2.872	30.027	-0.905	-0.301	-0.117	0.068	0.413	0.643	1.569
Housing	16,070	0.044	0.187	2.207	26.019	-0.505	-0.216	-0.085	0.028	0.180	0.276	0.738
Safe	19,823	0.026	0.025	4.216	40.075	0.000	0.000	0.000	0.025	0.049	0.060	0.116

Notes: Table A.1 shows cross sectional statistics of the returns distribution for different asset classes based on a pooled sample of households between 2004 and 2015 (Panel A to D) and 1994 and 2015 (Panel E). We calculate returns following Fagereng *et al.* (2020a). Equity corresponds to the sum of equity on private and publicly traded firms.

## A.4 Norwegian Tax System

Norway is one of few countries who still levy an annual tax on net wealth. In addition, capital income is taxed both at the personal level and at the corporate level. Finally, an inheritance tax was in place until 2014. In the following we provide a short description of the tax system with emphasis on the aspects and changes relevant for our study.

### A.4.1 Capital income tax

Since 1992 Norway has had a "dual income tax" system, which consists of a combination of a low proportional tax rate on capital income and progressive tax rates on labor income. Initially, dividends capital gains attributable to retained earnings were only taxed at the corporate level.

As the wedge between the top marginal tax rate on labor and the capital tax increased over time, taxpayers faced stronger incentives to convert shareholder wages into dividends for tax purposes. Thus, a tax reform in 2006 introduced taxation of dividends and capital gains at the individual level, the so-called Shareholder model ("aksjonærmodellen").

Since coexistence of the corporate and the personal income tax can drive the total effective tax rate on corporate equity above the tax rate imposed on other forms of capital income (return to equity accrued in corporations and are taxed as corporate profits and distributed after-tax profits (dividends) are again taxed as personal income), the Shareholder model is designed so that dividends exceeding a risk-free return are taxed as "ordinary income" at a proportional rate when distributed to personal shareholders. The part of the dividend that is not exceeding a risk-free return on the investment, is not taxed on the hand of the shareholder, and is thus subject to the corporate taxation only. Furthermore, the tax is designed so that the combination of corporate profit tax and personal tax on equity premium yields a marginal tax rate on equity income in line with top marginal tax rate on labor (currently 46.7 percent).

Consequences of the 2006 tax reform and its introduction of the Shareholder model were a) an income shifting through large dividends payouts in the two years prior to reform, b) very little dividends distributed in the years after reform and a general shift towards keeping profits as retained earnings instead, and c) an increase in the number of holding companies.

Dividends are for all practical purposes exempt from taxation if the shares in the company are owned by a holding company. The holding company is only taxable at the rate of 0.72 percent on dividends. There will be no taxation at all if the holding company owns more than 90 percent of the shares in the startup company. Capital gain upon the sale of the shares in the startup company is exempt from taxation. Taxation occurs first at the shareholder level when the entrepreneur receives dividends from the holding company.

### A.4.2 Wealth tax

In the Norwegian personal tax scheme, wealth is taxed jointly for married couples although all asset components are reported at the individual level. Over time, wealth taxation has become more lenient, both through reduced rates and through specific valuation concessions. The highest rate was 1.5 percent under the two-tier wealth tax in the beginning of our sample period, it went down to 1.1 percent in 2009, and has been 0.85 percent since 2015. At the same time the exemption level has been increased, from NOK 120,000 in 1993 to NOK 1.5 million in 2021.

TABLE A.2 – THE WEALTH TAX 1993-2015

			Tax values in % of market value		
	Rates	Allowances (in 1000 NOK)	Primary home*	Public stock**	Private equity
1993	1/1.3	120/235	appx. 20-25	100(75)	30
1994-1997	1.1/1.4/1.5	120/235/530	appx. 20-25	100(75)	30
1998-2004	0.9/1.3	120/540	appx. 20-25	100(65)	65
2005	0.9/1.3	151/540	appx. 20-25	65	65
2006	0.9/1.3	200/540	appx. 20-25	80	80
2007	0.9/1.3	220/540	appx. 20-25	85	85
2008	0.9/1.3	350/540	appx. 20-25	100	100
2009	1.1	470	appx. 20-25	100	100
2010-2011	1.1	700	25	100	100
2012	1.1	750	25	100	100
2013	1.1	870	25	100	100
2014	1.0	1000	25	100	100
2015	0.85	1200	25	100	100

\* The horizontal bar refers to a change in the system moving from set tax values to percent of market value. Prior to 2010, tax values were based on construction value and adjusted irregularly, but on average kept at level corresponding to 20-25% of market value. Not shown in the table is the values of other real estate, such as secondary housing, holiday homes and business property. These were also reported by their set tax values until 2010, when they were replaced by 40% of market value. This discount has been reduced in recent years.

\*\* In 1994-2004 there was no tax discount on shares traded on the stock exchange, except for small to medium sized businesses (SMB).

As illustrated by Table A.2, the wealth tax system includes a substantial tax discount on owner-occupied housing, but also on equity until 2008. In particular, the wealth tax valuation discounts were higher for private equity than for public equity (on the stock exchange) in the first 12 years of our sample period.

#### A.4.3 Inheritance tax

Prior to 2014, inheritances and gifts were subject to taxation in Norway. Taxes were paid by the recipient on amounts received at inheritance and on gifts received by living donors, and tax rates varied depending on the relationship to the donor. Table A.3 shows the changes in rates and exemption levels by recipient status over time. Spouses were exempt from taxation, but for others inheritance taxation was recipient based, meaning that the total gift and inheritance received by one individual from one donor constituted the tax base (a child inheriting his or her last surviving parent would therefore usually inherit from both parents and thus face an allowance twice the amount of in Table A.3).

Before the abolishment of the inheritance tax in 2014, there were different ways to reduce the tax burden. One possibility was to convert assets into private equity. While the basis for taxation of listed stocks and equity was market value at the time of transfer, private equity was based on assessed valuation. Furthermore, until 2009, transfers of private equity were given a 70 percent discount on assessed values below NOK 10 million. Private equity with values exceeding NOK 10 mill got no discount. From 2009, the discount was reduced to 40 percent

TABLE A.3 – THE INHERITANCE TAX 1993-2013

	Children and parents		Other heirs	
	Allowances		Allowances	
	Rates	(in 1000 NOK)	Rates	(in 1000 NOK)
1993-1998	8/20	100/300	10/30	100/300
1999-2002	8/20	200/500	10/30	200/500
2003-2008	8/20	250/550	10/30	250/550
2009-2013	6/10	470/800	8/15	470/800

of assessed valuation up to NOK 10 million. Transferring wealth as private equity therefore substantially reduced the tax liability, both due to assessed valuation and the tax discount, in particular before 2009.

## B Imputing Income From Capital Prior 2005

As mentioned in Appendix A, capital gains are calculated using a combination of firm-level balance sheet data and the share holder registry, which allows us to link capital gains to the owner of the firm. The share holder registry, however, is only available from 2005 on, restricting the measures of capital gains from private equity between that year and 2015. To perform our analysis, and extend our data as much as possible, we append the information available on capital gains by imputing capital income prior 2005 for all households in our sample. Importantly, although we have information on other measures of capital income (e.g., safe assets or mutual funds), we preferred to impute the entire capital income flow prior 2005 to reduce the noise in our imputation. To calculate income prior 2005, we proceed as follows.

- Step 1: For each year starting in 2005,
  - Rank household within a year by their total equity holdings in year  $t$  and  $t - 1$  as the sum of their holdings in private and public equity. We calculate the relative equity holdings as the ratio of these holdings relative to the average total equity in the economy within a year.
  - We then sort households in period  $t$  and  $t - 1$  by their *relative* equity holdings (two different rank) and calculate the return within pair of  $t$  and  $t - 1$  ranks as the ratio of capital income (sum of dividends and capital gains for public and private equity) and the average equity holdings between periods  $t - 1$  and  $t$  across all individuals within an age group.
  - Finally, take an average across all years between 2005 and 2015 of these returns within a pair of ranks and age groups. These returns are saved and be used for the imputation.
- Step 2: For each year prior 2005, calculate the total amount of equity holdings for each household in years  $t$  and  $t - 1$ . Then, within each year  $t$ , calculate the ratio between the individual ownership of equity over the average equity holding within that year.

- Step 3: Classify individuals within different groups according to relative equity holdings in years  $t$  and  $t - 1$  and merge (by age group) the information on returns calculated *after* 2005 in step 1 for each of these groups.
- Step 4: calculate the income from capital as the product of the imputed return times the average of the equity holdings in periods  $t$  and  $t - 1$ . Notice that this implies that we impute data starting in 1994.

We use this measure of imputed income from equity (public plus private) as our measure of capital income from equity prior 2005.

## C Shapley-Owen Decomposition

In a regression contest, the Shapley-Owen decomposition is an statistical method to identify the contribution of each regressor to the overall  $R^2$  of an OLS regressor. The basic idea—derived from the Shapley number from game theory—is to distribute the marginal contribution of each regressor taking into account all the possible combinations of regressors that can be used to account for the variation of the dependent variable. Here, we apply this simple idea to account for the difference between the wealth of a particular wealth group—top 1% wealth owners—relative to the wealth of a control group—those household between the 25th and 75th percentiles of the wealth distribution.

We start with the definition of the budget constraint for each group. The budget constraint of a household of type  $(a, g)$  where  $a$  is age and  $g$  is a wealth group given by

$$c_t(a, g) + w_t(a, g) = \tilde{l}_t(a, g) + \tilde{h}_t(a, g) + \tilde{i}_t(a, g) + k_t^e(a, g) + k_t^h(a, g) + w_{t-1}(a, g),$$

where  $\tilde{l}_t(a, g) \equiv [l_t(a, g) + e_t(a, g) + tr_t(a, g) - \tau_t^l(a, g)]$  is income from labor and self employment, government transfers, minus labor taxes;  $\tilde{h}_t(a, g) \equiv [h_t(a, g) - \tau_t^h(a, g)]$  is post taxes inheritances and intervivos transfers;  $\tilde{i}_t(a, g) \equiv d_t(a, g) + i_t^i(a, g) + i_t^h(a, g) - i_t^p(a, g) - \tau_t^e(a, g) - \tau_t^w(a, g)$ , is the sum of income from dividends, risky and safe assets (e.g. mutual funds and bonds), minus interest payments, and minus capital income tax and taxes on wealth. Define the income from capital as  $R_t^{INC}w_{t-1} \equiv \tilde{i}_t(a, g) + k_t^e(a, g) + k_t^h(a, g)$  to obtain the gross saving rate as

$$s_t(a, g) = \frac{\tilde{l}_t(a, g) + \tilde{h}_t(a, g) + R_t^{INC}(a, g)w_{t-1} - c_t(a, g)}{\tilde{l}_t(a, g) + \tilde{h}_t(a, g) + R_t^{INC}w_{t-1}},$$

Given these definitions, the budget constraint can be written as

$$w_t(a, g) = [\tilde{l}_t(a, g) + \tilde{h}_t(a, g) + R_t^{INC}(a, g)w_{t-1}(a, g)]s_t(a, g) + w_{t-1}(a, g).$$

We consider  $p = 5$  possible variables to permute,  $x(a, g) = \{\tilde{l}_t, \tilde{h}_t, R_t^{INC}, s_t, w_{93}\}$ , for their respective value in the control group,  $\bar{x}_i(a)$  for a give age group. For instance, if we want to understand the importance of the saving rate *and* the income from capital, we re calculate the

evolution of wealth as

$$\overline{w}_t \left( a, g; \overline{R^{INC}}, \overline{s} \right) = \left[ \tilde{l}_t(a, g) + \tilde{h}_t(a, g) + \overline{R^{INC}}(a) w_{t-1}(a, g) \right] \overline{s}(a) + \overline{w}_{t-1} \left( a, g; \overline{R^{INC}}, \overline{s} \right),$$

conditional on a starting value of wealth equal to  $w_{93}(a, g)$ .

In this context the Shapley value adds the marginal contribution to the gap between the groups under analysis from replacing component  $x_j$  (e.g. the saving rate) in the budget constraint after we have already replaced a different component (e.g. income from capital) or group of components (e.g. income from capital and initial wealth), weighted by the number of permutations possible *after* adding  $x_j$ . Hence, the contribution of  $x_j(a, g)$  for the wealth gap between group  $(a, g)$  and the control group can be formally written as

$$C_j(a, g) = \sum_{T \subseteq Z \setminus \{x_j(a, g)\}} \frac{k! \times (p - k - 1)!}{p!} [\overline{w}_t(a, g; T \cup \{x_j(a, g)\}) - \overline{w}_t(a, g; T)],$$

where  $\overline{w}_t(a, g; T)$  is the wealth gap accounted for the case in which we have replaced  $k$  of the components but without the component  $x_j$ , and  $T \cup \{x_j(a, g)\}$  is the same case but with the  $k$  components plus  $x_j(a, g)$ . Notice that, for the case in which one replace only of the components (e.g. only the saving rate),  $\overline{w}_t$  is equal to the actual wealth of the group in a particular year (the case in which we do not replace any component). The set  $Z$  all potential permutations. Then, the difference between the wealth of a particular group and the control group,  $\overline{C}(a, g)$  is equal to  $\overline{C}(a, g) = \sum_j C_j(a, g)$ , and the corresponding share as  $C_j^S(a, g) = C_j(a, g) / \overline{C}(a, g)$ . We plot these in our main analysis.

## D Additional Tables

TABLE C.1 – BASIC SAMPLE STATISTICS

	Panel A: Population Shares				
	1995	2000	2005	2010	2015
Age 25/44	43.80%	43.00%	40.90%	39.20%	36.30%
Age 45/64	30.10%	32.90%	35.60%	36.30%	36.40%
Age 65+	26.00%	24.10%	23.50%	24.50%	27.30%
Male	63.20%	62.60%	62.50%	62.60%	62.10%

	Panel B: Descriptive Statistics (US\$ of 2018)						
	Mean	Std. Dev.	P10	P50	P90	P99	P99.9
Safe Assets	42,869	204,242	345	12,001	102,886	408,838	1,474,710
Public Equity	7,899	303,496	0	0	11,036	118,260	642,274
Private Equity	35,205	2,312,932	0	0	490	409,833	4,425,962
Housing	285,608	300,826	0	222,809	638,730	1,384,161	2,192,636
Gross Wealth	371,581	2,551,564	2,778	259,693	749,967	1,922,639	6,978,503
Debt	92,417	114,888	0	45,135	250,202	464,635	678,678
Net wealth	279,164	2,546,067	-24,242	16,0147	637,285	1,731,470	6,750,314

Household Observations:	51.3 Million
-------------------------	--------------

Notes: Table C.1 show cross-sectional statistics of the population of households in Norway. Panel A shows, population shares for head of household. Panel B shows household-level wealth statistics in real US\$ of 2018 (1 USD=8.14 NOK). To obtain these statistics, we first calculate cross sectional moments at the annual level and then we average the statistics across all years in the sample (1993 to 2015).

TABLE C.2 – INCOME AND WEALTH CONCENTRATION

	Bottom 50	Top 10%	Top 5%	Top 1%	Top 0.1%	Top 0.01%
Labor Earnings	8.15	32.72	19.44	5.77	1.13	0.25
Safe Assets	4.14	59.32	44.01	21.12	7.73	2.69
Public Equity	0	99.89	99.19	86.64	53.71	27.87
Private Equity	0	91.03	80.85	55.55	29.49	15.91
Housing	12.52	35.95	23.47	8.53	2.11	0.60
Gross Wealth	13.22	38.43	26.56	11.81	4.44	1.87
Debt	5.09	39.26	23.64	7.01	0.87	0.16
Net wealth	7.31	43.81	30.73	14.10	5.46	2.33

Notes: Table C.2 show cross sectional concentration statistics at the household level. To calculate these statistics, we first calculate cross sectional moments at the annual level and then we average across all years in the sample (1993 to 2015). The concentration of net wealth deviates slightly from official statistics due to our use of alternative housing values.

TABLE C.3 – WEALTH RETURNS

	Obs. (000s)	Mean	Std. Dev.	Skew.	Kurt.	P90-P10	$S_K$
All	20,902	0.030	0.186	0.468	16.887	0.280	0.107
Equity	6,968	0.120	0.383	2.872	30.027	0.530	0.302
Housing	16,070	0.044	0.187	2.207	26.019	0.265	0.147
Safe	19,823	0.026	0.025	4.216	40.075	0.049	-0.02
	P1	P5	P10	P50	P90	P95	P99
All	-0.587	-0.234	-0.103	0.022	0.177	0.276	0.658
Equity	-0.905	-0.301	-0.117	0.068	0.413	0.643	1.569
Housing	-0.505	-0.216	-0.085	0.028	0.180	0.276	0.738
Safe	0.000	0.000	0.000	0.025	0.049	0.060	0.116

Notes: Table C.3 shows cross sectional statistics of the returns distribution for different asset classes based on a pooled sample of households between 2005 and 2015. We calculate returns following Fagereng *et al.* (2020a). Equity corresponds to the returns on private and publicly traded firms. See Appendix A.3 for additional details on the calculation of returns. The Kelley skewness is defined as  $S_K = \frac{P_{90} - P_{50}}{P_{90} - P_{10}} - \frac{P_{50} - P_{10}}{P_{90} - P_{10}}$ .

TABLE C.4 – SAMPLE STATISTICS: US SCF DATA

Descriptive Statistics (US\$ of 2018)							
	Mean	SD	P10	P50	P90	P99	P99.9
Safe Assets	125,615	602,358	85	16,521	281,479	1,620,551	5,924,482
Public Equity	84,644	1,109,028	0	0	76,413	1,569,328	9,102,842
Private Equity	91,180	1,825,445	0	0	7,301	1,574,025	12,985,575
Housing	237,051	1,477,831	0	98,010	457,038	2,389,650	10,598,920
Gross Wealth	538,491	3,293,036	382	143,885	938,809	7,116,825	31,126,536
Debt	78,513	532,779	-2	12,596	194,056	694,872	2,637,272
Net wealth	459,978	3,113,103	-1,741	78,847	801,826	6,685,830	27,845,214

Notes: Table C.4 show cross sectional statistics of the population of households in the United States using data from SCF in real US\$ of 2018. To obtain these statistics, we first calculate cross sectional moments at the annual level and then we average the statistics across all years in the sample after 1989.

TABLE C.5 – INCOME AND WEALTH CONCENTRATION: US SCF DATA

	Bottom 50	Top 10%	Top 5%	Top 1%	Top 0.1%	Top 0.01%
Income	9.41	49.92	38.58	21.42	8.32	3.03
Safe Assets	1.60	70.35	55.24	28.46	9.16	2.89
Public Equity	-0.04	95.77	87.27	59.96	25.47	8.90
Private Equity	-0.01	99.95	97.48	77.97	36.47	13.67
Housing	4.77	59.39	47.08	26.87	11.17	4.87
Gross Wealth	3.86	68.31	56.79	33.12	12.06	3.88
Debt	-0.08	58.84	43.93	23.31	10.95	5.59
Net wealth	1.78	73.37	61.55	36.24	13.28	4.33

Notes: Table C.5 show cross sectional statistics of the population of households in the United States using data from SCF in real US\$ of 2018. To obtain these statistics, we first calculate cross sectional moments at the annual level and then we average the statistics across all years in the sample after 1989.

TABLE C.6 – RETURNS ON ASSETS

	N 000s	Mean	SD.	Skew.	Kurt.	P1	P5	P10	P50	P90	P95	P99
Panel A: Individual-level returns												
All	29,482	0.033	0.202	0.702	19.911	-0.628	-0.241	-0.106	0.022	0.186	0.293	0.740
Equity	8,538	0.119	0.376	2.516	25.905	-0.920	-0.302	-0.119	0.069	0.414	0.643	1.545
Housing	23,558	0.045	0.201	2.619	30.030	-0.533	-0.229	-0.089	0.025	0.184	0.282	0.809
Safe	26,907	0.026	0.026	4.459	41.027	0.000	0.000	0.000	0.024	0.049	0.061	0.127
Panel B: Household-level returns												
All	20,902	0.030	0.186	0.468	16.887	-0.587	-0.234	-0.103	0.022	0.177	0.276	0.658
Equity	6,968	0.120	0.383	2.872	30.027	-0.905	-0.301	-0.117	0.068	0.413	0.643	1.569
Housing	16,070	0.044	0.187	2.207	26.019	-0.505	-0.216	-0.085	0.028	0.180	0.276	0.738
Safe	19,823	0.026	0.025	4.216	40.075	0.000	0.000	0.000	0.025	0.049	0.060	0.116

Notes: Table C.6 shows cross-sectional statistics of the returns distribution for different asset classes based on a pooled sample of households between 2004 and 2015. We calculate returns following [Fagereng et al. \(2020a\)](#). Equity corresponds to the sum of equity on private and publicly traded firms.

TABLE C.7 – SHARE OF LIFETIME RESOURCES IN THE CROSS SECTION

	Share out of lifetime resources, $\sum Y_{it}$ for 50 years old							
	Top 0.1% Wealth Group				Top 1% Wealth Group			
	P50	P90	P95	P99	P50	P90	P95	P99
Labor Income	6%	19%	26%	42%	19%	51%	64%	91%
Self-Emp. Income	0%	3%	10%	36%	0%	12%	28%	60%
Inheritance	0%	5%	10%	38%	0%	5%	9%	31%
Initial Wealth	8%	63%	81%	98%	14%	58%	70%	87%
Inheritance+Init Wealth	12%	68%	81%	98%	16%	60%	72%	88%

Notes: Table C.7 shows cross-sectional moments of the distribution of lifetime income shares.

TABLE C.8 – AVERAGE VALUES AND COUNTERFACTUAL FOR 50-TO-54 YEAR OLD HOUSEHOLDS

Wealth Rank	Labor Income, $\tilde{l}$	Inheritances $\tilde{h}$	Saving Rate, $s$	Capital Income, $R^{INC}$	Initial Wealth*
<0	407,266	9,615	-0.81	-0.15	0.00
[0, $W_{min}$ ]	265,827	5,460	-0.02	-0.32	0.04
[ $W_{min}$ , P50]	441,424	13,568	0.08	0.04	0.25
[P50, P75]	516,047	22,237	0.20	0.08	0.50
[P75, P90]	584,986	33,729	0.28	0.11	0.70
[P90, P95]	682,008	50,342	0.34	0.13	0.93
[P95, P99]	802,292	68,162	0.37	0.15	1.42
[P99, P99.9]	1,048,610	115,041	0.42	0.20	3.74
Top 0.1%	1,354,062	274,699	0.74	0.16	29.61
Counterfactual	471,402	17,051	0.13	0.06	0.25

Notes: Table C.8 shows the average of the component of the budget constraint for households who are 50 to 54 years old.

\*Initial wealth is expressed relative to the average wealth in the economy. Labor and Inheritances (sum of inheritances and inter-vivos transfers) are in real NOK of 2018.

TABLE C.9 – COUNTERFACTUAL INITIAL WEALTH UNDER DIFFERENT ASSUMPTIONS

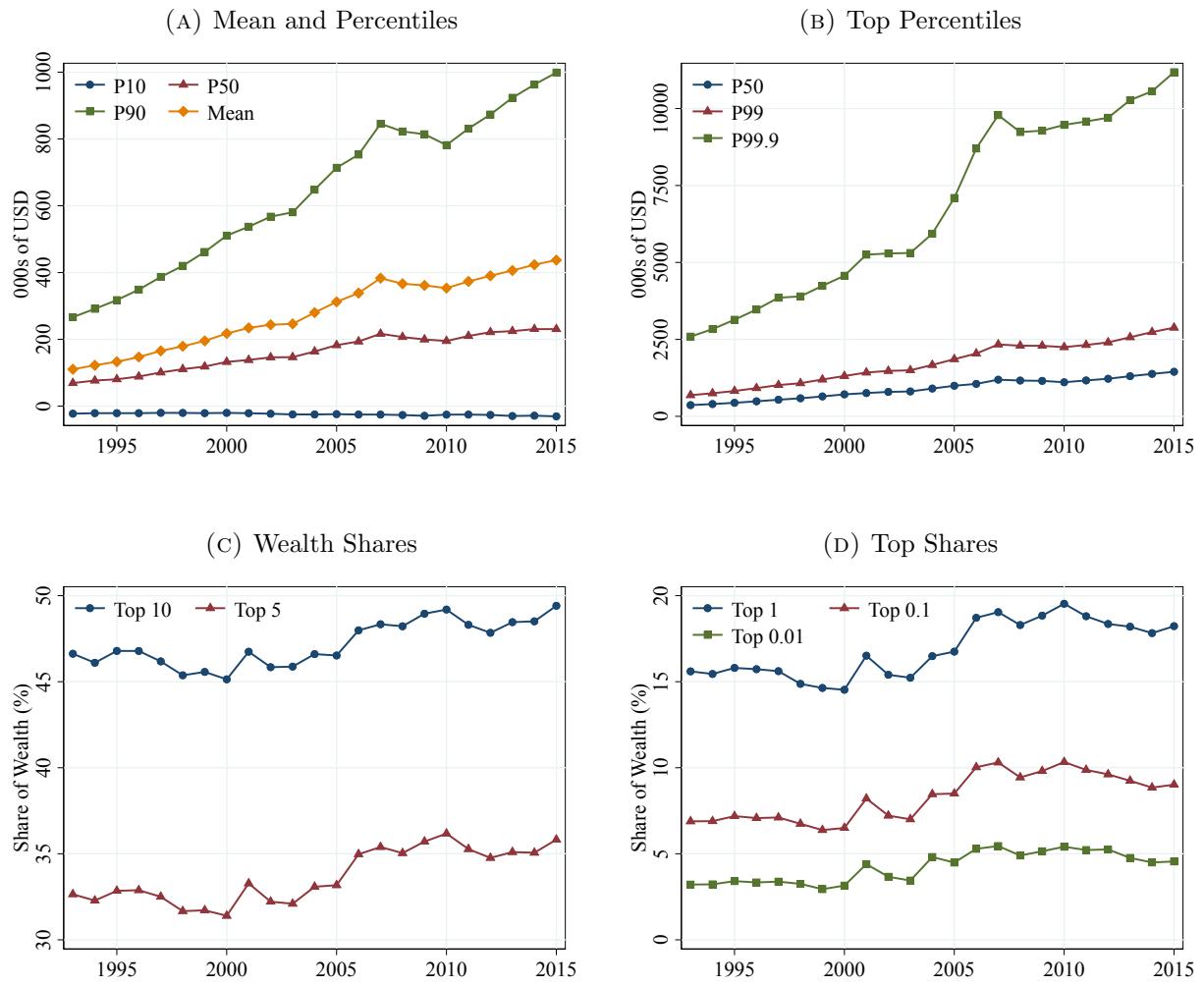
Age group	Labor prior 1993		Counterfactual		AW in 1993 Data	
	Values in Multiples of Average Wealth					
	(1)	(2)	(3)	(4)	(5)	(6)
40	Top 0.1	Old Money	Top 0.1	Old Money	Top 0.1	Old Money
40	0.47	0.49	0.39	0.39	3.15	11.88
45	2.38	2.51	2.19	2.29	7.87	25.39
50	5.26	5.42	5.59	5.73	20.15	76.73
55	9.49	9.69	12.02	12.18	37.57	131.71

Notes: Columns (1) and (2) report the sum of labor income prior to 1993, for the top 0.1% (backward-ranking), respectively the subgroup Old Money. Counterfactual initial wealth in (3) and (4) refers to the estimated initial wealth (in 1993) when capitalizing observed post-tax and transfer labor income prior to 1993 with the observed saving rate and return on net wealth post-1993. We contrast this estimated counterfactual initial wealth to the actual observed initial wealth in 1993 of each group (all top 0.1% households in (5) and the subgroup of Old Money in (6)). All values are in units of average economy-wide wealth (AW).

## E Additional Figures

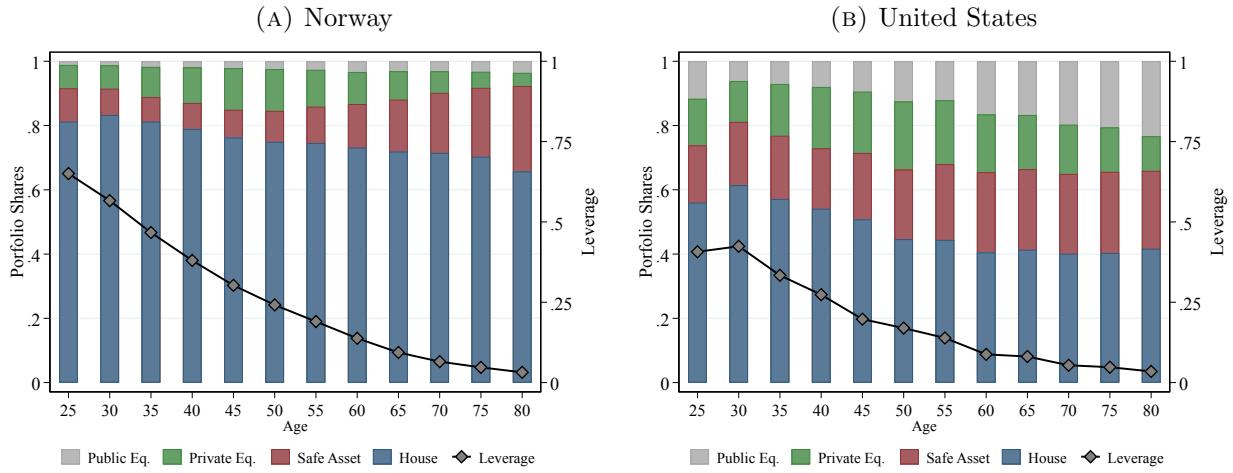
### E.1 Cross-Sectional Moments

FIGURE D.1 – TIME SERIES OF WEALTH AND CONCENTRATION



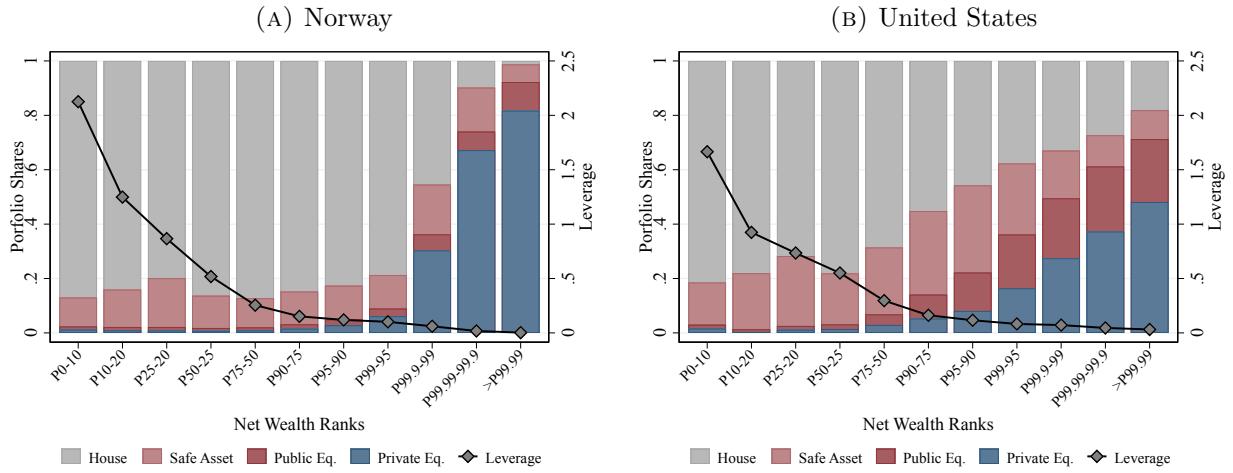
Notes: Figure D.1 shows time series of different moments of the wealth distribution in Norway.

FIGURE D.2 – PORTFOLIO COMPOSITION OVER THE LIFE CYCLE



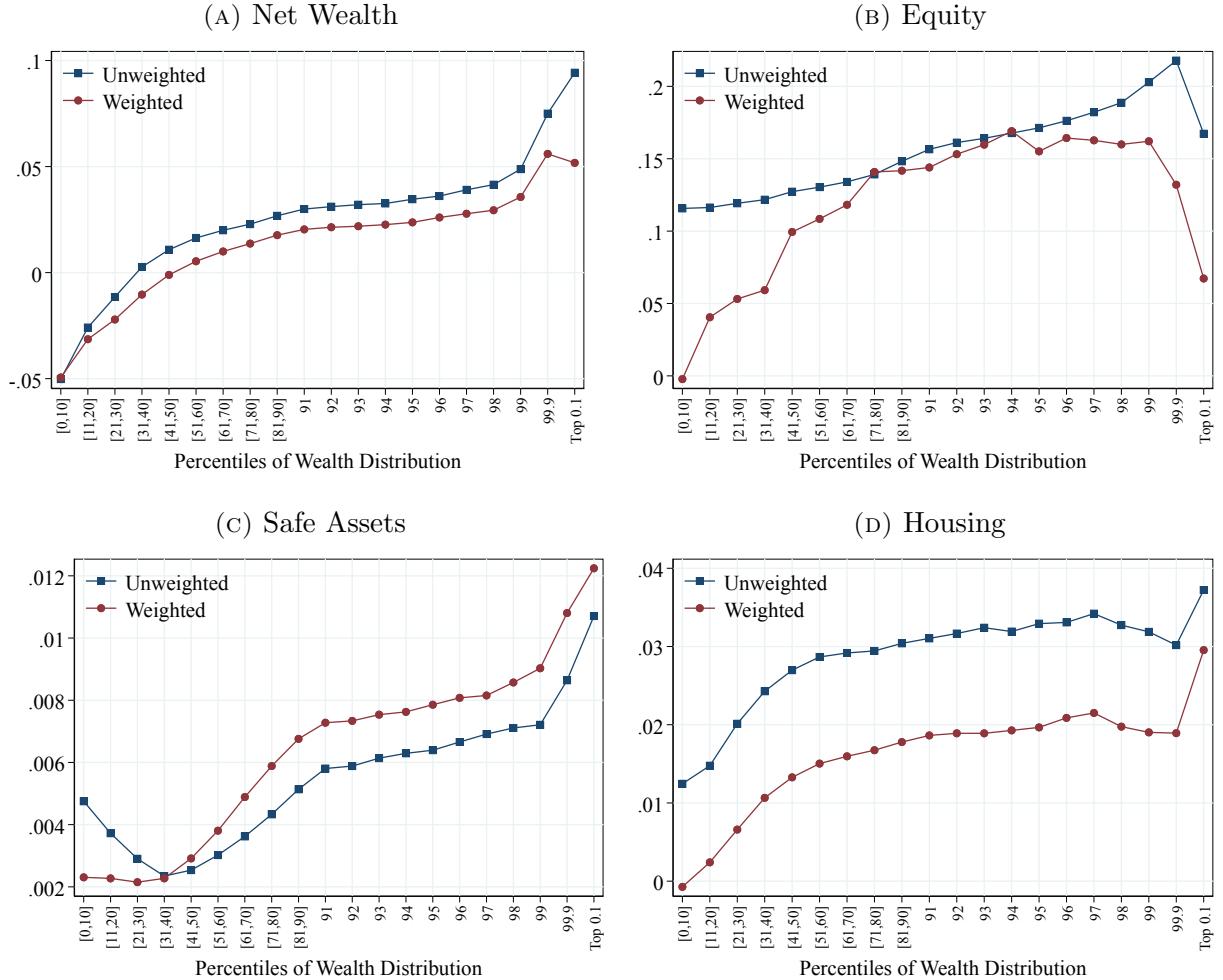
Notes: Figure D.2 shows the portfolio shares and leverage within five-year age groups labeled by their starting age (25-29, 30-34, and so on) for Norway and the United States. Portfolio shares are calculated as the ratio between the value of all assets in a particular category (e.g. total value of safe assets) over the total value of gross wealth (i.e. sum of wealth in housing, safe assets, public equity, and private equity) within an age group. Similarly, within-group leverage, is the ratio between the sum all debt (e.g. mortgages, student debt, credit card debt) within a wealth rank and age group and the sum of all total assets within the same group. See Appendix A for additional details and definitions.

FIGURE D.3 – PORTFOLIO COMPOSITION OVER THE WEALTH DISTRIBUTION



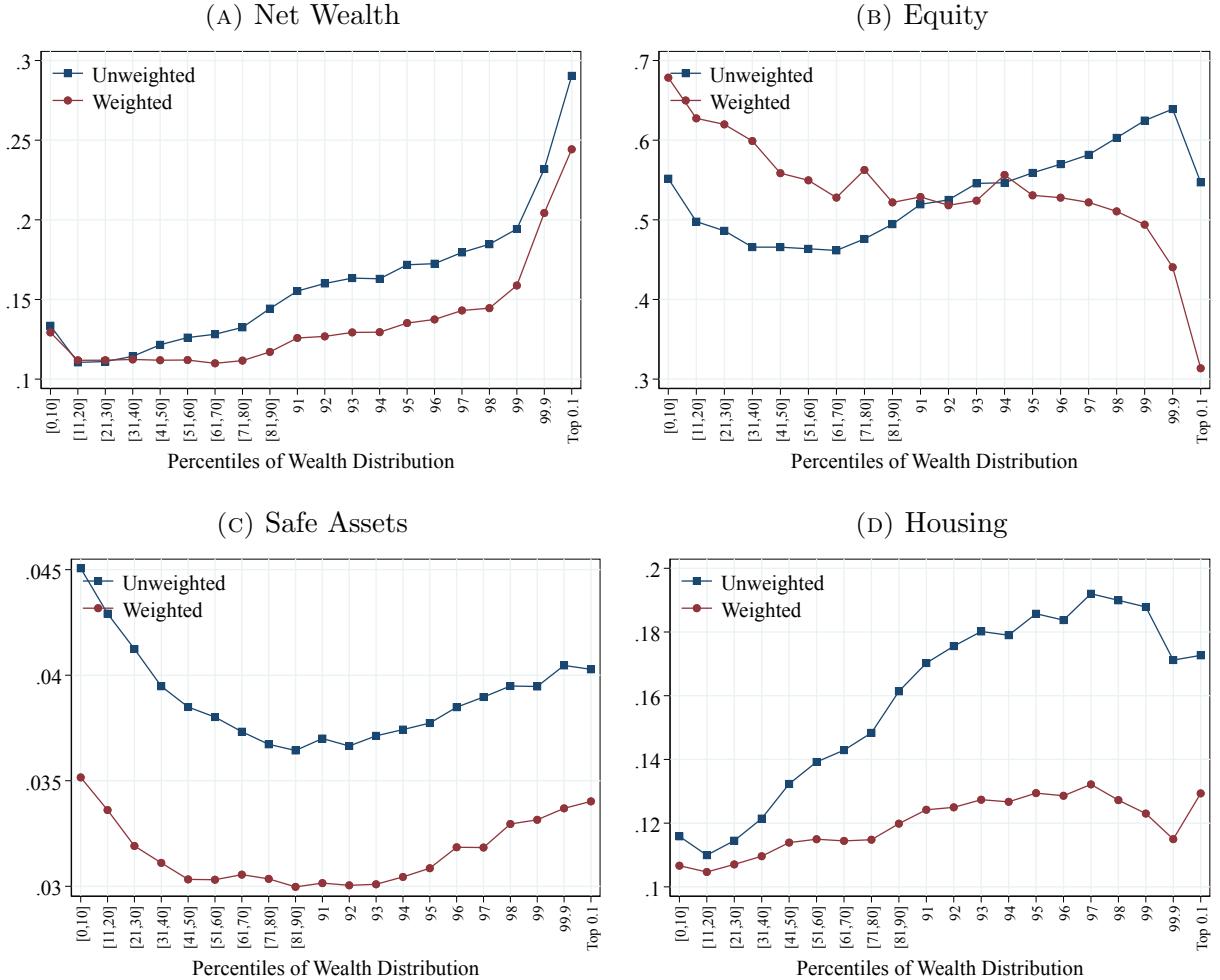
Notes: Figure D.3 shows the portfolio shares and leverage within wealth percentiles for Norway and the United States. Portfolio shares are calculated as the ratio between the value of all assets in a particular category (e.g. total value of safe assets) over the total value of gross wealth (i.e. sum of wealth in housing, safe assets, public equity, and private equity) within an wealth group. Similarly, within-group leverage, is the ratio between the sum all debt (e.g. mortgages, student debt, credit card debt) within a wealth group and the sum of all total assets within the same group. See Appendix A for additional details and definitions.

FIGURE D.4 – CROSS-SECTIONAL MEAN RETURNS



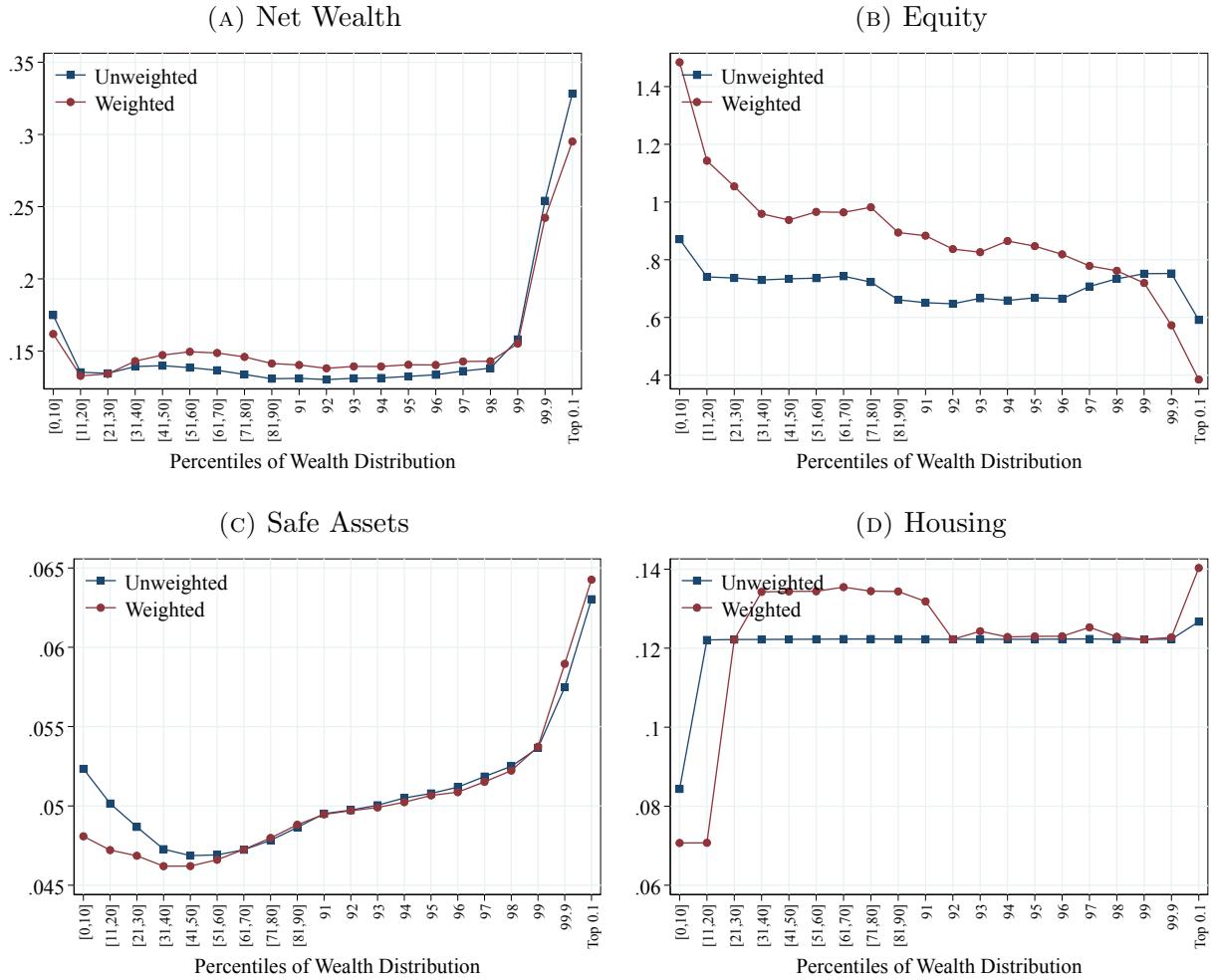
Notes: Figure D.4 shows the average returns within different quantiles of the households net worth distribution. To construct this figure, we pool household observations between 2005 and 2015. Weighted averages are weighted using the value of the corresponding asset. Negative or missing asset values are assigned a weight of 0.

FIGURE D.5 – CROSS-SECTIONAL STANDARD DEVIATION OF RETURNS



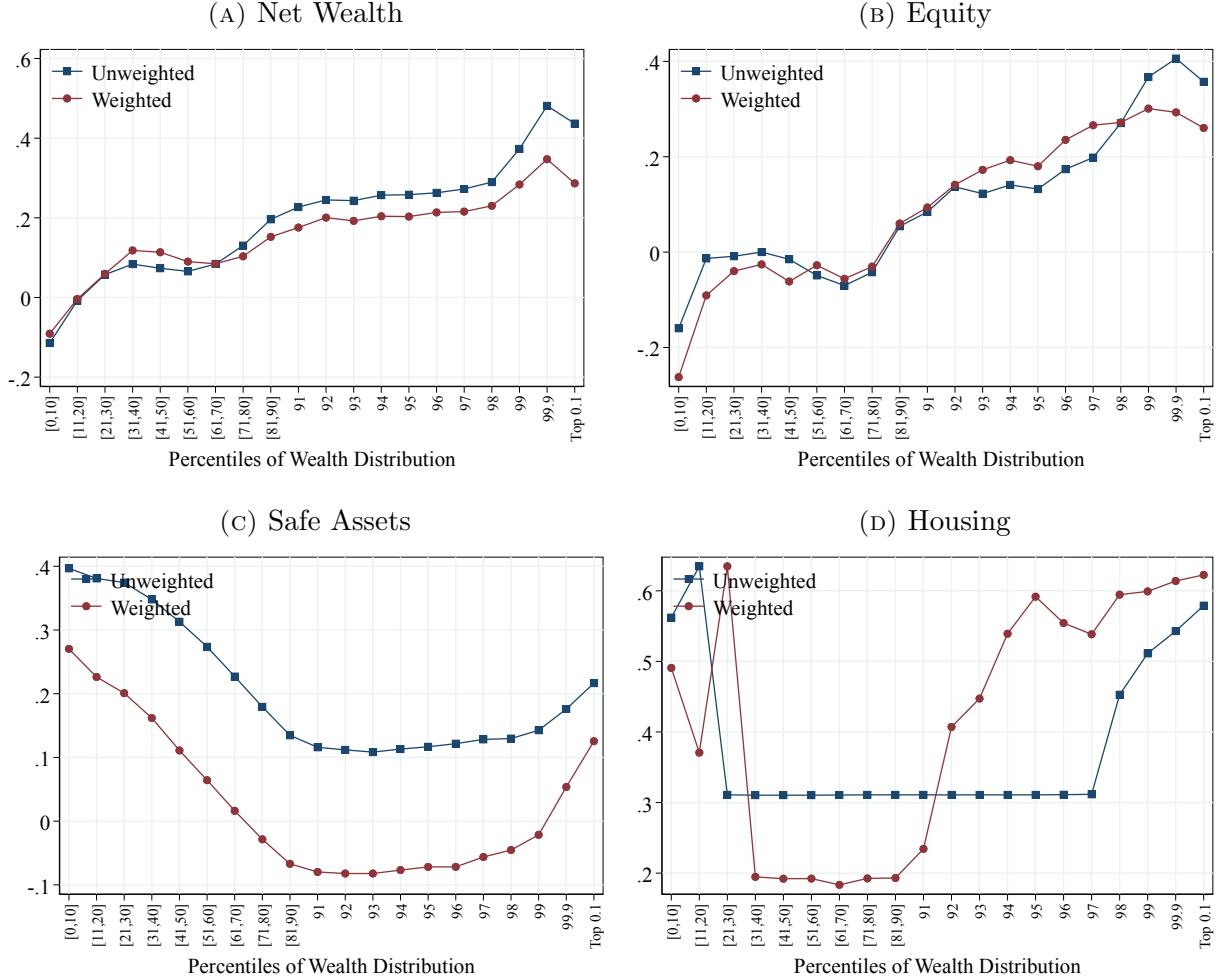
Notes: Figure D.5 shows the standard deviation returns within different quantiles of the households net worth distribution. To construct this figure, we pool household observations between 2005 and 2015. Weighted averages are weighted using the value of the corresponding asset. Negative or missing asset values are assigned a weight of 0.

FIGURE D.6 – CROSS SECTIONAL P90-P10 OF RETURNS



Notes: Figure D.6 shows the P90-P10 of returns within different quantiles of the households net worth distribution. To construct this figure, we pool household observations between 2005 and 2015. Weighted averages are weighted using the value of the corresponding asset. Negative or missing asset values are assigned a weight of 0.

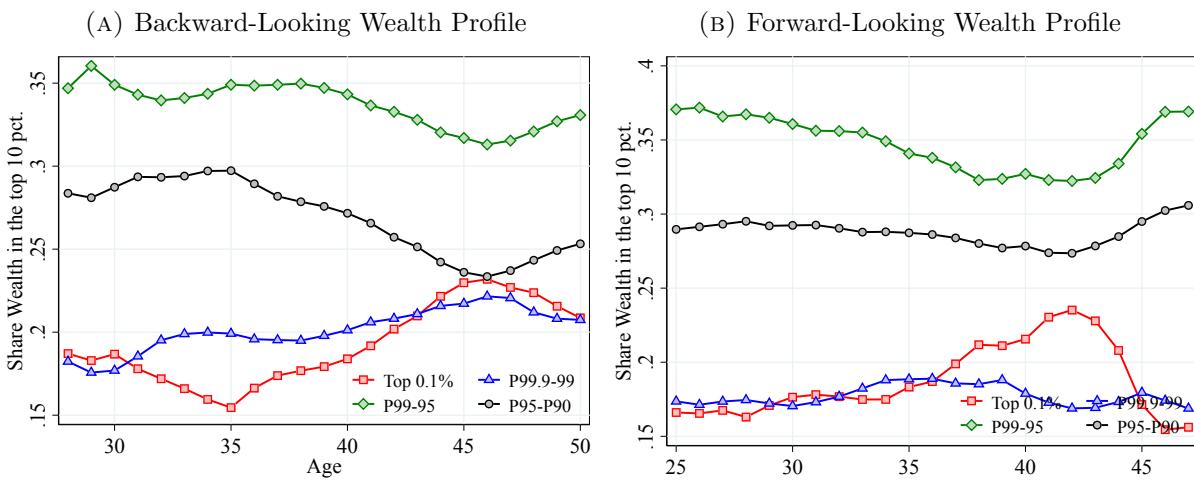
FIGURE D.7 – CROSS SECTIONAL KELLEY SKEWNESS OF RETURNS



Notes: Figure D.7 shows the Kelley Skewness returns within different quantiles of the households net worth distribution. To construct this figure, we pool household observations between 2005 and 2015. Weighted averages are weighted using the value of the corresponding asset. Negative or missing asset values are assigned a weight of 0. Kelley Skewness is defined as  $S_K = \frac{P_{90} - P_{50}}{P_{90} - P_{10}} - \frac{P_{50} - P_{10}}{P_{90} - P_{10}}$ .

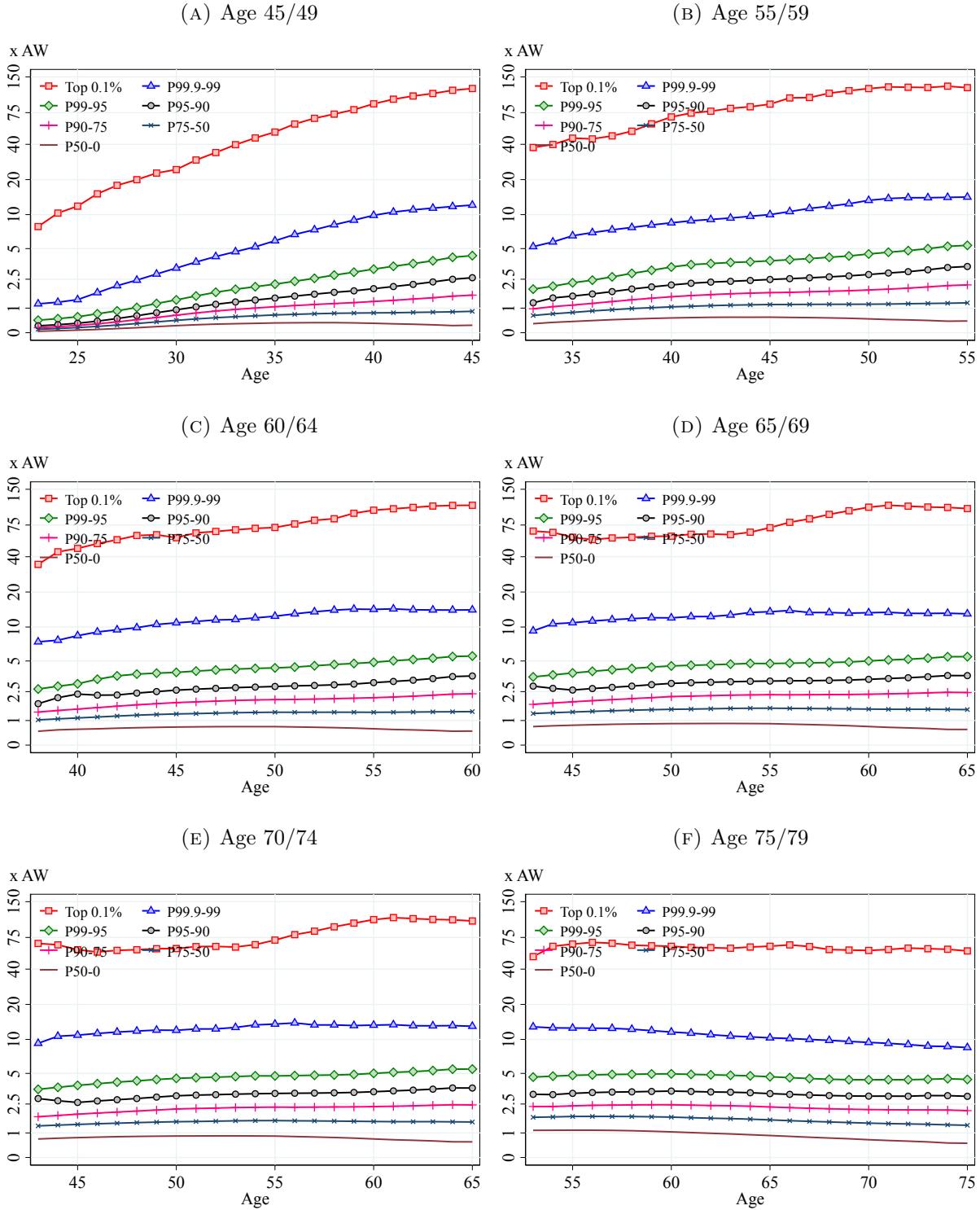
## E.2 Backward-Looking Results

FIGURE D.8 – SHARE OF WEALTH AT THE TOP 10 PERCENTILE.



Notes: Figure shows the share of the economy-wide net wealth held by households at the top 10% of the distribution.

FIGURE D.9 – BACKWARD-LOOKING WEALTH PROFILES: AGE GROUPS



Notes: Figure D.9 shows the evolution of average wealth for different wealth groups conditional on their wealth at the end of the sample period sorted by  $BW_j^h$ .

FIGURE D.10 – LONG-TERM TRANSITION MATRIX: AGE GROUPS

(A) Age 45/49								(B) Age 55/59								
Initial Average Wealth Rank								Initial Average Wealth Rank								
	[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%	
End-of-Period Wealth Rank, $BW_j^h$	[0,50]	60.3	23.4	11.2	2.9	1.9	0.3	0.0	[0,50]	66.5	21.7	8.2	2.1	1.4	0.1	0.0
	(50-75]	44.9	26.4	18.4	5.9	3.8	0.5	0.0		40.4	32.4	19.0	4.8	3.0	0.3	0.0
	(75-90]	40.7	24.2	19.6	8.0	6.4	1.0	0.0		30.3	28.0	25.9	9.0	6.0	0.8	0.0
	(90-95]	37.7	22.1	19.3	9.0	9.7	2.1	0.1		24.3	21.9	25.8	13.8	11.9	2.2	0.1
	(95-99]	33.9	19.3	18.1	9.0	12.7	6.7	0.4		18.9	16.8	21.2	15.1	21.0	6.6	0.4
	(99-99.9]	30.0	15.1	16.9	8.3	14.3	11.2	4.2		12.6	10.3	13.8	10.4	22.9	26.0	3.9
	Top 0.1%	29.6	8.6	9.5	7.0	11.1	11.2	23.0		5.4	4.6	7.2	7.3	12.2	32.9	30.4

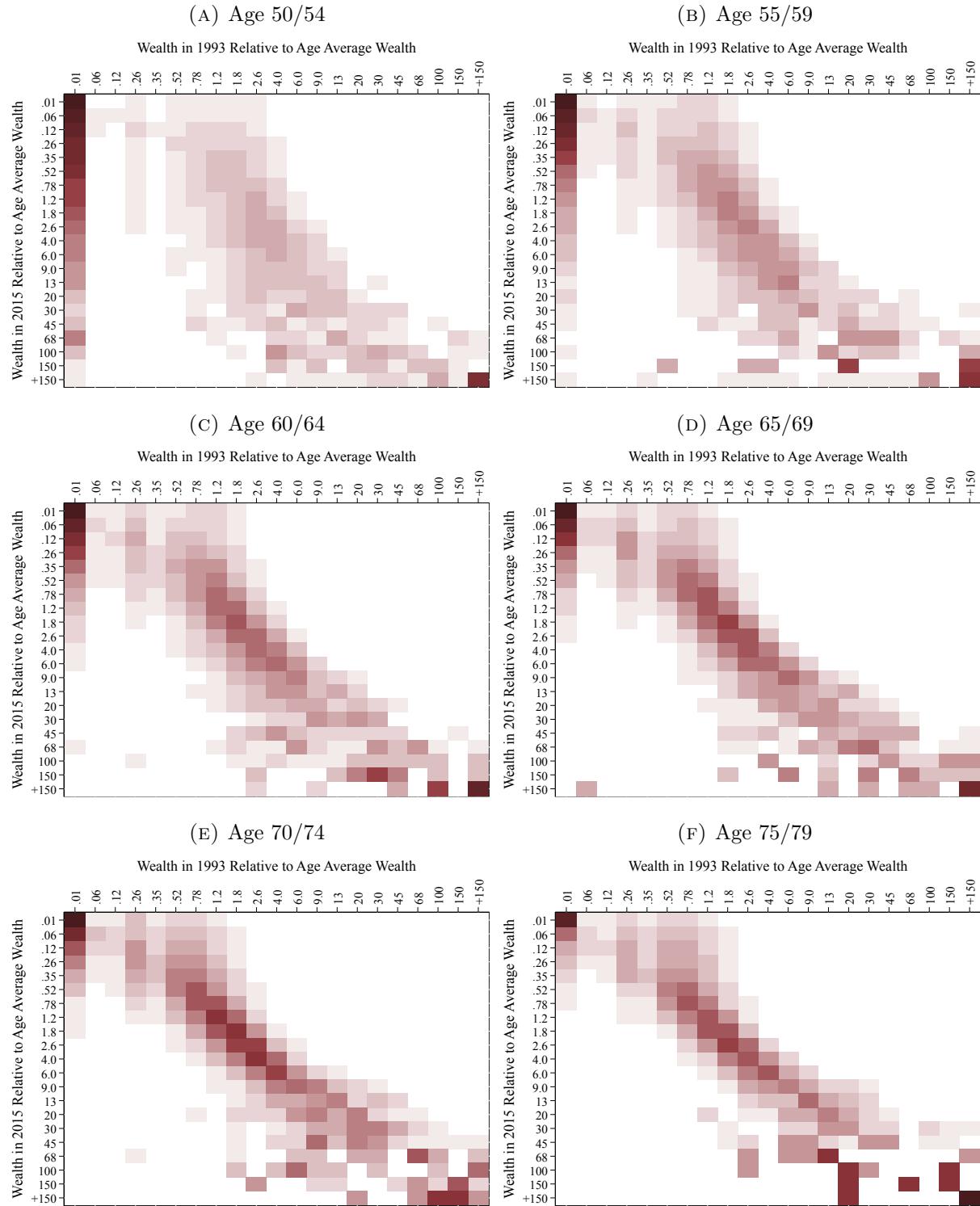
(C) Age 60/64								(D) Age 65/69								
Initial Average Wealth Rank								Initial Average Wealth Rank								
	[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%	
End-of-Period Wealth Rank, $BW_j^h$	[0,50]	68.8	20.6	7.4	2.0	1.1	0.1	0.0	[0,50]	70.2	19.8	7.2	1.8	0.9	0.1	0.0
	(50-75]	39.3	34.3	18.8	4.6	2.8	0.2	0.0		39.3	35.6	18.1	4.4	2.5	0.2	0.0
	(75-90]	27.2	29.2	27.9	8.9	6.0	0.6	0.0		24.8	30.5	29.3	9.0	5.8	0.6	0.0
	(90-95]	20.5	21.3	28.3	14.9	12.9	2.0	0.1		17.2	20.8	30.5	16.1	13.5	1.9	0.1
	(95-99]	14.3	15.2	22.6	16.1	24.4	7.1	0.3		11.3	13.0	22.6	18.6	27.1	7.0	0.3
	(99-99.9]	7.9	8.0	11.9	10.5	25.5	31.8	4.4		5.2	5.8	9.2	9.4	30.0	35.6	4.8
	Top 0.1%	3.9	3.4	7.1	6.2	10.7	34.9	33.8		3.2	3.4	4.1	3.5	8.7	42.6	34.5

(E) Age 70/74								(F) Age 75/79								
Initial Average Wealth Rank								Initial Average Wealth Rank								
	[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%	
End-of-Period Wealth Rank, $BW_j^h$	[0,50]	71.0	19.1	7.1	1.8	0.8	0.1	0.0	[0,50]	71.6	18.7	7.0	1.8	0.8	0.1	0.0
	(50-75]	39.6	36.0	17.7	4.1	2.3	0.2	0.0		39.9	36.0	17.4	4.1	2.3	0.2	0.0
	(75-90]	23.1	32.5	29.0	9.0	5.8	0.6	0.0		22.0	33.9	29.2	9.0	5.3	0.7	0.0
	(90-95]	14.6	20.8	33.5	16.2	13.1	1.7	0.1		12.1	21.5	35.7	16.1	12.8	1.7	0.1
	(95-99]	8.7	11.8	22.9	20.5	28.9	7.1	0.2		7.0	10.8	23.7	21.2	30.1	6.9	0.3
	(99-99.9]	2.8	4.6	8.0	9.8	33.5	36.0	5.2		1.7	3.1	6.9	9.2	39.1	35.5	4.4
	Top 0.1%	1.4	2.9	4.2	2.6	13.3	42.3	33.4		0.2	2.3	3.0	2.4	9.2	42.4	40.6

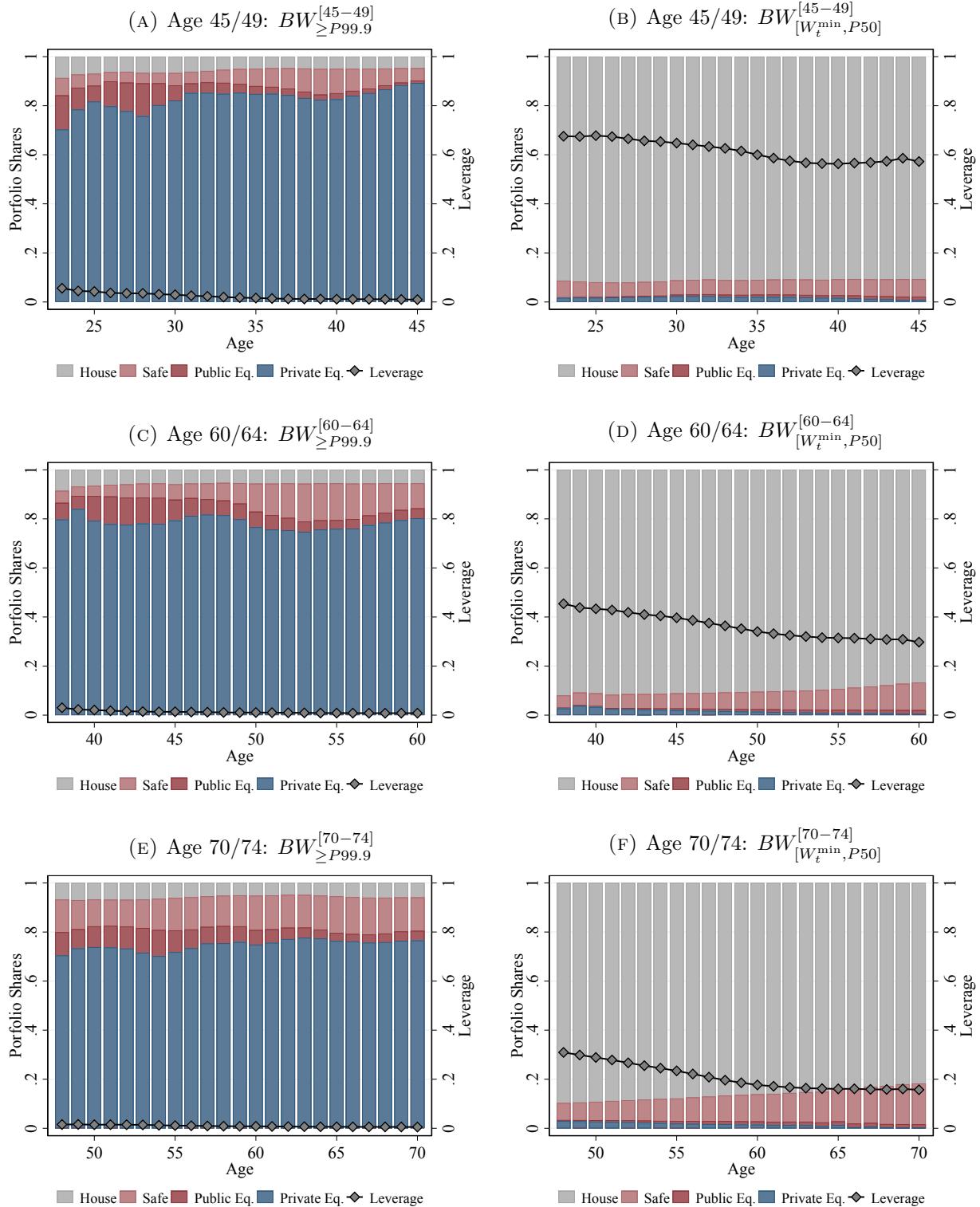
Notes: Figure D.10 shows the intragenerational persistence of net wealth. Figure 5a shows the results by first sorting household whose head is in different age groups in the conditioning year and then again by  $\bar{W}_{i,1993}$ . Each cell represent the fraction of household in different percentiles of the wealth distribution in  $\bar{W}_{i,1993}$  (columns), conditional on their percentile of the wealth distribution in the conditioning year,  $BW_j^h$  (rows).

FIGURE D.11 – BACKWARD-LOOKING TRANSITION MATRIX: LEVEL



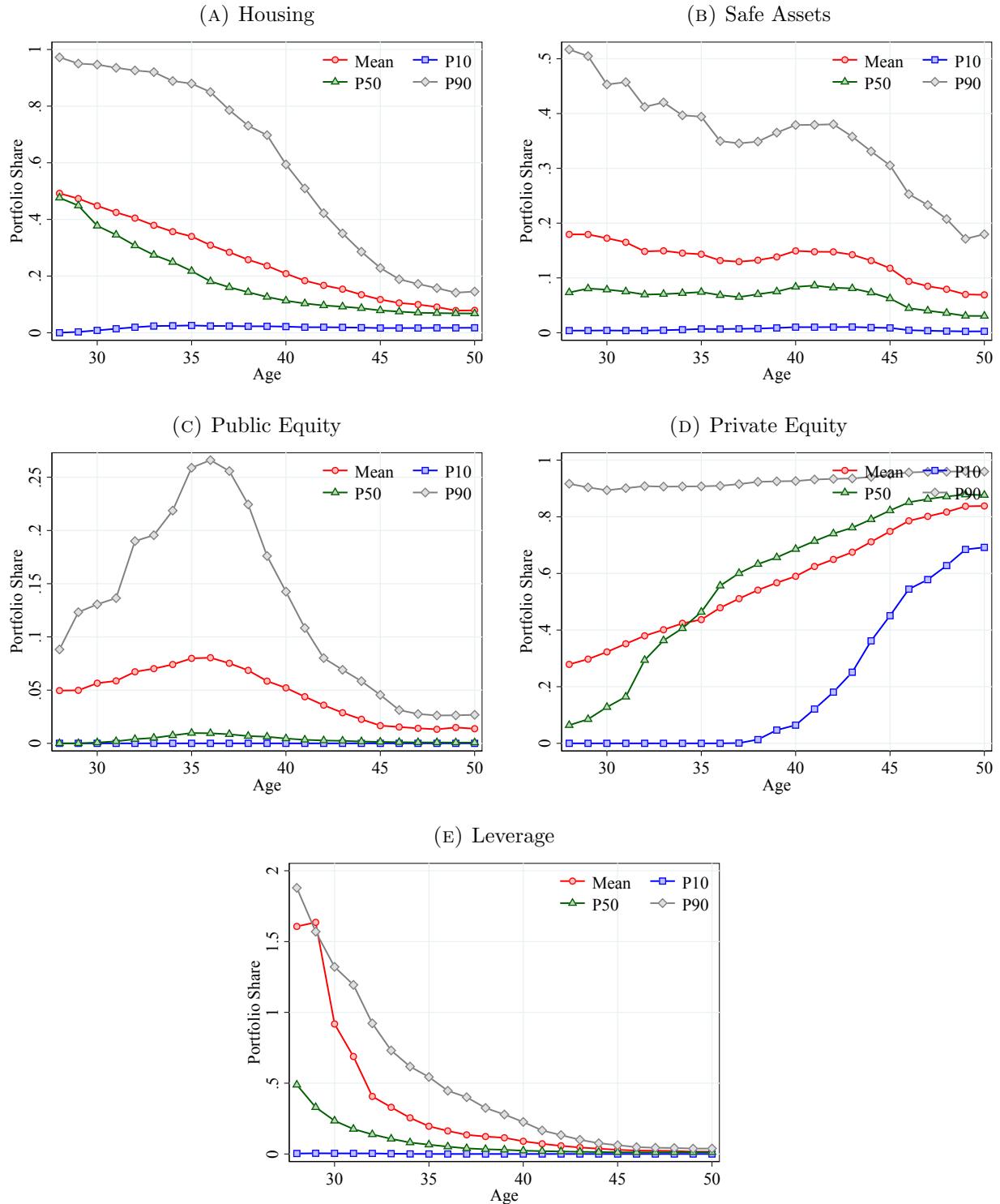
Notes: In the different panels of Figure D.11, each cell represent the fraction of household in different levels of the wealth distribution in  $\bar{W}_{i,1993}$  (columns), conditional on their levels of the wealth distribution in the conditioning year,  $BW_j^h$  (rows). Wealth is expressed in multiple of  $AW$ .

FIGURE D.12 – BACKWARD-LOOKING PORTFOLIO SHARES: AGE GROUPS



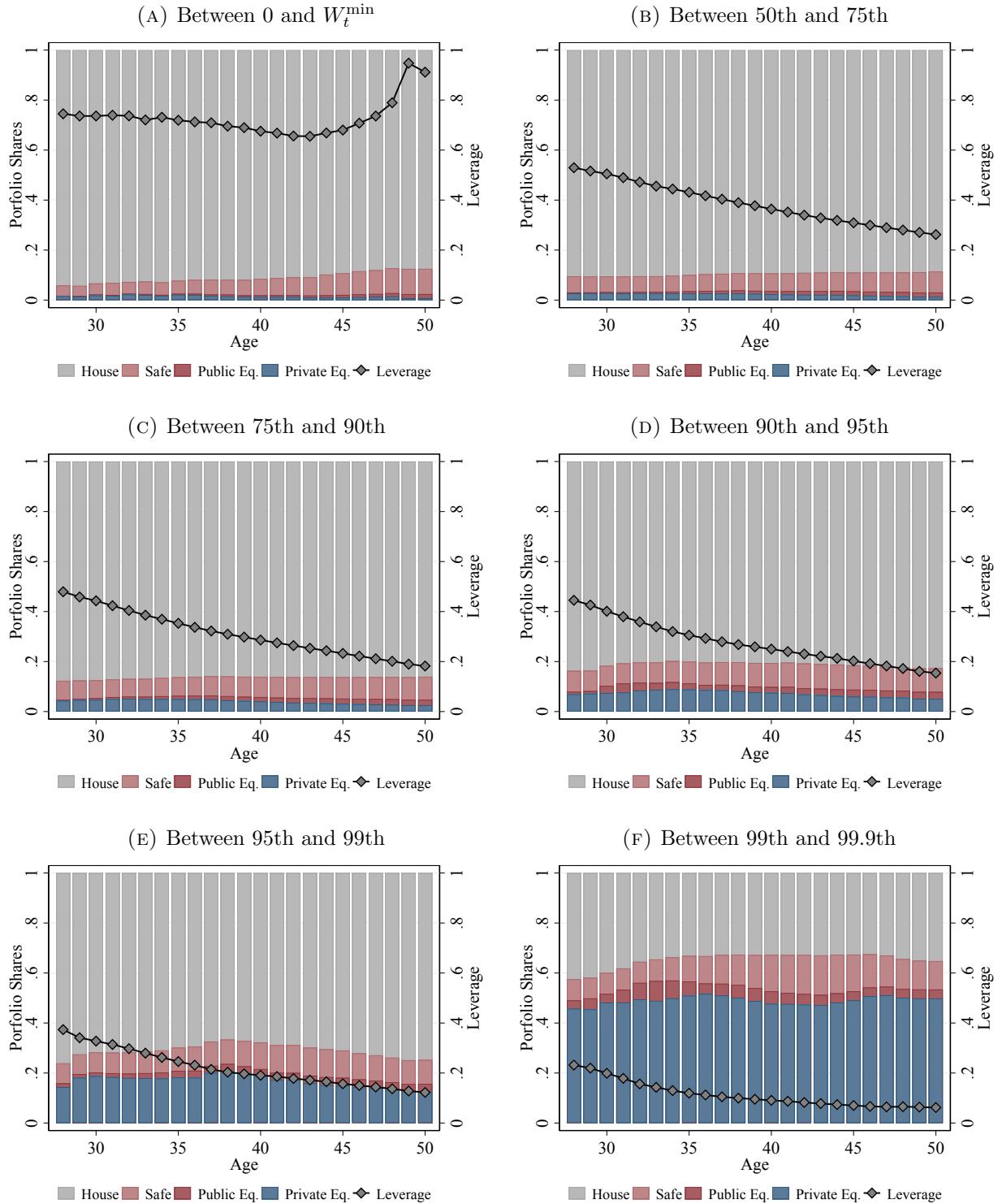
Notes: Figure D.12 shows the evolution of the portfolio shares (left y-axis) and leverage (right y-axis).

FIGURE D.13 – CROSS-SECTIONAL PORTFOLIO SHARES FOR  $BW_{\geq P99.9}^{[50-54]}$



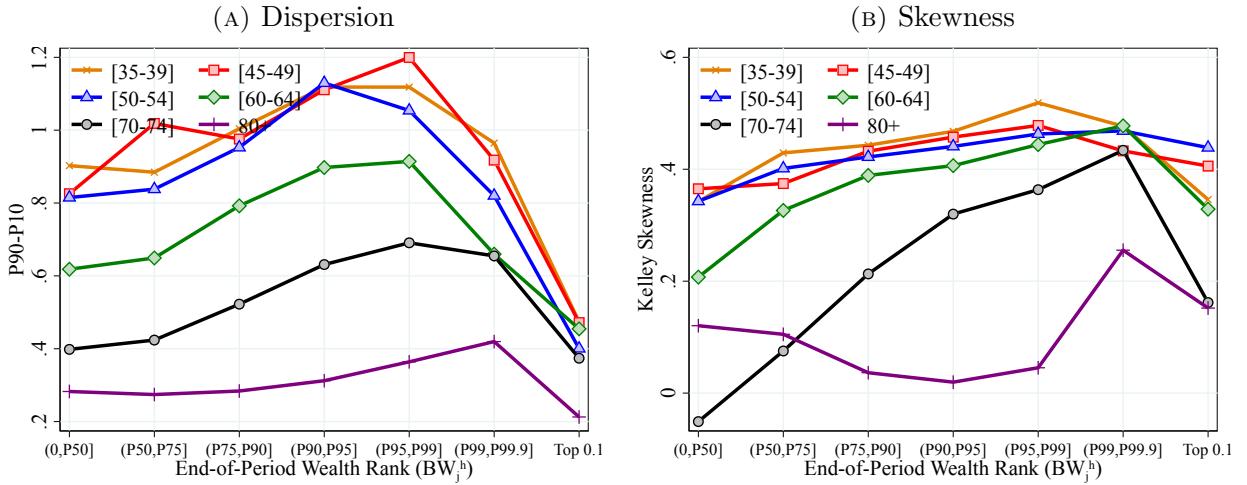
Notes: Figure D.13 cross-sectional moments of the distribution portfolio shares for households in  $BW_{\geq P99.9}^{[50-54]}$ .

FIGURE D.14 – BACKWARD-LOOKING PORTFOLIO SHARES FOR  $BW_{\geq P99.9}^{[50-54]}$



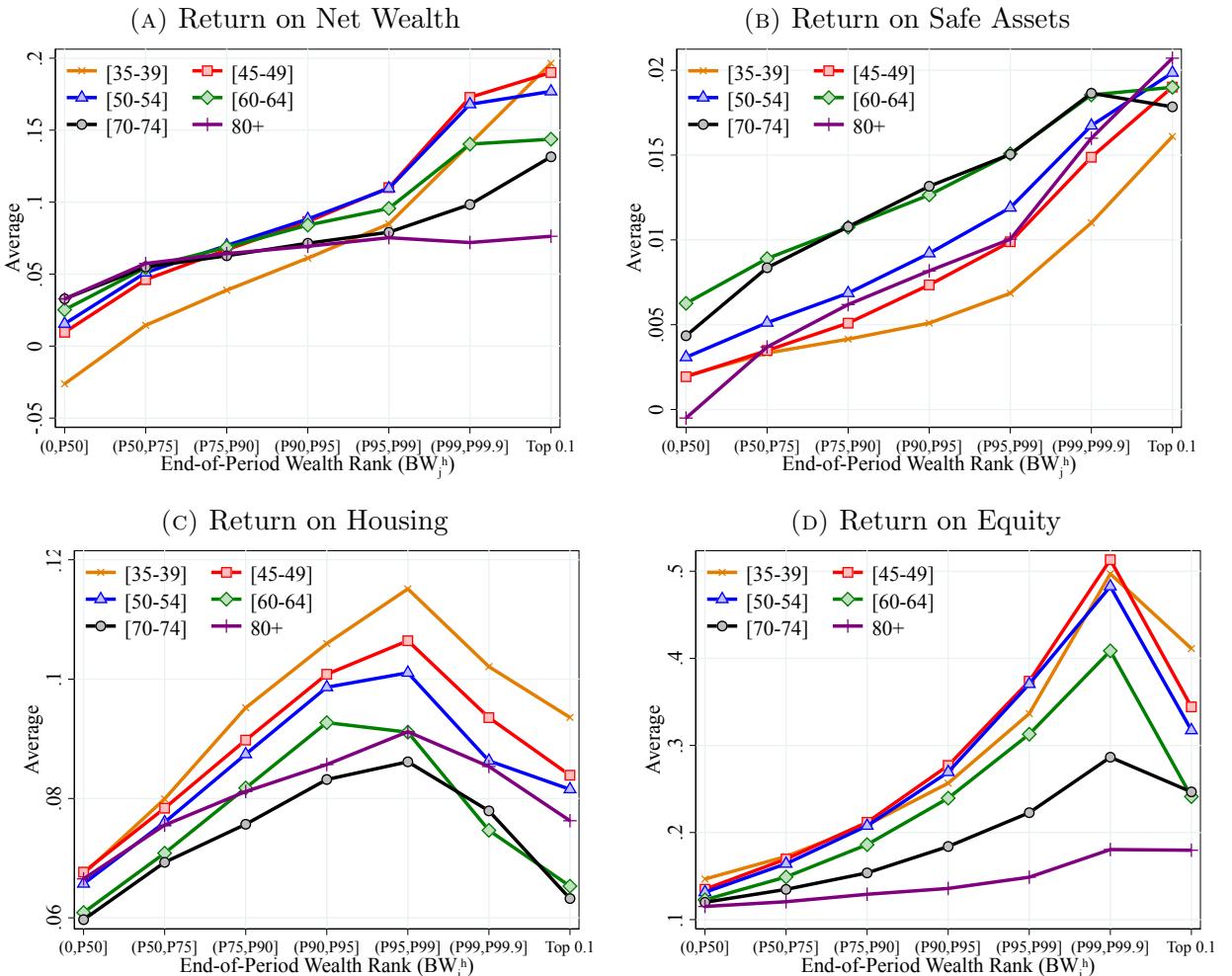
Notes: Figure D.14 shows the evolution of the portfolio shares (left y-axis) and leverage (right y-axis) for households.

FIGURE D.15 – DISPERSION AND SKEWNESS OF EQUITY RETURNS



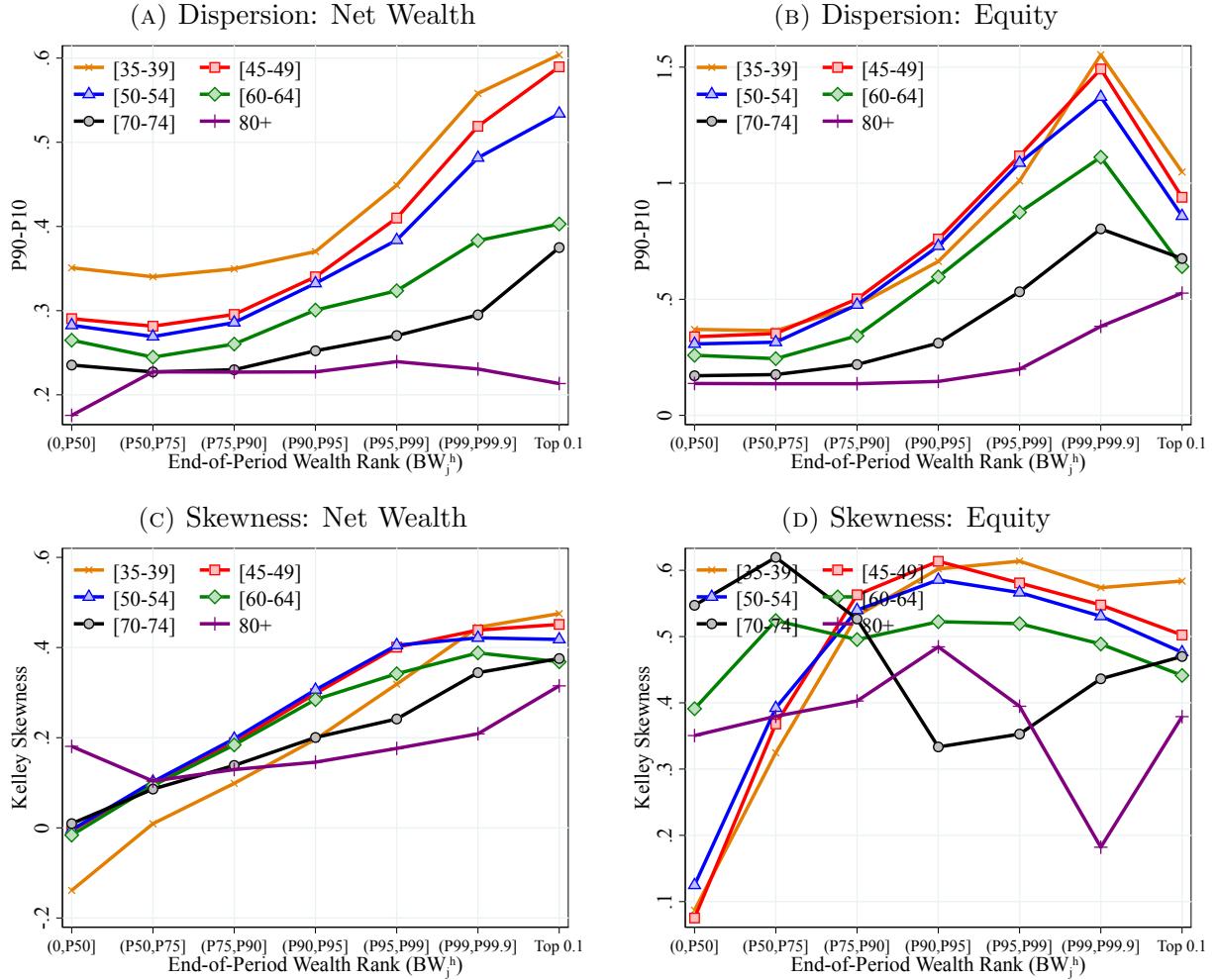
Notes: Figure D.15 shows value-weighted cross-sectional moments of annual returns within age and wealth groups.

FIGURE D.16 – RETURNS ON ASSETS ACROSS THE WEALTH DISTRIBUTION-UNWEIGHTED



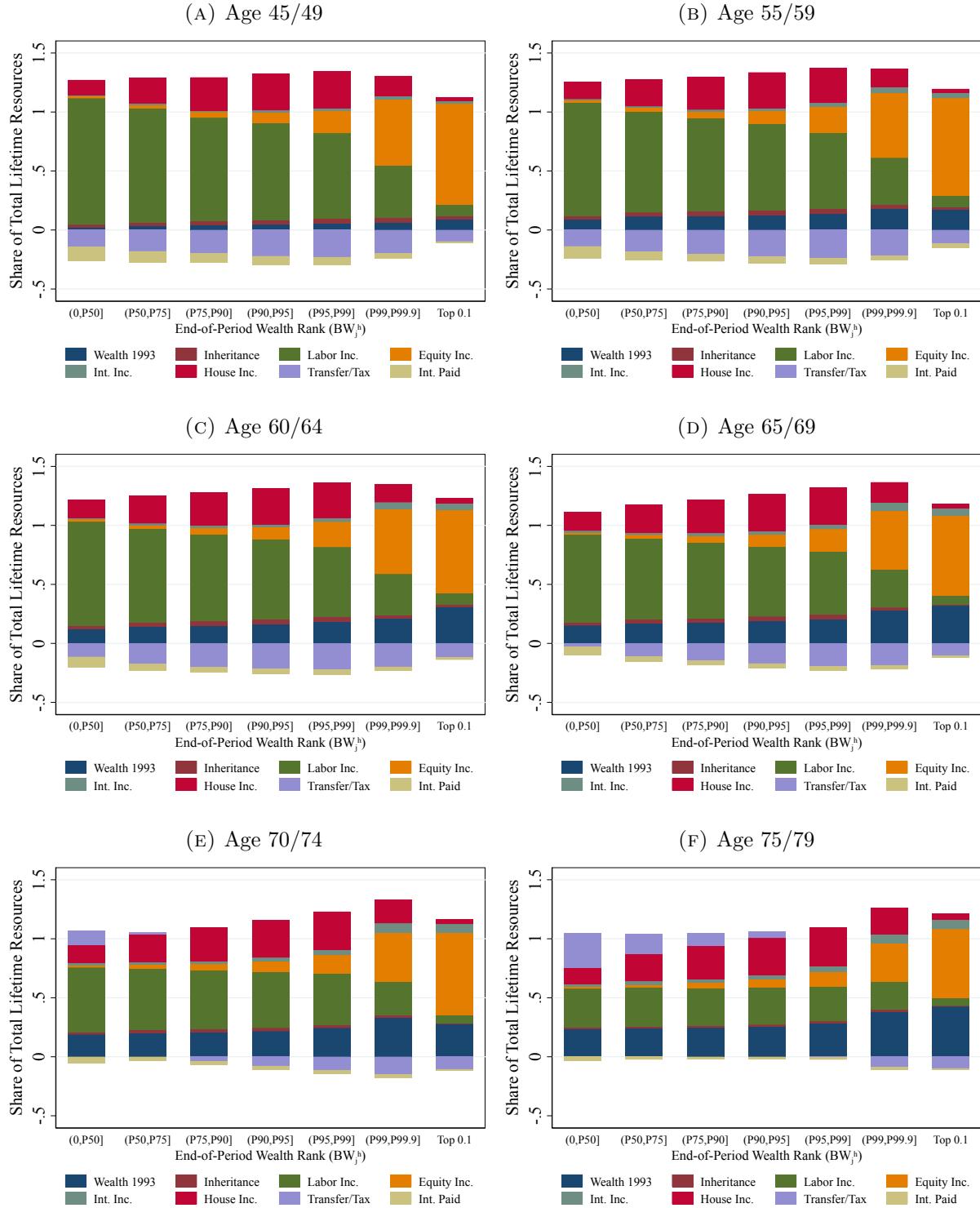
Notes: Figure D.16 shows the 11-years mean of the value-weighted average gross annual returns within age and wealth groups across different conditioning years for different asset classes.

FIGURE D.17 – DISPERSION AND SKEWNESS OF RATES OF LOG-TERM RETURNS-UNWEIGHTED



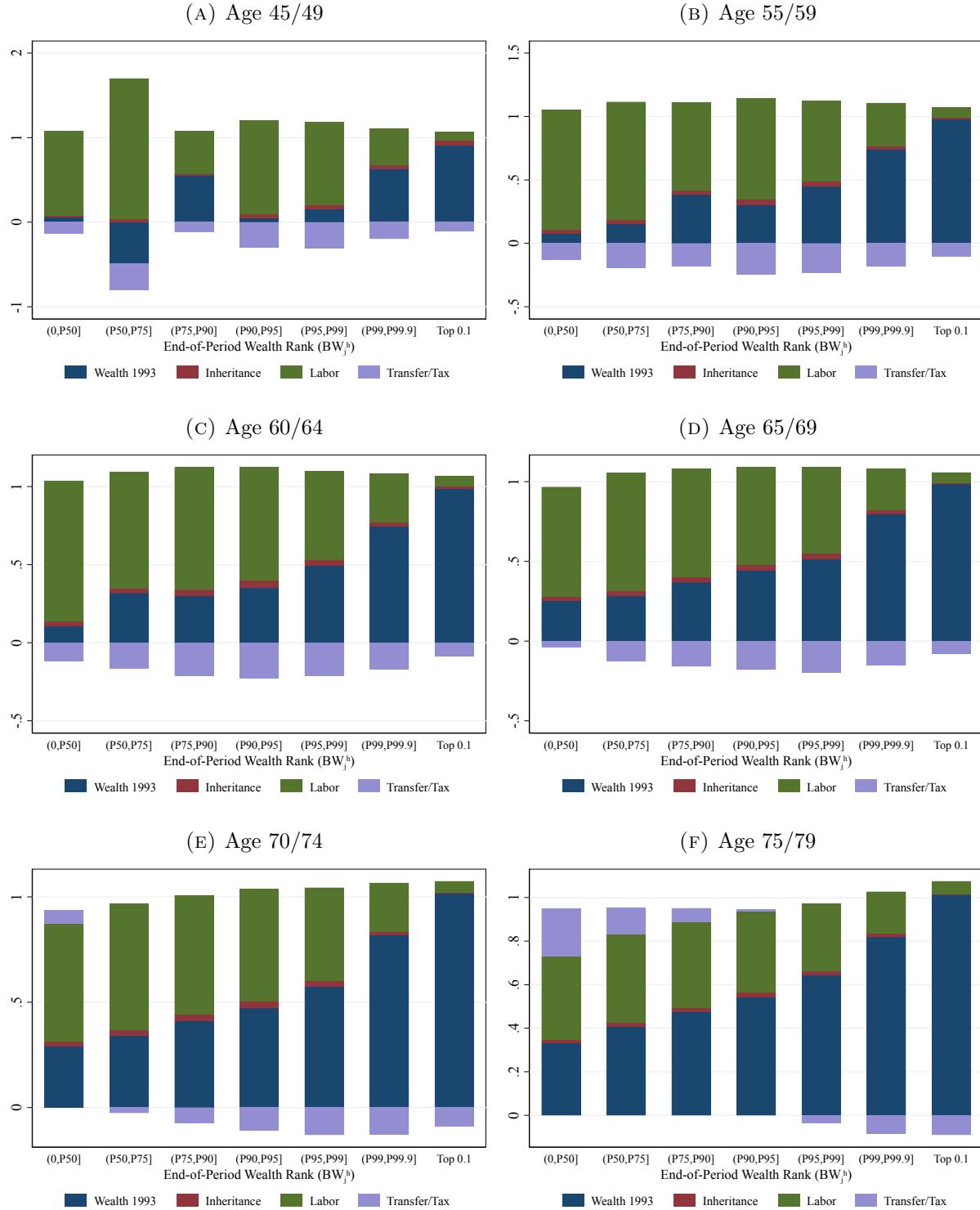
Notes: Figure D.17 shows the 11-years mean of the value-weighted cross-sectional moments of the gross annual returns within age and wealth groups across different conditioning years for different asset classes.

FIGURE D.18 – DECOMPOSITION OF LIFE TIME RESOURCES: AGE GROUPS



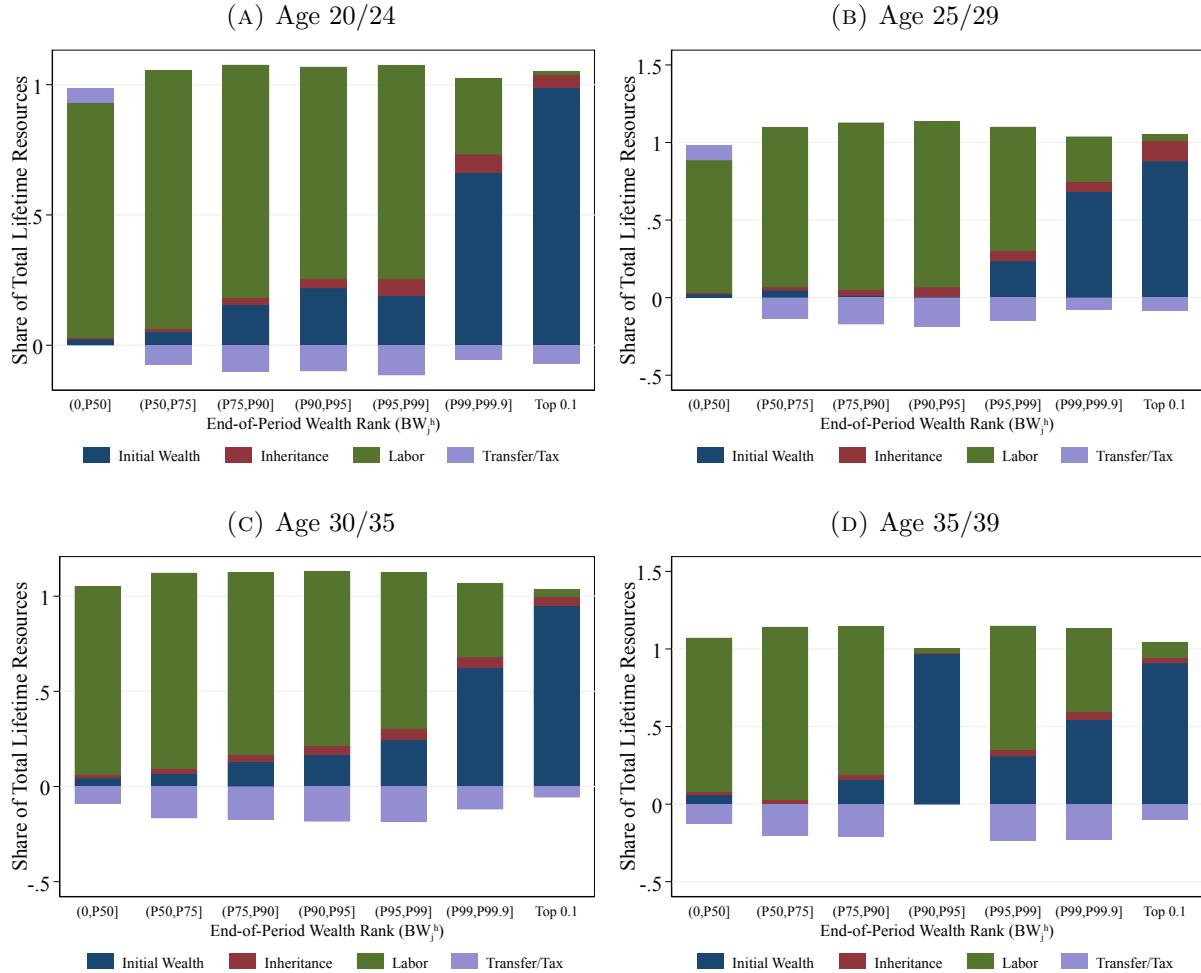
Notes: Figure D.18 shows the shares of lifetime income for a sample of households in a given conditioning year for different age groups conditional on  $BW_j^h$ . Lifetime income refers to the sum of initial wealth (net worth in 1993) and all income sources between 1994 and the conditioning year. We average these shares across conditioning years.

FIGURE D.19 – FUNDAMENTAL INCOME DECOMPOSITION: AGE GROUPS



Notes: Figure D.19 shows the shares of lifetime income for a sample of households in a given conditioning year for different age groups conditional on  $BW_j^h$  and accounting for capitalization.

FIGURE D.20 – FUNDAMENTAL INCOME DECOMPOSITION: YOUNG AGE GROUPS



Notes: Figure D.20 shows the shares of lifetime income for a sample of households in a given conditioning year for different age groups conditional on  $BW_j^h$  and accounting for capitalization.

FIGURE D.21 – INTERGENERATIONAL TRANSITION MATRIX: AGE GROUPS

		Parents Life Time Wealth Rank																		
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%												
End-of-Period Wealth Rank ( $BW_j^h$ )		[0,50]	47.6	36.8	12.7	2.1	0.7	0.1	0.0											
		(50-75]		34.7	41.1	18.8	3.8	1.5	0.1			0.0								
				(75-90]		27.0	39.1	24.5	6.1			3.0	0.3	0.0						
						(90-95]		21.9	35.6			27.1	8.7	5.8	0.9	0.0				
								(95-99]				19.5	30.6	26.5	11.1	9.8	2.3	0.1		
												(99-99.9]		14.0	22.9	23.1	10.0	17.3	11.5	1.3
														Top 0.1%		9.2	16.6	18.4	6.1	8.6

		Parents Life Time Wealth Rank																		
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%												
End-of-Period Wealth Rank ( $BW_j^h$ )		[0,50]	47.2	37.6	12.5	2.0	0.7	0.0	0.0											
		(50-75]		33.9	41.7	18.7	4.0	1.6	0.1			0.0								
				(75-90]		26.4	40.1	23.7	6.3			3.2	0.3	0.0						
						(90-95]		21.8	35.0			27.0	9.2	6.4	0.6	0.0				
								(95-99]				16.3	32.0	27.2	12.2	10.3	2.0	0.1		
												(99-99.9]		14.0	28.1	21.3	10.9	15.5	8.6	1.6
														Top 0.1%		7.0	22.8	15.8	11.4	13.9

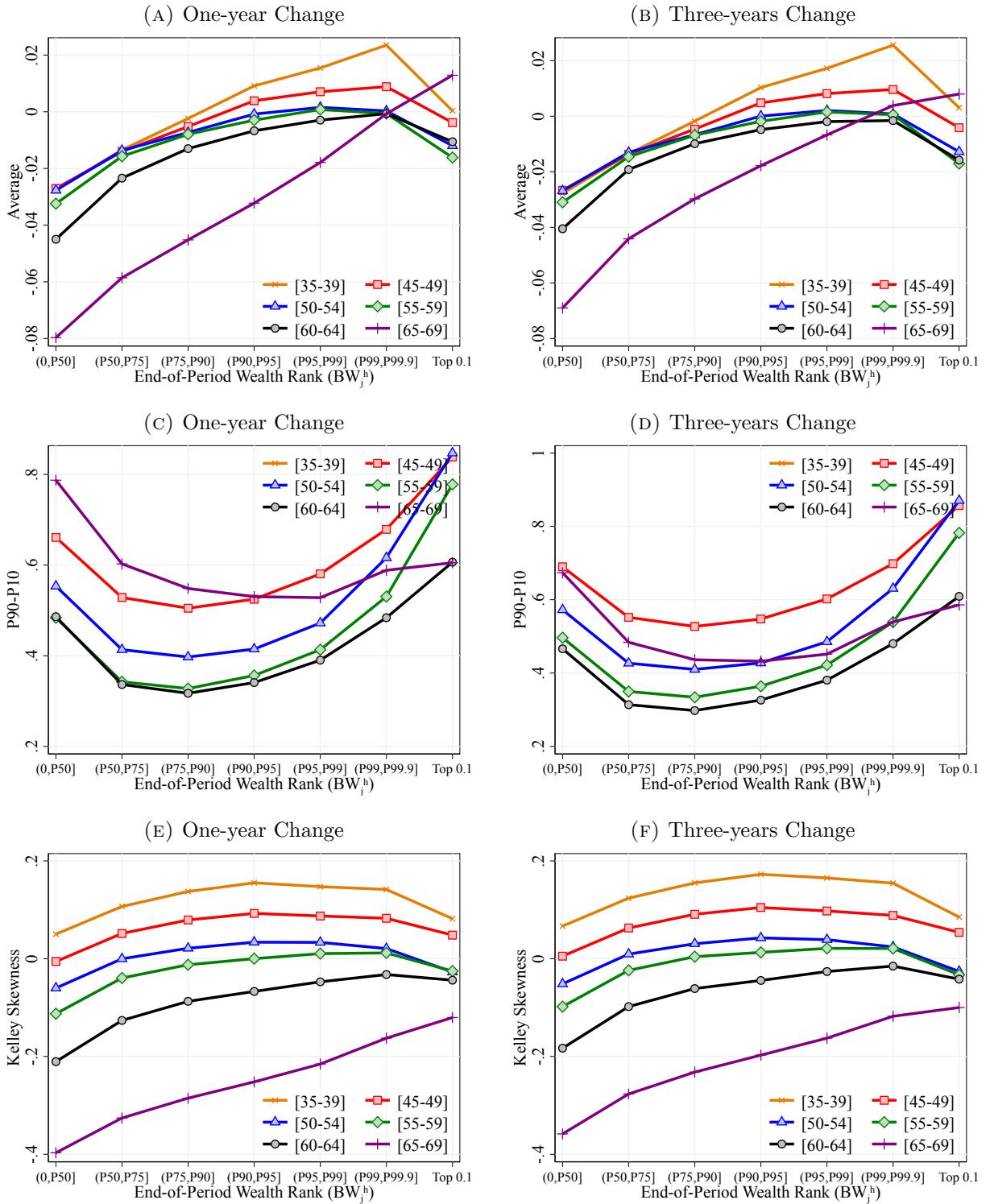
		Parents Life Time Wealth Rank																		
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%												
End-of-Period Wealth Rank ( $BW_j^h$ )		[0,50]	48.8	36.7	11.8	2.0	0.7	0.0	0.0											
		(50-75]		36.4	40.6	17.5	3.7	1.7	0.1			0.0								
				(75-90]		28.8	39.7	21.8	6.1			3.4	0.3	0.0						
						(90-95]		22.5	36.0			25.2	8.9	6.4	0.9	0.0				
								(95-99]				18.3	31.2	27.0	11.3	9.8	2.2	0.1		
												(99-99.9]		16.2	25.6	22.0	10.5	15.9	8.5	1.2
														Top 0.1%		13.7	17.6	19.8	11.5	9.9

		Parents Life Time Wealth Rank																		
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%												
End-of-Period Wealth Rank ( $BW_j^h$ )		[0,50]	51.9	34.4	10.9	2.0	0.8	0.0	0.0											
		(50-75]		38.9	38.4	17.2	3.7	1.7	0.1			0.0								
				(75-90]		31.8	36.6	21.8	5.9			3.6	0.3	0.0						
						(90-95]		25.0	33.3			25.7	8.3	6.8	1.0	0.0				
								(95-99]				20.4	29.7	25.0	11.8	10.7	2.3	0.1		
												(99-99.9]		16.1	25.9	22.3	10.9	16.3	8.1	0.3
														Top 0.1%		7.1	14.3	24.3	10.0	18.6

Notes: Figure D.21 shows the intergenerational persistence of net wealth. It shows the results by first sorting household within age groups by the lifetime wealth of their parents. Each cell represent the fraction of household in different percentiles of the parents wealth distribution (columns), conditional on their percentile of the wealth distribution in the conditioning year,  $BW_j^h$  (rows). Each row sums to 100. The Parents Life Time Wealth Rank is calculate as the rank of the average wealth adjusted for an age and year specific mean.

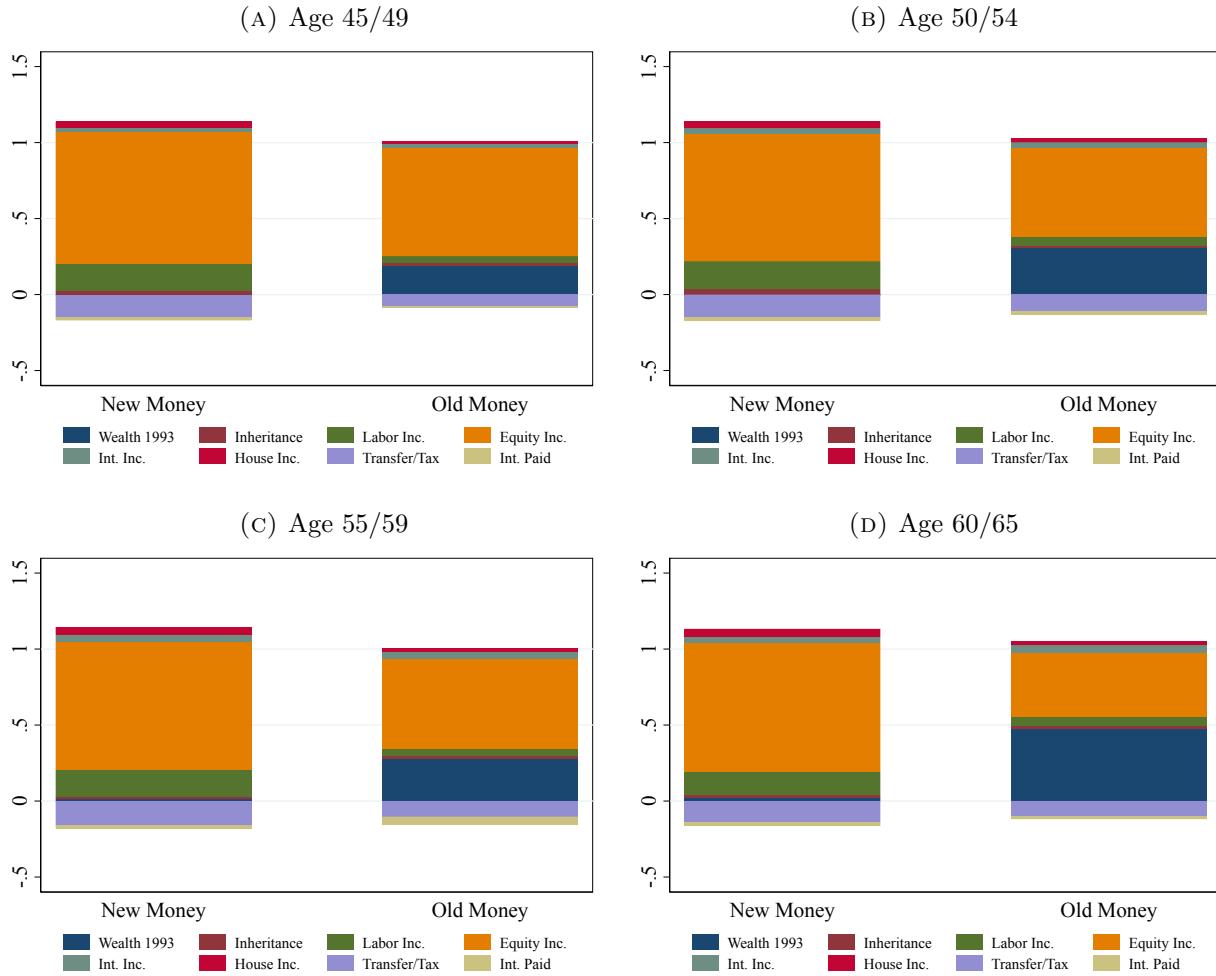
FIGURE D.22 – LABOR INCOME GROWTH ACROSS THE WEALTH DISTRIBUTION



Notes: Figure D.22 shows time series average of the distribution of residuals earnings growth conditional on age and wealth group ( $BW_j^h$ ).

### E.3 New Money and Old Money: Additional Figures

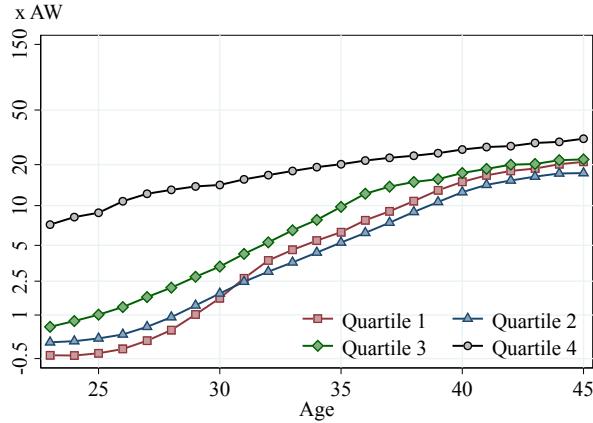
FIGURE D.23 – INCOME SOURCES FOR NEW- AND OLD-MONEY HOUSEHOLDS



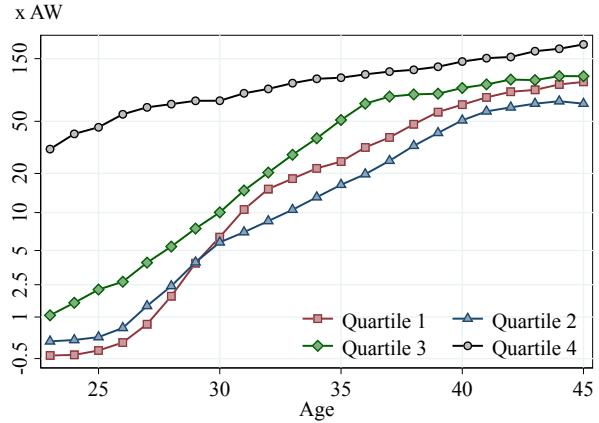
Notes: Figure D.23 shows the shares of lifetime income for a sample of households in a given conditioning year for different age groups conditional on  $BW_{\geq P99.9}^h$  and were in different quartiles of the initial average wealth distribution ( $\bar{W}_{i,1994}$ ). Lifetime income refers to the sum of initial wealth (net worth in 1993) and all income sources between 1994 and the conditioning year. We average these shares across conditioning years.

FIGURE D.24 – AVERAGE WEALTH PROFILE: OLD MONEY AND NEW MONEY

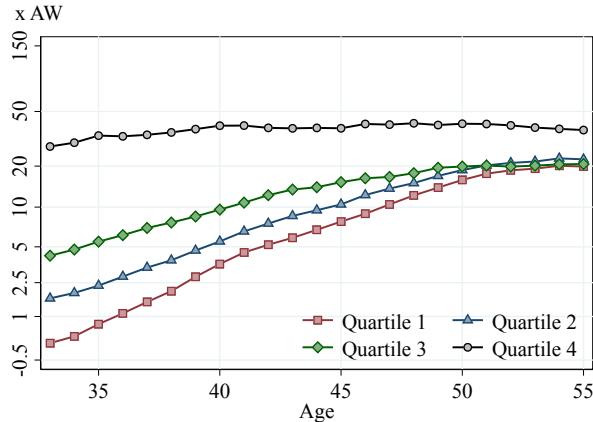
(A) Age 45/49: Top 1% Households



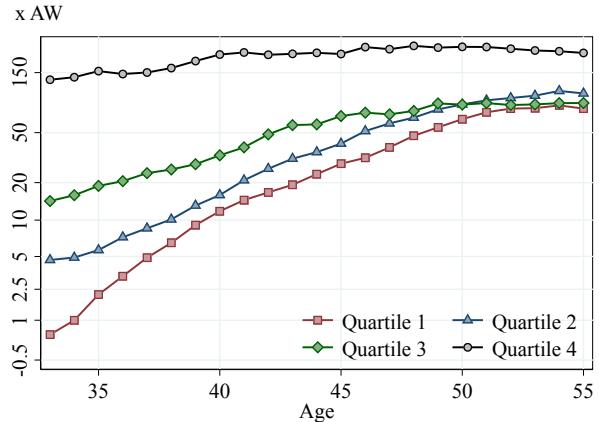
(B) Age 45/49: Top 0.1% Households



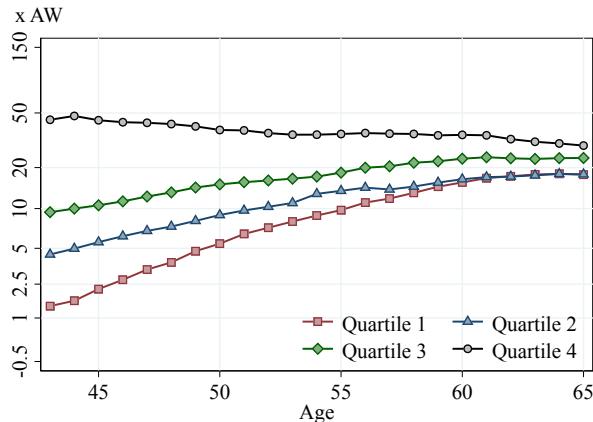
(C) Age 55/59: Top 1% Households



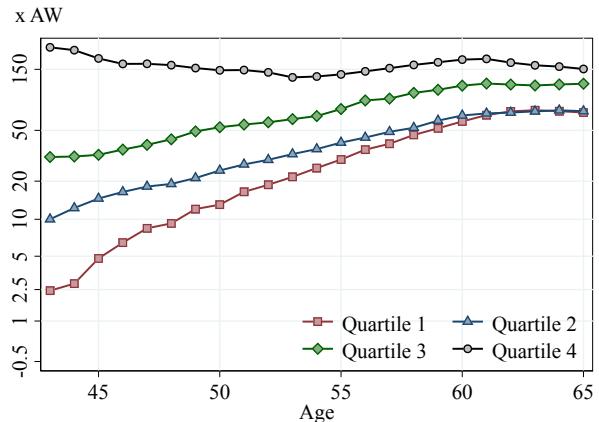
(D) Age 55/59: Top 0.1% Households



(E) Age 65/69: Top 1% Households

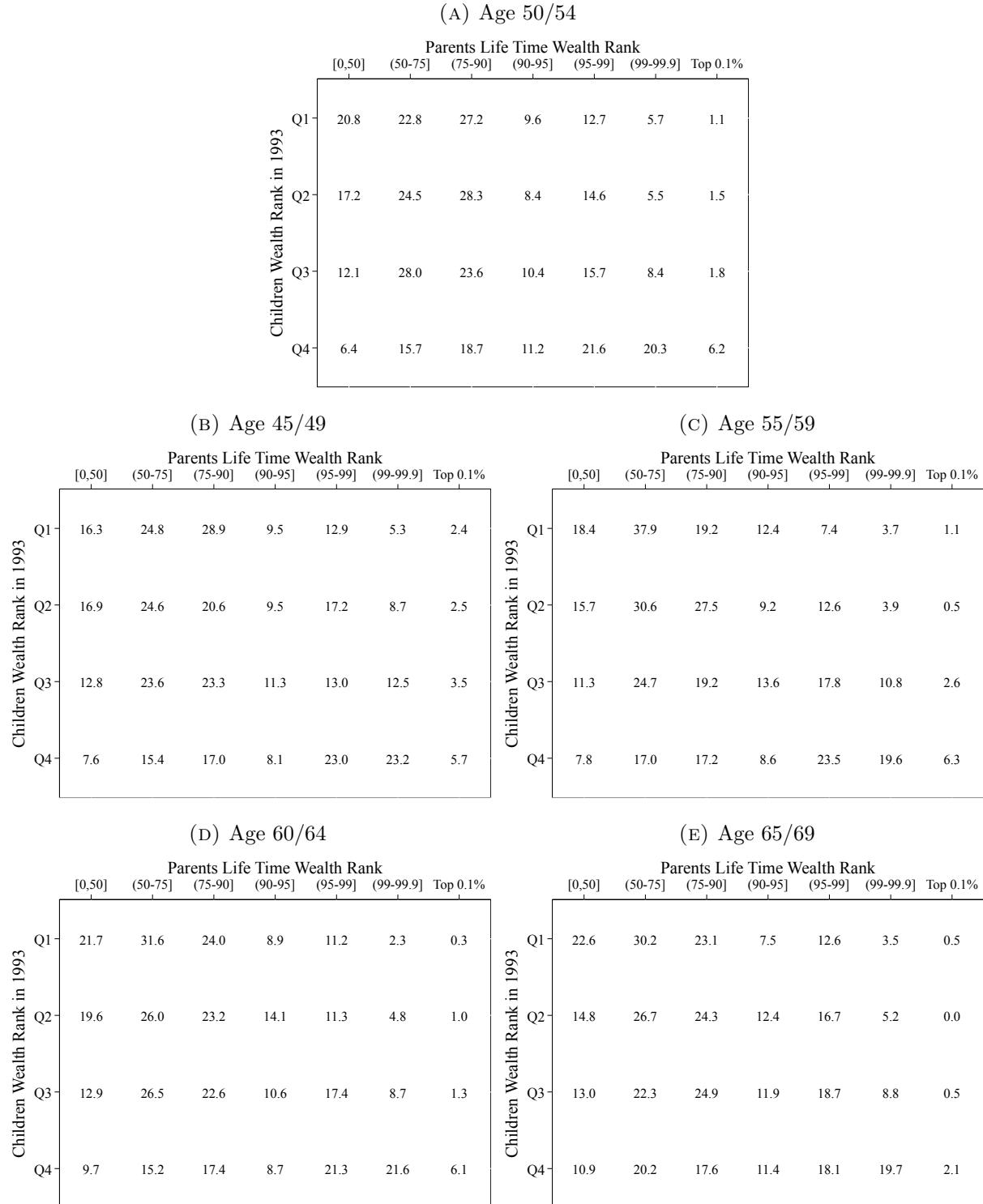


(F) Age 65/69: Top 0.1% Households



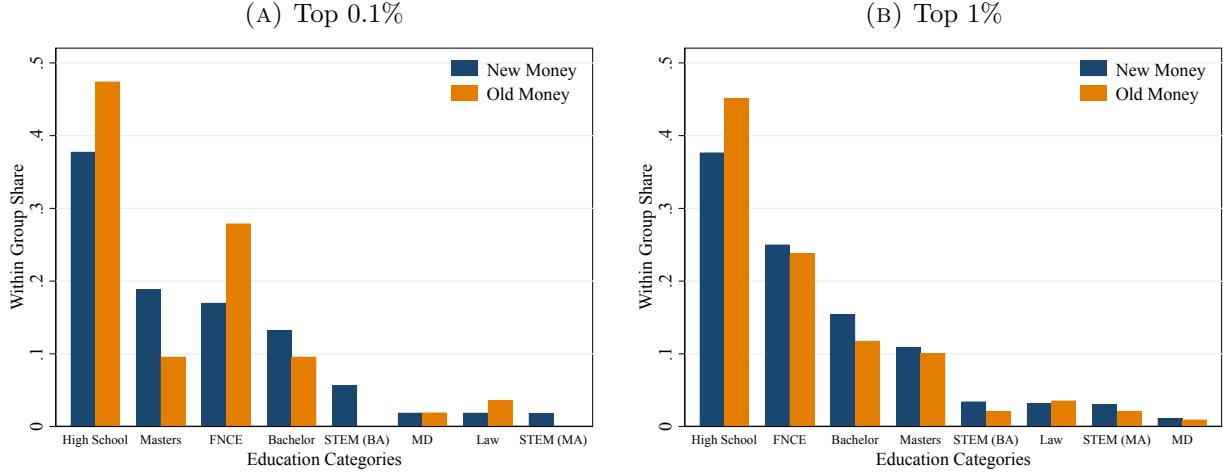
Notes: Figure D.24 shows the average wealth profile for household whose head is in different wealth age and belong to the top 0.1% of the wealth distribution at the end of the sample ( $BW_{\geq P99.9}^h$ ) and were in different quartiles of the initial average wealth distribution ( $\bar{W}_{i,1994}$ ).

FIGURE D.25 – INTERGENERATIONAL TRANSITION MATRIX: AGE GROUPS



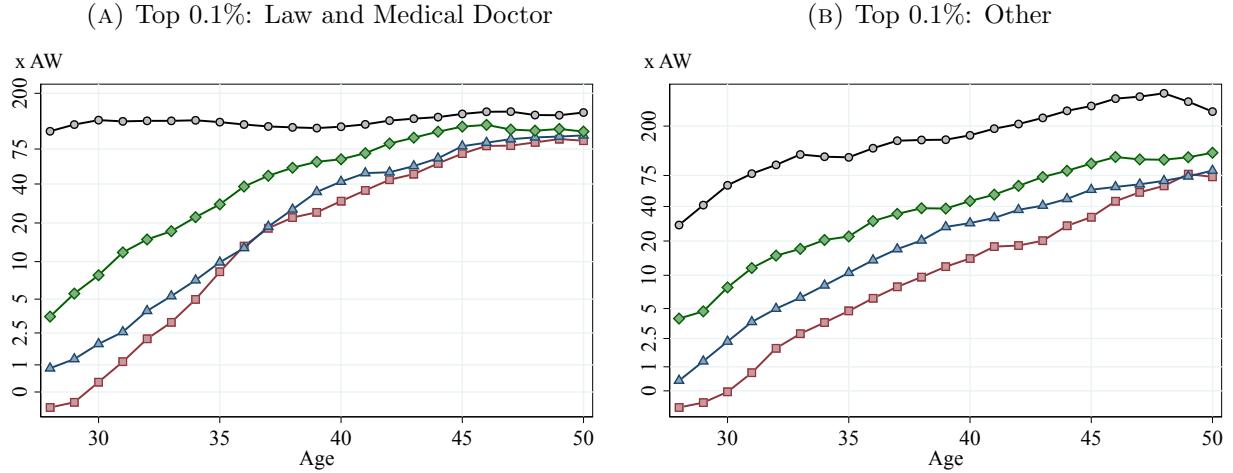
Notes: Figure D.25 shows a intergenerational transition matrix between households wealth in 2015 and their parental household wealth for households in different age groups. Each cell represent the fraction of household in different percentiles of the parents wealth distribution (columns), conditional on their percentile of the wealth distribution in the conditioning year,  $BW_j^h$  (rows). Each row sums to 100. The Parents Life Time Wealth Rank is calculate as the rank of the average wealth adjusted for an age and year specific mean.

FIGURE D.26 – EDUCATION SHARES FOR NEW AND OLD MONEY HOUSEHOLDS



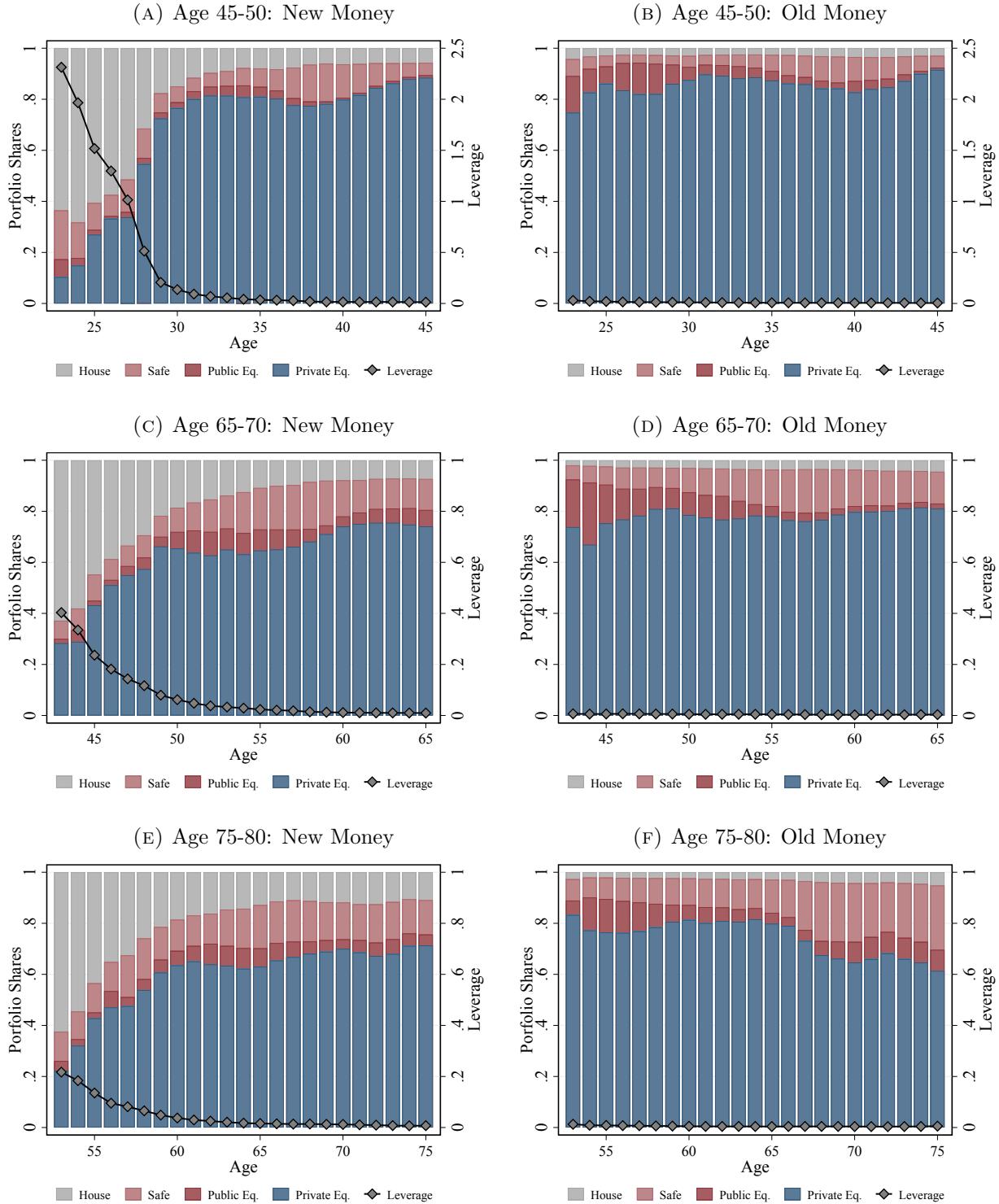
Notes: Figure D.26 shows the share of different education groups households (highest degree of the head of the household) for households at the top 0.1% and top 1% among 50 to 54 year old households ( $BW_{\geq P99.9}^{50-54}$  and  $BW_{\geq P99}^{50-54}$  respectively) divided in New Money (first quartile in the initial average wealth,  $\bar{W}_{i,1994}$ ) and Old Money (forth quartile in the initial average wealth,  $\bar{W}_{i,1994}$ ). HS is High-school or less, FNCE BA/MA is Bachelor or MBA on a finance or business administration major, BA and MA are other bachelor degrees or master degrees, MD is Medical Doctor or Dentist, H-STEM is BA or MA on a health related degree (except for Medical Doctor or Dentist) and STEM major.

FIGURE D.27 – AVERAGE WEALTH PROFILE BY EDUCATION



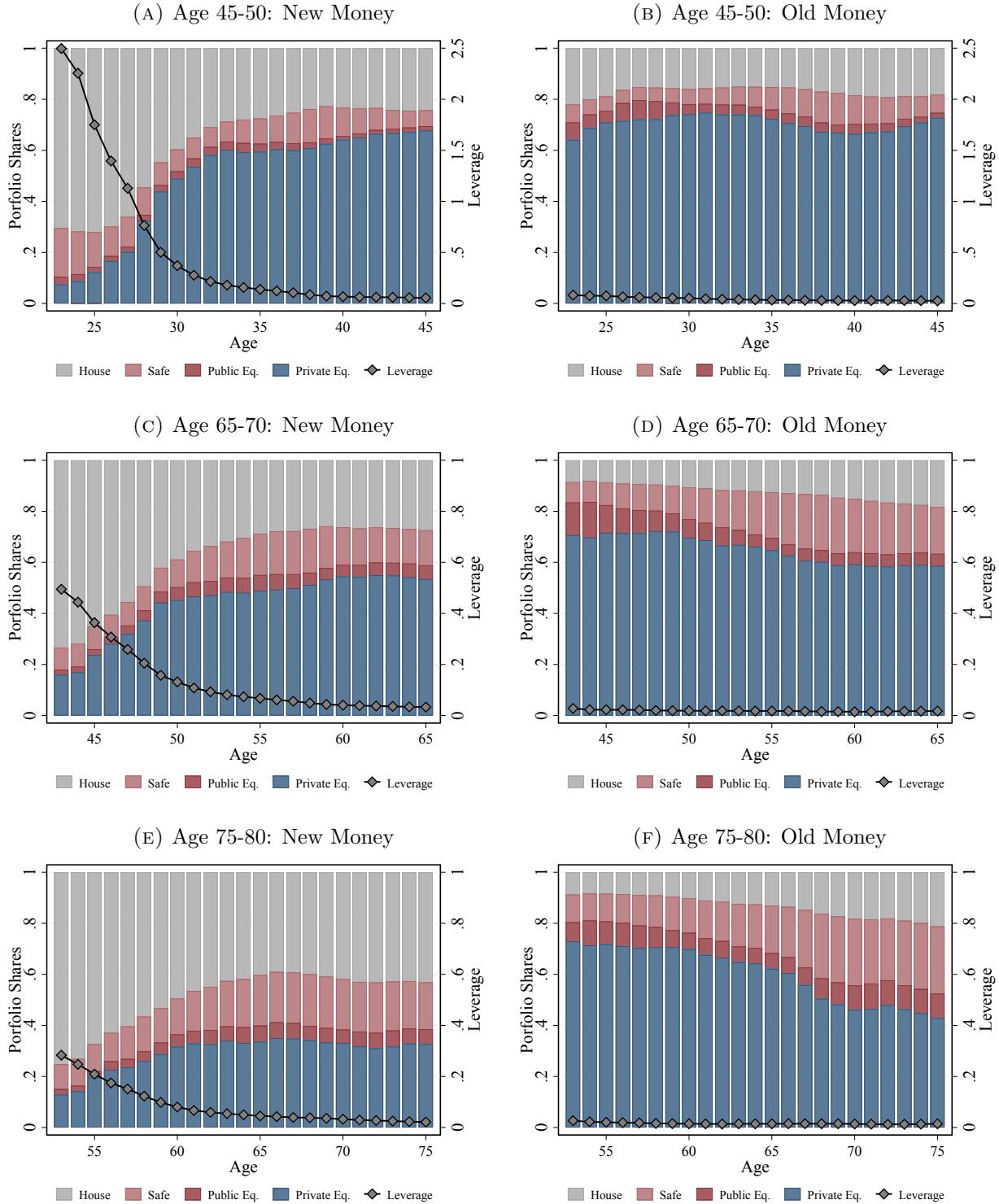
Notes: Figure D.27 shows the average wealth profile for household whose head is between 50 and 54 years old in 2015 and belong to the top 0.1% in that year. Each line is the average wealth for individuals in different quartiles of the wealth distribution in 1993. Panel A shows households whose head has the title of lawyer or medical doctor. Panel B shows all other educational titles.

FIGURE D.28 – PORTFOLIO SHARES: OLD MONEY AND NEW MONEY AND AGE GROUPS



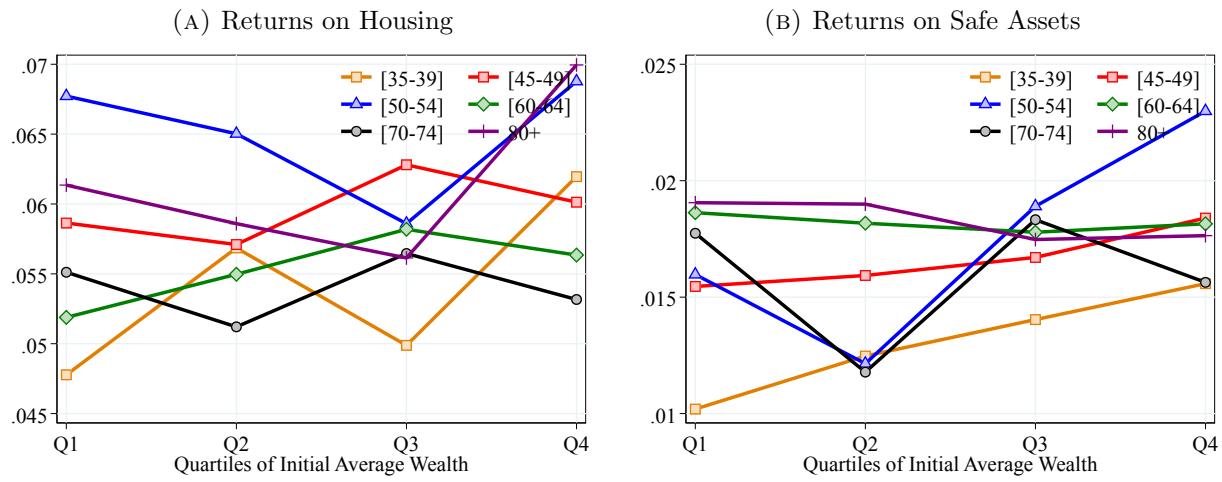
Notes: Figure D.28 shows the portfolio composition and leverage for households that belong to the top 1% in 2015. New Money households (Panel A, C and E) are those household that where in the first quartile of the wealth distribution in 1993; Old Money households (panel B, D, and F) are those households that were in the fourth quartile of  $\overline{W}_{1993}$ .

FIGURE D.29 – PORTFOLIO SHARES: OLD MONEY AND NEW MONEY AT TOP 1%



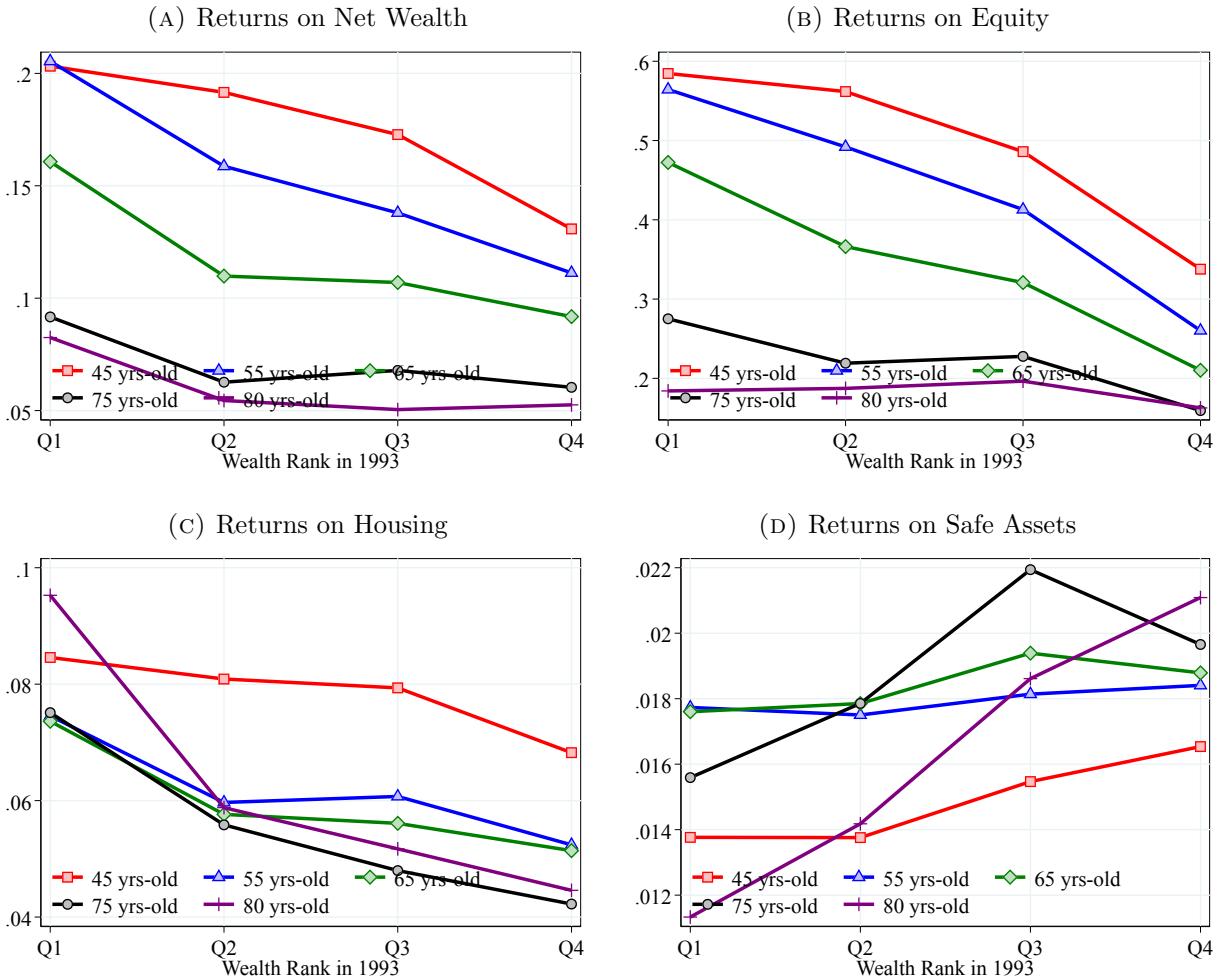
Notes: Figure D.29 shows the portfolio composition and leverage for households that belong to the top 1%. New Money households (Panel A, C, E) are those household that where in the first quartile of the wealth distribution in 1993; Old Money households (panel B, D, and E) are those households that were in the fourth quartile of  $\bar{W}_{1993}$ .

FIGURE D.30 – AVERAGE LONG-TERM RETURNS: OLD MONEY AND NEW MONEY



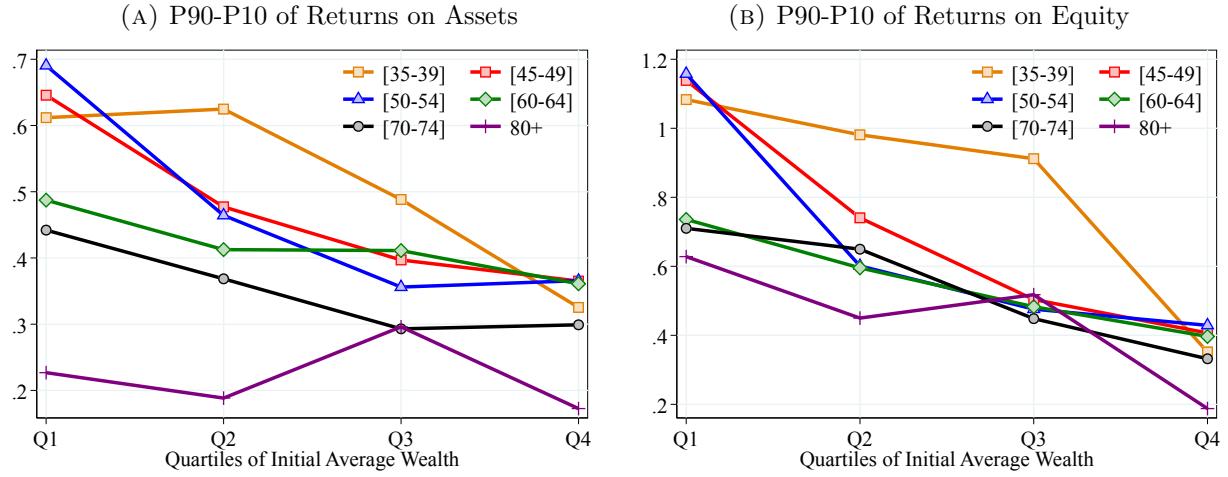
Notes: Figure D.30 shows the 11-years mean of the value-weighted average gross annual returns within age and wealth groups across different conditioning years for different asset classes.

FIGURE D.31 – LIFETIME RETURNS: OLD MONEY AND NEW MONEY (UNWEIGHTED)



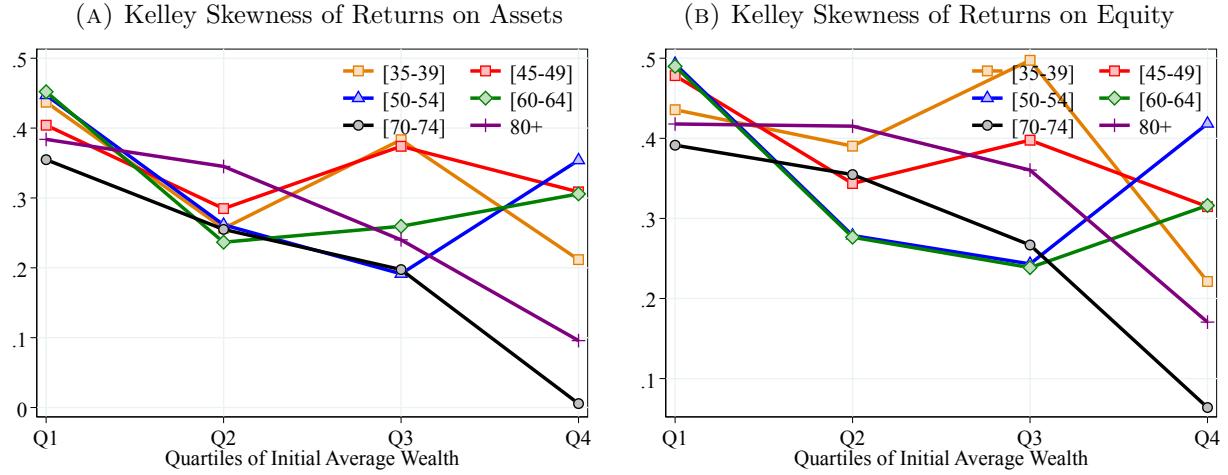
Notes: Figure D.31 shows the average lifetime returns for households who are at the top 1% of the wealth distribution at the end of the sample period (2015) and were in different quartiles of the wealth distribution at the start of the sample period (1993) identified as Quartile 1 (Q1) to Quartile 4 (Q4).

FIGURE D.32 – DISPERSION OF LONG-TERM RETURNS: OLD MONEY AND NEW MONEY



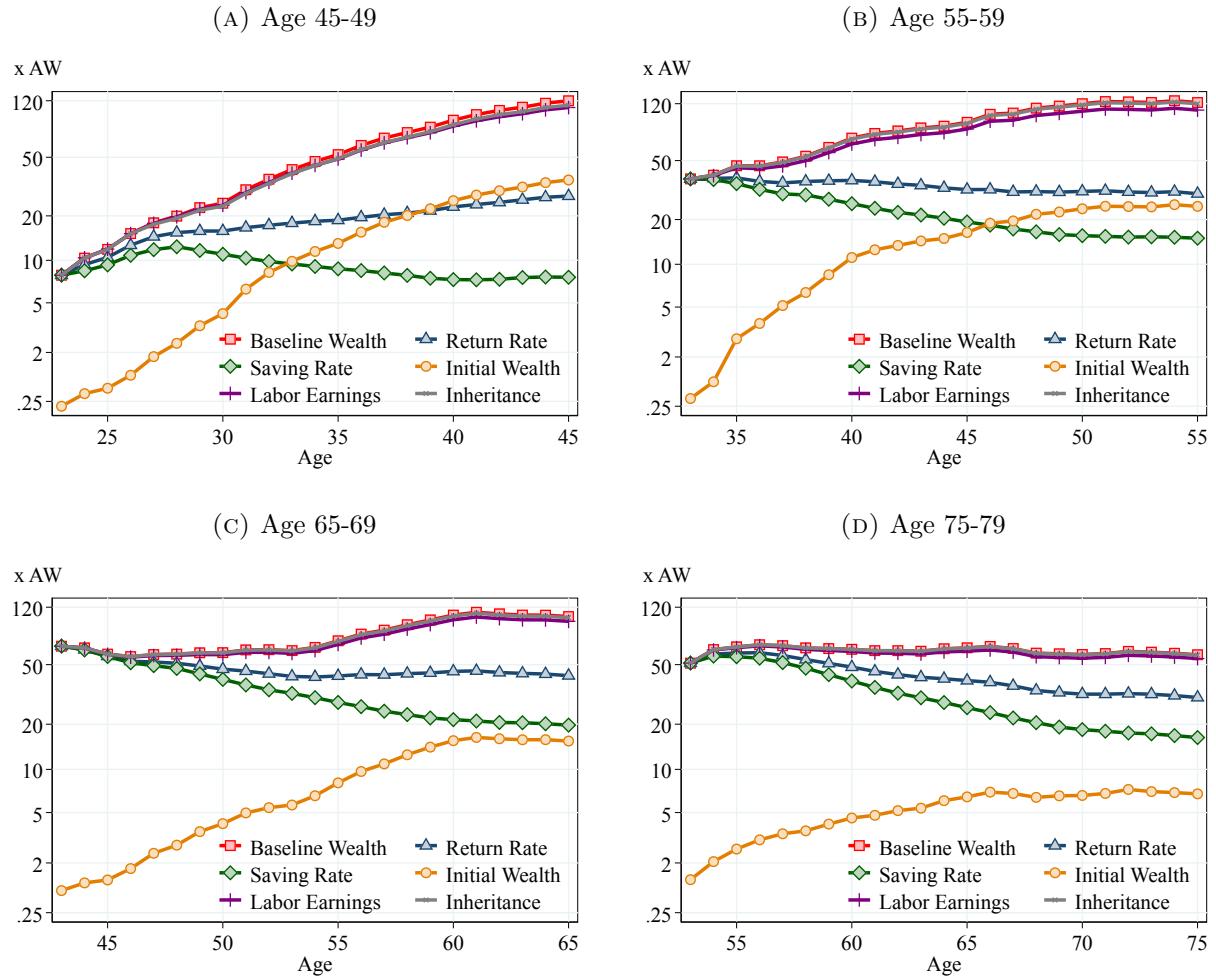
Notes: Figure D.32 shows the 11-years mean of the value-weighted P90-P10 of returns for households who are at the top 0.1% of the wealth distribution at the end of the sample period ( $BW_{\geq P99.9}^h$ ) and were in different quartiles of the initial average wealth distribution ( $\bar{W}_{i,1994}$ ) identified as Quartile 1 (Q1) to Quartile 4 (Q4).

FIGURE D.33 – SKEWNESS OF LONG-TERM RETURNS: OLD MONEY AND NEW MONEY



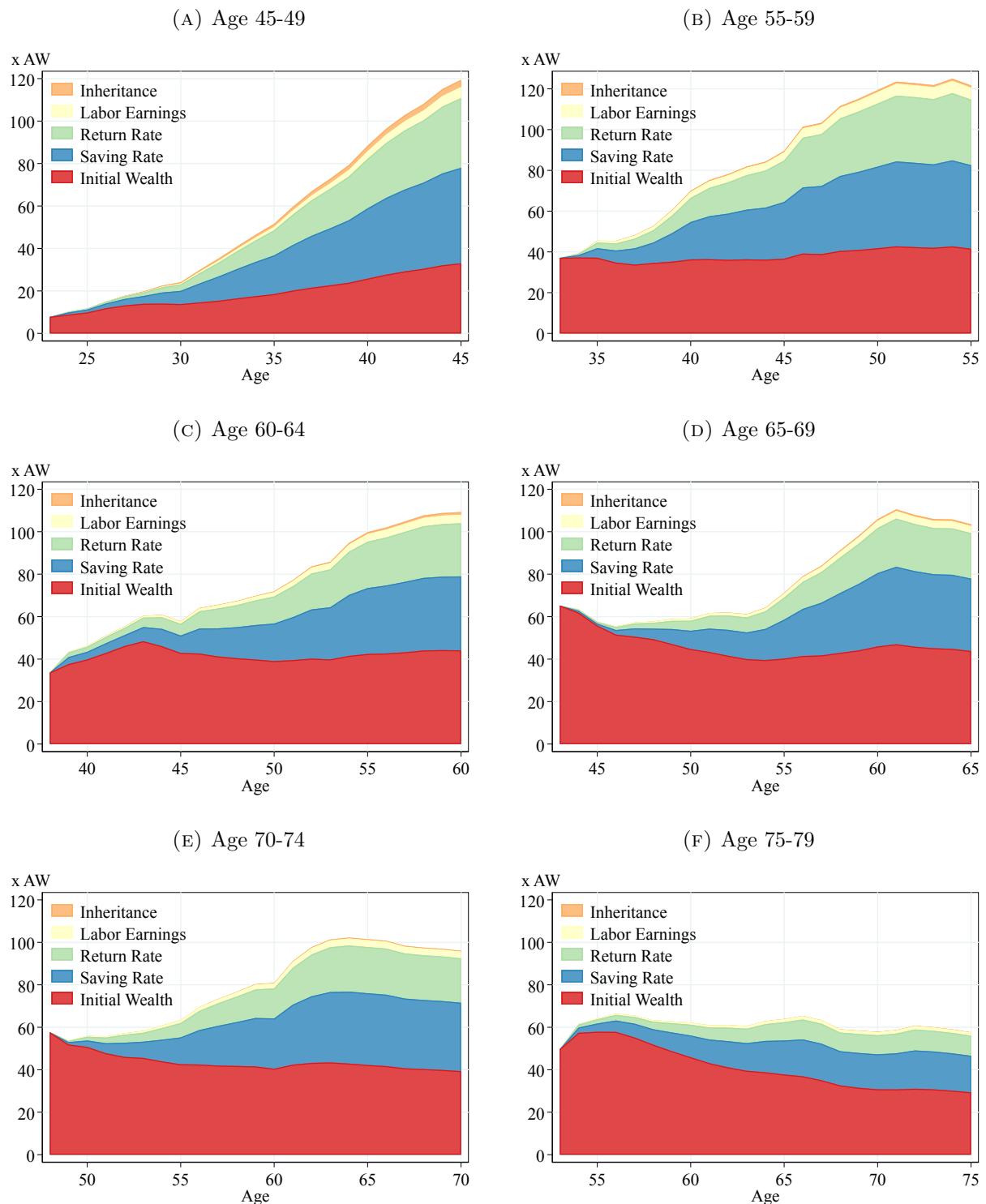
Notes: Figure D.33 shows the 11-years mean of the value-weighted Kelley Skewness of returns for households who are at the top 0.1% of the wealth distribution at the end of the sample period ( $BW_{\geq P99.9}^h$ ) and were in different quartiles of the initial average wealth distribution ( $\bar{W}_{i,1994}$ ) identified as Quartile 1 (Q1) to Quartile 4 (Q4).

FIGURE D.34 – TOP WEALTH HOUSEHOLDS FOR DIFFERENT AGE GROUPS



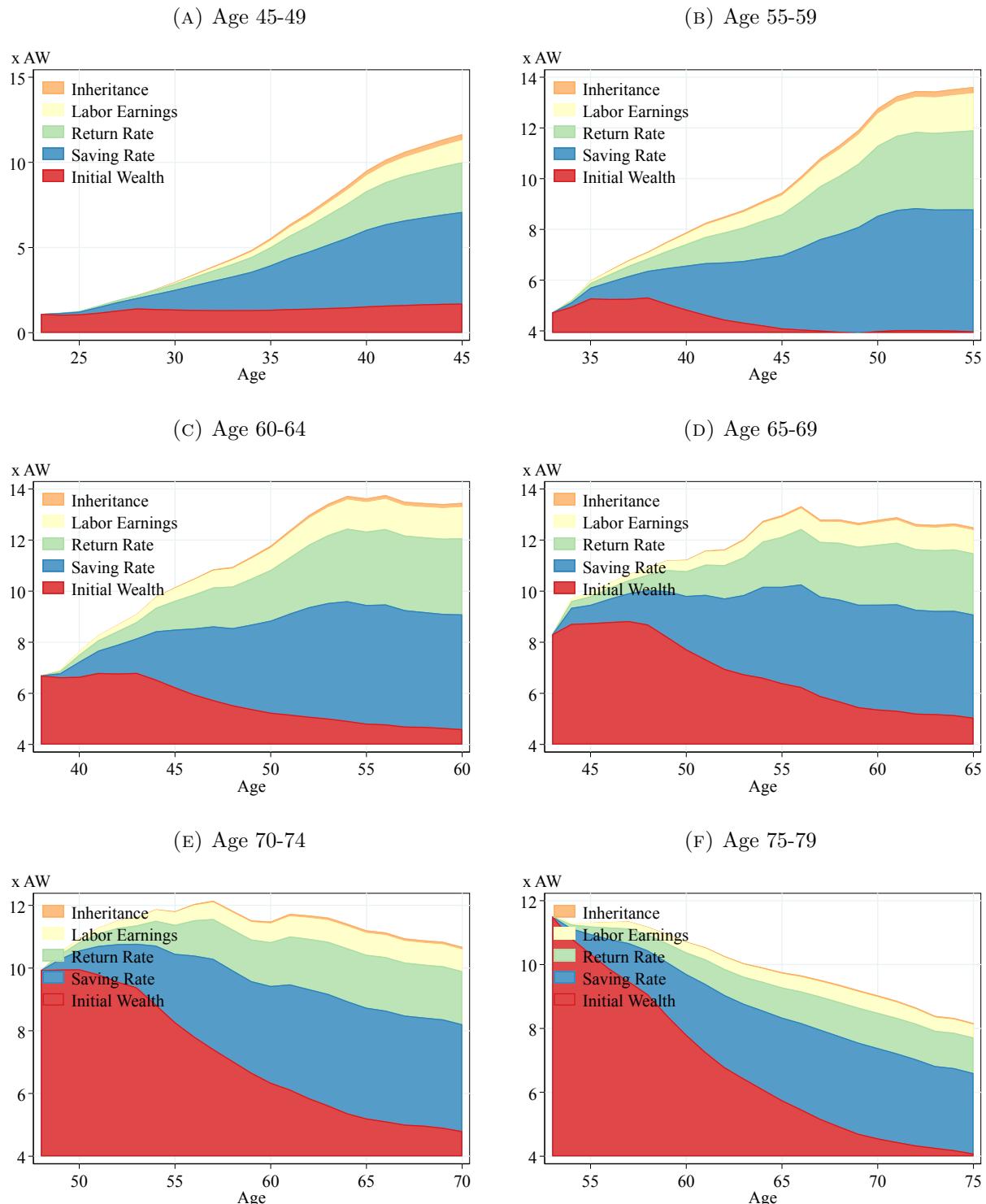
Notes: Figure D.34 shows the counterfactual wealth profiles for households at the top 0.1% of the wealth distribution if 2015 for different age groups.

FIGURE D.35 – SHAPLEY-Owen DECOMPOSITION OF WEALTH GAP: AGE GROUPS



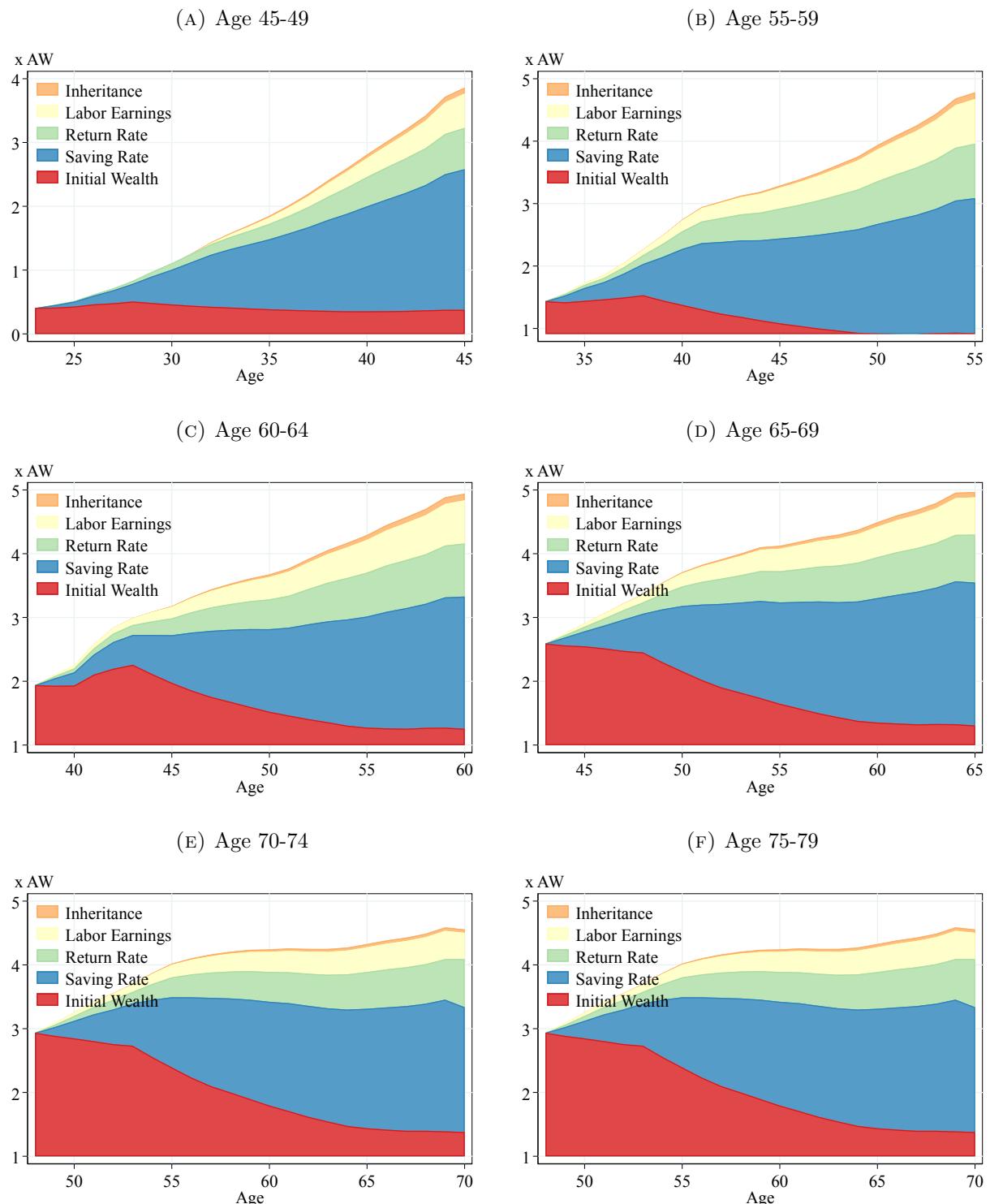
Notes: Figure D.35 shows the counterfactual wealth profiles for households at the top 0.1% of the wealth distribution if 2015 for different age groups.

FIGURE D.36 – SHAPLEY-Owen DECOMPOSITION OF WEALTH GAP: 99 TO 99.9%



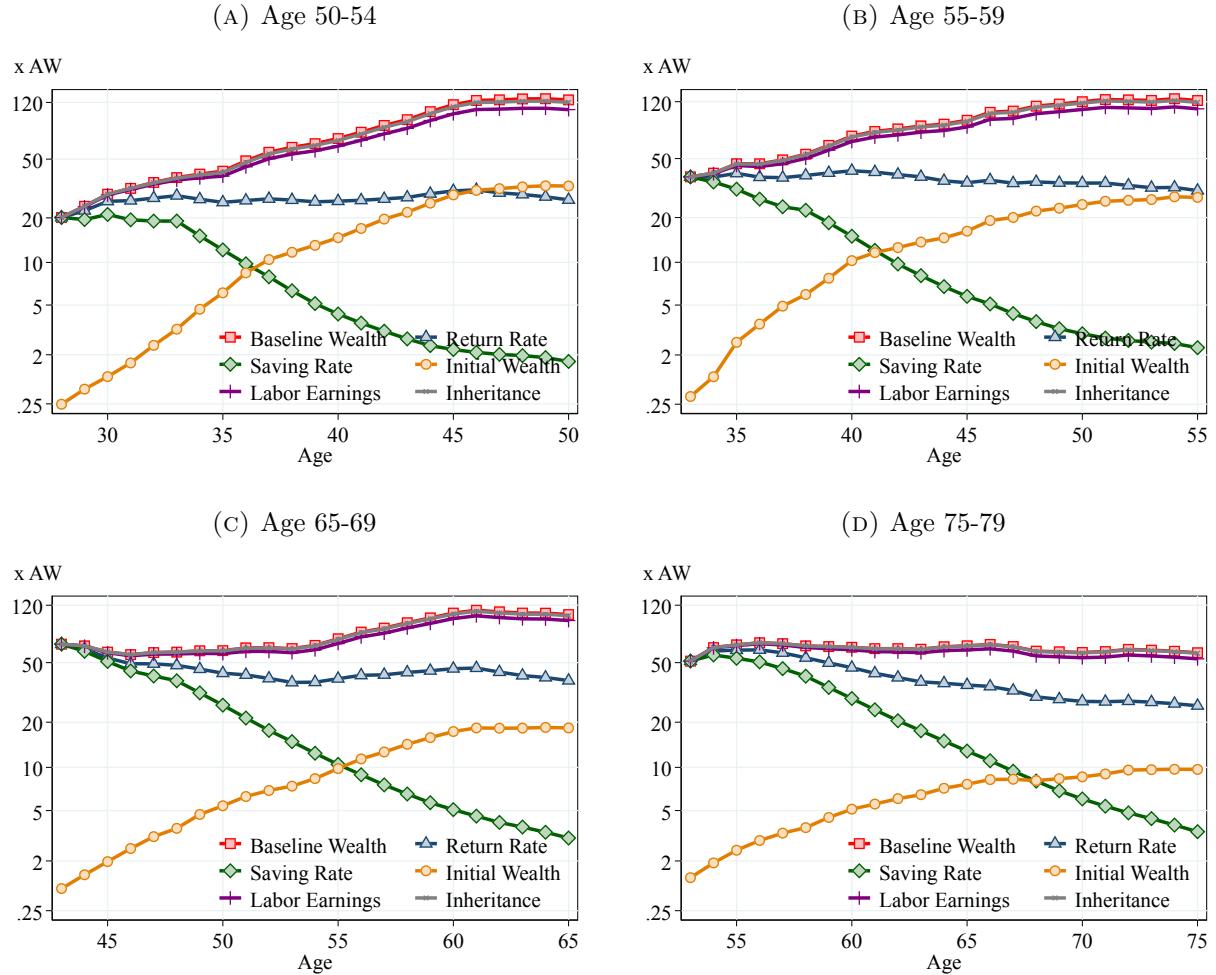
Notes: Figure D.36 shows the counterfactual wealth profiles for households between the 99 and 99.9th percentiles of the wealth distribution if 2015 for different age groups.

FIGURE D.37 – SHAPLEY-OWEN DECOMPOSITION OF WEALTH GAP: 95 TO 99%



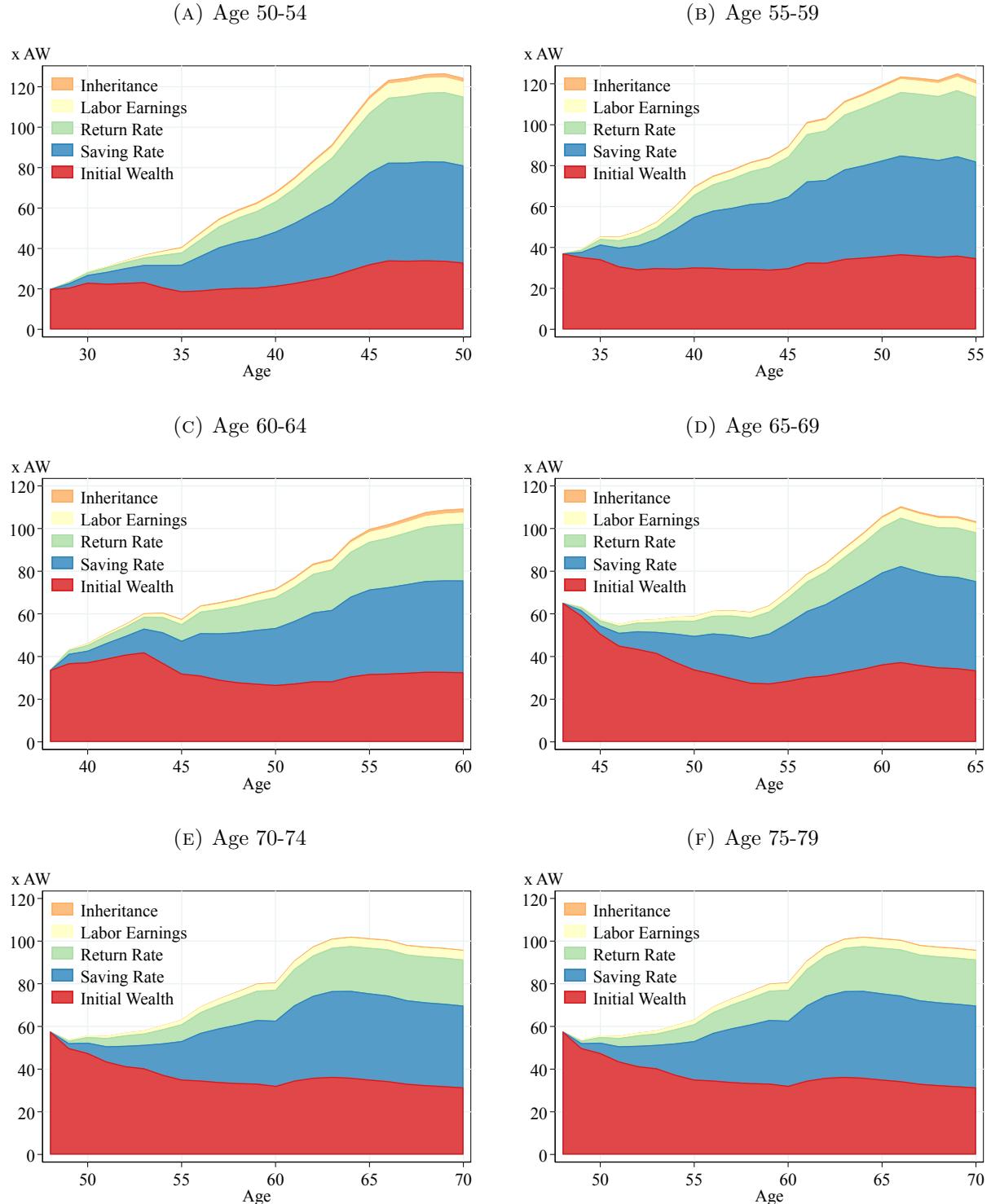
Notes: Figure D.37 shows the counterfactual wealth profiles for households between the 95 and 99th percentiles of the wealth distribution if 2015 for different age groups.

FIGURE D.38 – DECOMPOSITION USING CASH-ON-HAND SAVING RATE



Notes: Figure D.38 shows the counterfactual wealth profiles for households at the top 0.1% of the wealth distribution if 2015 for different age groups. The saving rate is defined as  $\tilde{S}_{it} = W_{i,t}/(W_{i,t-1} + \tilde{L}_{i,t} + \tilde{H}_{i,t} + \tilde{R}_{i,t}W_{i,t-1})$ .

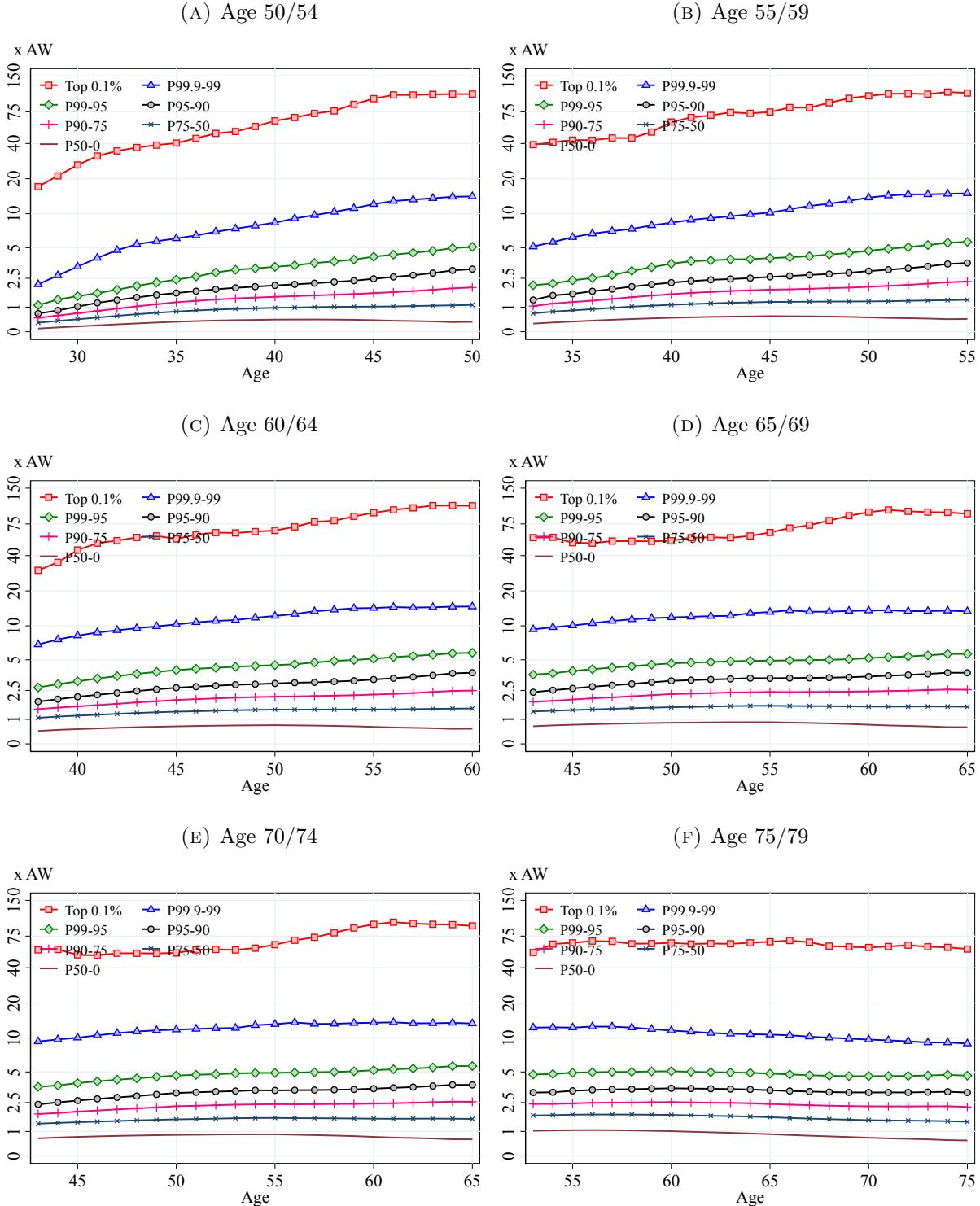
FIGURE D.39 – SHAPLEY-OWEN DECOMPOSITION: CASH-ON-HAND SAVING RATE



Notes: Figure D.39 shows the counterfactual wealth profiles for households at the top 0.1% of the wealth distribution if 2015 for different age groups. The saving rate is defined as  $\tilde{S}_{it} = W_{i,t-1} / (W_{i,t-1} + \tilde{L}_{i,t} + \tilde{H}_{i,t} + \tilde{R}_{i,t} W_{i,t-1})$ .

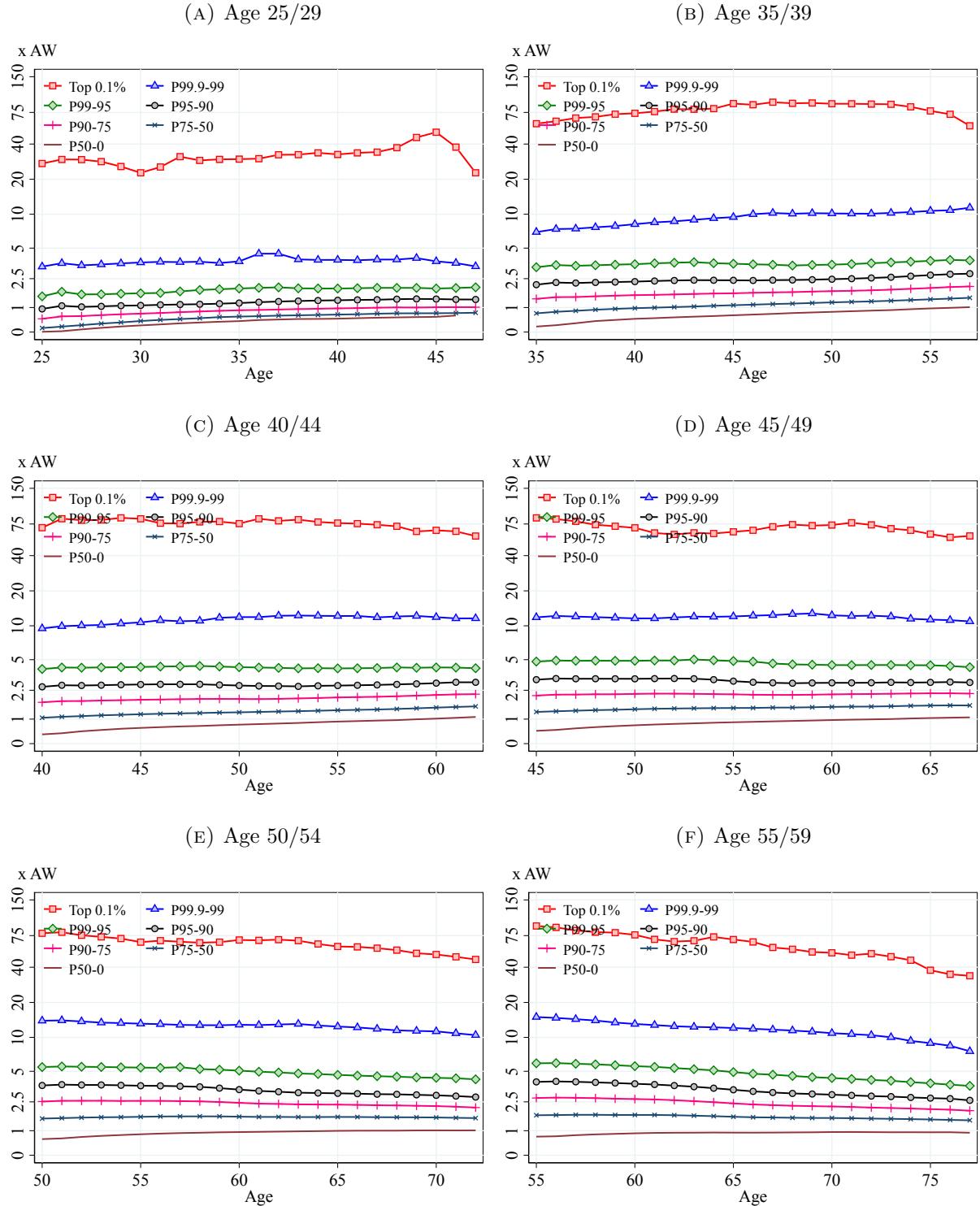
## E.4 Balanced Sample

FIGURE D.40 – BALANCED BACKWARD-LOOKING WEALTH PROFILES: AGE GROUPS



Notes: Figure D.40 shows average wealth for different  $BW_j^h$  groups considering households that have been stable for at least ten years.

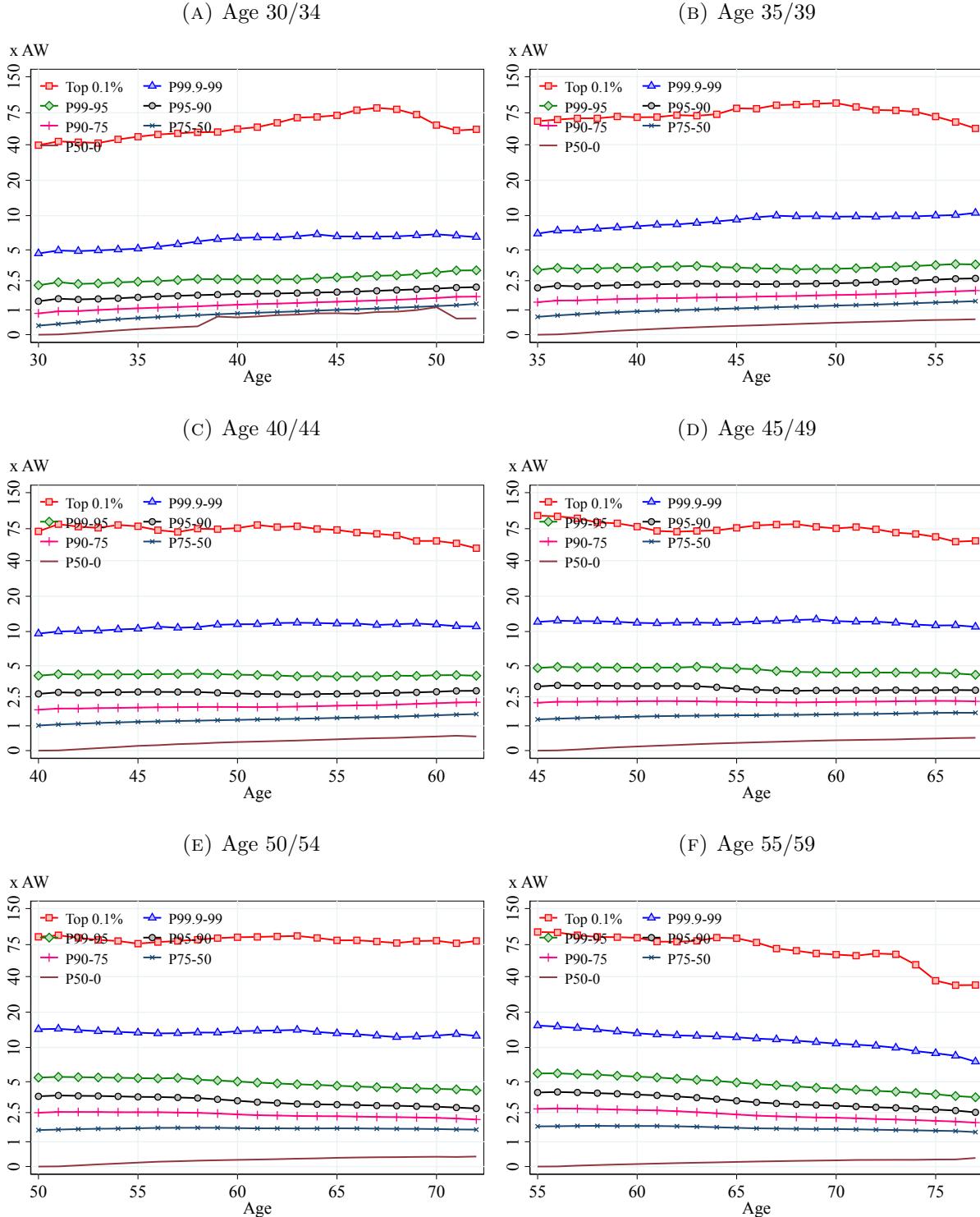
FIGURE D.41 – BALANCED FORWARD-LOOKING WEALTH PROFILES: AGE GROUPS



Notes: Figure D.41 shows average wealth for different  $FW_j^h$  groups considering households that have been stable for at least ten years.

## E.5 Forward-Looking Results

FIGURE D.42 – FORWARD-LOOKING WEALTH PROFILES: AGE GROUPS



Notes: Figure D.42 shows the evolution of average household for households in different  $FW_j^h$  groups.

FIGURE D.43 – FORWARD-LOOKING TRANSITION MATRIX: AGE GROUPS

		Ending Average Wealth Rank						
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%
Start-of-Period Wealth Rank, FW <sub>j</sub>	[0,50]	62.6	21.0	10.7	3.2	2.2	0.4	0.0
	(50-75]	48.0	28.6	15.2	4.7	3.1	0.5	0.0
	(75-90]	32.5	32.9	21.6	6.9	5.1	0.9	0.1
	(90-95]	22.7	28.8	27.8	10.3	8.5	1.6	0.1
	(95-99]	16.2	21.8	27.3	14.3	16.1	4.0	0.3
	(99-99.9]	7.5	10.7	16.9	13.5	33.5	16.0	2.0
	Top 0.1%	3.1	2.5	2.6	4.4	14.1	44.1	29.2

		Ending Average Wealth Rank						
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%
Start-of-Period Wealth Rank, FW <sub>j</sub>	[0,50]	67.1	19.7	8.9	2.5	1.6	0.2	0.0
	(50-75]	44.4	32.0	16.0	4.4	2.8	0.4	0.0
	(75-90]	26.4	33.9	25.6	7.8	5.4	0.8	0.0
	(90-95]	17.1	25.6	31.0	13.3	11.0	1.9	0.1
	(95-99]	11.7	18.8	26.5	16.7	21.0	5.2	0.2
	(99-99.9]	4.9	6.6	14.1	13.1	32.7	25.0	3.5
	Top 0.1%	2.8	0.9	4.4	3.7	11.8	41.2	35.2

		Ending Average Wealth Rank						
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%
Start-of-Period Wealth Rank, FW <sub>j</sub>	[0,50]	69.9	18.9	7.9	2.1	1.2	0.1	0.0
	(50-75]	41.9	34.5	16.6	4.3	2.4	0.3	0.0
	(75-90]	22.7	33.8	28.3	8.8	5.7	0.7	0.0
	(90-95]	14.9	24.1	31.3	15.1	12.6	1.9	0.1
	(95-99]	9.6	15.5	25.5	17.9	25.3	5.8	0.3
	(99-99.9]	3.5	5.0	10.8	11.2	33.6	31.7	4.2
	Top 0.1%	1.7	1.4	3.9	2.3	12.2	45.5	32.9

		Ending Average Wealth Rank						
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%
Start-of-Period Wealth Rank, FW <sub>j</sub>	[0,50]	71.7	18.5	7.1	1.7	0.9	0.1	0.0
	(50-75]	39.9	36.6	17.1	4.1	2.1	0.2	0.0
	(75-90]	21.0	32.7	30.5	9.5	5.8	0.6	0.0
	(90-95]	14.0	21.9	32.2	16.8	13.5	1.6	0.1
	(95-99]	8.1	13.5	23.6	19.3	28.9	6.5	0.2
	(99-99.9]	2.5	4.1	8.1	10.1	34.4	36.6	4.3
	Top 0.1%	1.7	0.7	2.9	1.6	9.2	44.9	39.0

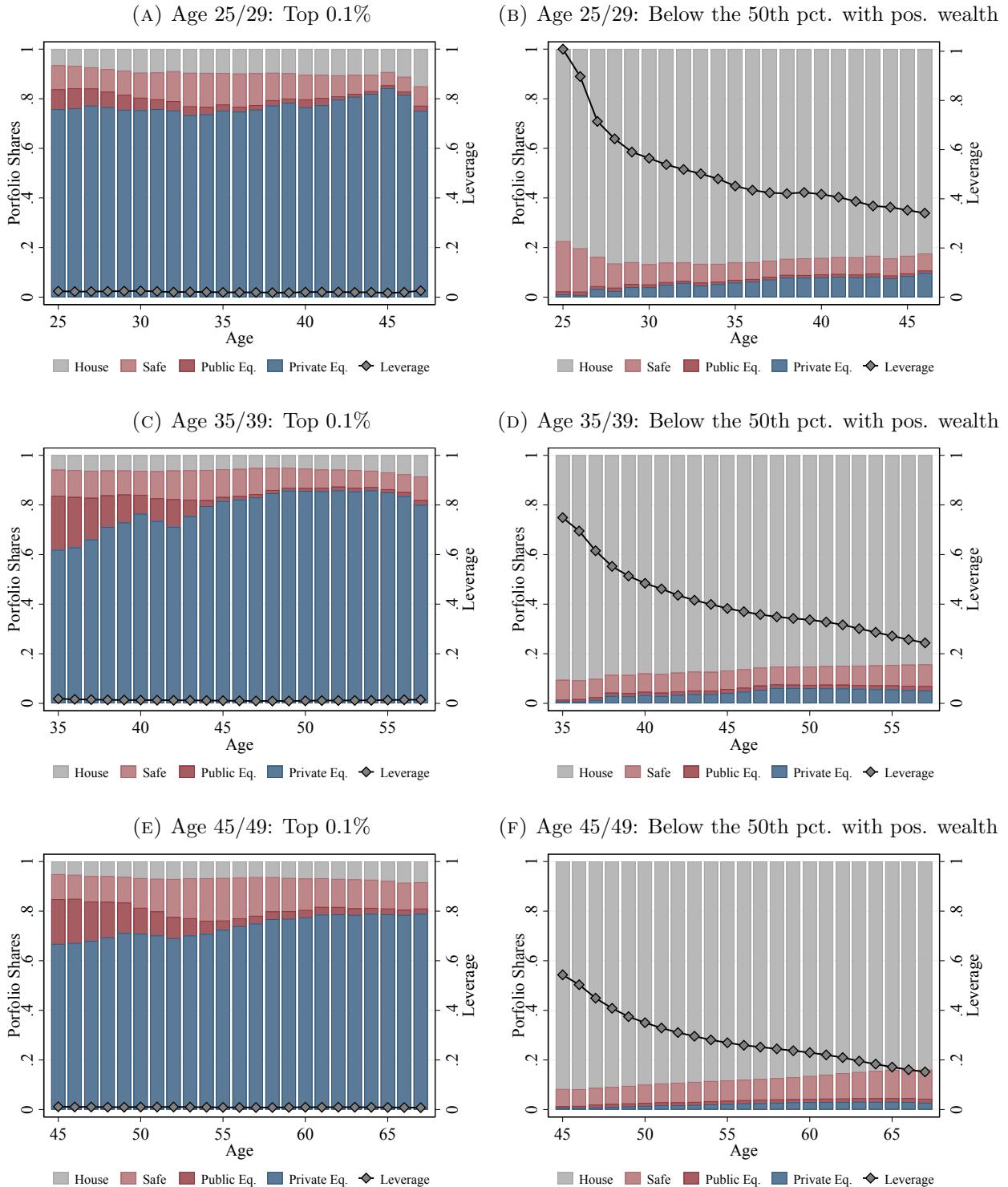
		Ending Average Wealth Rank						
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%
Start-of-Period Wealth Rank, FW <sub>j</sub>	[0,50]	72.8	18.7	6.2	1.4	0.7	0.1	0.0
	(50-75]	38.2	38.0	18.0	3.8	1.8	0.2	0.0
	(75-90]	20.2	31.4	32.0	10.1	5.7	0.5	0.0
	(90-95]	13.7	19.5	31.8	18.4	15.2	1.5	0.0
	(95-99]	7.2	11.0	22.8	20.3	31.4	7.1	0.2
	(99-99.9]	2.7	3.8	8.7	9.6	31.8	38.7	4.6
	Top 0.1%	0.8	1.2	2.5	0.8	10.2	42.5	42.0

		Ending Average Wealth Rank						
		[0,50]	(50-75]	(75-90]	(90-95]	(95-99]	(99-99.9]	Top 0.1%
Start-of-Period Wealth Rank, FW <sub>j</sub>	[0,50]	73.9	18.8	5.6	1.1	0.6	0.0	0.0
	(50-75]	36.3	39.0	19.2	3.7	1.7	0.1	0.0
	(75-90]	20.0	29.9	33.0	10.9	5.7	0.4	0.0
	(90-95]	13.3	18.1	30.5	19.9	16.4	1.6	0.1
	(95-99]	7.7	11.5	20.7	19.6	32.7	7.6	0.2
	(99-99.9]	2.2	3.6	8.9	9.2	32.3	39.0	4.8
	Top 0.1%	0.9	0.0	3.1	2.5	7.8	46.1	39.5

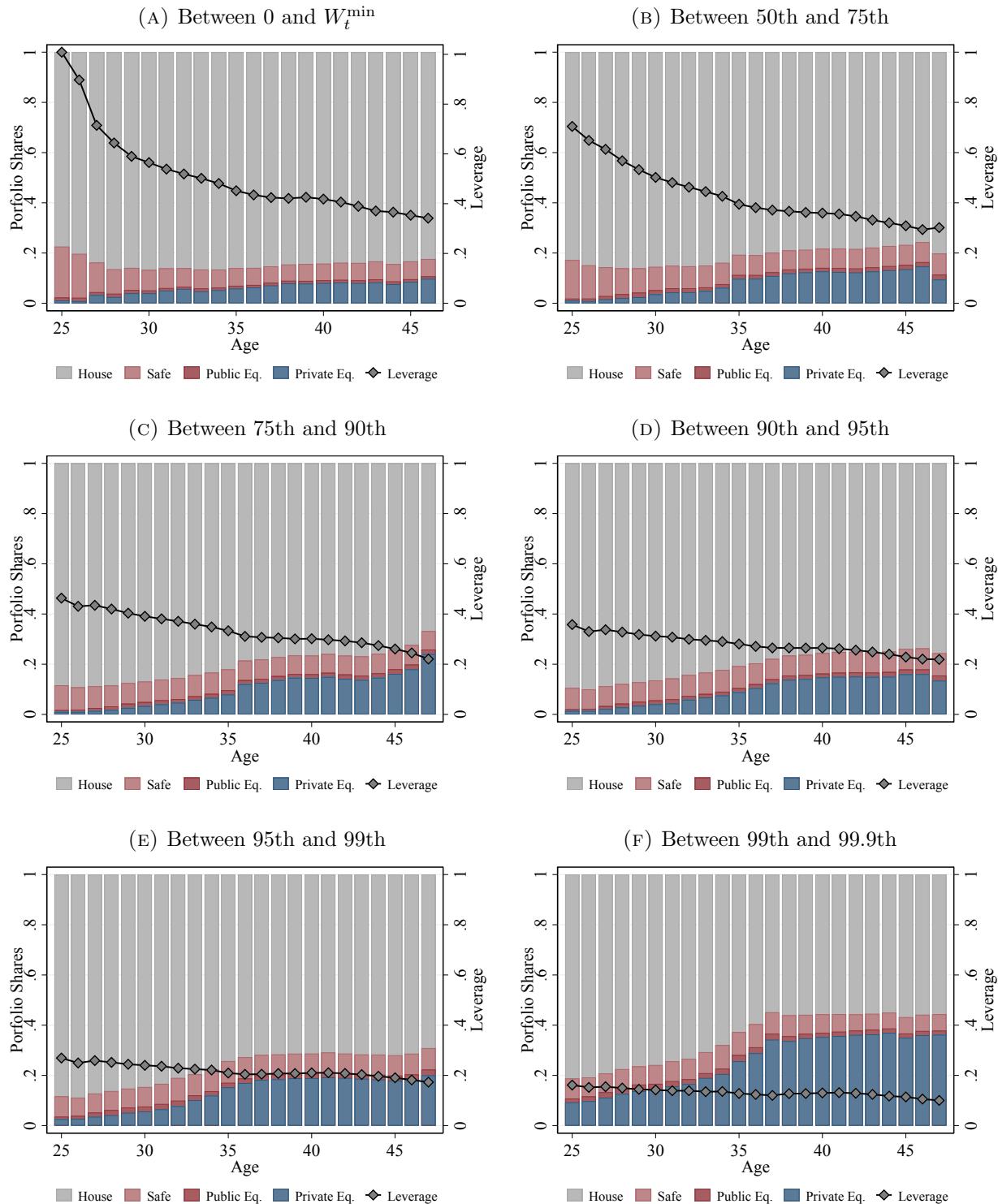
Notes: Figure D.43 shows the intragenerational persistence of net wealth. Figure D.43 shows the results by first sorting household whose head is in different age groups in the conditioning year and then again by  $\bar{W}_{i,2015}$ . Each cell represent the fraction of household in different percentiles of the wealth distribution in  $\bar{W}_{i,2015}$  (columns), conditional on their percentile of the wealth distribution in the conditioning year,  $FW_j^h$  (rows).

FIGURE D.44 – FORWARD-LOOKING PORTFOLIO SHARES: AGE GROUPS



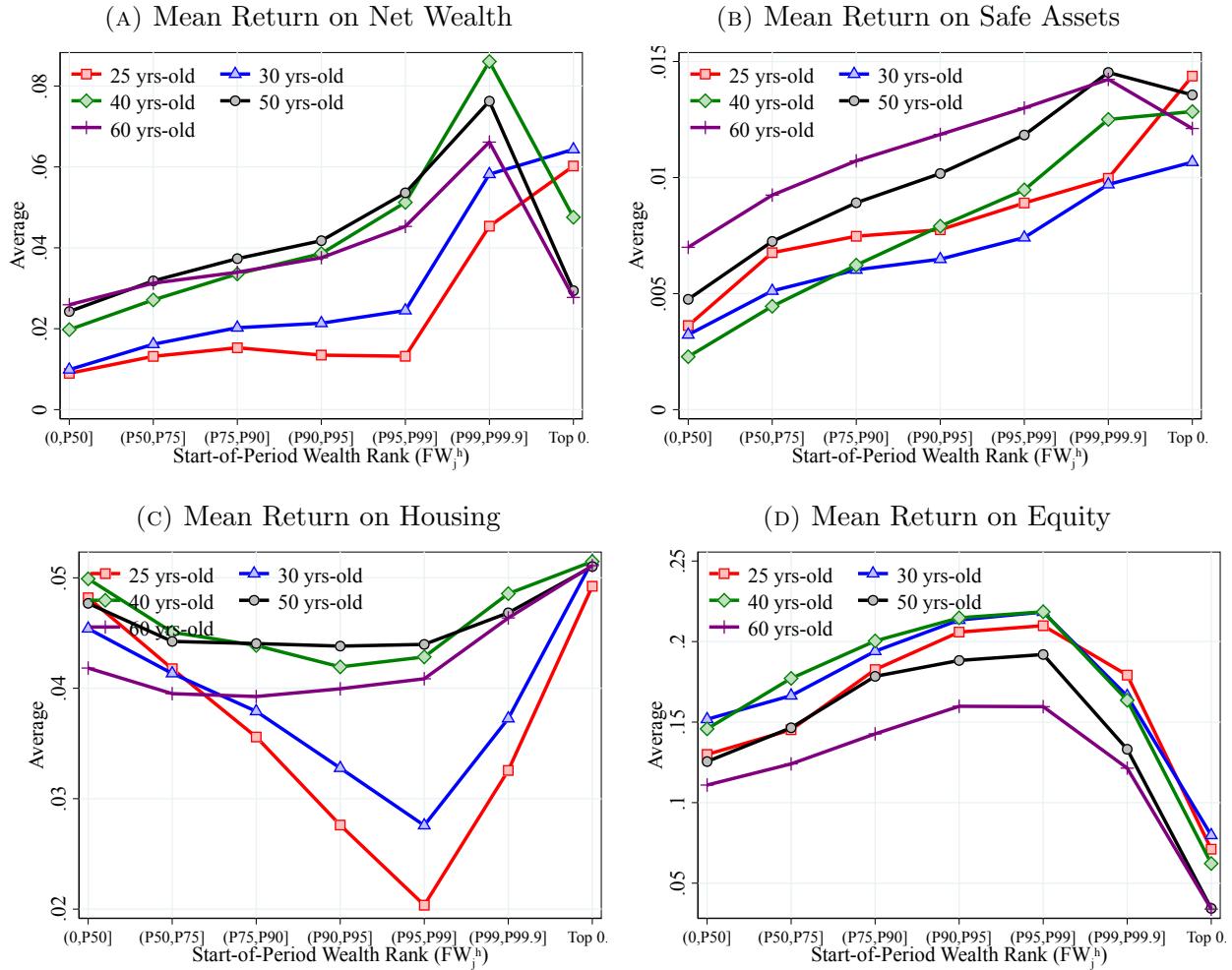
Notes: Figure D.44 shows the evolution of the portfolio shares (left y-axis) and leverage (right y-axis) for households.

FIGURE D.45 – FORWARD-LOOKING PORTFOLIO SHARES: OTHER GROUPS (25-29 YEARS OLD)



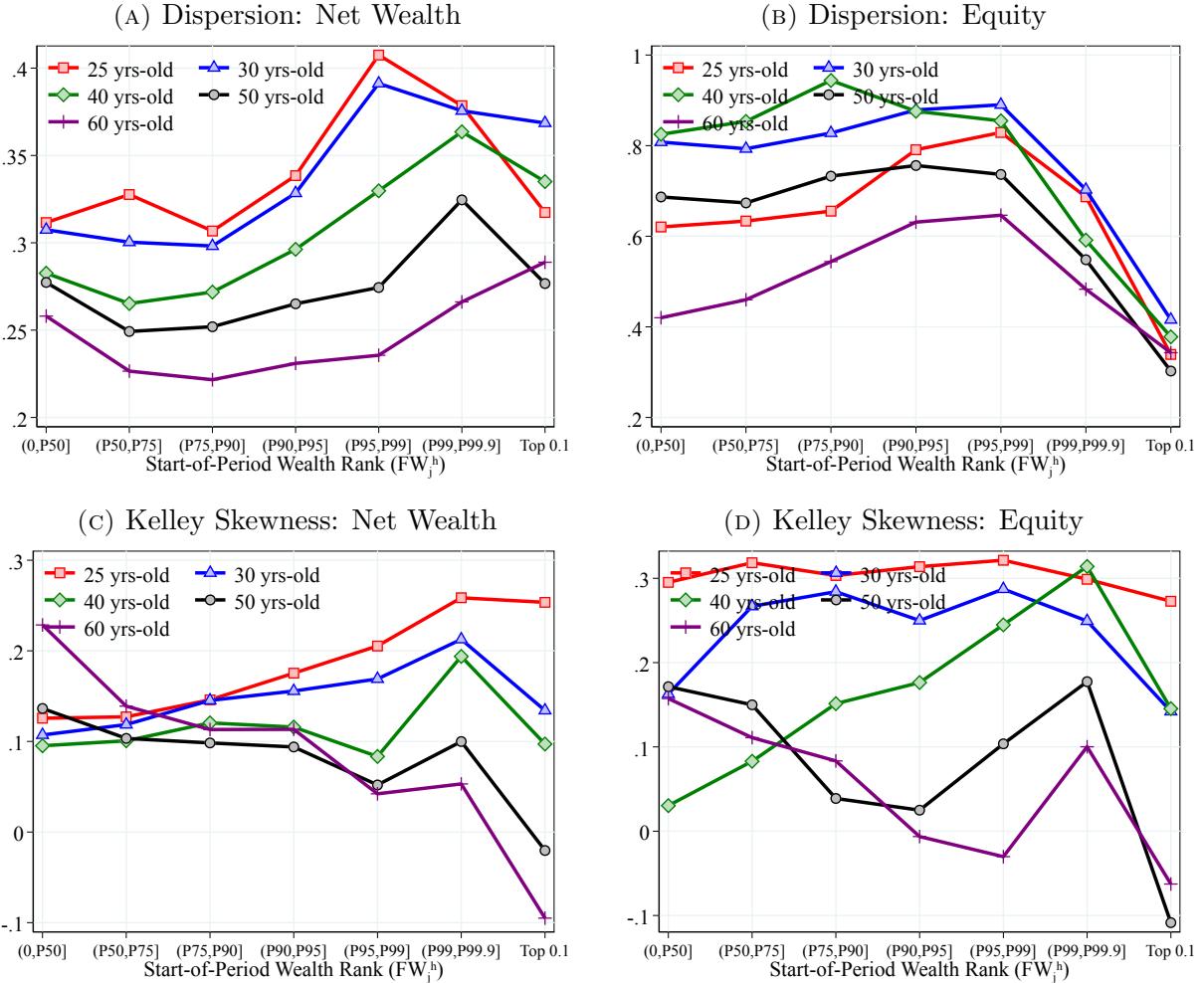
Notes: Figure D.45 shows the evolution of the portfolio shares (left y-axis) and leverage (right y-axis) for households.

FIGURE D.46 – LIFETIME RETURNS BY START-OF-THE-PERIOD WEALTH



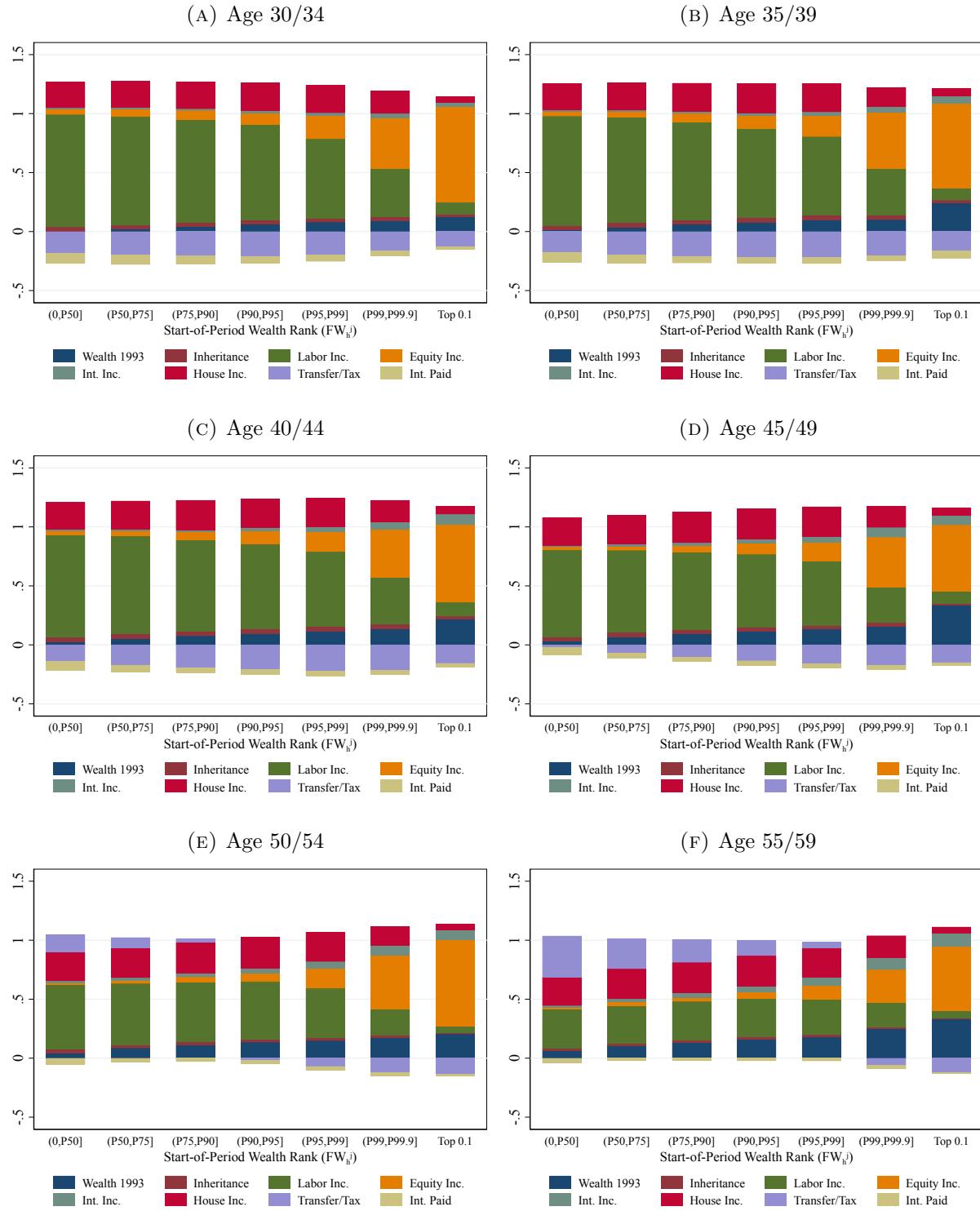
Notes: Figure D.46 shows the 11-years mean of the value-weighted average gross annual returns within age and wealth groups across different conditioning years for different asset classes.

FIGURE D.47 – DISPERSION AND SKEWNESS OF RATES OF RETURNS



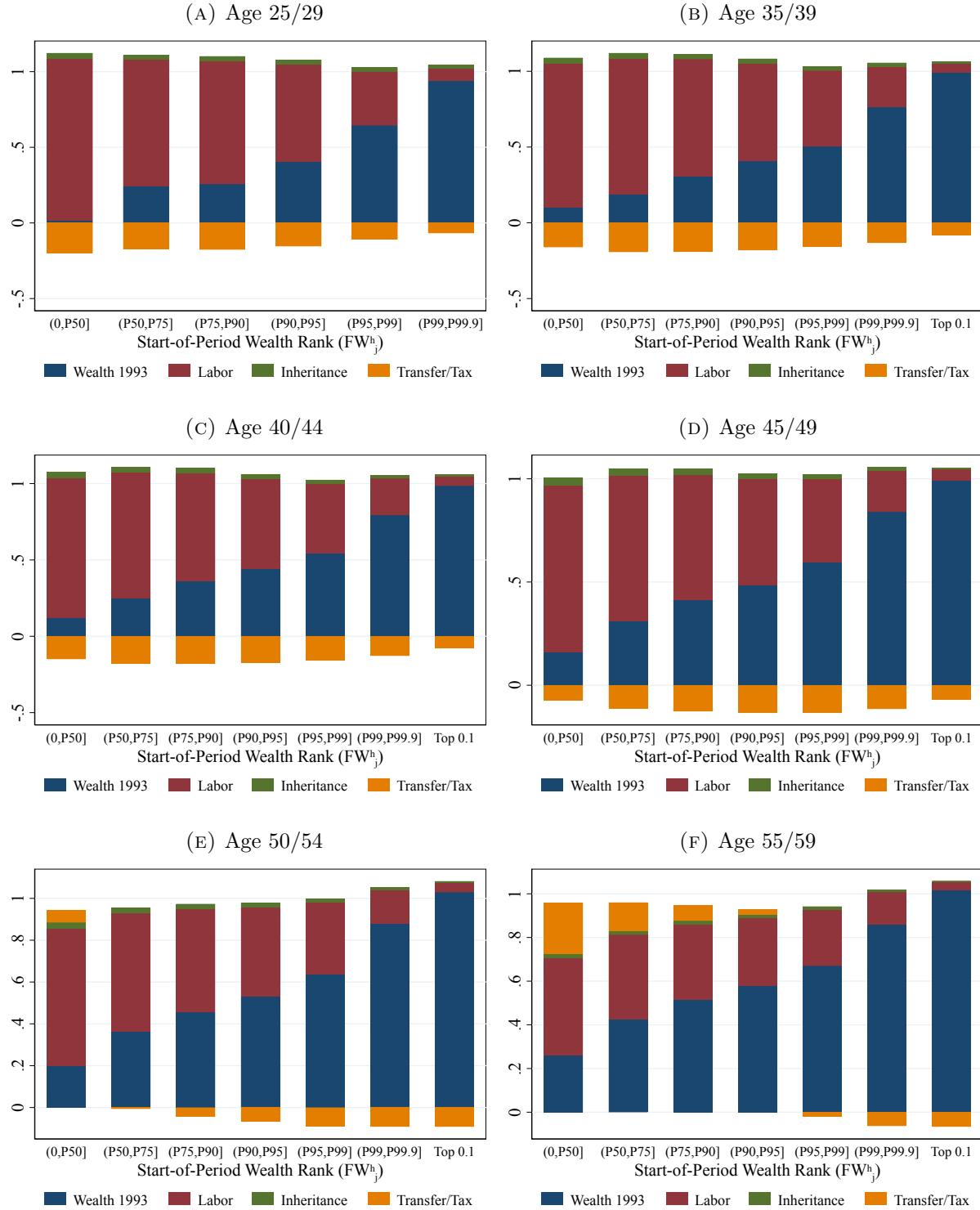
Notes: Table D.47 shows the 11-years mean of the value-weighted cross-sectional moments of the gross annual returns within age and wealth groups across different conditioning years for different asset classes.

FIGURE D.48 – LIFETIME RESOURCES DECOMPOSITION: AGE GROUPS



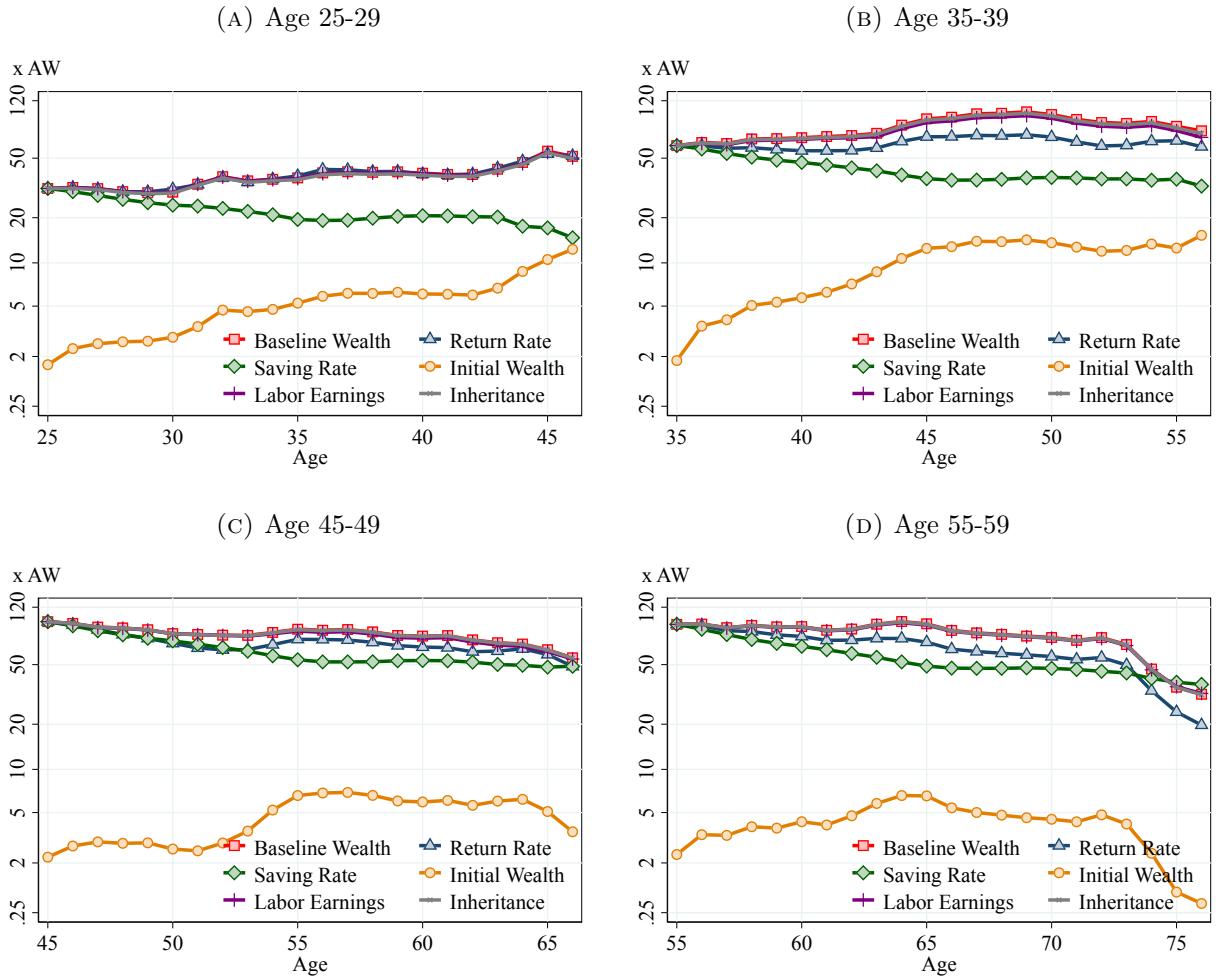
Notes: Figure D.48 shows lifetime resources shares for households in different age groups and wealth rank,  $FW_h^h$ .

FIGURE D.49 – FORWARD-LOOKING DYNAMIC DECOMPOSITION: AGE GROUPS



Notes: Figure D.49 shows the shares of lifetime resources for a sample of households in different age groups and wealth rank,  $FW_j^h$ , accounting for capitalization.

FIGURE D.50 – COUNTERFACTUAL: TOP WEALTH HOUSEHOLDS; AGE GROUPS

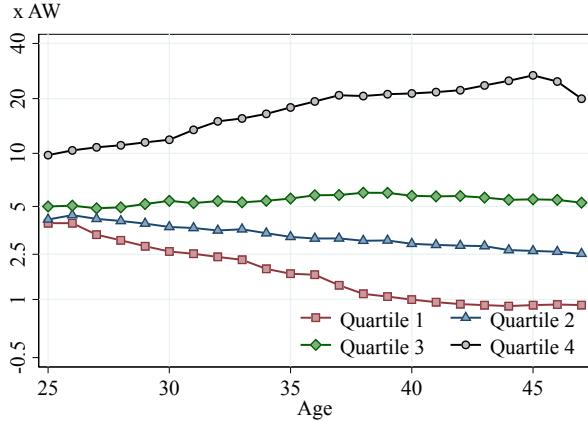


Notes: Figure D.50 shows the counterfactual wealth profiles for households at the top 0.1% of the wealth distribution.

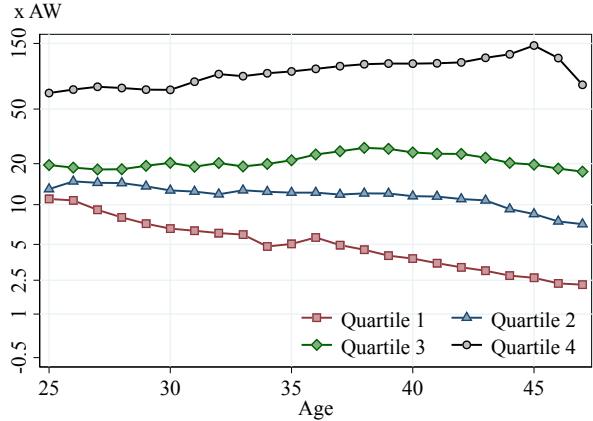
## E.6 Forward-Looking Evolution of the Rich

FIGURE D.51 – FORWARD WEALTH PROFILE: OLD MONEY AND NEW MONEY

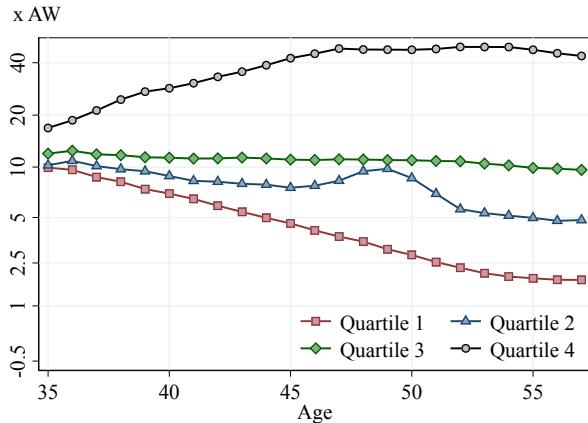
(A) Age 25/29: Top 1% Households



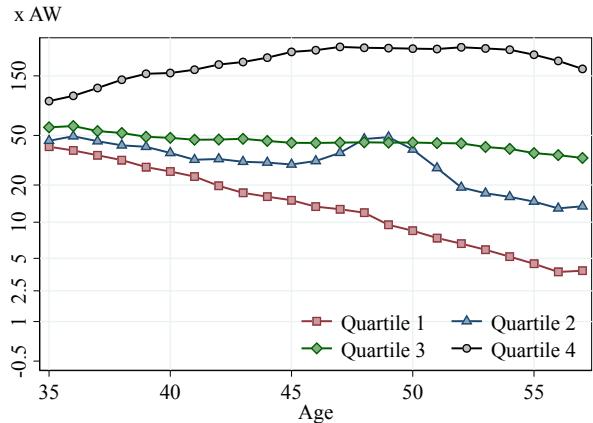
(B) Age 25/29: Top 0.1% Households



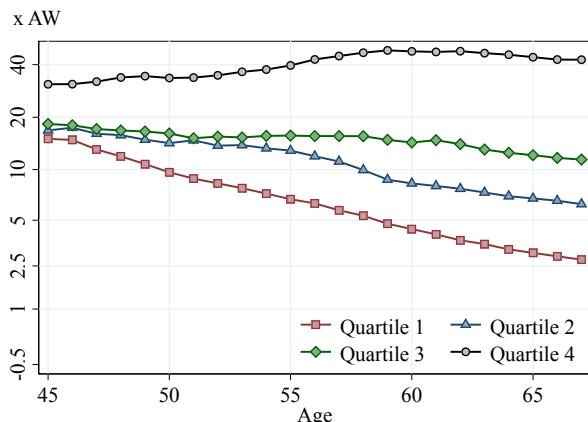
(C) Age 35/39: Top 1% Households



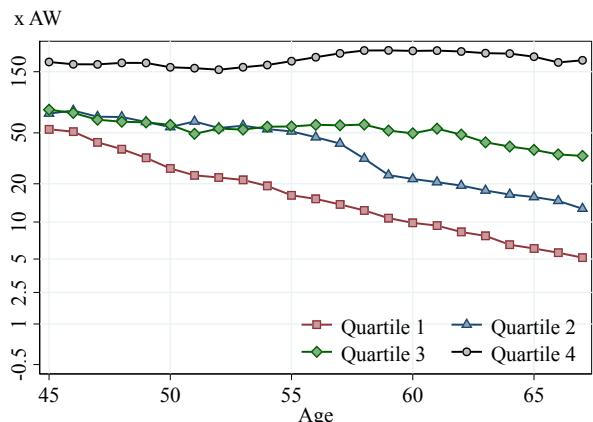
(D) Age 35/39: Top 0.1% Households



(E) Age 45/49: Top 1% Households



(F) Age 45/49: Top 0.1% Households



Notes: Figure D.51 shows the average wealth profile for household whose head is in  $FW_{\geq P99.9}^h$  different age groups,  $h$  and belong to the top 0.1% of the wealth distribution at the start of the sample and were in different quartiles of the end-of-period average wealth distribution ( $\bar{W}_{i,2015}$ ).