From Saving Comes Having? Disentangling the Impact of Saving on Wealth Inequality

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June 2018

ABSTRACT

This paper investigates the channels through which saving flows impact the dynamics of wealth inequality. The analysis relies on an administrative panel that reports the assets and income of every Swedish resident at the yearly frequency. We document that the saving rate, defined as saving from labor income divided by net worth, is on average a decreasing function of net worth itself. The saving rate is also highly heterogeneous within net worth brackets. Heterogeneity across and within net worth brackets have conflicting effects on wealth inequality. As a result, saving rate heterogeneity is measured to have a strong impact on social mobility but only a weak impact on the distribution of net worth. Heterogeneity in wealth return is instead the main driver of the recent increase in top wealth shares.

Keywords: Household finance, inequality, saving, consumption, income-to-wealth ratio.

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Wealth inequality far exceeds income inequality and is growing rapidly in the United States and around the world (Piketty 2014, Saez and Zucman 2016). Among possible explanations of these phenomena, the heterogeneity of saving rates has emerged as a leading contender in the theoretical literature (de Nardi and Fella 2017). The assumed diversity of saving rates has multiple potential sources rooted in individual preferences. Some individuals may be more patient and choose steeper accumulation paths than others (Krusell and Smith 1998) – a form of heterogeneity that can be classified as type-dependent. Other sources of saving rate heterogeneity are tied to variation in the shape of the utility function with the level of wealth – a form of heterogeneity that can be classified as scale-dependent. For instance, under the spirit-of-capitalism preferences considered by Carroll (2000), the marginal utility of wealth decreases more slowly than the marginal utility of consumption as wealth increases, so that agents in top brackets choose high saving rates. These two classes of saving rate heterogeneity parallel the type- and scale-dependent forms of heterogeneity in wealth returns, which can both be key drivers of wealth inequality (Benhabib et al., 2011) and its acceleration (Gabaix et al., 2016) in general equilibrium models.

While the links between savings and inequality have been extensively studied in the theoretical literature, their empirical analysis largely remains an open empirical question. Ideally, one would like to accurately measure the joint distribution of individual wealth, saving flows, and returns. Research has long been hampered by the lack of detailed information on the finances of households, especially in the wealthiest brackets that control a large share of national wealth. Household surveys, such as the U.S. Survey of Consumer Finances (SCF) and the Consumer Expenditure Survey (CEX), do not provide wealth returns and largely underreport consumption in top brackets (Koijen et al., 2015). Widely used panels, such as the U.S. Panel Study of Income Dynamics (PSID), do not oversample the wealthy and provide limited information on returns.

As a result of these data challenges, the empirical evidence on the distribution of wealth, saving flows, and returns remains fragmentary. The proportion of lifetime income allocated to current consumption has been shown to be either unrelated to net worth (Friedman 1957, Venti and Wise 2000) or decreasing in net worth (Carroll 2000, Dynan Skinner and Zeldes 2004, Mayer 1972). A separate strand of research investigate the link between saving flows and wealth in datasets that do not permit the measurement of returns. Saez and Zucman (2016) impute household net worth from U.S. tax returns and report a positive correlation between saving rates and wealth under the assumptions of homogeneous returns within an asset class and no mobility of households between wealth brackets.

In the present paper, we overcome the data challenge by using the Swedish Income and Wealth Registry, a high-quality administrative dataset containing the wealth records of Swedish residents between 2000 and 2007. This panel is one of the most comprehensive sources on individual finances (Calvet Campbell and Sodini 2007). It compiles the income, debt level and disaggregated holdings of every individual on December 31st of each year, reported at the level of each bank account, financial security, private firm, or real estate property. In Bach Calvet and Sodini (2017), we have used the dataset to measure the link between wealth and returns, excluding saving from consideration. We now use it to analyze the distribution of saving flows, returns, and wealth of individuals, which allows us to disentangle the main drivers of wealth inequality.

The panel allows us to construct a very accurate measure of the *active saving flow*, defined as labor income and transfers minus taxes and consumption, as well as the *total saving flow*, which is the sum of the active saving flow and capital income. The income and wealth panel also allows us to impute consumption, as in Koijen et al. (2015). Consistent with the wealth inequality literature, our main variables of investigation are flow variables scaled by net worth. We focus primarily on the *active saving rate* and the *total saving rate*, which are defined as the active saving flow and the total saving flow, respectively, divided by net worth. By construction, an individual's total saving rate is the sum of the active saving rate and the return on net wealth. Since current income is an appropriate scaling factor in other contexts, we also report the ratios of the (active and total) saving flow to income in selected sections.

This paper makes several contributions to the literature. First, we document that the *active* saving flow represents on average a declining proportion of net worth as we consider individuals in increasing brackets of net worth. The average active saving rate decreases from 8% for the median bracket to -1.5% for the top 20%-10% and -7% for the top 0.01%. Low net-worth individuals hold relatively more human capital than wealth, so that even modest savings out of labor income imply a large proportional increase in wealth. By contrast, richer individuals derive a far bigger share of their earnings from capital income and can therefore consume substantially more than their labor income.

Second, we show that the total saving rate, which takes capital income into account, declines with net worth in brackets up to the 80th percentile of net worth and then stabilizes around 7% in the top 20% of the population. This finding confirms that the high consumption level of the wealthy is partly financed by capital income. Furthermore, our results imply that the total saving flow is approximately linear in wealth within the top 20% of the distribution. This empirical finding is consistent with the properties of classic portfolio-theoretic and equilibrium models (Gourinchas and Parker 1996, Krusell and Smith 1998).

Third, we measure considerable dispersion in saving behavior. Across all individuals with positive net worth, the standard deviation of the annual active saving rate is close to 90%, which is an order of magnitude higher than the dispersion of wealth returns. The diversity of the saving rate is also high when we condition on net worth: the standard deviation of the active saving rate remains above 30% per year even within tightly-defined wealth groups. Idiosyncratic dispersion in the active saving rate is high among poor individuals because their net worth is low relative to human capital. At the top of the distribution, idiosyncratic dispersion in active saving rates is lower but remains substantial, in part due to the variability of saving flows among entrepreneurs.

Fourth, we investigate how the heterogeneity of saving behavior impacts the dynamics of wealth inequality. Based on insights from the empirical wealth inequality literature (Saez and Zucman 2016, Garbinti Goupille-Lebret and Piketty 2017, Gomez 2017), we develop a decomposition of the growth of wealth shares based on three key factors: (i) systematic differences in the average saving rate between wealth groups, (ii) idiosyncratic dispersion in the saving rate within each wealth group, and (iii) differences in turnover across wealth groups.

Systematic differences in the average saving rate between wealth groups tend to reduce inequality. Over the 2000 to 2007 period, however, inequality has risen due to the large idiosyncratic dispersion in the active saving rate within each wealth group which we document. We decompose the change in inequality into a return component and an active saving component. Active saving behavior only has a limited impact on inequality due to the conflicting effects of high active saving rates at the bottom (which tend to reduce inequality) and large heterogeneity in the active saving rate at the top (which tend to increase inequality). By contrast, the heterogeneity of wealth returns is a major driver of wealth inequality, which confirms that the findings in Bach Calvet and Sodini (2017) remain valid in an empirical analysis controlling for saving rate heterogeneity.

To the best of our knowledge, our paper is the first to consider heterogeneity in saving rates across the entire distribution of net worth at the individual level. In the absence of individual data, Saez and Zucman (2016) measure saving aggregated at the level of fractiles of the U.S. wealth distribution. They construct a fractile's synthetic saving flow between t and $t+1$ as the difference between the observed variation of the wealth held by individuals in the fractile at t and $t+1$ and the variation predicted by the capital gain returns earned by individuals in the fractile at t. Under these definitions, saving rates are reported to increase with net worth. The main issue with such an approach is that it considers each wealth fractile as a homogeneous group of individuals. In practice, individuals regularly move from one fractile to another, which naturally boosts synthetic saving flows for fractiles at the top of the distribution (Gomez 2017). Turnover between fractiles likely explains why we reach a very different conclusion on the link between saving and wealth.

The paper provides key inputs for the calibration of equilibrium models seeking to explain the level and dynamics of wealth inequality (Benhabib et al. 2017; Hubmer et al. 2017; Kaymak and Poschke 2016). In order to match the observed wealth distribution, the calibrations consider either scale-dependent or type-dependent saving rates in the population. We establish that there is strong type-dependence but only weak scale-dependence of saving rates in the micro data.

More generally, our results inform the literature on consumption, saving, and wealth along multiple dimensions. Early work specifies the saving flow either as an increasing fraction of (lifetime) income (Fisher 1930, Keynes 1936) or as a constant proportion of lifetime income (Friedman 1957) as income increases. Subsequent research refines these specifications by developing more precise lifecycle models (e.g., Gourinchas and Parker 2002) that generate approximate linearity. A key aggregation result, due to Krusell and Smith (1998), shows that when agents have CRRA utility and an infinite horizon, individual saving is approximately linear in current wealth in top brackets, so that aggregate demand is approximately independent of the wealth distribution (see also Benhabib et al. 2015 and Achdou et al. 2017). We measure approximately constant saving rates out of wealth at the top and thereby confirm Krusell and Smith's (1998) insight. The approximate linearity in the data invalidates models implying that the saving flow is a strictly convex function of wealth (Carroll, 2000). Moreover, our paper confirms that the active saving rate of the wealthiest individuals exhibit very large heterogeneity, which is consistent with micro theories based on the heterogeneity of discount rates, family characteristics, or old-age risk exposures (Browning and Lusardi 1996; Lusardi et al., 2017). Last but not least, the forms of saving heterogeneity documented in the paper have profound implications for the sensitivity of aggregate demand to distributional shocks, and therefore for the dynamics of macroeconomic activity, capital formation, and asset prices. The joint distribution of saving, income and wealth is also crucially important for the efficiency and distributional impact of the tax system. We leave these issues for further research.

The rest of the paper is organized as follows. Section I describes the data and main variables. Section II documents the average active and total saving rates and their main determinants across different brackets of net worth. Section III investigates the heterogeneity of saving rates within each wealth bracket and their possible origins. Section IV offers an analytical decomposition of wealth inequality dynamics and derives the implications of our empirical findings for the dynamics of wealth inequality. Section V concludes.

I. Data and Definition of Variables

A. *Registry Data and Sample Selection*

The holdings of Swedish residents are available from the Income and Wealth Registry, which is compiled by Statistics Sweden from tax returns. The data include the worldwide assets and debt of each resident at year-end from 2000 to 2007. Our unit of observation is the individual rather than the household. This choice allows us to avoid the complications in the measurement of savings due to frequent changes in household composition.

We select all individuals aged 20 or more. The sample includes 5.7 million observations per year representing, through sampling weights, 7.2 million Swedish individuals per year. Bank account balances, stock and mutual fund investments, private equity and real estate holdings are observed at the level of each account, security, or property.[1] Funded pension savings are imputed

[1] Bank account balances are reported if the account yields more than 100 Swedish kronor during the year (1999 to

using the history of each individual's earnings from 1984 onwards. Most wealth items are reported by third parties, which ensures high accuracy. Earlier research describes the Income and Wealth Registry in greater detail.[2] To avoid dealing with either negative or very small levels of net worth in our computation of saving rates, we drop individuals with net worth below 3,000 SEK (about 200 USD), which represents the bottom 10% of the wealth distribution.

B. Asset Returns

Pricing data on Nordic stocks and mutual funds are available from FINBAS, a financial database maintained by the Swedish House of Finance. FINBAS provides monthly returns, market capitalizations, and book values of publicly traded companies for the 1983 to 2009 period. For securities not covered by FINBAS, we use pricing information from Datastream and Morningstar. We proxy the return on financial assets with less than two years of price and dividend data by the return on financial assets with more than two years of available data.[3] The return on pension wealth is imputed using the aggregate asset composition of the holdings of Swedish life insurance companies, which manage the savings accumulated by Swedes in defined-contribution retirement accounts.

Real estate prices are computed by Statistics Sweden from two main sources. First, tax authorities assess the value of each property every five to ten years using detailed information on its characteristics. Second, Statistics Sweden collects data on all transactions, which permit the construction of sales-to-tax-value multipliers for different geographic locations and property types. The Statistics Sweden price data allow us to compute yearly capital gains. As in Bach, Calvet and Sodini (2017), we impute the rental yield (net of depreciation) on each property using a user cost of capital formula. Because the Swedish property market is characterized by very small transaction costs and rental contracts that are very protective of renters, the user cost of capital formula equates the rental yield with the interest rate on Swedish Treasury bills.

For unlisted business equity, the measurement of valuations and returns must overcome the lack of regular price information. As in Bach, Calvet and Sodini (2017), we use a standard methodology

2005 period), or if the year-end bank account balance exceeds 10,000 Swedish kronor (2006 and 2007). We impute unreported cash balances by following the method developed in Calvet, Campbell, and Sodini (2007).

[2]See Bach, Calvet, and Sodini (2017) and Calvet, Campbell and Sodini (2007).

[3]Assets with missing return data consist primarily of capital insurance and represent about 10% of total financial wealth during the sample period with little variation across wealth groups.

based on valuation multiples of listed firms in the same industrial sector as the unlisted firm of interest, with a substantial discount to account for the illiquidity of the shares (Damodaran 2012). The total return on the share of a private firm is the increase in valuation between two accounting years plus the net payout over the same period.

Debt costs are conveniently imputed from the registry. For each individual, we observe total debt outstanding at year end and the interest paid during the year. We proxy the individual's yearly debt cost by the average interest payment made in years t and $t+1$ divided by total debt at the end of year t, winsorized at the 5% right tail.

C. *Wealth Variables*

We measure an individual's gross financial wealth as the value of her bank accounts, mutual funds, stocks, and other investment vehicles (bonds, derivatives, and capital insurance). Pension wealth is equal to the market value of the assets accumulated in defined-contribution retirement accounts. Real estate wealth is the value of residential properties providing housing services to the individual (primary and secondary residences), and commercial properties serving primarily as investment vehicles (rental, industrial, and agricultural properties). Private equity consists of all the shares of unlisted companies. Household debt is the sum of mortgages and all other liabilities.

We define *total gross wealth* as the sum of financial wealth, real estate wealth, and private equity. *Net wealth* (or *net worth*) is the difference between gross wealth and household debt. The definition of wealth variables and the corresponding aggregates from the micro data used in the paper are consistent with national accounts, as can be observed in Figure 1.

Unless stated otherwise, an individual's *rank* will always refer to her position in the distribution of net worth at the end of each calendar year. In Figure 2, we display the share of aggregate net worth held by various fractiles of the population between 2000 and 2007. Our results are consistent with other studies on Sweden, such as Roine and Waldenström (2009) and Bach, Calvet and Sodini (2017), even though the present paper focuses on individuals rather than households. In particular, there is very substantial wealth concentration in Sweden. For instance, the top 1% and the top 0.01% of the distribution hold on average 21.7% and 5.6%, respectively, of aggregate wealth during the sample period.

II. How Do Saving Flows Vary Across Wealth Brackets?

This section investigates how saving flows vary across brackets of net worth.

A. *Total and Active Saving Rates*

As Dynan et al. (2004) explain, some income sources are easier to consume than others. The marginal propensity to consume capital gains tends to be small, regardless of whether the capital gains are earned from real estate (Fagereng et al., 2016) or more liquid financial securities (Baker et al. 2007, Di Maggio et al. 2017). Moreover, from a macroeconomic perspective, capital gains are not a source of income that can be reinvested in the economy.

In practice, however, disentangling capital gains from earned interest and dividends may be challenging empirically. One reason is that interest and dividends can be automatically reinvested, as is often the case with mutual funds and capital insurance products. Another reason is that individuals have substantial control over the dividend policies of the companies they own, as is typically the case for owners of private equity.[4] Given the economic specificities and measurement issues associated with capital gains, we use two different definitions of the saving flow.

The *active saving flow* of individual i between the end of years t and $t+1$ is defined by:

$$S^{act}_{i,t+1} = W_{i,t+1} - (1 + r_{i,t+1})\, W_{i,t}, \tag{1}$$

where $W_{i,t}$ denotes net worth and $r_{i,t+1}$ the pre-tax total return on wealth. Reinvested capital income is not included in the calculation of the active saving flow. By contrast, the *total saving flow* is defined by:

$$S^{tot}_{i,t+1} = W_{i,t+1} - W_{i,t}. \tag{2}$$

The main difference with the previous definition is that reinvested capital income now count as saving.

These definitions of saving flows naturally relate to consumption and specific definitions of income. Let $L_{i,t+1}$ denote the sum of labor income and public and private pensions, and let $T_{i,t+1}$

[4] In addition, financial theory suggests that a firm's dividend payout choice should be irrelevant to investors (Miller and Modigliani, 1961).

denote taxes and pension contributions net of transfers. We define active income by

$$Y_{i,t+1}^{act} = L_{i,t+1} - T_{i,t+1}.$$

Note that it does not take capital income into account. The budget constraint implies that the active saving flow is the difference between active income and consumption:

$$S_{i,t+1}^{act} = Y_{i,t+1}^{act} - C_{i,t+1}, \tag{3}$$

where $C_{i,t+1}$ denotes the individual's private consumption in year $t+1$. Similarly, the total saving flow is related to the total or Haig-Simons income (Haig 1921, Simons 1938),

$$Y_{i,t+1}^{tot} = Y_{i,t+1}^{act} + r_{i,t+1} W_{i,t},$$

a broader measure that also incorporates all forms of capital income, including capital gains. The total saving flow is equal to total income net of consumption: $S_{i,t+1}^{tot} = Y_{i,t+1}^{tot} - C_{i,t+1}$.

The above characterizations of saving flows have different implications in terms of measurement accuracy. Traditionally, saving flows are calculated as the difference between income and consumption provided by survey data, as in equation (3). The quality of the measure crucially depends then on the quality of consumption measurement, which is known to be poor at the top of the income and wealth distributions. For this reason, we follow a budget constraint approach inspired by the recent literature (Koijen et al., 2015) and estimate saving flows from wealth variables, as equations imply. Imputing the saving flows from equations (1) and (2) only requires information on the value of net wealth and capital income at the yearly frequency, which are measured with good accuracy in our administrative panel.[5] Consumption is then obtained as the difference between (total or active) income and the corresponding saving flow. Since consumption is estimated as a residual, it also includes durables and net inter vivos gifts to family members.[6]

[5] See Bach Calvet and Sodini (2017) for further details.

[6] The net gift is the difference between gifts granted to and gifts received from family members. If received gifts are large enough, the resulting consumption measure can turn out to be negative, which occurs in only a small number of instances in our dataset.

In order to measure saving intensity, we consider the *total saving rate*

$$s_{i,t+1}^{tot} = \frac{S_{i,t+1}^{tot}}{W_{i,t}}, \quad (4)$$

and the *active saving rate*

$$s_{i,t+1}^{act} = \frac{S_{i,t+1}^{act}}{W_{i,t}}. \quad (5)$$

Individual i's total saving rate is the sum of her active saving rate and wealth return:

$$s_{i,t+1}^{tot} = s_{i,t+1}^{act} + r_{i,t+1}, \quad (6)$$

as definitions (1) and (2) imply. Our baseline saving rates (4) and (5) are computed relative to initial net worth, $W_{i,t}$, so that the impact of the saving flow on capital accumulation is easily comparable to the impact of the return on net worth. Wealth is also a more stable and less noisy measure than current income, especially in top brackets that control the bulk of aggregate wealth. Since current income is a more appropriate scaling factor in other applications, we will occasionally scale the active saving flow by active income and the total saving flow by total income. In all cases, we winsorize the saving rate at the 1% level in order to limit the influence of outliers and we filter out observations for which the scaling factor is either zero or negative.

In Figure 3, we display the aggregate active and total saving rate derived from registry data together with their equivalent in national accounts. The total saving rate is quite volatile in both our data and in national accounts; it is high and positive when returns are large (2003-2007) and close to zero if not negative when returns are low (2001-2002). Despite this natural volatility, each source of data delivers very close levels of total saving with an average total saving rate of 9.8% in the registry data and 9.7% in the national accounts. The national account data provides longer time series and the total saving rate is equal to 8.7% on average from 1981 to 2016 according to national accounts. Therefore in our period of study the total saving rate is relatively high, due to returns higher than their long-term mean, but still fairly representative. The active saving rate is much less volatile, smaller and very close to zero in aggregate over the period 2001 to 2007 in both series

(0.00% on average in our registry data and -0.5% in the national accounts). [7]These levels of active saving are just slightly higher than the long-term average (-0.9% from 1981 to 2016 according to national accounts) so our period of study appears representative also on this count.

In Table I, we estimate the average value of (1) the active saving rate and (2) the total saving rates across quantiles of net worth. In each column, we regress the corresponding saving rate on dummy variables for each quantile. The estimation is conducted on individuals in the 10th percentile and above. The results of the estimation are illustrated in Figure 4. The solid line plots the average active saving rate and the dashed line the average total saving rate in each bracket of net worth.

The middle class accumulate wealth at a robust pace due to high active savings and high returns on net worth. For instance, in the median bracket (40th-50th percentiles), the active saving flow represents on average 7.5% of initial net wealth. The total saving flow is substantially higher and amounts to 16.5% of net wealth. Both measures indicate that the median bracket accumulates wealth at a fast pace. The difference between the total and the active saving rates, which is by construction equal to the return on net worth, is close to 9% on average. Similar results are obtained in other middle brackets. The explanation is that the middle class hold leveraged positions in real estate generating high average returns on net worth, as Bach Calvet and Sodini (2017) explain.

Below the 40th percentile, the active saving rate is larger as labor income net of taxes represents a larger share of wealth. Because real estate is less important in these parts of the distribution, the return to wealth is lower and total saving is high in proportion to wealth but primarily driven by the high level of active saving.

Between the 40th and 90th percentiles of the population, the active and total saving rates both decline very strongly with net worth, as is apparent in Figure 4. The active saving rate rapidly declines from 7.5% for the 40th-50th percentile to -1.5% for the 80th-90th percentile (Table I, column 1). The active saving rate is negative for individuals above the 70th percentile, an indication that capital income (including rents to owner-occupied housing) is consumed in order to finance expenditures. A more complete picture is obtained by considering the total saving rate, which also takes capital income into account. As column 2 of Table I shows, the total saving rate also declines

[7]A negative active saving in aggregate is not unsustainable in steady-state. In fact, one can show, to the contrary, that an economy whose active saving rate is consistently positive is dynamically inefficient (Abel et al., 1989).

with wealth, from 16.5% (40th-50th percentile) to about 7% (80th-90th percentile).

Within the top decile, saving rates do not vary as strongly as in the rest of the distribution. The active saving rate slightly declines from -2.4% (top 10%-5%) to -7.1% (top 0.01%), which confirms that wealthy individuals allocate more than their entire labor income to consumption. The total saving rate exhibits even less variability, hovering in the 6.1%-7.0% range among the top 10%-0.01% and then reaching 7.8% for the top 0.01%. These estimates suggest that in the top decile of the population, capital income is both used to finance consumption and grow capital, which accumulates on average at a real rate of about 7%.

One striking implication of our findings is that the total saving flow is approximately linear in wealth within the top decile, where most of aggregate wealth lies. The approximate linearity of savings in our data is remarkably consistent with Krusell and Smith's (1998) seminal aggregation result on the irrelevance of the wealth distribution for macroeconomic dynamics, which they establish in a class of neoclassical growth models with isoelastic utility. Our empirical results suggests that the aggregate savings of the household sector are indeed only marginally affected by the distribution of wealth at the top, so that the aggregate behavior of the economy can be modeled by a representative agent to a first approximation.

B. *Income, Consumption, and Taxes*

In Table II, we investigate how the following key components of an individual's yearly budget constraint vary with net worth: (1) the consumption-to-net wealth ratio, $C_{i,t}/W_{i,t}$, (2) active income divided by net wealth, $Y_{i,t}^{act}/W_{i,t}$, (3) total income divided by net wealth, $Y_{i,t}^{tot}/W_{i,t}$, (4) the active saving flow divided by active income, $S_{i,t}^{act}/Y_{i,t}^{act}$, (5) the total saving flow divided by total income, $S_{i,t}^{tot}/Y_{i,t}^{tot}$, (6) taxes divided by net wealth, (7) taxes divided by total income, (8) taxes divided by taxable income, and (9) taxable income by net wealth.

An individual in the median decile (40th-50th percentile) consumes on average 51% of net worth in a given year. This level of consumption is slightly lower than both active income and total income, which respectively represent 57% and 66% of net worth. The median individual owns very little net wealth relative to human capital, so that the consumption-to-wealth ratio is high and active and total income are nearly equal. The active saving flow is 7.9% of active income and the total saving flow is 16% of total income. These statistics show that even a small saving flow out of income translate into large saving flows relative to wealth. Taxes are substantial to the median household, accounting for 18% of net wealth and 8% of total income.

We next discuss how the components of the budget constraint vary with net worth. The consumption-to-wealth ratio declines from 727% (second decile) to 5.4% (top 0.5%-0.1%), and then stabilizes around 7% in top percentile (column 1). These results show that there is no absolute ceiling in the amount that can be consumed. Individuals in the top 0.01% consume on average 7% of net worth per year, which is close to the rate of capital accumulation and is half as large as the return on net wealth reported in Table I. The wealthy consume on average all their labor income and half of their capital income, and reinvest the remaining half of their capital income.

The active income-to-net wealth ratio declines from about 800% for the median decile to about zero for the top 0.01% (column 2). Total income exhibits a similar pattern outside the top decile: the total income-to-net worth ratio declines with net worth up to the 90th percentile and then stabilizes around 16% in the top decile (column 3). At the aggregate level, these numbers correspond to a wealth to income ratio of 4, which roughly matches the wealth-to-income ratios imputed from national statistics by Piketty (2014) and others. The stability of the wealth-to-income ratio in higher brackets of the population of investors is due to two opposite forces, which are of about equal strength. On the one hand, human capital becomes smaller relative to wealth as one considers richer individuals, so that labor income becomes relatively tiny. On the other hand, the rich invest in higher risk and higher return securities (Bach Calvet and Sodini, 2017), so that average wealth returns increase with net worth.

The active saving flow-to-active income ratio is negative in the top 40% of the population (column 4), which confirms that individual consumption and saving behavior cannot be understood without considering capital income. By contrast, the ratio of total saving to total income increases with net worth, ranging from 2.4% for the second decile to 40.2% for the top 0.01% (column 5). This estimate is consistent with the fact that the top 0.01% save 7.8% of net wealth (Table I, column 2) and have an income-to-wealth ratio of 16.6% (Table II, column 3), so that the total income to wealth ratio is approximately $7.8\%/16.6\% \approx 47\%$.

Table II also tabulates the size of personal taxes net of transfers across wealth groups. Personal taxes are computed on a yearly basis and include capital income taxes and the wealth tax, which are both substantial in Sweden during the period.

Personal taxes represent a decreasing proportion of net wealth as net worth increases (column 6). While individuals in the second decile pay 70% of their wealth in taxes each year, the top 0.01% pay 1.2% of net worth in personal taxes. Equivalently, individuals in the second decile own one and a half years worth of taxes, while the top 0.01% own about 80 years worth of personal taxes. This analysis does not take into account the corporate tax, which likely has a substantial impact on the wealthy, and the value added tax, which likely has a substantial impact on individuals in lower brackets. Nonetheless, our analysis suggests that if wealth is considered as an appropriate measure of ability to pay, the personal tax system is regressive in Sweden, even in the presence of a substantial wealth tax during the sample period.

The table also reports how personal taxes vary in relation to income. As column 7 shows, the proportion of gross total income spent on personal taxes is hump-shaped in net worth. The ratio of personal taxes to gross total income is -100% for the second decile, reaches a plateau of about 25% for the 70th-99.5th percentiles, and then decreases to 10.5% for the top 0.01%. By contrast, when taxable income is used as the scaling factor, the share of personal taxes is strictly increasing in net worth (column 8). The ratio of personal taxes to taxable income goes from -125% for the second decile to 25.1% for the ninth decile and 39.1% for the top 0.01%.

These patterns are driven by a few key mechanisms. First, the taxation of labor income is progressive in Sweden, which implies that the tax burden tends to increase with net worth among the middle class (columns 7 and 8). Second, capital income is taxed at a flat rate that is more favorable than the marginal tax rate levied on labor income and the tax code exempts unrealized capital gains from income taxation (column 9), which explains the relatively low average tax rates paid by the wealthiest (columns 6 and 7). Third, at the top of the wealth distribution, active income tends to be small compared to capital income and net wealth, so that the tax burden of the wealthy, which is light relative to total income, appears heavy relative to active income.

Overall, the top 0.01% pay 39.1% of taxable income in taxes, far more than the median individual (14%), but these payments represent only 10.5% of gross total income (conditional on it being positive), which is a lower rate than for the median bracket (15.6%).

C. *Allocation of Individual Saving Flows*

The active saving flow can be decomposed by asset class. Let $A_{i,t}^{FIN}$, $A_{i,t}^{RE}$, $A_{i,t}^{PE}$, and $D_{i,t}$ respectively denote the value of individual i's financial assets, real estate properties, private equity, and liability at the end of year t. By equation (1), the active saving flow between t and $t+1$ is

$$\begin{aligned} S_{i,t+1}^{act} \;=\; & [A_{i,t+1}^{FIN} - (1+r_{i,t+1}^{FIN})A_{i,t}^{FIN}] + [A_{i,t+1}^{RE} - (1+r_{i,t+1}^{RE})A_{i,t}^{RE}] \\ & + [A_{i,t+1}^{PE} - (1+r_{i,t+1}^{PE})A_{i,t}^{PE}] - [D_{i,t+1} - (1+r_{i,t+1}^{D})D_{i,t}] \end{aligned} \tag{7}$$

where $r_{i,t+1}^{FIN}$ is the total return on financial assets, $r_{i,t+1}^{RE}$ the total return on real estate, $r_{i,t+1}^{PE}$ the total return on private equity, and $r_{i,t+1}^{D}$ is the average debt cost between years t and $t+1$. The decomposition provides the destinations of the active saving flow and quantifies if it is used to purchase financial assets or real estate, invest in a private business, or reduce household debt.

In Table III, we report the allocation of individual saving flows across brackets of net worth. All quantities are expressed relative to initial net worth. An individual in the median decile (40th-50th percentiles) invests on average most of her active saving flow in real estate (8.3% of initial wealth). She borrows the equivalent of 4.2% of initial net wealth during the year, presumably to finance real estate purchases. Her largest alternative to real estate is to invest in pension wealth (4.3% of initial wealth), after which investments in financial assets and private equity are more marginal, amounting to, respectively, 1.6% and 1% of initial wealth. The average active saving rate of the median decile is overall 1.6% + 4.3% + 8.3% + 1.0 - 4.2%, or about 11%, consistent with the active saving rate reported in Table I.[8]

The saving flows into each asset class vary substantially with net worth. Real estate investment exhibits the largest variation and is strongly U-shaped. The saving flow into real estate is 68% of net worth for the second decile, decreases to -3% for the top 10%-1%, and rises to -1% for the top 0.1%. Richer individuals invest a much lower fraction of active saving flows in real estate than households in the middle decile. Interestingly, all individuals above the 70th percentile of the net worth distribution actually *divest* from real estate, in part because the rents from owner-occupied housing are automatically consumed. They take on less debt as a result. While the household in

[8] Because each of these quantities is winsorized and the active saving rate is left-skewed, the average active saving rate is slightly below the sum of the active saving rates by destination.

the second decile borrows 60% of net worth in a given year, individuals in the top 0.1% have a debt flow that is nearly equal to zero.

Wealthier individuals are less likely to actively accumulate financial assets and private equity than the median household. The saving flow into financial assets decreases with net worth but remains modest, ranging from 16.7% of net worth for the second decile to -1.1% for the top 0.01%. The saving flow into private equity decreases from 5.9% for the second decile to -4% for the top 0.1%. To meet their consumption needs, the wealthy liquidate some of their financial wealth and divest some of their private equity holdings, possibly through the award of substantial dividends to themselves.

Overall, individuals in different brackets of net worth exhibit major systematic differences in saving rates and in the sources and allocation of saving flows. Since wealthier individuals tend to have lower saving rates than the median individual, the systematic differences documented in this section should lead to a gradual decrease in inequality over time, which is clearly counterfactual. In the next section, we show that savings are highly dispersed within wealth groups and that the idiosyncratic heterogeneity of savings can further explain the observed wealth inequality dynamics.

D. *Life-cycle and Dynastic Effects*

The analysis so far considered wealth at the individual level, with no consideration of age. In this subsection we investigate the role played by age and dynastic links in the distribution of saving behavior.

In Table IV, we report the average value of the active saving rate and the total saving rate across quantiles of the distribution of net worth within three age groups: the young (20 to 39 years old, columns 1 and 4), the middle-aged (40 to 59 years old, columns 2 and 5), and the retired (above 60 years old, columns 3 and 6). These three groups are of about the same size in demographic terms but they represent a very different share of aggregate private wealth: the young own 12% of private wealth, the middle-aged 42% and the retired 46%. This is why in table IV we define the fractiles of net worth conditional on the age group, with substantially larger wealth thresholds as one considers older groups.

Among individuals belonging to the bottom of the distribution of net worth (10th-30th percentile), the young have a much greater saving intensity: their active saving rate is equal to 64.8% and their total saving rate is 72.3%, compared to 25.3% and 32.4% for the poor middle-aged, and 7.4% and 12.5% for the poor retired. This primarily reflects the fact that younger individuals have more human capital than wealth. Within each age group, the saving rate is decreasing in net wealth just as for the total population, but the saving rate decreases more quickly with the rank in the distribution of wealth as one considers younger parts of the population: the active saving rate and total saving rate are equal to -3.5% and 9.5% among members of the young ninth decile, 0.6% and 10.7% among members of the middle-aged ninth decile, and -2.7% and 5.1% among members of the retired ninth decile.

As a result of this, within the top quintile of net worth, the differences in saving rates across age groups are much smaller, in line with our result that saving is an almost constant function of wealth at the top of the distribution. There are significant patterns though, especially when comparing the middle-aged and the retired: at all levels of net worth within the top quintile, the total saving rate remains five percentage points lower among the retired; at the same time the active saving rates of each age group converge progressively. This is the result of two key mechanisms with opposite effects. First, among the middle-aged, active income is far more significant than for the retired, while consumption patterns are relatively similar; since the importance of active income declines with net worth, this initial difference between the two age groups progressively decreases with the rank in the distribution of wealth. Secondly, the middle-aged invest in riskier and higher-yielding assets than the retired and this difference in investment style grows with wealth: the return on wealth is 2.3% higher for the middle-aged than for the retired in the ninth decile, and 5.3% higher when one compares these two age groups within the top 0.1% of the distribution.

In Table V, we investigate how the following key characteristics of an individual's dynasty evolve with the individual's net worth: (1) the probability that one parent passes away during the year, (2) conditional on having parents passing away during the year, the ratio of the inheritance from a deceased parent over the net wealth of the individual, (3) the unconditional ratio of inheritances from deceased parents over the net wealth of the individual, (4) the ratio of active saving flows generated by the individual's entire living dynasty (parents, children and joint household members) over the net wealth of the individual's entire dynasty, and (5) the ratio of total saving flows generated by the individual's entire living dynasty (parents, children and joint household members) over the net wealth of the individual's entire dynasty.

For individuals in the second decile of the distribution of wealth, the likelihood of receving an inheritance from one's parents is equal to 1%. However, conditional on receiving an inheritance, the impact is tremendous as such an inheritance represents more than 16 times the initial wealth of the recipient. As a result, the expected inheritance is equal to 15.4% of initial wealth, which is substantial given the very low frequency of inheritances. Living members of those poor individuals' dynasty are collectively saving less than them in proportion to wealth: the active and the total saving rate of their dynasty are equal to 17.6% and 27.9%, against 47.9% and 54.2% for themselves (columns 1 and 2 of Table I). This may partly come from the fact that richer members of their dynasty provide them substantial gifts, or it may simply be the mechanic effect of other dynasty members coming from relatively richer segments of the population with lower individual saving rates.

The expected inheritance (in proportion to net worth) is a declining function of net worth: it reaches 0.9% in the eight decile and then stays below 1% within the top quintile. While the likelihood of inheritance goes up with wealth (up to 3% in the top 0.5% of the distribution), the dominant effect is that the level of the inheritance becomes small in proportion to the recipient's initial wealth (below 20% in the top 5% of the distribution). While it may sound counterintuitive that inheritances have a progressive effect when considering the individual distribution of wealth, this has already been documented in several contexts (Wolff, 2002; Elinder et al., 2016). Another conclusion we may draw is that the inheritance flow is of second order relative to the consumption flow (which, given our budget-constraint definition, includes gifts paid minus gifts received and inheritances): inheritance represents 2% of consumption in the second decile, and around 5% in the top half of the distribution. As a result, the active saving patterns we described in Table I would be left nearly unchanged if we could measure inheritances more precisely and withdraw them from our consumption and active saving measures.

The saving behavior of the dynasty follows a very similar pattern as that we described for individuals: the dynasty's active and total saving rate decline with the wealth rank of the individual, albeit a slightly slower rate than the individual's saving intensity. In particular, the total saving rate of the individual's dynasty reaches a plateau of about 7.5% within the top 1% of the distribution of individual wealth, a slighty higher level than the total saving rate at the individual level at the very top (about 6%). Therefore, once we take into account all the potential gifts made within a dynasty, the conclusion remains that the total saving flow is linear in wealth once we consider the highest parts of the distribution of wealth.

Overall, these patterns of life-cycle and dynastic effects on saving do not change the main conclusion so far that the rate of accumulation of wealth declines with wealth in the lower parts of the distribution and then remains constant. However, the analysis suggests that age and dynasty effects may play a substantial role in explaining the diversity of saving behavior within each wealth bracket, which we investigate in the next section.

III. Heterogeneity of Individual Saving Behavior

In this section, we investigate the heterogeneity of saving behavior in the population.

A. *Dispersion of Saving Rates*

In Table VI, we report the dispersion of saving rates across the population and within specific wealth brackets. Specifically, we provide the cross-sectional standard deviation of (1) the active saving rate, (2) the total saving rate, the interdecile range of (3) the active saving rate, (4) the total saving rate, the 10%-quantile-based skewness of (5) the active saving rate, (6) the total saving rate, and (7) the correlation coefficient between the active saving rate and the return to wealth.

The population of individuals with positive net worth exhibits considerable dispersion in saving rates. The standard deviation of the annual active saving rate is 89.5%, which is very large. The standard deviation of the total saving rates is slightly higher at 92%. Furthermore, the correlation between the active saving rate and the wealth return is close to zero, so that the variance of the total saving rate is approximately the sum of the wealth return variance and the active saving rate variance:

$$Var(s^{tot}_{i,t+1}) \approx Var(s^{act}_{i,t+1}) + Var(r_{i,t+1})$$

Columns 1, 2 and 7 of Table VI show that the high dispersion of the total saving rate in the population is primarily driven by the dispersion of the active saving rate. In columns 3 and 4, we consider a non-parametric measure of dispersion, the interdecile range. Comparing with the standard deviation in columns 1 and 2, the interdecile range is much smaller than 2.5 times the standard deviation, which is strong evidence that the distributions of both the active and the total saving rate have significantly fatter tails than a normal distribution. In column 5 and 6, we provide evidence that the distribution of both kinds of saving rates is significantly right-skewed, which is caused by very large and positive saving rates at the bottom of the distribution.

We compute the standard deviation of saving rates within wealth brackets, which we will henceforth call the "idiosyncratic" dispersion. The results are tabulated in Table VI and illustrated in Figure 5. As the simulations in Bach, Calvet and Sodini (2017) and the theoretical discussion in Gomez (2017) show, the wealth inequality dynamics are primarily driven by the idiosyncratic dispersion of accumulation rates. Table VI documents that the idiosyncratic dispersion in saving rates is also very large. Among households within the second decile of the distribution of wealth, the standard deviations of active and total saving rates are equal to 185% and 190%, respectively. Such high levels of dispersion permit considerable turnover in the set of individuals contained in the decile. Idiosyncratic dispersion in saving rates gradually declines as one considers upper brackets, until one reaches the 95th percentile of the distribution. The standard deviation of the active and total saving rates are equal to 27.7% and 30.3%, respectively, for the top 5%-2.5%. Up to the 99th percentile, more than 80% of the idiosyncratic variance in accumulation rates is driven by the variance of active saving rates rather than the variance of returns.

An opposite trend emerges in the top 1%. The standard deviations of active and total saving rates go up again and reach 43.1% and 53.6%, respectively, among the top 0.01% of the distribution. These high levels of dispersion imply that there is substantial wealth mobility within the very top of the distribution and that this may significantly accelerate the growth of inequality in that part of the distribution. Contrary to lower parts of the distribution, a substantial part of the dispersion in total saving rates comes from idiosyncratic dispersion in returns, whose origins are discussed at length in Bach, Calvet and Sodini (2017); yet, at the same time, dispersion in active saving rates remains very high and retains a key role for inequality at the very top.

B. *Dispersion of Saving Sources*

In Table VII, we investigate the dispersion of saving sources, which sheds light on the determinants of the high dispersion of saving rates. We report the cross-sectional standard deviation of (1) consumption divided by net worth, (2) active income divided by net worth, (3) total income divided by net worth, (4) the correlation of consumption and active income, and (5) the correlation of consumption and total income.

The consumption-to-wealth ratio is very heterogeneous in the population, with a cross-sectional standard deviation of 284%. However, even though there is also substantial dispersion in the income-to-wealth ratio, the dispersion of saving is not much higher than the dispersion of consumption because income and consumption are very correlated.[9]

Within brackets of net worth, the dispersion of income and consumption remains high, especially among the lowest deciles. At the high end of the population, the consumption-to-wealth ratio is very dispersed, with a standard deviation always above 25%, which helps to understand why saving rates remain so volatile at the very top. The other reason is that the correlation between either active or total income and consumption becomes weaker and weaker as one considers higher ranks in the distribution of net wealth. This is a reflection of the well-known fact that the marginal propensity to consume declines with wealth. As a result, saving rates at the very top of the distribution inherit the volatility of both consumption and income in an almost additive way.

C. *Dispersion of Saving Allocations*

In Table VIII, we report the cross-sectional standard deviation of the active saving flow allocated to (1) financial wealth, (2) real estate, (3) private equity, (4) debt repayment, all expressed as a proportion of net worth. Column 5 provides the correlation between the active saving flow to real estate and the active saving flow to debt repayment.

The four components of saving flows are highly dispersed across the entire population as well as within each net worth bracket. Real estate investments and debt repayments generate most of the heterogeneity in saving rates among the lowest deciles, but become less important in higher brack-

[9]The correlation coefficient is equal to 0.92.

ets. At the very top, the dispersion in active saving flows originates primarily from the diversity of private equity investments, consistent with the fact that dividend payouts and capital injections tend to be lumpy for private firms (Michaely and Roberts 2012).

Overall, the idiosyncratic dispersion of saving rates is very large and usually exceeds the idiosyncratic dispersion of wealth returns. Both forms of heterogeneity can generate extreme fortunes and can therefore thicken the right tail of the wealth distribution. By contrast, the negative correlation of active saving and net wealth documented in Section II has the potential to reduce inequality. In order to quantify the respective impact of these various mechanisms, we develop in the next section a decomposition of the wealth inequality dynamics.

IV. From Saving Flows to Wealth Inequality Dynamics

The previous sections thoroughly describe the moments of the distribution of saving rates. We now assess their respective contributions to the dynamics of wealth inequality.

A. *Synthetic Saving Flow*

We consider the dynamics of the wealth share held by a fractile f of the distribution of net worth. By definition, in a given year the fractile contains all individuals with a level of net worth comprised between two quantiles of the net worth distribution, such as the 40th-50th percentile or the top 0.01%. We denote by $W_{f,t} = \sum_{i \in f} W_{i,t}$ the total net worth of individuals in the fractile at t.

The wealth controlled by the quantile varies between t and $t+1$ through two mechanisms. First the wealth of individuals in the quantile changes during the year. Second, the set of individuals in f changes between t and $t+1$ due to death, birth, and variation in individual wealth ranks. Some individuals drop out of the fractile because they pass away or migrate to a different fractile. Others enter fractile f in year $t+1$ because they join the adult population for the first time or migrate to f from a different fractile.

It is useful to consider the following definitions:

- $W_{f,t+1}$: total net worth at the end of year $t+1$ held by individuals belonging to fractile f at the end of year $t+1$,

- $\widetilde{W}_{f,t+1}$: total net worth at $t+1$ held by individuals in fractile f at t who are still alive at $t+1$,
- $W^{dead}_{f,t}$: wealth at t held by members of fractile f who pass away between t and $t+1$,
- $W^{born}_{f,t+1}$: wealth at the end of year $t+1$ held by members of fractile f who join the adult population during year $t+1$.

Following the terminology of Saez and Zucman (2016), we define the *synthetic saving flow* of fractile f between t and $t+1$ by

$$S^{synt}_{f,t+1} = W_{f,t+1} - W^{born}_{f,t+1} - \widetilde{W}_{f,t+1}. \tag{8}$$

The synthetic saving flow captures changes in the fractile's wealth that cannot be explained by tracking the wealth of individuals initially in the fractile. In particular, the synthetic flow $S^{synt}_{f,t+1}$ is zero if individuals do not migrate across fractiles during their lives, as is the case if the fractile contains the entire population.[10] We easily verify that the synthetic saving flow is the difference between the inflow of wealth held by individuals migrating to f between t and $t+1$ and the outflow of wealth of individuals held by individuals migrating out of f over the same period. The synthetic saving flow is positive if new entrants are wealthier on average than individuals who leave the fractile.

In order for the synthetic saving flow to be small, members of a given fractile f at the end of year t who are still alive at the end of year $t+1$ must behave in sufficiently similar ways in terms of saving and the more so as the average wealth in each fractile is close to its lower and upper bounds, as Gomez (2017) shows. This sufficient condition does not hold in practice since saving rates are highly heterogeneous within a wealth fractile, as Section III documents. Synthetic saving flows are therefore likely to play an important role for the analysis of the wealth inequality dynamics.

[10]The same condition implies that synthetic saving flows to top fractiles decrease in volume as inequality worsens.

B. *A Decomposition of Wealth Share Growth into Total Saving, Turnover, and Demographic Effects*

We develop a decomposition of the growth of the wealth share held by fractile f based on the accounting identity (8). Consider the wealth death rate $d_{f,t+1} = W_{f,t}^{dead}/W_{f,t}$, the wealth birth rate $b_{f,t+1} = W_{f,t+1}^{born}/W_{f,t+1}$, and the synthetic saving rate $s_{f,t+1}^{synt} = S_{f,t+1}^{synt}/[(1-d_{f,t+1})W_{f,t}]$. The wealth accumulation equation for individual i between year t and year $t+1$ is:

$$W_{i,t+1} = (1+s_{i,t+1}^{tot})\,W_{i,t}, \tag{9}$$

which follows from the definition of the total saving flow in equation (2) and the definition of the total saving rate in equation (4). The wealth held by households in the fractile at t who are alive at $t+1$ is therefore worth

$$\widetilde{W}_{f,t+1} = (1+s_{f,t+1}^{tot})\,(1-d_{f,t+1})\,W_{f,t}, \tag{10}$$

where $s_{f,t+1}^{tot} = \left(\sum_{i\in f \text{ at } t} s_{i,t+1}^{tot}\,W_{i,t}\,\mathbb{I}_{i \text{ alive at } t \text{ and } t+1}\right)/\left[(1-d_{f,t+1})\,W_{f,t}\right]$ is the wealth-weighted average total saving rate of surviving members between t and $t+1$ and $\mathbb{I}_{i \text{ alive at } t \text{ and } t+1}$ is a dummy variable equal to unity if individual i is alive at the end of year $t+1$.

By equations (8) and (10), the fractile's net wealth grows at the rate:

$$\frac{W_{f,t+1}}{W_{f,t}} = \left(1+s_{f,t+1}^{tot}+s_{f,t+1}^{synt}\right)\frac{1-d_{f,t+1}}{1-b_{f,t+1}}. \tag{11}$$

The growth rate is strong if the death rate is low, the birth rate is high, individuals in the fractile at date t have high total saving rates, and turnover contributes positively to the fractile's wealth. At the national level, the synthetic saving flow is equal to 0, and aggregate wealth W_t grows at the rate:

$$\frac{W_{t+1}}{W_t} = \left(1+s_{t+1}^{tot}\right)\frac{1-d_{t+1}}{1-b_{t+1}}, \tag{12}$$

where b_{t+1}, d_{t+1} and s_{t+1}^{tot} are the economy-wide wealth birth, wealth death, and total saving rates.

The fractile's share of total wealth is $\text{Share}_{f,t} = W_{f,t}/W_t$. Between t and $t+1$, it grows at the rate $g_{f,t+1} = \text{Share}_{f,t+1}/\text{Share}_{f,t} - 1$, or equivalently

$$g_{f,t+1} = \left(1 + \frac{s^{tot}_{f,t+1} - s^{tot}_{t+1}}{1 + s^{tot}_{t+1}} + \frac{s^{synt}_{f,t+1}}{1 + s^{tot}_{t+1}}\right) \frac{1 - d_{f,t+1}}{1 - d_{t+1}} \, \frac{1 - b_{t+1}}{1 - b_{f,t+1}} - 1,$$

as equations (11) and (12) imply. When birth rates and death rates are small, the growth rate of the share of fractile f is therefore approximately given by

$$g_{f,t+1} \approx \underbrace{\frac{s^{tot}_{f,t+1} - s^{tot}_{t+1}}{1 + s^{tot}_{t+1}}}_{\substack{\text{Differences in} \\ \text{Saving Rates}}} + \underbrace{\frac{s^{synt}_{f,t+1}}{1 + s^{tot}_{t+1}}}_{\text{Turnover}} + \underbrace{NB_{f,t+1}}_{\text{Net Birth}} \tag{13}$$

where $NB_{f,t+1} = (b_{f,t+1} - d_{f,t+1}) - (b_{t+1} - d_{t+1})$ quantifies the net impact of demographic effects.[11] The share of the fractile grows quickly if (i) individuals in the fractile at t have higher saving rates than individuals in other fractiles, (ii) turnover contributes positively to the wealth of the fractile, and (iii) the fractile has a higher birth rate and a lower death rate than the overall population. The first channel results from the systematic dispersion in saving rates, the second channel from the idiosyncratic dispersion in total saving rates, and the third channel from net demographic effects.

In Table IX and Figure 6, we estimate the decomposition of the wealth share growth rate in equation (13) on the full sample of Swedish residents (including those with negative wealth). Individuals are sorted into nine fractiles. For each fractile, we report the average wealth share (column 1) as well as the average and time series standard deviation of the wealth share growth rate (columns 2 and 3), saving rate differential (columns 4 and 5), turnover effect (columns 6 and 7), and net birth effect (columns 8 and 9).

Over the 2000 to 2007 period, the wealth share of the bottom 80% is close to 30% and declines by 0.5% per year, albeit with substantial volatility (2.6% per year). The share of the top 20%-0.5% declines by about 0.6% per year, with a slightly lower level of annual volatility. The shares of the top 0.5%-0.1%, the top 0.1%-0.01% and the top 0.01%, which are on average 6.5%, 5.3% and

[11] In a recent paper, Gomez (2017) derives a similar decomposition in the context of a continuous-time model of wealth accumulation.

5.5% respectively, all grow during the 2000 to 2007 period. The increase is most pronounced for the top 0.01%, whose share grows at the average rate of 6.6% per year during the period. The time series standard deviation is also most pronounced for the top 0.01% (12.3% per year).

The decomposition allows us to understand the mechanisms driving the growth rate of wealth shares. Differences in birth rates and death rates across fractiles play a negligible role in explaining wealth share dynamics, as column 8 shows. By contrast, systematic and idiosyncratic differences in saving rates both play sizable roles.

Systematic differences in total saving rates contribute to slow down wealth inequality (column 4). In the absence of other channels, individuals in the bottom 80% of the distribution of net wealth would have increased their share of aggregate wealth by a staggering 7.4% per year between 2000 and 2007 through higher total saving rates. The wealth share of the other fractiles (all in the top quintile) would have declined by about 2% to 4% per year. These results provide a striking illustration of the equalizing impact of systematic differences in total saving rates.

The idiosyncratic dispersion of saving rates is large enough to generate extensive turnover between fractiles, which has a sizable impact on wealth inequality dynamics (column 6). Turnover reduces the growth of the bottom four quintiles and increases the shares held by top fractiles, so it overall tends to exacerbate inequality. Up to the 80th percentile, turnover reduces the growth rate of the wealth share by 7.6% per year on average, which almost fully offsets the equalizing impact of high saving rates. As households get wealthier, they migrate to higher fractiles and thereby deplete the wealth held by the bottom 80%. Upwardly mobile individuals are replaced by individuals with slow or negative accumulation rates from upper fractiles. Above the 80th percentile, turnover has the opposite effect and tends to boost the shares of the wealthy. For instance, it increases the share of the top 0.01% by 9.6% per year, which largely dominates the negative impact of low total saving rates (-3.6%). Thus, the fast growth of top wealth shares is driven to a large extent by "new money," that is by individuals with fast growing wealth from lower fractiles. We now investigate the origins of this fast growth.

C. *Disentangling the Roles of Wealth Return and Active Saving*

The decomposition of wealth share growth in (13) highlights how a fractile's average total saving rate, synthetic total saving flow, and net birth rate drive the growth of its share of national wealth. The total saving rate used in this first decomposition aggregates the active saving rate and realized wealth returns, which are very distinct dimensions of individual wealth dynamics. For this reason, we now develop a refined decomposition of a fractile's share growth that splits the systematic total saving rate and the synthetic total saving flow into active saving and wealth return components.

C.1. *Decomposing the Systematic Total Saving Effect*

The total saving rate of an individual is the sum of the active saving rate and wealth return, as equation (6) shows. The average total saving rate of individuals belonging to the fractile at t and alive at $t+1$ can be rewritten as

$$s^{tot}_{f,t+1} = s^{act}_{f,t+1} + r_{f,t+1}$$

where $s^{act}_{f,t+1}$ is the average active saving rate and $r_{f,t+1}$ is the average wealth return of these individuals.[12] The impact of systematic saving rates in equation (13) can therefore be decomposed as:

$$\frac{s^{tot}_{f,t+1} - s^{tot}_{t+1}}{1+s^{tot}_{t+1}} = \frac{s^{act}_{f,t+1} - s^{act}_{t+1}}{1+s^{tot}_{t+1}} + \frac{r_{f,t+1} - r_{t+1}}{1+s^{tot}_{t+1}} \tag{14}$$

where s^{act}_{t+1} and r_{t+1} respectively denote the average saving rate and average return in the entire population.

C.2. *Decomposing the Synthetic Total Saving Effect*

We decompose the synthetic total saving flow defined by (8) into a component driven by the heterogeneity of individual returns, a component driven by the heterogeneity of active saving rates, and a residual. The decomposition is based on wealth trajectories that only take into account a single form of heterogeneity, as we now explain.

[12]The variables $s^{act}_{f,t+1}$ and $r_{f,t+1}$ are given by $s^{act}_{f,t+1} = (\sum_{i\in f \text{ at } t} s^{act}_{i,t+1} W_{i,t}\, \mathbb{I}_{i \text{alive at } t+1})/(\sum_{i\in f \text{ at } t} W_{i,t}\, \mathbb{I}_{i \text{ alive at } t+1})$ and $r_{f,t+1} = (\sum_{i\in f \text{ at } t} r_{i,t+1} W_{i,t}\, \mathbb{I}_{i\text{alive at } t+1})/(\sum_{i\in f \text{ at } t} W_{i,t}\, \mathbb{I}_{i \text{ alive at } t+1})$.

Synthetic Saving Flow Generated by Heterogeneous Wealth Returns

For all individuals in fractile f at t, we construct a virtual trajectory that takes into account the heterogeneity of individual returns, while active saving rates are assumed to be identical. The virtual level of wealth at date $t+1$ of every individual i belonging to the fractile at t and alive at $t+1$ is given by:

$$W^r_{i,t+1} = (1 + r_{i,t+1} + s^{act}_{f,t+1})\, W_{i,t}.$$

Initial members of fractile f earn their empirical individual returns, $r_{i,t+1}$, but all set their active saving rates equal to the average active saving rate in the fractile, $s^{act}_{f,t+1}$. The choice of $s^{act}_{f,t+1}$ implies that for the group of households who are in the fractile at t and are alive at $t+1$, aggregate wealth is the same under the assumed trajectory as in the data:

$$\sum_{i \in f \text{ at } t} W^r_{i,t+1}\, \mathbb{I}_{i \text{ alive at } t \text{ and } t+1} = \widetilde{W}_{f,t+1}. \tag{15}$$

The trajectory therefore allows us to capture the impact of heterogeneous returns on wealth distribution, without modifying the aggregate (or average) wealth of a key subgroup.

We construct a "partial" synthetic saving flow that only takes into account the heterogeneity of individual wealth return. We sort individuals alive at t and $t+1$ by the virtual level of wealth $W^r_{i,t+1}$ and consider the fractile of individuals f^r based on the same fractile bounds as f. For instance if f contains individuals in the top 1% of distribution of net wealth $W_{i,t}$, f^r contains individuals alive at t and $t+1$ who are in the top 1% of the distribution of $W^r_{i,t+1}$. Let $W^r_{t+1} = \sum_{i \in f^r \text{ at } t+1} W^r_{i,t+1}$ denote the total wealth in f^r. We define the partial synthetic saving flow corresponding to heterogeneous returns by:

$$S^{synt\_r}_{f,t+1} = W^r_{f,t+1} - \widetilde{W}_{f,t+1}. \tag{16}$$

This measure only takes into account a single form of heterogeneity. By equation (15), the partial synthetic saving flow can be rewritten as:

$$S^{synt\_r}_{f,t+1} = \left(\sum_{i \in f^r \text{ at } t+1} - \sum_{i \in f \text{ at } t} \right) W^r_{i,t+1}\, \mathbb{I}_{i \text{ alive at } t \text{ and } t+1}. \tag{17}$$

It is zero if the set of individuals belonging to fractile f at t and alive at $t+1$ coincides with the set of individuals alive at t and belonging to fractile f^r at $t+1$. This equality holds for instance if the fractile f contains the entire population or if every individual in the population sets the active saving rate equal to $s^{act}_{f,t+1}$ and earns a return equal to $r_{f,t+1}$. By contrast, the synthetic saving rate $S^{synt\_r}_{f,t+1}$ corresponding to a top share (say the top 1%) is positive if new entrants have higher wealth at $t+1$ (due to higher returns or possibly the higher average saving rates of other fractiles) than households originally in the top 1%. Since saving rates are relatively flat at the top, the synthetic saving flow is nonnegative and primarily driven by the heterogeneity of returns.

Synthetic Saving Flow Generated by Heterogeneous Active Saving Rates

A similar methodology can be applied to study the impact of heterogeneity in saving rates. We consider the virtual wealth trajectory

$$W^{act}_{i,t+1} = (1 + r_{f,t+1} + s^{act}_{i,t+1})\, W_{i,t}.$$

This definition of $W^{act}_{i,t+1}$ assumes that the fractile's initial members share the same return but have their individual active saving rates. We can then rank all individuals and create an alternative wealth grouping f^{act} using as fractile bounds the same quantiles as for the f grouping. We can then define the corresponding synthetic saving flow

$$S^{synt\_act}_{f,t+1} = \sum_{i \in f^{act} \text{ at } t+1} W^{act}_{i,t+1}\, \mathbb{I}_{i \text{ alive at } t \text{ and } t+1} - \widetilde{W}_{t+1}. \tag{18}$$

Residual Synthetic Saving Flow

We define the *residual synthetic saving flow* $S^{synt\_res}_{f,t+1}$ as the difference between the total synthetic saving flow and the sum of the partial synthetic saving flows:

$$S^{synt\_res}_{f,t+1} = S^{synt}_{f,t+1} - S^{synt\_r}_{f,t+1} - S^{synt\_act}_{f,t+1}. \tag{19}$$

We denote by $s^{synt\_r}_{f,t+1}$, $s^{synt\_act}_{f,t+1}$, and $s^{synt\_res}_{f,t+1}$, the ratios of saving flow measures divided by the initial stock of wealth of fractile f.[13] They satisfy

$$s^{synt\_r}_{f,t+1} + s^{synt\_act}_{f,t+1} + s^{synt\_res}_{f,t+1} = s^{synt}_{f,t+1} \tag{20}$$

by construction.

The residual saving flow is driven by the correlation of active saving rates and returns, a we now show. The synthetic saving flow defined by (8) satisfies the identity:

$$S^{synt}_{f,t+1} = S^{synt\_r}_{f,t+1} + \tilde{S}^{synt\_act}_{f,t+1},$$

where $S^{synt\_r}_{f,t+1}$ defined in equation (16) is the synthetic flow that only takes into account the heterogeneity of individual returns, and

$$\tilde{S}^{synt\_act}_{f,t+1} = \sum_{i \in f \text{ at } t+1} W_{i,t+1}\, \mathbb{I}_{i \text{ alive at } t \text{ and } t+1} - \sum_{i \in f^r \text{ at } t+1} W^r_{i,t+1}\, \mathbb{I}_{i \text{ alive at } t \text{ and } t+1}$$

is the synthetic saving flow that also takes into account the heterogeneity of active saving rates. We show in the Appendix that when returns and saving rates are only weakly dependent conditional on wealth, the flow $\tilde{S}^{synt\_act}_{f,t+1}$ is approximately equal to the partial flow $S^{synt\_act}_{f,t+1}$ previously defined in equation (18), which starts from individuals in the fractile at t and only takes the heterogeneity of saving rates into account. The synthetic saving flow then satisfies $S^{synt}_{f,t+1} \approx S^{synt\_r}_{f,t+1} + S^{synt\_act}_{f,t+1}$. In practice, the sum of $S^{synt\_r}_{f,t+1}$ and $S^{synt\_act}_{f,t+1}$ may differ from $S^{synt}_{f,t+1}$ because of the possible dependence between active saving rates and returns.[14]

[13] That is, $s^{synt\_r}_{f,t+1} = S^{synt\_r}_{f,t+1}/W_{f,t}$.

[14] Column 3 of Table VI shows that this correlation is rather small, except in the bottom of the distribution where highly leveraged individuals draw high returns and at the same time have high active saving flows because they wish to reimburse their debt.

C.3. Full Decomposition

We may then include those various saving flow measures in the inequality growth equation (13). Equations (14) and (20) imply that

$$
\begin{aligned}
g_{f,t+1} \simeq\ & \underbrace{\frac{r_{f,t+1}-r_{t+1}}{1+s^{tot}_{t+1}}}_{\substack{\text{Systematic}\\ \text{Return Dispersion}}} + \underbrace{\frac{s^{act}_{f,t+1}-s^{act}_{t+1}}{1+s^{tot}_{t+1}}}_{\substack{\text{Systematic Active}\\ \text{Saving Dispersion}}} + \underbrace{\frac{s^{synt\,r}_{f,t+1}}{1+s^{tot}_{t+1}}}_{\substack{\text{Idiosyncratic}\\ \text{Return Dispersion}}} \\
& + \underbrace{\frac{s^{synt\,act}_{f,t+1}}{1+s^{tot}_{t+1}}}_{\substack{\text{Idiosyncratic Active}\\ \text{Saving Dispersion}}} + \underbrace{\frac{s^{synt\,res}_{f,t+1}}{1+s^{tot}_{t+1}}}_{\substack{\text{Residual Idiosyncratic}\\ \text{Saving Dispersion}}} + \underbrace{NB_{f,t+1}}_{\text{Net Birth}}
\end{aligned}
\tag{21}
$$

The six terms in equation (21) can be estimated on our panel.

In Table X and Figure 7, we report estimates of the decomposition (21) across brackets of net worth. Return and active saving play very different roles in explaining inequality. The correlation between returns and wealth (column 1) and the idiosyncratic dispersion in returns (column 5) increase the share going to the top 1% of the distribution, as shown in Bach, Calvet and Sodini (2017). The correlation between active saving and wealth (column 3) strongly increases the share going to the bottom of the distribution and decreases the share going to the top 0.1% at a faster rate than for the rest of the top quintile. The idiosyncratic dispersion in active saving rates (column 7) has a symmetrically opposite effect, as it greatly reduces the growth in the share going to the bottom 80% and strongly increases the growth of top wealth shares. The residual mobility effect (column 13) slightly increases the share going to the bottom 80%, but has overall little effect on the shape of the distribution.

Summing up the effects of systematic and idiosyncratic dispersion, as is done in columns 9 and 11 respectively for returns and active saving rates, the dispersion in active saving rates contributes to the acceleration of inequality in all parts of the distribution of wealth, but the dispersion in returns has an effect of larger magnitude, especially at the bottom and at the top of the distribution, as was already described by Bach, Calvet and Sodini (2017). Finally, from a close look at the standard deviation of our estimates it turns out that with our seven years of data the only parameter that is imprecisely estimated is the systematic dispersion in returns. This is why in Bach, Calvet and Sodini (2017) we use an asset pricing model to provide more solid estimates of this component. Thankfully, the results from that approach are not very different from what we see in the data on historical returns from 2000 to 2007. We may therefore consider all our results to be precise and apply to other contexts and other periods.

V. Conclusion

This paper uses a high-quality administrative panel to analyze the saving flows of Swedish individuals and their impact on the dynamics of wealth concentration. We document that saving rates in proportion to wealth are negatively correlated with wealth in the lower parts of the distribution but roughly constant in the top decile, where most of the wealth is concentrated. However, active saving does not slow down inequality, due to its very high idiosyncratic dispersion.

These results suggest that the rich do not as a group seem to have a specific taste for wealth accumulation. At the same time, they provide backing for inequality models based on heterogeneity in either returns to wealth or preferences for saving. It is still to be assessed where this heterogeneity is coming from, preferences, bequests or chance, as this would be key in order to determine the tax implications of our results. Since saving is so heterogeneous even conditional on wealth, it may also have an impact on wealth mobility that is much stronger than previously thought.

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A Appendix to Section IV

The objective of this Appendix is to illustrate the properties of the synthetic saving flow, $S_{f,t+1}^{synt_res}$, defined by equation (19). We develop a stylized probabilistic model of the active saving rate and wealth return and compute the resulting synthetic saving flow of a fractile. We show that the residual flow $S_{f,t+1}^{synt_res}$ is small when the active saving rate and wealth are independent conditional on wealth, but can be substantial otherwise.

The probabilistic model is specified as follows. We assume that the wealth return and active saving rate of every individual i can be written as

$$\begin{aligned} s_{i,t+1}^{act} &= s_{f,t+1}^{act} + \varepsilon \sigma_{i,t+1}, \\ r_{i,t+1} &= r_{f,t+1} + \eta \rho_{i,t+1} \end{aligned}$$

where η and ε are deterministic scaling factors controlling the magnitude of heterogeneity, and $(\sigma_{i,t+1}, \rho_{i,t+1})$ is a random vector. The vector $(\sigma_{i,t+1}, \rho_{i,t+1})$ has a zero mean if i is in fractile f at date t. For simplicity, we abstract away from birth and death, which play only a very minor role in the empirical analysis.

We denote by $h(W_{t+1}; \varepsilon, \eta)$ the probability density function of

$$W_{t+1} = W_t \, (1 + s_{f,t+1}^{act} + r_{f,t+1} + \varepsilon \sigma_{i,t+1} + \eta \rho_{i,t+1}).$$

Let $W_q(\varepsilon, \eta)$ denote the wealth level such that

$$\int_{W_q(\varepsilon,\eta)}^{+\infty} h(W_{t+1}; \varepsilon, \eta) \, dW_{t+1} = q.$$

Consider the function

$$G(\varepsilon, \eta) = \int_{W_q(\varepsilon,\eta)}^{+\infty} W \, h(W; \varepsilon, \eta) \, dW - \int_{W_q(0,\eta)}^{+\infty} W \, h(W; 0, \eta) \, dW.$$

The function G captures the population-wide synthetic saving flow corresponding to the transition from heterogeneity in wealth returns only to heterogeneity in both saving rates and returns. We note that

$$\frac{\partial G}{\partial \varepsilon}(\varepsilon,\eta) = \int_{W_q(\eta,\varepsilon)}^{+\infty} W \,\frac{\partial h(W;\varepsilon,\eta)}{\partial \varepsilon}\, dW - \frac{\partial W_q(\varepsilon,\eta)}{\partial \varepsilon}\, W_q(\varepsilon,\eta)\, h[W_q(\varepsilon,\eta);\varepsilon,\eta]$$

for every ε and η.

The population equivalent of the partial synthetic saving, $S_{f,t+1}^{synt\_act}$, is $G(\varepsilon,0)$. If $s_{i,t+1}$ and $r_{i,t+1}$ are independent conditional on W_{t+1}, the population equivalent of the partial synthetic saving flow, $\widetilde{S}_{f,t+1}^{synt\_act}$, is $G(\varepsilon,\eta)$. The saving flows $S_{f,t+1}^{synt\_act}$ and $\widetilde{S}_{f,t+1}^{synt\_act}$ are therefore equivalent when η is small. Furthermore, when ε is also small,

$$G(\varepsilon,0) \approx \frac{\partial G}{\partial \varepsilon}(0,0)\,\varepsilon$$

is first order, and the difference between synthetic saving flows $G(\varepsilon,\eta)$ and $G(\varepsilon,0)$ is second order. Hence $\widetilde{S}_{f,t+1}^{synt\_act}$ and $S_{f,t+1}^{synt\_act}$ are asymptotically equivalent as the number of agents is large.

This result hinges crucially on the assumption that $s_{i,t+1}$ and $r_{i,t+1}$ are independent conditional on W_{t+1}. For instance if $r_{i,t+1}$ and $s_{i,t+1}$ are perfectly and positively correlated, then the sets $\{i \in f \text{ at } t+1\}$ and $\{i \in f^r \text{ at } t+1\}$ are equal. Hence

$$\begin{aligned}
\widetilde{S}_{f,t+1}^{synt_act} &= \sum_{i\in f^r \text{ at } t+1} (W_{i,t+1} - W_{i,t+1}^r)\, \mathbb{I}_{i \text{ alive at } t \text{ and } t+1} \\
&= \sum_{i\in f^r \text{ at } t+1} W_{i,t}(s_{i,t+1}^{act} - s_{f,t+1}^{act})\, \mathbb{I}_{i \text{ alive at } t \text{ and } t+1} \\
&= \varepsilon \sum_{i\in f^r \text{ at } t+1} W_{i,t}\sigma_{i,t+1}
\end{aligned}$$

of order ε^2, while $S_{f,t+1}^{synt\_act}$ is generally of order ε.

Table I
Saving Rates

This table reports the mean and the median individual saving intensity in different brackets of the net wealth distribution in Sweden between 2000 and 2007. We consider: in (1) and (3) the ratio of active saving over net worth at the beginning of the year, in (2) and (4) the ratio of total saving over net worth at the beginning of the year. Active saving is defined as active income minus consumption. Active income is equal to labor and pension income minus taxes net of transfers. Total saving is defined as active saving flows plus capital income. Saving rates are winsorized at the 1% level. Each column is based on the regression of the explained characteristic on net worth bracket dummies and year fixed effects. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD).

	Mean		Median	
	Active Saving to Wealth (1)	Total Saving to Wealth (2)	Active Saving to Wealth (3)	Total Saving to Wealth (4)
Wealth Group				
P10-P20	47.9%	54.2%	17.2%	19.7%
P20-P30	28.9%	38.2%	10.4%	15.3%
P30-P40	15.0%	24.6%	6.9%	13.6%
P40-P50	7.5%	16.5%	4.5%	11.4%
P50-P60	3.6%	12.1%	2.8%	9.5%
P60-P70	1.4%	10.0%	1.6%	9.0%
P70-P80	-0.2%	8.5%	0.6%	8.4%
P80-P90	-1.5%	7.3%	-0.2%	7.8%
P90-P95	-2.4%	6.7%	-0.8%	7.4%
P95-P97.5	-2.9%	6.4%	-1.3%	6.9%
P97.5-P99	-3.4%	6.1%	-1.7%	6.3%
P99-P99.5	-3.8%	6.2%	-1.9%	5.6%
P99.5-P99.9	-4.2%	6.6%	-2.1%	4.8%
P99.9-P99.99	-6.0%	7.0%	-2.2%	5.1%
Top 0.01%	-7.1%	7.8%	-2.0%	6.1%

Table II
Sources of Saving

This table reports the average consumption intensity and the average income-to-wealth ratio in different brackets of the net wealth distribution in Sweden between 2000 and 2007. We consider: (1) the ratio of consumption over net worth at the beginning of the year, (2) the ratio of active income over net worth at the beginning of the year, (3) the ratio of total income over net worth at the beginning of the year, (4) the ratio of active saving over active income, (5) the ratio of total saving over total income, (6) the ratio of personal taxes (net of transfers) over net worth at the beginning of the year, (7) the ratio of personal taxes (net of transfers) over gross active income, and (8) the ratio of personal taxes (net of transfers) over gross total income. Active saving is defined as active income minus consumption. Total saving is defined as active saving plus latent and realized capital gains. Active income is equal to labor and pension income minus taxes net of transfers. Total income is equal to active income plus capital income. Gross (active or total) income is equal to (active or total) income plus taxes. All ratios are winsorized at the 1% level and set as missing when the denominator is negative. Each column is based on the regression of the explained characteristic on net worth bracket dummies and year fixed effects. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD).

	Consumption to Wealth (1)	Active Income to Wealth (2)	Total Income to Wealth (3)	Active Saving to Income (4)	Total Saving to Income (5)	Taxes to Wealth (6)	Taxes to Gross Total Income (7)	Taxes to Taxable Income (8)	Taxable Income to Wealth (9)
Wealth Group									
P10-P20	726.5%	778.4%	784.6%	3.9%	2.4%	68.8%	-102.6%	-124.9%	790.2%
P20-P30	227.5%	249.4%	258.7%	11.6%	13.6%	55.6%	-14.8%	-23.1%	293.3%
P30-P40	92.5%	104.1%	113.7%	9.6%	16.2%	29.0%	8.1%	4.5%	127.6%
P40-P50	50.9%	57.4%	66.4%	7.9%	18.3%	17.8%	15.6%	14.0%	73.2%
P50-P60	33.3%	36.8%	45.2%	4.2%	18.7%	13.0%	20.5%	19.7%	50.0%
P60-P70	24.6%	26.1%	34.6%	-2.5%	18.8%	10.4%	22.9%	22.6%	37.8%
P70-P80	18.2%	18.0%	26.7%	-12.2%	19.9%	8.1%	24.1%	24.4%	28.4%
P80-P90	13.2%	11.7%	20.5%	-28.4%	23.4%	6.2%	25.1%	26.3%	21.1%
P90-P95	9.7%	7.3%	16.5%	-50.7%	28.4%	5.0%	25.7%	27.9%	16.1%
P95-P97.5	7.9%	4.9%	14.4%	-80.3%	31.7%	4.4%	26.4%	29.7%	13.4%
P97.5-P99	6.7%	3.1%	13.0%	-117.5%	33.9%	3.9%	26.6%	31.7%	11.4%
P99-P99.5	5.8%	1.8%	12.3%	-157.6%	36.4%	3.5%	25.8%	33.7%	9.6%
P99.5-P99.9	5.4%	0.7%	12.9%	-211.6%	36.8%	3.2%	23.4%	35.9%	8.4%
P99.9-P99.99	6.1%	-0.3%	15.1%	-332.7%	38.5%	2.2%	16.5%	37.7%	5.6%
Top 0.01%	6.8%	-0.6%	16.6%	-560.8%	40.2%	1.2%	10.5%	39.1%	3.2%

Table III
Allocation of Active Saving

This table reports the average destination of active saving in different brackets of the net wealth distribution in Sweden between 2000 and 2007. We consider: (1) the ratio of active saving into financial wealth over net worth at the beginning of the year, (2) the ratio of active saving into funded pension wealth over net worth at the beginning of the year, (3) the ratio of active saving into real estate over net worth at the beginning of the year, (4) the ratio of active saving into private equity over net worth at the beginning of the year, and (5) the ratio of active dissaving into household debt over net worth at the beginning of the year. For each wealth component, we define active saving as the difference between the value of the holdings at the end of the year and the fully capitalized value of holdings at the beginning of the year, using the total realized return for these beginning-of-the-year holdings. All ratios are winsorized at the 1% level except the ratio saving in private equity, which is winsorized at the 0.01% level. Each column is based on the regression of the explained characteristic on net worth bracket dummies and year fixed effects. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD).

	Saving in Financial Wealth (1)	Saving in Pension Wealth (2)	Saving in Real Estate (3)	Saving in Private Equity (4)	Dissaving in Debt (5)
Wealth Group					
P10-P20	16.7%	16.7%	68.3%	5.9%	60.2%
P20-P30	5.5%	11.8%	58.1%	3.2%	37.6%
P30-P40	2.4%	6.8%	25.0%	1.9%	14.3%
P40-P50	1.6%	4.3%	8.3%	1.0%	4.2%
P50-P60	1.1%	2.8%	2.7%	0.7%	1.5%
P60-P70	0.8%	1.8%	0.4%	0.6%	0.9%
P70-P80	0.6%	1.3%	-1.2%	0.5%	0.6%
P80-P90	0.5%	0.8%	-2.4%	0.4%	0.3%
P90-P95	0.4%	0.5%	-3.0%	0.3%	0.3%
P95-P97.5	0.2%	0.3%	-3.2%	0.2%	0.2%
P97.5-P99	0.0%	0.2%	-3.1%	0.0%	0.2%
P99-P99.5	-0.3%	0.2%	-2.4%	0.0%	0.2%
P99.5-P99.9	-0.6%	0.1%	-1.4%	-1.2%	0.2%
P99.9-P99.99	-0.9%	0.1%	-0.8%	-3.9%	-0.1%
Top 0.01%	-1.0%	0.0%	-1.0%	-4.1%	0.0%

Table IV
The Life Cycle of Saving Rates

This table reports the average individual saving intensity in different age categories and different brackets of the net wealth distribution (conditional on each age group) in Sweden between 2000 and 2007. We consider: in (1), (2) and (3) the ratio of active saving over net worth at the beginning of the year, in (4), (5) and (6) the ratio of total saving over net worth at the beginning of the year. Active saving is defined as active income minus consumption. Active income is equal to labor and pension income minus taxes net of transfers. Total saving is defined as active saving flows plus capital income. Saving rates are winsorized at the 1% level. Each column is based on the regression of the explained characteristic on net worth bracket dummies and year fixed effects. Wealth fractiles are defined within each age group and therefore correspond to different amounts of wealth for each of the three age groups. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD).

	Active Saving over Wealth			Total Saving over Wealth		
	20-39 y. old	40-59 y. old	60+ y. old	20-39 y. old	40-59 y. old	60+ y. old
	(1)	(2)	(3)	(4)	(5)	(6)
Wealth Group						
P10-P30	64.8%	25.3%	7.4%	72.3%	32.4%	12.5%
P30-P40	44.4%	9.4%	1.2%	54.6%	18.4%	6.7%
P40-P50	29.8%	6.4%	0.3%	41.6%	15.9%	6.3%
P50-P60	17.4%	4.5%	-0.8%	30.7%	14.3%	5.8%
P60-P70	7.6%	3.0%	-1.5%	21.5%	12.9%	5.4%
P70-P80	1.4%	1.8%	-2.2%	15.0%	11.8%	5.1%
P80-P90	-3.5%	0.6%	-2.7%	9.5%	10.7%	5.1%
P90-P95	-7.3%	-0.5%	-3.3%	5.1%	9.8%	4.7%
P95-P97.5	-9.7%	-1.4%	-3.8%	2.6%	9.0%	4.2%
P97.5-P99	-10.4%	-2.3%	-4.4%	2.0%	8.5%	3.5%
P99-P99.5	-8.4%	-3.4%	-4.6%	4.7%	8.0%	3.2%
P99.5-P99.9	-6.0%	-4.3%	-5.1%	8.0%	8.1%	2.9%
P99.9-P99.99	-5.1%	-6.7%	-5.9%	10.5%	7.9%	3.4%
Top 0.01%	-7.3%	-7.8%	-8.3%	6.6%	9.5%	3.8%

Table V
The Effect of Dynastic Links on Saving

This table reports the average of various characteristics of family wealth for individuals in different brackets of the distribution of net wealth in Sweden between 2000 and 2007. We consider the following measures: (1) the probability that one parent passes away during the year, (2) conditional on having parents passing away during the year, the ratio of the deceased parent's estate over the net wealth of the individual, (3) the ratio of the deceased parent's estate over the net wealth of the individual, with the parental estate set to zero if no parent dies during the year, (4) the ratio of the sum of active saving flows across all of the individual's dynasty members over the sum of net wealth across all of the individual's family members, and (5) the ratio of the sum of total saving flows across all of the individual's dynasty members over the sum of net wealth across all of the individual's family members. The value of parental inheritance is equal to the market value of the deceased parent's net worth at the time of her death divided by the number of children of the deceased parent. For each individual, the dynasty comprises herself, her parents, her children and the members of her household. Each column is based on the regression of the explained characteristic on net worth bracket dummies and year fixed effects. All ratios are winsorized at the 1% level except the unconditional ratio of parents' estate over net wealth (3), which is winsorized at the 0.01% level. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD). The rank in the wealth distribution is defined at the level of the individual.

	Prob. of Parental Death (1)	Parental Inheritance to Own Wealth (2)	Expected Inheritance to Own Wealth (3)	Dynasty's Active Saving to Wealth (4)	Dynasty's Total Saving to Wealth (5)
Wealth Group					
P10-P20	1.0%	1606.5%	15.4%	17.6%	27.9%
P20-P30	1.5%	464.9%	7.2%	12.4%	20.4%
P30-P40	2.0%	189.4%	3.8%	8.4%	16.9%
P40-P50	2.1%	106.3%	2.2%	5.8%	14.6%
P50-P60	2.1%	73.1%	1.5%	4.3%	13.1%
P60-P70	2.2%	54.0%	1.2%	3.1%	11.8%
P70-P80	2.3%	41.1%	0.9%	2.1%	10.9%
P80-P90	2.4%	30.6%	0.7%	1.1%	10.1%
P90-P95	2.5%	23.4%	0.6%	0.3%	9.4%
P95-P97.5	2.6%	18.8%	0.5%	-0.5%	8.7%
P97.5-P99	2.7%	16.2%	0.4%	-1.3%	8.0%
P99-P99.5	2.8%	14.7%	0.4%	-1.9%	7.6%
P99.5-P99.9	3.0%	10.7%	0.3%	-2.4%	7.3%
P99.9-P99.99	3.0%	7.9%	0.2%	-3.3%	7.1%
Top 0.01%	3.1%	19.0%	0.7%	-4.5%	7.1%

Table VI
Dispersion of Saving Rate

This table reports various measures of dispersion of saving rates in the Swedish population and different brackets of the distribution of net wealth in Sweden between 2000 and 2007. We consider the following measures of dispersion: the cross-sectional standard deviation of (1) the ratio of active saving to net wealth and (2) the ratio of total saving to net wealth, the interdecile range (P90-P10) of (3) the ratio of active saving to net wealth and (4) the ratio of total saving to net wealth, the quantile-based skewness ((P90+P10-2*P50)/(P90-P10)) of (5) the ratio of active saving to net wealth and (6) the ratio of total saving to net wealth, and (7) the coefficient of correlation between the return to wealth and the active saving rate. All moments are computed on a yearly basis and then averaged over the 2000 to 2007 period. Ratios are winsorized at the 1% level for correlation and standard deviation measures. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD).

	Standard Deviation		Interdecile Range		Quantile-based Skewness		Correlation Wealth Ret. and Active Sav. Rate
	Active Sav. Rate	Total Sav. Rate	Active Sav. Rate	Total Sav. Rate	Active Sav. Rate	Total Sav. Rate	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Entire Population	89.5%	92.0%	94.5%	99.4%	0.08	0.11	0.01
Wealth Group							
P10-P20	184.7%	190.4%	410.3%	421.4%	0.32	0.34	0.04
P20-P30	132.9%	137.2%	203.5%	216.5%	0.16	0.23	0.05
P30-P40	89.4%	91.7%	114.5%	122.0%	0.04	0.13	0.09
P40-P50	62.9%	64.4%	74.6%	79.9%	-0.04	0.07	0.11
P50-P60	48.2%	49.5%	55.7%	60.1%	-0.08	0.03	0.12
P60-P70	40.6%	41.8%	48.5%	52.6%	-0.10	-0.01	0.11
P70-P80	34.9%	36.0%	42.7%	46.8%	-0.13	-0.05	0.08
P80-P90	30.3%	31.7%	37.7%	42.2%	-0.15	-0.08	0.04
P90-P95	28.1%	29.8%	35.2%	40.8%	-0.17	-0.09	0.00
P95-P97.5	27.7%	30.3%	35.5%	42.8%	-0.19	-0.10	-0.02
P97.5-P99	29.7%	33.3%	37.1%	48.3%	-0.22	-0.09	-0.04
P99-P99.5	32.8%	37.6%	39.6%	56.7%	-0.24	-0.06	-0.06
P99.5-P99.9	37.2%	45.0%	43.0%	70.3%	-0.29	-0.02	-0.06
P99.9-P99.99	39.5%	49.5%	48.0%	89.1%	-0.39	-0.03	-0.08
Top 0.01%	43.1%	53.6%	50.8%	93.5%	-0.55	-0.06	-0.07

Table VII
Dispersion of Sources of Saving

This table reports the cross-sectional standard deviation of the sources of saving in the Swedish population and different brackets of the distribution of net wealth in Sweden between 2000 and 2007. We consider the following measures of dispersion: (1) the cross-sectional standard deviation of the ratio of consumption to net wealth, (2) the cross-sectional standard deviation of the ratio of active income to net wealth, (3) the cross-sectional standard deviation of the ratio of total income to net wealth, (4) the coefficient of correlation between the ratio of active income to net wealth and the ratio of consumption to net wealth, and (5) the coefficient of correlation between the ratio of total income to net wealth and the ratio of consumption to net wealth. All moments are computed on a yearly basis and then averaged over the 2000 to 2007 period. All ratios are winsorized at the 1% level. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD).

	Dispersion Measures			Dependence Measures	
	Consumption-to-Wealth Standard Deviation (1)	Active Income-to-Wealth Standard Deviation (2)	Total Income-to-Wealth Standard Deviation (3)	Consumption-Active Income Correlation (4)	Consumption-Total Income Correlation (5)
Entire Population	284.2%	281.7%	283.1%	0.92	0.92
Wealth Group					
P10-P20	512.3%	467.9%	473.1%	0.87	0.87
P20-P30	207.7%	148.0%	155.1%	0.70	0.69
P30-P40	100.3%	57.3%	63.7%	0.52	0.50
P40-P50	63.3%	32.6%	38.4%	0.42	0.40
P50-P60	46.8%	22.7%	27.9%	0.36	0.34
P60-P70	39.1%	17.3%	22.5%	0.32	0.30
P70-P80	33.3%	13.4%	18.7%	0.27	0.25
P80-P90	28.9%	10.4%	16.5%	0.23	0.22
P90-P95	26.5%	8.1%	15.4%	0.20	0.19
P95-P97.5	26.0%	7.3%	17.1%	0.20	0.18
P97.5-P99	27.5%	6.5%	20.1%	0.17	0.19
P99-P99.5	29.8%	5.4%	22.9%	0.14	0.21
P99.5-P99.9	33.2%	5.8%	29.0%	0.18	0.17
P99.9-P99.99	40.0%	3.5%	36.7%	0.10	0.25
Top 0.01%	37.8%	2.3%	30.3%	0.11	0.05

Table VIII
Dispersion of the Allocation of Active Saving

This table reports the cross-sectional standard deviation of the destinations of active saving in the Swedish population and different brackets of the distribution of net wealth in Sweden between 2000 and 2007. We consider the following measures of dispersion: (1) the cross-sectional standard deviation of the ratio of active saving into financial wealth over net wealth, (2) the cross-sectional standard deviation of the ratio of active saving into funded pension wealth over net wealth, (3) the cross-sectional standard deviation of the ratio of active saving into real estate over net wealth, (4) the cross-sectional standard deviation of the ratio of active saving into private equity over net wealth, (5) the cross-sectional standard deviation of the ratio of active dissaving into household debt over net wealth, and (6) the coefficient of correlation between the ratio of active saving into real estate over net wealth and the ratio of active dissaving into household debt over net wealth. All moments are computed on a yearly basis and then averaged over the 2000 to 2007 period. All ratios are winsorized at the 1% level except the ratio saving in private equity, which is winsorized at the 0.01% level. The sample includes all Swedish individuals aged 20 or more with net worth above 3,000 SEK (approx. 450 USD).

	Standard Deviation of Active Saving Allocated to:					Debt Repayment-Real Estate Saving
	Financial Wealth	Pension Wealth	Real Estate	Private Equity	Debt Reduction	Correlation
	(1)	(2)	(3)	(4)	(5)	(6)
Entire Population	33.2%	11.5%	141.2%	125.7%	99.8%	0.54
Wealth Group						
P10-P20	62.8%	24.8%	286.5%	27.6%	213.7%	0.46
P20-P30	43.6%	14.3%	248.4%	29.3%	167.6%	0.63
P30-P40	30.0%	10.0%	146.7%	26.4%	102.3%	0.59
P40-P50	21.7%	8.3%	78.1%	20.6%	52.5%	0.50
P50-P60	17.0%	6.9%	49.0%	16.9%	31.5%	0.43
P60-P70	15.0%	5.9%	37.3%	15.2%	22.7%	0.38
P70-P80	13.5%	5.0%	30.4%	14.4%	17.0%	0.33
P80-P90	12.3%	4.2%	25.2%	13.6%	12.5%	0.27
P90-P95	11.4%	3.6%	22.6%	14.2%	9.9%	0.24
P95-P97.5	11.3%	3.2%	20.9%	16.1%	8.8%	0.23
P97.5-P99	11.9%	2.8%	20.1%	20.1%	8.5%	0.21
P99-P99.5	13.1%	2.5%	19.2%	26.2%	9.0%	0.22
P99.5-P99.9	14.8%	1.9%	18.3%	31.9%	9.8%	0.21
P99.9-P99.99	15.5%	1.1%	14.0%	35.3%	8.1%	0.34
Top 0.01%	14.1%	0.3%	22.5%	42.8%	5.2%	0.14

Table IX
Decomposition of Wealth Share Growth

This table reports the average and the time-series dispersion of the key parameters driving the growth of the share of aggregate wealth accruing to various fractiles of the distribution of net wealth in Sweden between 2000 and 2007. We consider the following characteristics: (1) the average of the share of aggregate wealth accruing to each wealth fractile, (2) and (3) the average and the time-series standard deviation of the annual growth of these wealth shares, (4) and (5) the average and the time-series standard deviation of the contribution to each wealth share's growth of the differences in total saving rates between wealth groups, (6) and (7) the average and the time-series standard deviation of the contribution to each wealth share's growth of the idiosyncratic dispersion in total saving rates, and (8) and (9) the average and the time-series standard deviation of the contribution to each wealth share's growth of the entry and exit of individuals into the Swedish population. The sum of the terms in (4), (6) and (8) equals (2). The sample includes all Swedish individuals aged 20 or more.

				Decomposition of Wealth Share Growth					
	Wealth Share Level	Wealth Share Growth		Systematic Saving Effect		Idiosyncratic Saving Effect		Net Birth Effect	
	Mean	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Wealth Group									
P0-P80	29.5%	-0.5%	2.6%	7.4%	2.8%	-7.6%	1.2%	-0.3%	0.1%
P80-P90	17.5%	-0.7%	2.3%	-1.9%	1.9%	1.5%	1.1%	-0.2%	0.1%
P90-P95	13.4%	-0.6%	2.2%	-2.9%	2.0%	2.3%	0.7%	-0.1%	0.1%
P95-P97.5	9.6%	-0.6%	1.8%	-3.4%	1.7%	2.7%	0.9%	0.1%	0.1%
P97.5-P99	8.4%	-0.5%	1.0%	-3.8%	1.1%	3.2%	0.9%	0.1%	0.1%
P99-P99.5	4.3%	-0.2%	2.1%	-2.8%	2.6%	2.4%	2.4%	0.2%	0.2%
P99.5-P99.9	6.5%	0.6%	5.4%	-2.8%	4.9%	3.1%	1.4%	0.3%	0.2%
P99.9-P99.99	5.3%	3.1%	8.7%	-3.7%	8.5%	5.9%	1.7%	0.8%	0.6%
Top 0.01%	5.5%	6.6%	12.3%	-3.6%	10.7%	9.6%	4.3%	0.6%	1.4%

Table X
The Roles of Wealth Returns and Active Saving in Wealth Share Growth

This table reports the average and the time-series dispersion of the return to wealth and active saving parameters driving the growth of the share of aggregate wealth accruing to various fractiles of the distribution of net wealth in Sweden between 2000 and 2007. We consider the following characteristics: (1) and (2) the average and the time-series standard deviation of the contribution to each wealth share's growth of the differences in return to wealth between wealth groups, (3) and (4) the average and the time-series standard deviation of the contribution to each wealth share's growth of the differences in active saving rates between wealth groups, (5) and (6) the average and the time-series standard deviation of the contribution to each wealth share's growth of the idiosyncratic dispersion in returns to wealth, (7) and (8) the average and the time-series standard deviation of the contribution to each wealth share's growth of the idiosyncratic dispersion in active saving rates, (9) and (10) the average and the time-series standard deviation of the total contribution to each wealth share's growth of the dispersion in returns to wealth, (11) and (12) the average and the time-series standard deviation of the total contribution to each wealth share's growth of the dispersion in active saving rates, and (13) and (14) the average and the time-series standard deviation of the contribution to each wealth share's growth of the idiosyncratic correlation between returns to wealth and active saving rates. The sum of the terms in (1) and (5) equals (9), the sum of the terms in (3) and (7) equals (11), the sum of the terms in (5), (7) and (13) equals column (6) in table VIII, and the sum of the terms in (1) and (3) equals column (4) in table VIII. The sample includes all Swedish individuals aged 20 or more.

	Systematic Return		Systematic Active Saving		Idiosyncratic Return		Idiosyncratic Active Saving		Sum of Return Effects		Sum of Active Saving Effects		Active Saving-Return Correlation	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Wealth Group														
P0-P80	-0.4%	1.9%	7.8%	1.5%	-2.0%	0.4%	-7.7%	1.3%	-2.5%	1.8%	0.1%	1.5%	2.2%	0.5%
P80-P90	-0.6%	2.8%	-1.4%	1.6%	0.0%	0.4%	1.8%	1.0%	-0.6%	3.0%	0.4%	1.0%	-0.3%	0.2%
P90-P95	-0.5%	2.7%	-2.4%	1.6%	0.3%	0.2%	2.5%	0.8%	-0.1%	2.8%	0.2%	1.1%	-0.6%	0.2%
P95-P97.5	-0.3%	2.1%	-3.0%	1.2%	0.3%	0.2%	3.0%	0.9%	0.0%	2.2%	0.0%	1.0%	-0.6%	0.3%
P97.5-P99	-0.2%	0.8%	-3.5%	1.0%	0.3%	0.3%	3.4%	0.9%	0.1%	0.9%	-0.2%	0.9%	-0.6%	0.3%
P99-P99.5	0.0%	1.6%	-2.9%	2.1%	0.1%	0.5%	2.5%	2.3%	0.2%	1.6%	-0.4%	1.2%	-0.2%	0.4%
P99.5-P99.9	0.8%	5.6%	-3.6%	1.4%	0.4%	0.5%	3.0%	1.3%	1.2%	5.6%	-0.6%	1.5%	-0.3%	0.5%
P99.9-P99.99	2.7%	9.8%	-6.4%	2.8%	1.0%	0.3%	5.4%	2.3%	3.6%	9.8%	-1.0%	2.7%	-0.4%	0.8%
Top 0.01%	4.4%	11.7%	-8.0%	2.1%	2.6%	1.3%	7.8%	4.0%	6.9%	12.4%	-0.2%	5.1%	-0.7%	0.5%

Figure 1
Aggregate Private Wealth

This figure illustrates the evolution of aggregate private wealth in Sweden from the beginning of 2001 to the beginning of 2008 according to national accounts (NA) and registry data. In both data series, aggregate net worth includes all the assets and liabilities of all Swedish residents at beginning-of-the-year, except for the net working capital held by households (currency minus net short-term non-financial debt). On December 31st 2004, the Swedish kronor traded at 0.151 US dollars.

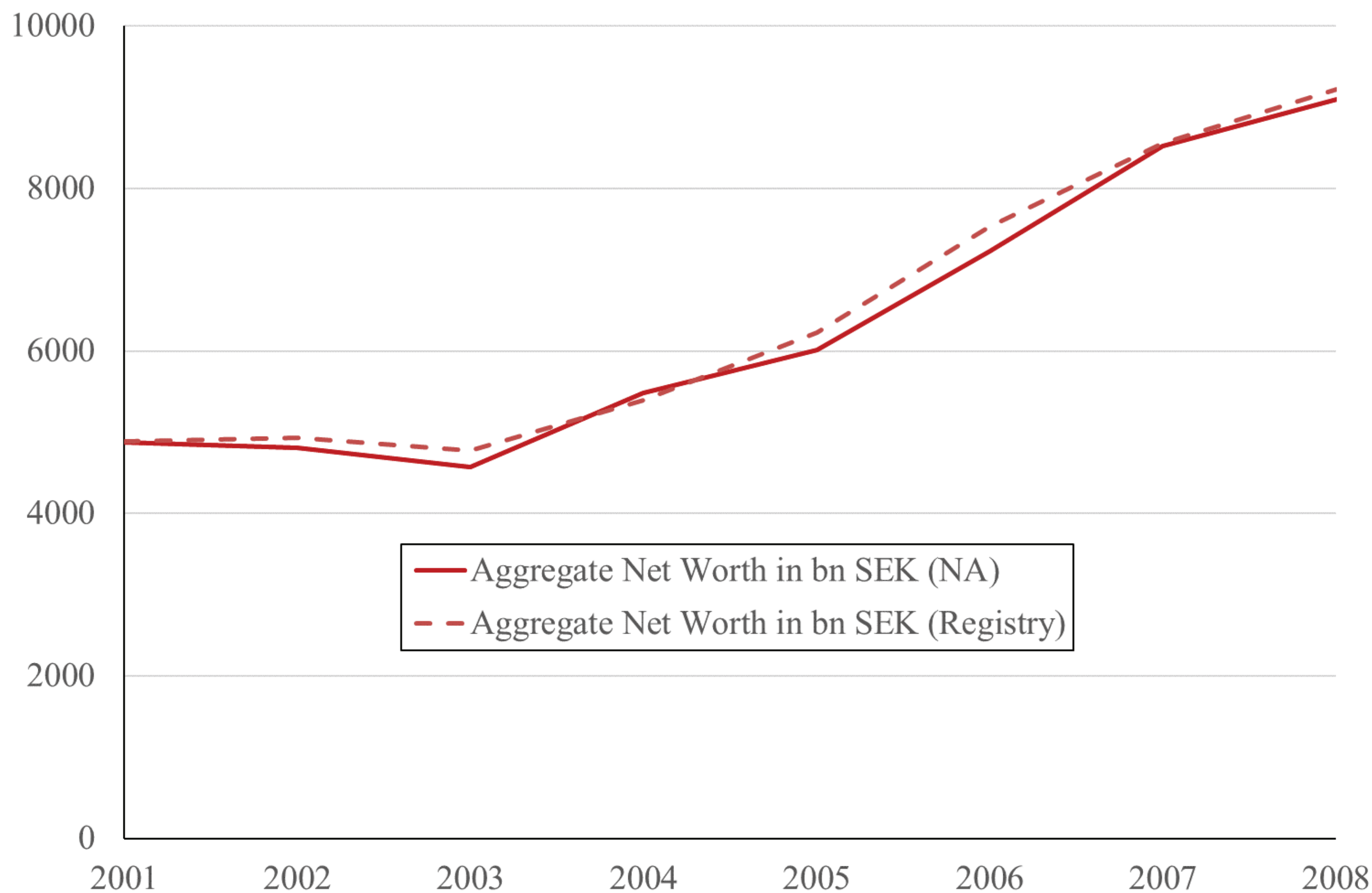

Figure 2
Wealth Concentration in Sweden

This figure illustrates the average shares of aggregate net wealth held by individuals in various brackets of net wealth in Sweden between 2000 and 2007. P0-P80 refers to households ranked between the 0th and 80th percentiles of the net wealth distribution, and so on.

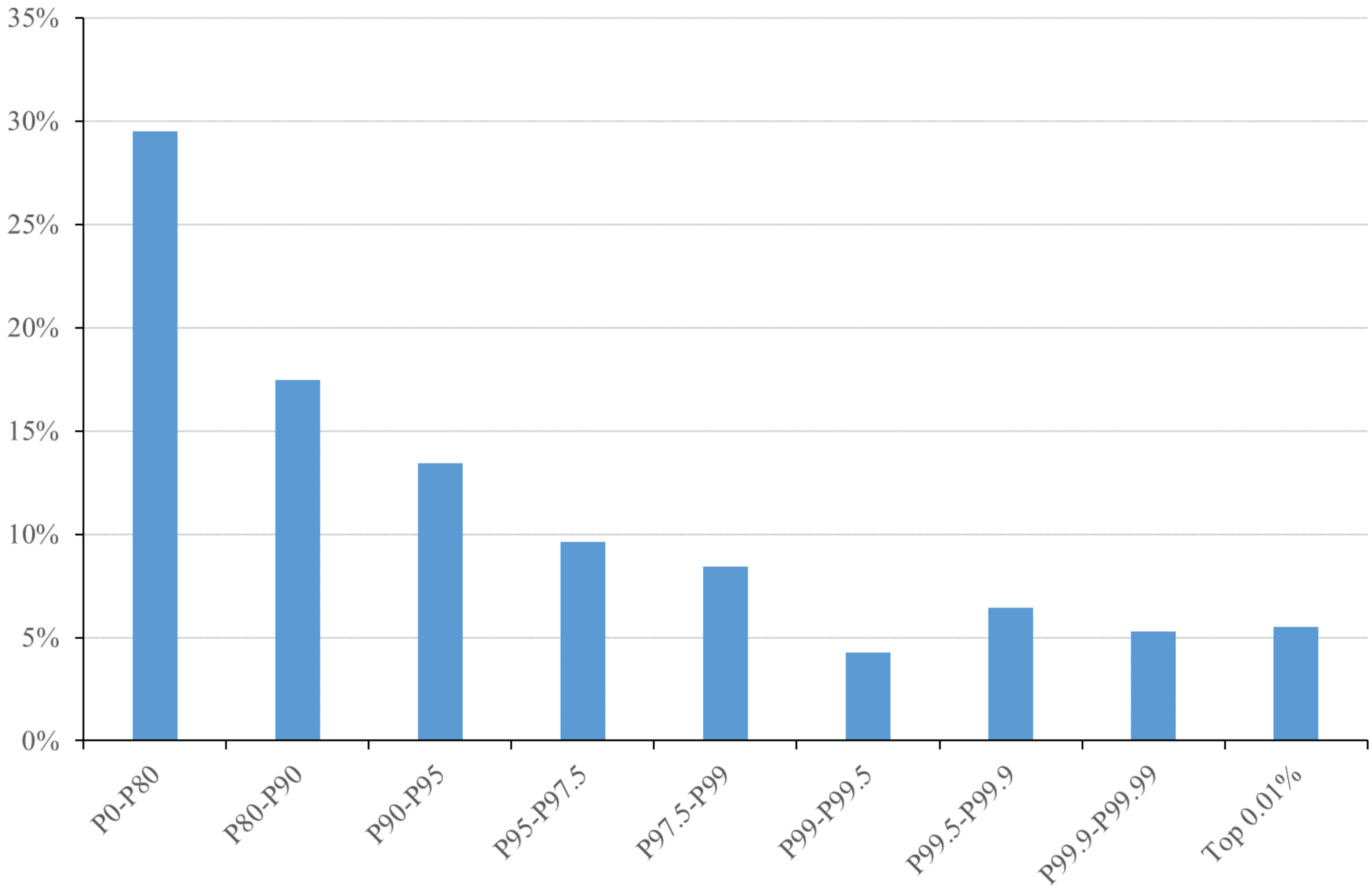

Figure 3
Aggregate Saving Rates

This figure illustrates the evolution of aggregate saving rates in Sweden from 2001 to 2007 according to national accounts (NA) and registry data. In registry data, aggregate active saving includes active saving (as defined in the main text and in Table I) of individuals living in Sweden all year long plus the net worth of arriving Swedish residents (through birth or immigration) minus the net worth of exiting Swedish residents (through death or emigration). In national accounts, aggregate active saving is equal to disposable income (including the increase in pension entitlements from employer contributions) minus property income (including from owner-occupied housing) minus final consumption expenditure. Aggregate net worth includes all the assets and liabilities of all Swedish residents at beginning-of-the-year, except for the net working capital held by households (currency minus net short-term non-financial debt). The total saving rate is equal to the growth rate of aggregate net worth in both series. The active saving rate is equal to aggregate active saving during the year over aggregate net worth at the beginning of the year.

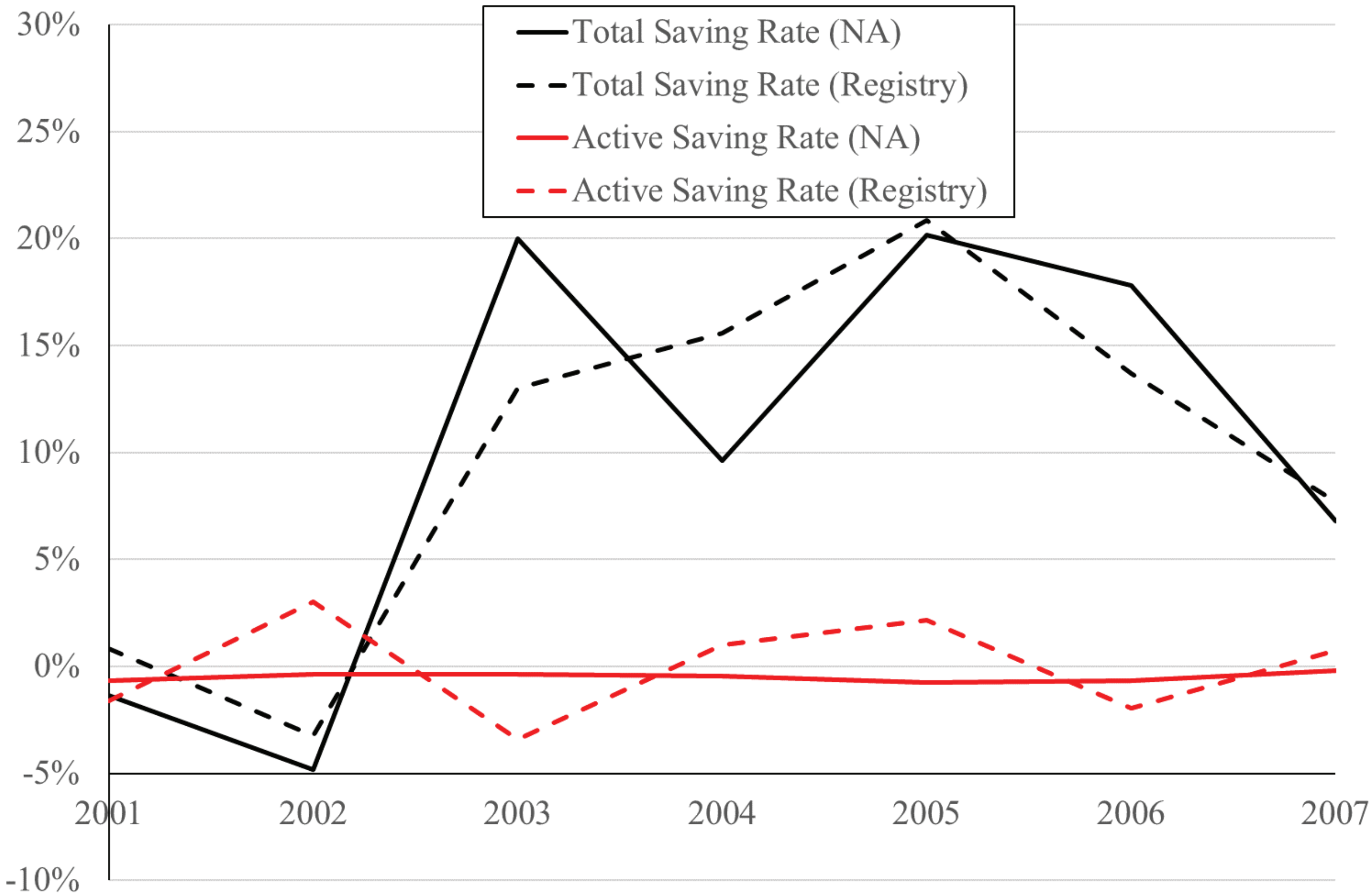

Figure 4
Average Saving Rates Across the Wealth Distribution

This figure illustrates the average saving rates (in proportion to net worth) across various brackets of the distribution of net wealth in Sweden between 2000 and 2007. The dotted line plots total saving rates and the solid line plots active saving rates, where active saving is equal to labor income minus taxes minus consumption and total saving is equal to active saving plus returns to wealth.

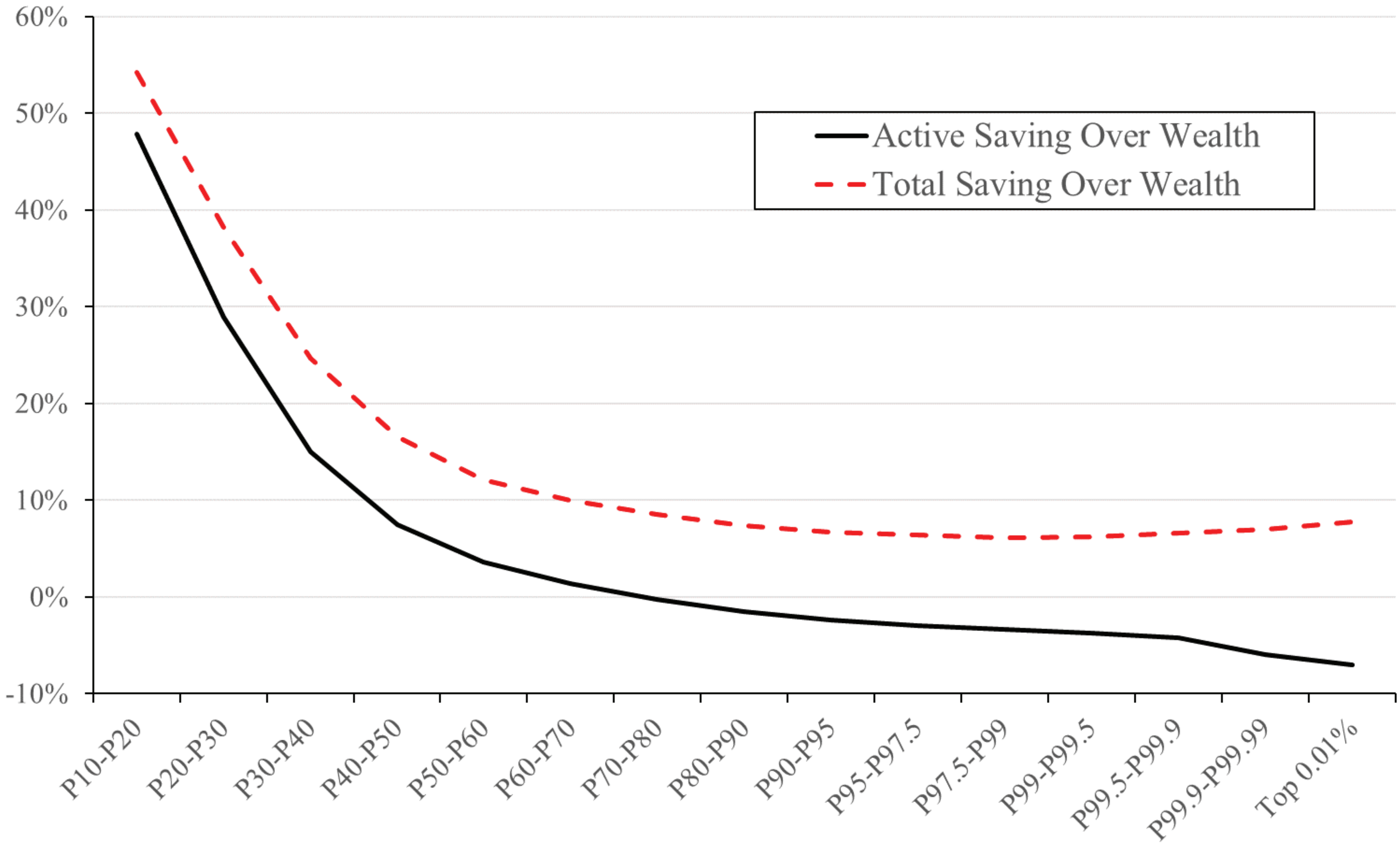

Figure 5
The Dispersion of Saving Rates Across the Wealth Distribution

This figure illustrates the cross-sectional standard deviation of saving rates (in proportion to net worth) across various brackets of the distribution of net wealth in Sweden between 2000 and 2007. The dotted line plots total saving rates and the solid line plots active saving rates, where active saving is equal to labor income minus taxes minus consumption and total saving is equal to active saving plus returns to wealth.

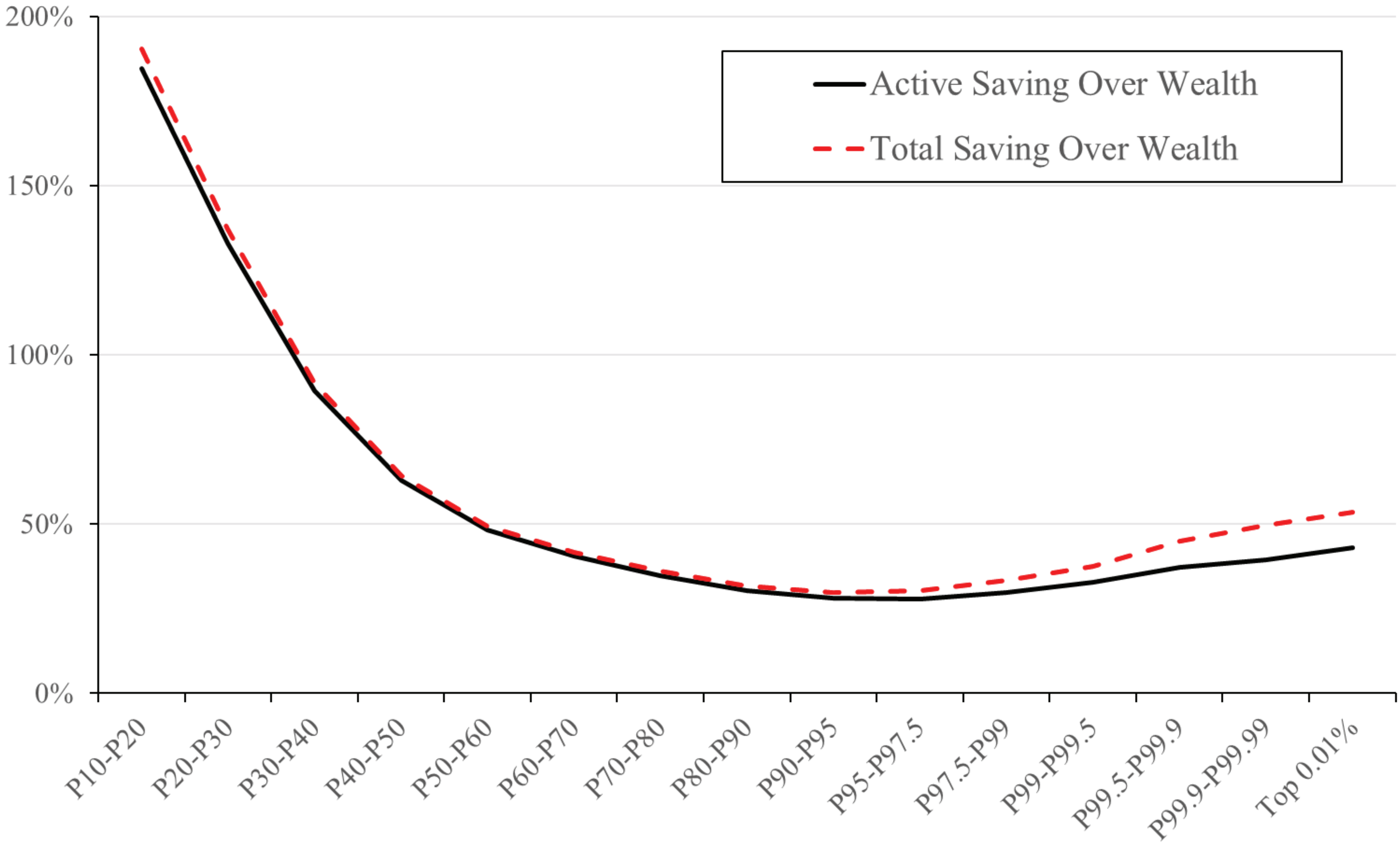

Figure 6
The Relative Roles of Wealth Effects, Wealth Mobility and Demographics in the Dynamics of Inequality

This figure illustrates the main determinants of the growth of aggregate wealth shares for various fractiles of the distribution of net wealth in Sweden between 2000 and 2007. The solid line plots the average annual growth of wealth shares observed from 2000 to 2007, the red, blue and green dotted lines plot the respective contributions to each wealth share's growth of the correlation between wealth and total saving, the idiosyncratic dispersion of total saving rates and the movements of individuals in and out of the Swedish population.

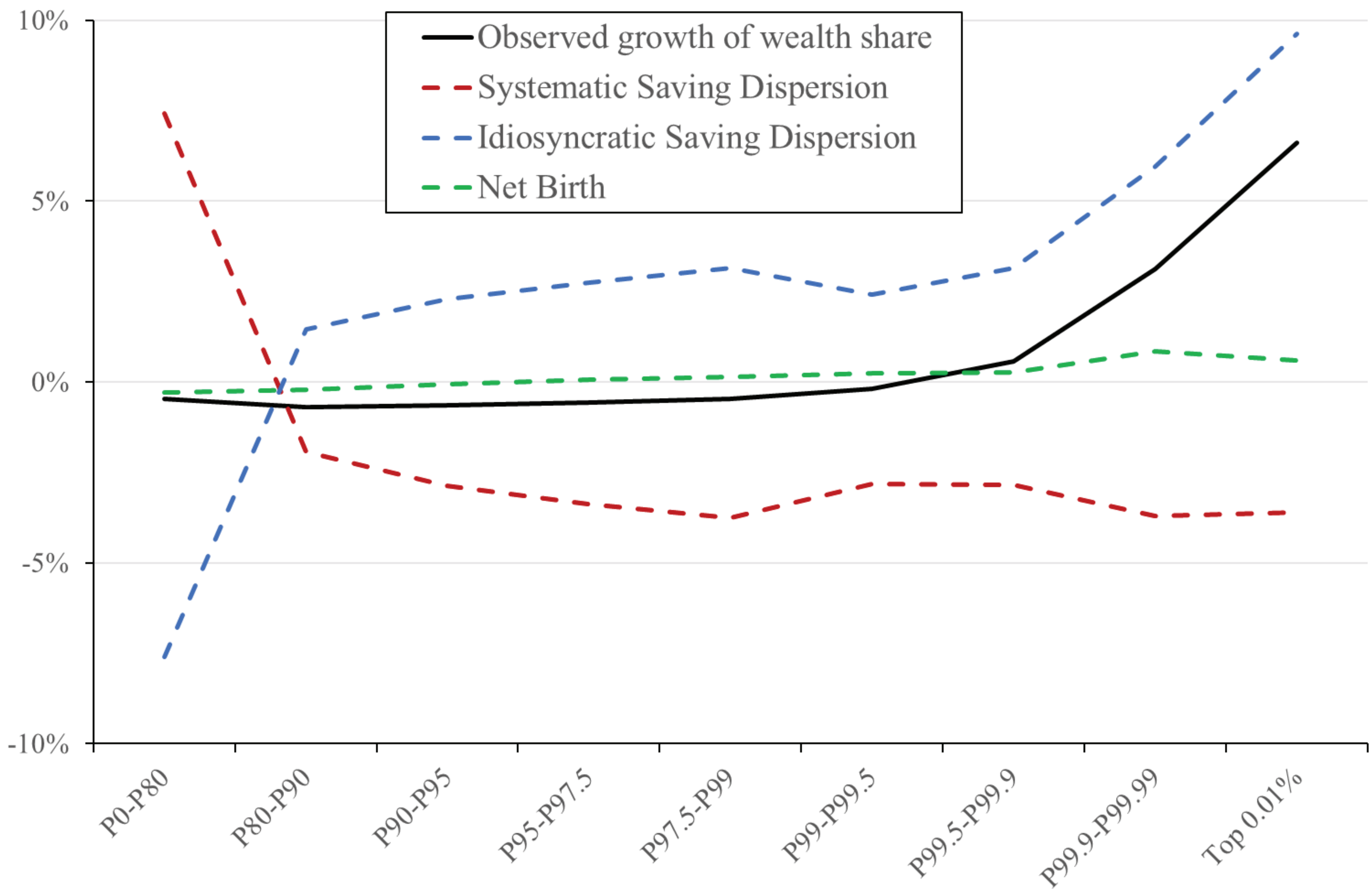

Figure 7
The Relative Roles of Wealth Returns and Active Saving in the Dynamics of Inequality

This figure illustrates the relative roles of returns to wealth and active saving rates in the growth of aggregate wealth shares for various fractiles of the distribution of net wealth in Sweden between 2000 and 2007. The solid line plots the average annual growth of wealth shares observed from 2000 to 2007, the red, blue and green dotted lines plot the respective contributions to each wealth share's growth of the heterogeneity in returns to wealth, the heterogeneity in active saving rates and the correlation between returns to wealth and active saving rates.