Wealth Inequality in Canada from 1990-2022: Evidence from the Capitalization Method*

Alexander Hempel†
University of Alberta

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Abstract

This paper estimates the distribution of wealth in Canada from 1990 to 2022 using the income capitalization method. It finds that the top 1% wealth share rose from 16.2% in 1990 to 21.3% in 2008, before falling and stabilizing at 19.3% by 2022. These estimates imply a lower level of wealth inequality than prior Canadian estimates based on Pareto-interpolation methods, largely reflecting differences in how the wealth of the top 0.1% is estimated. The results also reveal two distinct trends. The top 0.1% share is increasing, while strong wealth growth among middle-class households is compressing inequality across the remainder of the distribution, resulting in a lower overall Gini coefficient. Decomposition results show that the modest growth in top wealth shares in recent years reflects a weakening of the forces typically associated with rising wealth inequality, which were more pronounced earlier in the period.

JEL Classification: E01, D31, E21

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†University of Alberta School of Business, Email: hempel1@ualberta.ca.

1 Introduction

There is a growing literature on wealth inequality in Canada, but existing estimates vary substantially across data sources and methodologies (Davies & Di Matteo, 2020; Wodrich & Worswick, 2020; Dong, 2025). Survey-based measures are infrequent and subject to underreporting at the top, while Pareto-interpolation approaches combine these surveys with billionaire "rich lists" to better capture the upper tail, often yielding much larger estimates. As a result, there remains uncertainty about both the level and trajectory of wealth concentration in Canada.

This paper provides new annual estimates of the wealth distribution in Canada from 1990 to 2022 using the income capitalization method popularized by Saez & Zucman (2016). By combining administrative tax data from the Longitudinal Administrative Databank (LAD) with aggregate wealth data from the national accounts (NBSAs), this approach constructs a consistent series of wealth shares over time and offers improved coverage of the upper tail of the distribution.

The results suggest that wealth inequality in Canada is lower than previously believed. The baseline results reveal a top 1% wealth share of 19.3% in 2022. This estimate lies several percentage points below existing Canadian estimates that employ Pareto-interpolation methods, which range from 22% to 25% in recent years. Subsequent analysis reveals that the gap between estimates is driven by differences in the top 0.1% share, which is much larger when using Pareto-interpolation approaches. These differences reflect the inherent difficulty of measuring wealth at the top of the distribution and the sensitivity of estimates to how the extreme upper tail is modelled.

The capitalization results reveal two distinct periods in the evolution of the top 1% share. The top 1% share rose from 16.2% in 1990 to 21.3% in 2008, before falling sharply to 17.6% the following year. This increase of over five percentage points in just over a decade represents a substantial rise in wealth inequality. In contrast, the 2010s are characterized by relative stability, with the top 1% share fluctuating between 17.5% and 19.3% through 2022. Overall, after an initial period of growth, wealth concentration at the top has remained broadly stable in recent years.

The trends in the top 1% mask two contrasting trends across the distribution. On the one hand, the top 0.1% has seen a 45% increase in its wealth share - from 5.1% in 1990 to 7.4% in 2022. This suggests those at the very top of the wealth distribution are pulling away from those below. On the other hand, a declining Gini coefficient and 90/50 percentile ratio suggest the majority of households in the middle of the distribution are becoming more equal. Looking at wealth shares below the top 1% reinforces this pattern: households below

the 60th percentile saw their share increase by 1.7 p.p., while those between the 60th and 99th percentiles experienced a decline of 4.8 p.p.

These findings also shed light on how Canada compares to its international peers. The top 1% share in Canada is substantially smaller than the estimates for other countries, such as France (Blanchet & Martínez-Toledano, 2023) and the United States (Saez & Zucman, 2016; Batty et al., 2022), even when using the same method. The overall increase over time is also modest in an international context. The top 1% share rose 3.1 p.p. in Canada from 1990 to 2022, which is less than half the increase observed in France and the United States over a similar period. An important caveat is that much of the cross-country gap with France reflects differences in how pension wealth is measured rather than the underlying wealth distribution. After accounting for these differences, Canada appears more similar to France, although still substantially more equal than the United States.

To better understand why wealth inequality has only increased modestly overall and hardly at all in recent years, I employ a pair of decomposition approaches. First, a linear asset decomposition shows that changes in aggregate asset composition, rather than increases in within-asset concentration, account for most of the variation in top wealth shares over the period. A major shift towards equity wealth in the 1990s and away from housing drove most of the large increase in the top 1% share prior to the Great Recession, but this pattern has since stabilized, with housing wealth helping the middle-class keep pace with gains in equity wealth accruing to those at the top of the distribution.

Second, a synthetic savings decomposition indicates that fluctuations in savings behaviour at the top, rather than differential capital gains or income inequality, are the primary driver of changes in wealth concentration. In particular, the stabilization of top wealth shares since the late 2000s is closely tied to a decline in top savings rates. This decomposition analysis reveals that the factors that drove the increase in wealth inequality in the early part of the period have since been moderated, which has led to the plateau in top wealth shares that has been observed since 2009.

This paper contributes to several strands of the literature. First, it provides new evidence on wealth inequality in Canada. Existing estimates rely either on survey data, which are infrequent and subject to underreporting at the top, or on Pareto-interpolation methods that combine surveys with billionaire "rich lists" (Vermeulen, 2018; Davies & Di Matteo, 2020; Wodrich & Worswick, 2020; Duncan & Perrault, 2021; Dong, 2025). Other work has attempted to address survey limitations using uncensored microdata (Brzozowski et al., 2010). The estimates presented here lie between these approaches, exceeding those from the Survey of Financial Security (SFS) but falling below Pareto-based estimates. By using administrative tax data, this paper provides the first annual series of top wealth shares in

Canada over an extended period.[1]

Second, the paper contributes to the growing literature estimating wealth distributions and wealth inequality. Over time, researchers have relied on a variety of data sources and methods, including estate tax data, survey data, administrative wealth data and combinations of these approaches (Kopczuk & Saez, 2004; Alvaredo et al., 2018; Acciari et al., 2024; Jakobsen et al., 2020; Albers et al., 2022; Katic & Leigh, 2016). More recently, the use of administrative tax data and the income capitalization method popularized by Saez & Zucman (2016) has become a prominent approach for estimating wealth inequality and has been applied in a number of countries (Garbinti et al., 2020; Blanchet & Martínez-Toledano, 2023; Martínez-Toledano, 2019). This paper adapts the method to the Canadian context and introduces a distribution regression approach (Chernozhukov et al., 2020) to allocate assets without observed income flows. This approach allows for a more continuous and data-driven allocation of assets such as housing and pensions and avoids reliance on discrete groupings. The results also suggest that recent debates around heterogeneous returns (Saez & Zucman, 2020; Smith et al., 2023) play a limited role in the Canadian context.

Third, the paper contributes to the literature on the determinants of wealth inequality. A large body of work has examined why wealth concentrates at the top of the distribution (Krusell & Smith, 1998; Benhabib et al., 2011; De Nardi & Fella, 2017; Benhabib et al., 2019; Fagereng et al., 2020; Bach et al., 2020). Empirical studies have emphasized the roles of asset price dynamics (Kuhn et al., 2020), income inequality (Hubmer et al., 2020), and savings behaviour (Blanchet & Martínez-Toledano, 2023). The results in this paper point to savings dynamics as the primary driver of wealth inequality in Canada, with asset price movements playing a more limited role in generating divergence across wealth groups.

The remainder of the paper is as follows. Section 2 provides an overview of wealth data in Canada, Section 3 describes the capitalization methodology, Section 4 presents the main results, Section 5 explores the mechanisms underlying these trends and Section 6 concludes.

2 Wealth in Canada

2.1 Defining Wealth

Before going further, it is necessary to define the concept of wealth. Marketable wealth is the current market value of all assets owned by households minus their debts. The international standards of the System of National Accounts (SNA) limits assets to those "which are sub-

[1]Statistics Canada's Distributions of Household Economic Accounts (DHEA) provide annual data beginning in 2010, but only for broad groups such as the top quintile.

ject to ownership rights and from which economic benefits may be derived by their owners by holding them or using them in an economic activity" (United Nations, 2010). Some notable potential assets that are omitted from this definition include: promises of future government spending (such as government pensions), unfunded pensions, consumer durables and human capital. Using these criteria, in this chapter, the following assets make up marketable wealth: public and private equity, currency and deposits, bonds and short-term paper, unincorporated business assets, pension assets, principal residences and other real estate properties, while debts include mortgages and non-mortgage loans.[2]

2.2 Aggregate Wealth in Canada

Data on aggregate wealth in Canada from 1990-2022 comes from the National Balance Sheet Accounts (NBSAs), which record the stock of assets and debts in the economy for a variety of sectors.[3] In particular, the focus will be on the household and non-profit institutions serving households sector, which aligns with the definition of wealth above. Within each sector, the NBSAs break wealth down further into different instrument types such as residential structures, debt securities and listed shares, which is instrumental for the capitalization approach. Because the NBSAs follow the SNA framework (United Nations, 2010), these estimates of aggregate wealth are also comparable to other countries such as the United States, Great Britain and France.

This paper uses an aggregate value of wealth that differs from the NBSAs due to the omission of a few asset categories. The total net worth of Canadian households used here is $15.6 trillion CAD in 2022, compared to $16.9 trillion reported in the NBSAs. This difference can be explained by the exclusion of consumer durables, consumer credit, and certain life insurance and pension liabilities in this paper's definition of wealth. These categories lack reliable distributional data and would therefore require strong assumptions to be incorporated into individual wealth estimates.[4]

This period provides an interesting backdrop for the study of wealth inequality since

[2]Throughout, wealth is measured at market values, including capital gains on housing. While owner-occupied housing also provides consumption services, this paper focuses on its role as a component of marketable wealth, consistent with the broader wealth inequality literature. Alternative approaches that abstract from housing capital gains may be useful for studying housing services or consumption-based measures of well-being but correspond to a different concept of wealth.

[3]This period is chosen because in 2012, revised estimates of the NBSAs were published going back only to 1990 and in this way, the series can only remain consistent up until then.

[4]Saez & Zucman (2016) also omit consumer durables from their definition of wealth, but do include consumer debt and life insurance assets using strong assumptions on their distribution that are not made in the baseline specification of this paper. Section 4.3 shows that an alternative specification that includes these assets only has a modest impact on the main inequality estimates. A detailed reconciliation between this measure and the NBSAs is provided in the Online Appendix.

	Years				
	1990	1998	2006	2014	2022
Total Net Worth (in Millions)	3,514,144	5,061,372	6,759,298	9,895,558	15,644,709
Average Growth Rate	.	5.41	10.54	7.04	6.02
Capital to Income Ratio (%)	323	402	395	508	679
Average Net Worth	305,613	389,318	473,548	620,581	863,001
Savings Rate (%)	13.1	4.9	3.1	4.3	4.6
Number Of Families	11,498,655	13,000,600	14,273,730	15,945,625	18,128,255

Dollar variables expressed in 2022 CAD $

Table 1: Net Worth Summary Statistics

This table presents summary statistics of household net worth for five individual years. Aggregate net worth is computed using data from the National Balance Sheet Accounts (NBSAs). Aggregate net worth, expressed in millions, totalled $15.6 trillion CAD$ in 2022 using the definition of wealth from this paper. The average in the growth and savings rate refers to the average over the preceding seven years. The savings rate is presented from the household's current and capital account, which also is part of the system of national accounts. The capital to income ratio (K/Y) is the ratio of total net worth to income. Average net worth is with respect to the family unit.

aggregate wealth has exploded over this time. Table 1 shows that aggregate net worth in Canada increased from $3.5 trillion in 1990 (inflation-adjusted) to $15.6 trillion in 2022. The growth in aggregate wealth has remained steady for most of the period, with average annual growth rates above 5% for each of the eight year periods. The growth in wealth has also been disproportionate to income. The capital to income ratio in Canada has grown from 323% to 679% of national income. Naturally, the average family net worth has also risen over this period, with the average currently at $863,000 per family. All of this is happening while the aggregate household savings rate, measured in the Current and Capital Account for households, declined from 13.1% in 1990 to 3.1% in 2006 and 4.6% in 2022. This suggests that a rising savings rate in the household sector as a whole is unlikely to explain the increase in aggregate wealth and that other factors may be important.

To better understand where this upward trend in aggregate wealth is coming from, it is useful to look at its component parts. Figure 1 plots aggregate wealth over time, broken up into six assets groupings.[5] A major takeaway from the figure is the key role played by housing. Net housing wealth has increased from $1.5 trillion in 1990 to over $7 trillion in 2022 CAD, which is consistent with the rise of Canadian home values - the Canadian home

[5]Details on how wealth is divided into its component parts are available in the Online Appendix.

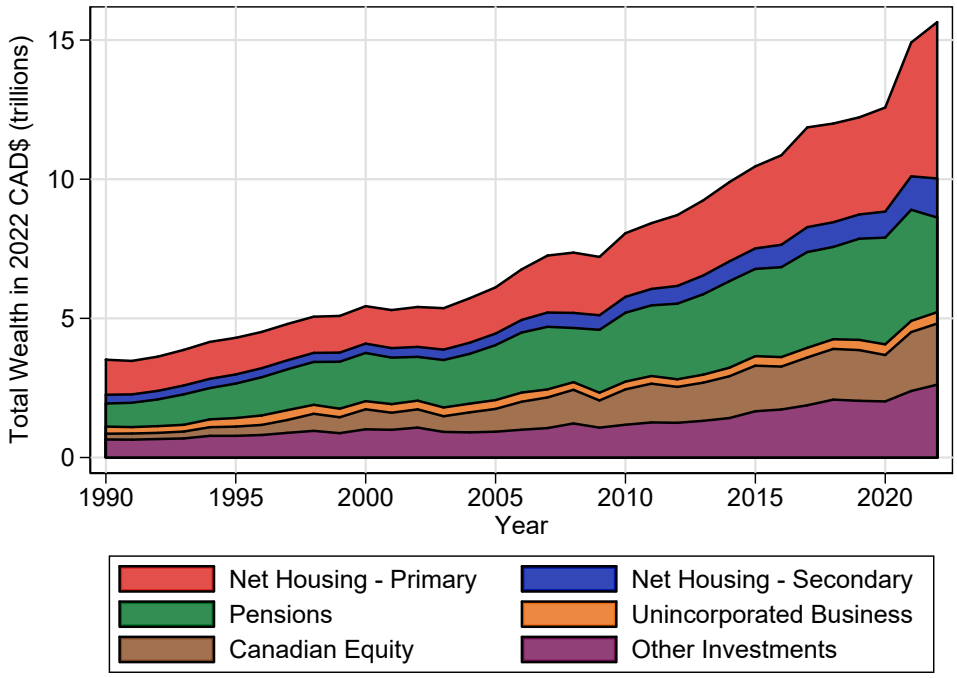


Figure 1: Aggregate Household Wealth in Canada, 1990-2022

This figure depicts the level and composition of household wealth in Canada from 1990-2022 in 2022 CAD $ using data from the National Balance Sheet Accounts (NBSAs). Information on pensions comes from the Pension Satellite Accounts (PSAs).

price index shows that the price of a home has tripled since 2000. However, housing alone is not driving the trend in aggregate wealth. Pensions have also almost quadrupled in value over the period. Equity wealth has gone from $200 billion inflation adjusted to almost $2.2 trillion. And other investment types have gone from $650 billion to $2.6 trillion.

This has changed the overall composition of wealth in Canada significantly. For instance, the equity share of aggregate wealth increased from 6% to 14% of all wealth. Most of this came at the expense of unincorporated business assets, which fell from 7% to 3%. This decline in unincorporated business wealth could reflect a growing trend towards incorporation among sole proprietors. The share of other investment types and pension wealth also edged down slightly.

This section highlights the remarkable increase in wealth from 1990 to 2022, but these aggregate figures say nothing about how wealth was distributed. It is on this front that information is more limited. While Canada collects data on wealth through the Survey of Financial Security (SFS), the survey was conducted infrequently prior to 2012 and does not oversample high-net-worth individuals, which makes drawing conclusions about trends at the top of the distribution challenging.

The composition of assets also differs across data sources. In particular, the SFS reports a smaller share of financial, non-pension assets relative to the National Balance Sheet Accounts (NBSAs). For example, in 2019 the SFS reports $3.05 trillion (23.3% of total net worth) in financial assets compared to $4.4 trillion (34.6%) in the NBSAs (expressed in 2023 dollars).[6] These differences reflect variation in measurement and classification across data sources and motivate the use of an approach that reconciles micro-level information with national balance sheet aggregates.

2.3 Capital Income in Canada

Unlike wealth which is a stock, capital income is a flow that is reliably reported on tax forms annually. In Canada, this capital income data comes from the Longitudinal Administrative Databank (LAD). The LAD is a 20% sample of the annual T1 Family File (T1FF) of Canadian taxpayers, which amounts to over 6.1 million individual observations in 2022. The T1 Family File covers all taxpayers who have a social insurance number (SIN) and creates Census families that link together parents and children through information provided on the tax form.[7] Census families are comprised of either unattached individuals or a married couple, both including their unmarried children if any.[8] The Census family will be used as the unit of analysis in this paper because some forms of wealth, like housing, are difficult to allocate to just one individual in a household.

The concentration of capital income has increased in three distinct phases since 1990, as seen in Figure 2, which plots the evolution of the top 1% share of capital income. Capital income concentration first rose steeply from 32.0% in 1990 to 42.6% in 2000. This was followed by a relative plateau between 2000 and 2016, where capital income concentration did not change. Finally, the top 1% share of capital income rose again starting in 2016, with the top 1% reaching over 50% of all capital income in 2022. Overall, the top 1% share of capital income has increased by over 50% since 1990.

This trend, however, masks substantial changes to the overall composition of capital income. In 1990, in an era when the prime lending rate was over 14%, the interest and other investment income category (which includes deposits and bonds) made up 42% of all capital income. By 2021, with the bank rate down to 0.5%, other investment income made up only 5.3% of all capital income. Dividends (from 10.7% to 26%) and capital gains (from 13.6% to 46%) have made up the difference.

[6] See Online Appendix for further details and the full comparison table.

[7] This means that under the family variable for each individual in the LAD, the family's total income is pulled from the T1FF.

[8] This definition includes unmarried, adult children who continue to reside at the same residence as their parents regardless of age.

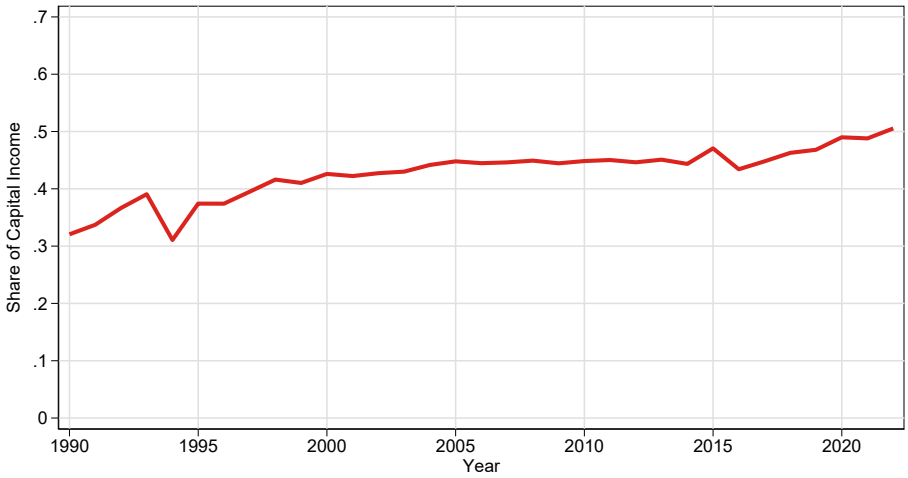


Figure 2: Top 1% Share of Capital Income, 1990-2022

This figure depicts the share of capital income earned by the top 1% of capital earners. Capital income is made up of self-employment income, dividends, capital gains, net rental income and interest and other investment income. Data comes from the Longitudinal Administrative Databank (LAD).

Because similar capital income flows can indicate wildly different values in the underlying asset, the trend in capital income inequality may not reflect growing *wealth* inequality. For example, annual income from a bond paying out 1% interest and a dividend with a 5% rate of return may be similar, but one asset may be more valuable. If high-capital income earners are shifting to assets that pay out more in capital income, but have lower underlying values, the increase in capital income concentration may not reflect an increase in the concentration of wealth. This is also the key principle of income capitalization: if one knows the rate of return on different asset classes, they can infer the level of wealth based on the capital income flow. This process will be described in detail in the next section.

3 Method

3.1 Capitalization Method

The income capitalization method is an approach to convert capital income flows into the stock value of an asset - and a form of marketable wealth. Suppose we have an asset j and a distribution of agents $i \in \{1, ..., k\}$. The stock of asset j, held by individual i is W_{ij}. This is connected to the capital income flow from asset j received by individual i, I_{ij}, through the annual return of that individual's asset, r_{ij}. This can be written in the following way:

$$r_{ij}W_{ij} = I_{ij} \implies W_{ij} = \frac{1}{r_{ij}}I_{ij} = \beta_{ij}I_{ij}$$

Here, β_{ij} is called the *capitalization factor*, which is the inverse of the annual return for that asset. An individual's total wealth, W_i, is the sum of the holdings of each asset type.

$$W_i = \sum_j \beta_{ij} I_{ij}$$

This equation tells us that we can infer the wealth of an individual based on their capital income if we can estimate these annual returns for different assets. However, the primary challenge when using this method is that it is impossible to know the exact annual return received by each individual and each asset. This paper follows Saez & Zucman (2016) in making a simplifying assumption: the annual return for each asset is constant across all individuals, $r_{ij} = r_j$.

Annual returns by asset, r_j, are computed using aggregate wealth data from the NBSAs and aggregate capital income flows from the LAD. To do this, capital income flows from the LAD are matched with categories of assets in the NBSAs - a process presented in the Online Appendix. As an example, for Canadian equity, the relevant NBSA variables are listed and unlisted shares, as well as a portion of mutual funds, while the two sources of capital income from owning shares are dividends and capital gains, which are reported in the LAD. Then, to get the rate of return by asset, the aggregate capital income flow is divided by the aggregate of the corresponding stock in the NBSA.[9]

This approach for estimating returns is useful for two reasons. First, it allows for a consistent approach across assets in estimating returns. Rather than relying on asset-specific estimates from a collection of sources that use different methods, this approach is consistent across all assets. Second, using this approach, the total wealth is going to be consistent with the total wealth for that asset in the NBSAs. This is because the constant used to scale income to wealth is exactly the ratio of aggregate wealth from the NBSAs to aggregate capital income in the LAD.

3.2 Assets Without Capital Income Flows

The capitalization method only works when there are capital income flows observed in the microdata. In Canada, there are a couple major assets that do not show up clearly in the LAD: housing and pensions. Unlike in the United States, there is no mortgage interest deduction or other observable metric of homeownership. For pensions, while there are indicators of pension withdrawals, this does not capture the substantial pension wealth that is

[9]For example, in 2022 the combined dividend and capital-gains return on listed and unlisted Canadian equity is 10.6%, implying a capitalization factor of 9.4. The full set of capitalization factors and rates of return can be found in Appendix Figure 1.

owned, but not withdrawn by those who are not yet retired. To address this gap in the data, I use a novel imputation approach for this literature that is based on *distribution regression*.

A more complex imputation approach is important when trying to measure wealth inequality because the objective is to mimic the distribution of assets rather than to minimize the squared error at the individual level. Standard imputation approaches that rely on linear regression lead to estimates of the asset distribution that have too little variance. This arises because these models rarely predict extreme values for an asset, such as zero, which is not realistic given that many households do not own their homes or have a pension. Instead of estimating the conditional expectation of asset values, I estimate the conditional distribution of housing and pensions using distribution regression techniques on the SFS and then impute the value of assets in the LAD by drawing from a family's predicted conditional distribution. Since this approach yields a non-parametric distribution for each family, which can give a high probability of drawing a zero, this approach generates a more realistic distribution of assets across the population.[10]

For the distribution regression, this paper follows the work of Chernozhukov et al. (2020). Distribution regression allows for the generalization from a univariate cumulative distribution function (CDF) to a conditional CDF. We can write the conditional distribution of Y as a function of covariates X as follows:

$$F_{Y|X}(y \mid x) = E[\mathbb{1}(Y \leq y) \mid X = x]$$

The distribution regression model can then be written as:

$$F_{Y|X}(y \mid x) = \Lambda\left(x'\beta(y)\right)$$

where $\Lambda(\cdot)$ is a link function - in the case of this chapter, the logit transformation, x is a vector of covariates, and $\beta(y)$ is an unknown vector of coefficients that depends on the value of y.[11] If we think in terms of a single threshold y, then this is just a binary regression of whether one is above or below that threshold. Doing so for many thresholds yields the distribution regression model.

This object is useful because it can be inverted to yield the conditional quantile func-

[10] Non-parametric approaches such as in Garbinti et al. (2020), where households are grouped into income and age bins and then assigned the average value of the bin to the proportion in that bin with a positive value represents a middle ground between this paper and standard prediction methods. While they do produce a more realistic distribution of assets, the within-bin variance is limited and the choice of bins is arbitrary and not data-driven like in this paper's approach.

[11] In the context of this chapter, because y is a continuous variable (eg. housing value), it will be approximated using a series of 100 grid points at each percentile of y

tion.[12] With the conditional quantile function, one can predict the value of the asset at each percentile $p \in \{0, 0.01, ...0.99, 1\}$ for each family. It is then straightforward to draw from a uniform distribution, $p \sim U[0, 1]$, for each family and assign the value of the asset that corresponds to that percentile drawn. This way, a more realistic dispersion of the asset will be preserved.

The conditional quantile function is estimated using the SFS. Net housing and pension wealth are modelled as a linear function of both individual and city-level variables that are found in both the SFS and the LAD. After estimating the conditional quantile function for all one hundred quantiles in the SFS, the estimated coefficients are used to predict each quantile for every family in the LAD using the set of common characteristics. Then, from each family's estimated distribution, a value of housing and pension wealth is drawn from this estimated distribution. In theory, one can repeat these draws many times and compute the average values each time, but in practice, the variance in the top 1% share across simulations is imperceptibly small, so a single simulation is used for the main specification.[13] While the SFS has its limitations in terms of measuring wealth at the top of the distribution, it is more reliable for housing and pensions, which makes it suitable for this exercise. This is because housing values are publicly available and well-known to respondents and pensions have annual contribution limits, which means that top-coding is unlikely to be an issue.

It is important to reiterate that the objective of this exercise is to impute individual-level values of housing and pension wealth conditional on observable characteristics, in order to construct a measure of total household wealth. Accordingly, the marginal distributions of these assets in the LAD need not exactly replicate those observed in the SFS. Instead, the estimation targets the conditional distribution of assets, $F_{Y|X}(y \mid x)$, so as to preserve the correlation between imputed assets, household characteristics, and other components of wealth. Approaches such as the RIF-regression framework in Davies et al. (2017) are well suited to matching unconditional distributional features, but are less appropriate for imputation in this setting, where the goal is to generate plausible household-level asset values rather than to reproduce marginal wealth distributions.

3.3 Heterogeneous Returns

The main critique of the capitalization method is the assumption of homogeneous returns across the wealth distribution. Bach et al. (2020) and Fagereng et al. (2020) have shown

[12] This approach is theoretically equivalent to estimating a quantile regression directly in large enough samples. However, the distribution regression is faster to run computationally and more flexible (Chernozhukov et al., 2020).

[13] This method, and how it compares to some alternative approaches, is discussed in more detail in the Online Appendix.

how rates of return to wealth are higher for those at the top than those at the bottom of the distribution. They show this to be the case, not just because different wealth groups hold different assets, but within even narrowly-defined asset classes as well. If this is the case, then the assumption of homogeneous returns would lead to an overestimate of the wealth of those at the top of the distribution since the capitalization factors would be overstated. Smith et al. (2023) argue that correcting for this can dramatically lower the top 1% share of wealth in the United States relative to what Saez & Zucman (2016) estimate in their paper.

How to address this challenge remains a contested topic. Smith et al. (2023) take a stance on the rate of return for the rich in the fixed income claims asset category (which is similar to the interest and other investment income category in Canada). They argue that the rate of return on the Moody's AAA corporate bond, which averaged 6.0% in the 2000s and 4.2% from 2010-2016, is a good proxy for the rate of return of the top 0.1% and the 10-year US treasury bond is a good proxy for the next 0.9%. They then capitalize the income of these groups according to those returns and then compute the residual rate of return for the remaining population, which is close to 0. Saez & Zucman (2020) contest this and argue that this correction is excessive and does not line up with the data. They argue that there is no evidence that suggests an interest rate premium for the wealthiest that is close to the Moody's AAA corporate bond rate. At most, they find that the interest rate of the top 1% wealthiest households is 1.4 times higher than the average after 2008, which is far below the Moody's rate.[14]

To address this issue in this paper, I follow the Saez & Zucman (2020) correction for the baseline estimates, but also present the alternative approaches as robustness checks. For the Saez & Zucman (2020) approach, the baseline specification assumes the interest rate premium is the same as in the United States - 1.4 times.[15] This assumption is reasonable for a couple reasons. First, interest rates have followed a similar path in Canada and the United States since the Great Recession. Second, with global capital markets, the wealthiest Canadians have access to many of the same corporate bonds and financial instruments as their American counterparts and likely share similar portfolio strategies. For the Smith et al. (2023) approach, the baseline specification also uses the Moody's AAA corporate bond rate for the top 0.1%, but uses the 10-year Canadian government bond rate for the next 0.9%.

[14]One reason for the disagreement is that Smith et al. (2023) apply the Moody's rate to the top 1% of *interest* income earners rather than the wealthiest 1% which may lead to its own downward bias.

[15]The SFS does not allow for the same analysis of rates of return as was done in the American SCF.

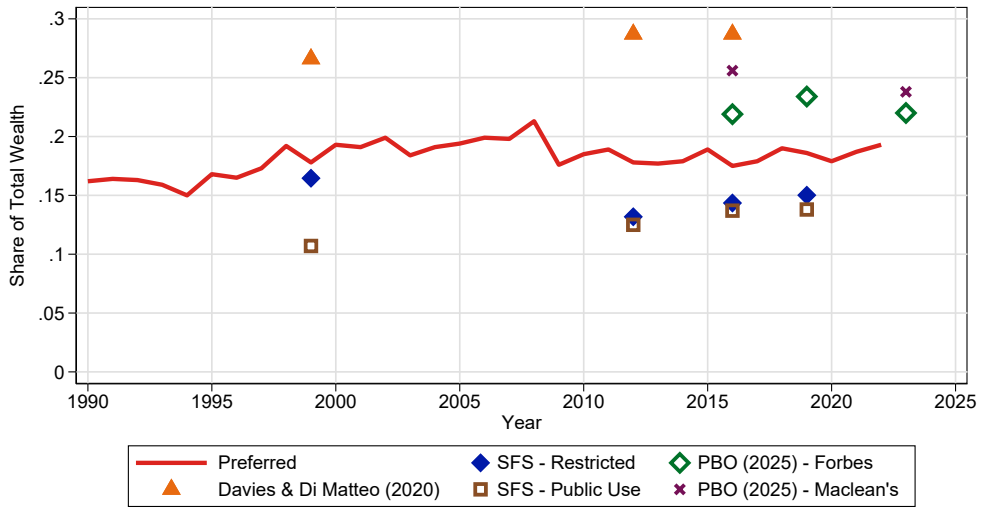


Figure 3: Comparing Canadian Estimates of the Top 1% Wealth Share

This figure presents the share of wealth held by the wealthiest 1% in Canada from 1990-2022 from different sources with some sources extending to 2023. The preferred estimate comes from using the capitalization method on administrative tax data. The Survey of Financial Security (SFS) data is presented both using the restricted access version that is not top-coded and the publicly available version that is top-coded. Davies & Di Matteo (2020) and the Parliamentary Budget Officer (PBO) use Pareto-interpolation methods that merge the SFS with billionaire "rich lists" (both from Canadian Business Magazine/Maclean's and Forbes).

4 Results

4.1 Comparison with Other Estimates

While the capitalization approach can be used to generate a range of wealth inequality measures, this paper focuses on the top 1% share. This measure provides a clear indicator of wealth concentration at the top of the distribution, which is particularly relevant in discussions of extreme wealth, and is widely used, allowing for direct comparison across sources. Figure 3 presents the evolution of the top 1% wealth share in Canada from 1990–2022 using the capitalization method alongside estimates from the existing literature. The baseline estimates indicate that the top 1% share rose from 16.2% in 1990 to 19.3% in 2022, with a peak of 21.3% in 2008, just before the Great Recession.

Despite the fact that these estimates show that the top 1% own nearly one-fifth of all wealth in Canada, they are somewhat low compared to prior estimates from the literature that employ Pareto-interpolation based methods. Davies & Di Matteo (2020) and the Office

of the Parliamentary Budget Officer (PBO) (Dong, 2025)[16] follow Vermeulen (2018) to estimate top wealth shares in Canada by combining SFS data with billionaire "rich lists" and fitting a Pareto distribution to the upper tail. The Davies & Di Matteo (2020) estimates are substantially higher, approaching 29%, because they omit pensions for historical consistency. The Dong (2025) estimates are closer to the capitalization results, particularly when using the Forbes list (22% in 2023) rather than the Maclean's list (23.8%), but a multi-percentage point gap still remains.[17]

As seen in Figure 3, the baseline estimates fall squarely between the survey-based SFS estimates and the Pareto-interpolation estimates. The public use microfile (PUMF) suggests a top 1% share of only 13.8% in the 2019 survey, while the restricted version that is not top-coded yields a slightly higher value of 15%.[18] That the capitalization results are higher than the SFS results is to be expected because non-response bias at the top of the distribution would be much higher in a voluntary survey than in official tax filings. However, these results show that there is disagreement surrounding the degree of this bias, with Pareto-interpolation style corrections suggesting a much higher level of wealth concentration than the capitalization approach.

The capitalization estimates are also lower than those reported for Canada in widely cited global wealth inequality databases. Appendix Figure 3 compares these estimates to those from the World Inequality Database (WID) (Bajard et al., 2021) and the Credit Suisse *Global Wealth Report* (Shorrocks et al., 2022). The WID series for Canada is not constructed using a capitalization approach, but instead relies on imputations based on the income distribution combined with adjustments for top wealth holdings. The Credit Suisse estimates follow an approach more closely related to the Pareto-interpolation methods described above. Given these methodological differences, the capitalization estimates are several percentage points lower throughout the period. The Credit Suisse series also exhibits a declining trend over this period, in contrast to the patterns observed in the other estimates.

More broadly, the top 1% share in Canada is low by international standards. Figure 4 compares the top 1% wealth share for Canada to estimates for the United States (Saez &

[16]This is the 2025 update to earlier analyses by Wodrich & Worswick (2020) and Duncan & Perrault (2021). In the update, they use the restricted access Survey of Financial Security (SFS) rather than the public use microfile (PUMF) that was used in prior versions. To see how the older estimates compare to the capitalization method, which includes estimates for earlier years, refer to Appendix Figure 2.

[17]The PBO results use two different rich lists: Forbes and Maclean's/Canada Business. The Forbes list is simply the standard Forbes billionaires list, while the Canada Business rich list had extra focus on Canada and included some additional names that were not found on the Forbes list. The Canada Business list was discontinued in 2017 until Maclean's started a new list in 2024, which explains the gap seen in the data.

[18]These estimates differ slightly from other sources that reference the SFS because these wealth shares are computed using a definition of wealth consistent with the one in this paper rather than the general net worth variable found in the survey.

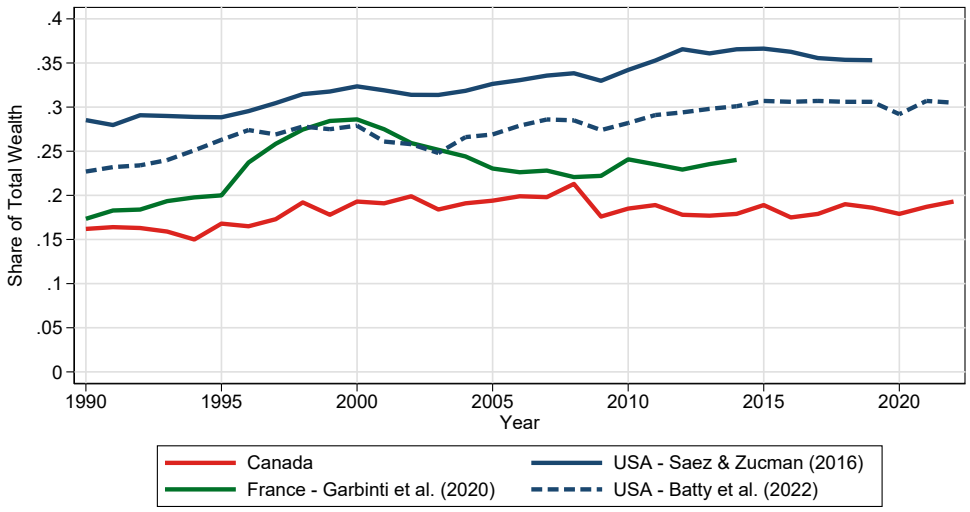


Figure 4: International Estimates of the Top 1% Wealth Share

This figure presents the share of wealth held by the wealthiest 1% for Canada, the USA and France between 1990 and 2022. The United States estimates come from Saez & Zucman (2016) and the Distributional Financial Accounts (Batty et al., 2022). The French estimates come from Garbinti et al. (2020). Saez & Zucman (2016) and Garbinti et al. (2020) employ the capitalization method in their estimates.

Zucman, 2016; Batty et al., 2022) and France (Garbinti et al., 2020).[19] In 1990, the top 1% share was either 28.5% (Saez & Zucman, 2016) or 22.7% (Batty et al., 2022) in the US , 16.2% in Canada and 17.3% in France. By 2014, the US sat at either 36.6% or 30.1%, Canada at 17.9% and France at 24%. While the overall trend in Canada is similar to the United States - with a large increase leading up to 2008 followed by a plateau - France experienced a sharper rise around 2000 that later reversed. An important caveat is that part of the gap between Canada and France reflects differences in how pension wealth is measured, which can distort cross-country comparisons. As discussed in Section 5.2, accounting for this reduces much of the apparent difference between the two countries.

Finally, the finding that wealth inequality is lower under the capitalization approach is consistent across alternative measures. The Gini coefficient, the 90/50 ratio, and the top 0.1% share are all lower than those reported in the PBO's High-net-worth Families Database (HFD), indicating a more equal distribution.[20] The difference is particularly pronounced at the very top, where the top 0.1% share in the HFD is roughly twice as large as in the capitalization estimates. These results suggest that the lower level of wealth concentration

[19]For the United States, Saez & Zucman (2016) employ the capitalization method, while Batty et al. (2022) construct a series of Distributional Financial Accounts (DFAs) based on the Survey of Consumer Finances (SCF).

[20]See Appendix Table 1 for a comparison of these measures across Canadian sources in 2016, the most recent year for which they can be computed consistently.

is not specific to the top 1% measure, but reflects a broader pattern across the distribution.

To summarize, the capitalization estimates suggest that wealth in Canada may be less concentrated than previously believed. The estimated top wealth shares are several percentage points below those reported in prior work and in other countries, indicating a lower level of inequality. This pattern is consistent across alternative measures, suggesting that the result is not driven solely by the use of the top 1% share. Subsequent sections explore potential explanations for this gap across approaches and assess the robustness of these findings.

4.2 Reconciliation With Other Canadian Estimates

The capitalization estimates presented in the previous section imply a different level of wealth concentration in Canada relative to existing Canadian series. The capitalization estimates are about 3-5 p.p. higher than those found in the original SFS as might be expected from a voluntary survey. Conversely, the estimates are 3-8 p.p. below those found by the PBO (Dong, 2025) using the Pareto-interpolation method. Such different results for the concentration of wealth across estimation methods warrants further investigation into what accounts for the gap.

The key difference across approaches is the concentration at the very top of the distribution. Figure 5 shows the wealth shares of various wealth groups in the top 10% across different approaches. In recent years, the top 0.1% in the PBO's Pareto-interpolation estimates sit between 10% and 12% depending on whether the Forbes or Maclean's billionaire lists are used. In contrast, the capitalization method yields estimates between 6% and 8% and the SFS falls between 2% and 4%. The next 0.9% are much closer across methods. In 2019 (the last year with data from all sources), the PBO estimates were 13.5% (Maclean's) and 12.7% (Forbes), the capitalization method was 11.6% and the SFS was 10.7%. For the remainder of the top decile, the capitalization shares were generally higher than the PBO and SFS shares for the 95-99th percentile group and in line with the SFS for the 90th-95th percentile group.[21] The majority of the gap in the top 1% can therefore be explained by the gap in the 0.1%.

These differences are also reflected in the thresholds for entering top wealth groups and in average wealth within those groups. In the capitalization method, the threshold for the top 1% was $5.3 million in 2019 and $7.2 million in 2022, which is not far off from the thresholds of $6.3 million in 2019 and $7.4 million in 2023 from the PBO analysis. However,

[21] For a more complete comparison with the distribution in the SFS, see Appendix Table 2 (top decile) and Appendix Figure 4 (quintiles). The quintile estimates come from the Distributions of Household Economic Accounts (DHEA), a Statistics Canada series based on the SFS that reports wealth quintiles annually since 2010. These comparisons show that top decile and quintile shares are approximately 4-6 percentage points higher under the capitalization method.

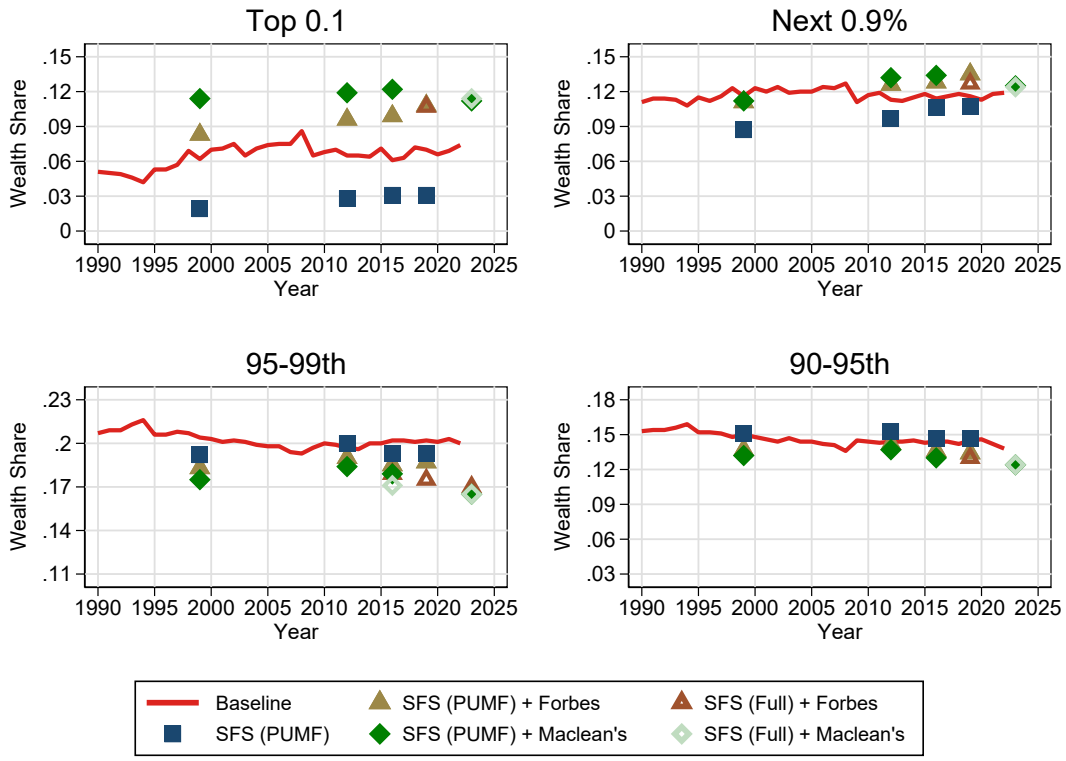


Figure 5: Comparing Estimates for Assorted Top 10% Wealth Groups

This figure presents the share of wealth held by different wealth groups in the top 10% in Canada from 1990-2022 from different sources. The baseline capitalization estimates are compared to various estimates based on the Canadian Survey of Financial Security (SFS), including a set of estimates from the Parliamentary Budget Officer (PBO) that use a Pareto-interpolation approach.

the differences for the top 0.1% (about the richest 18,000 households) are much starker. The capitalization method implies a top 0.1% threshold of $18.8 million in 2019 and $26 million in 2022, while the PBO finds a value of $28.8 million in 2019 and $35.8 million in 2023. In terms of average wealth, the capitalization method suggests that the top 0.1% hold $64 million on average compared to the over $100 million average wealth found by the PBO. These comparisons indicate that the gap in top 1% shares across approaches is driven almost entirely by greater concentration of wealth at the very top of the distribution.

This raises the question of why these approaches produce such different estimates at the very top of the distribution. Because this portion of the distribution is not directly observed in any data source, it is difficult to adjudicate between them empirically.[22] Instead, the following discussion outlines some explanations for the divergence across approaches.

There are a few reasons the capitalization method could underestimate wealth at the very

[22]Confidentiality restrictions also limit the ability to directly compare the implied wealth levels at the top of the distribution with those from billionaire lists.

top of the distribution. The first relates to the underlying data and assumptions used to construct the wealth series. The baseline specification uses a slightly modified definition of wealth from the NBSAs, and a number of assumptions are made when capitalizing income streams into wealth that could underestimate top wealth. However, Section 4.3 conducts several robustness checks showing that the results are not overly sensitive to these choices. Although some alternative specifications raise the top 1% share by around a percentage point, this is not sufficient to explain the discrepancy across approaches. This suggests that the gap is unlikely to be driven primarily by the methodological choices made in this paper.

The second reason relates to unobserved wealth, including that held offshore. The extremely wealthy may use offshore accounts to shelter wealth from domestic authorities, which means this wealth will not show up in either the NBSAs or the tax data. To assess the role of offshore wealth, I incorporate estimates from Alstadsæter et al. (2018), who attribute offshore wealth to countries as a share of GDP. For Canada, this corresponds to approximately $32 billion in 1990 and $133 billion in 2022.[23] Incorporating offshore wealth has only a modest effect on the top 1% share (see Appendix Figure 5), reflecting its relatively small size relative to total household wealth.

Finally, there are a number of additional reasons why capital income flows may not exactly reflect the stock of wealth held by a household. Households that time capital gains realizations or use tax-sheltering strategies, such as retaining earnings within corporate structures or family trusts, can smooth capital income over time in a way that reduces observed income relative to underlying wealth. In addition, equity valuations are forward looking, meaning that some highly valued firms may generate limited capital income in the present. A household heavily invested in such assets may therefore appear to have low levels of capital income despite a high underlying valuation, as reflected in billionaire lists.

Although these factors cannot be measured directly, some bounds can be placed on their impact. Because the underlying stock of these assets is captured, either directly or indirectly, in the NBSAs, the issue largely reduces to how concentrated the associated capital income flows are. To assess how much more concentrated equity wealth would need to be to close the gap between the capitalization estimates and the PBO estimates, I simulate the top 1% share under the assumption that the share of equity wealth going to the top 1% is 25% higher.[24] This increases the top 1% share by around 2 percentage points (see Appendix Figure 6), which is not insignificant, but does not close the gap between estimates. Taken together, these results indicate that the potential limitations of the capitalization method

[23]Following Saez & Zucman (2016), it is assumed that 90% of this wealth is held by the top 1%.

[24]For reference, the 2022 share of equity wealth going to the top 1% would increase from 54.9% to 68.6% in this simulation, which would make Canadian equity more concentrated at the top than the business assets category in the United States, which is around 60% (Saez & Zucman, 2016).

are insufficient, on their own, to account for the gap between estimates.

In contrast, there are several reasons why the Pareto-interpolation estimates may overstate the top 1% share of wealth. The first relates to the billionaire lists themselves. One issue is that the valuation methods used to assess billionaire wealth are not necessarily consistent with the methods used in the national accounts or in this paper. For example, Forbes notes that they include "art, yachts, planes, ranches, vineyards, jewelry, car collections and more," which are not part of the wealth concept used here. In addition, while efforts are made to restrict the PBO's HFD to Canadian residents, the residency status of some high-net-worth individuals is uncertain, and the treatment of domestic versus foreign assets may differ between sources. Another concern is measurement error in the lists themselves. Capehart (2014) show that alternative rankings, such as the *Hurun Report*, differ both in the individuals included and in their estimated wealth levels. Given that these valuations are not based on verified administrative data, they should be interpreted with caution.

A second concern is the Pareto assumption itself. The view that the top of the wealth distribution is "well approximated by a Pareto distribution" (Davies & Shorrocks, 2000) is longstanding, but empirical support is mixed in the contexts relevant to this paper. Vermeulen (2018), whose methodology underpins many applications, does not directly test this assumption. Chan et al. (2017) examine the Forbes data and find that a Pareto type I distribution does not provide a statistically adequate fit in any year. Evidence from the Canadian Business *Rich 100* list is similarly "mixed" (Ogwang, 2011), and Campolieti (2018) show that a Pareto distribution is observationally similar to a truncated lognormal when fitted to the upper tail.

As Vermeulen (2018) note, estimates of top wealth shares are highly sensitive to a small number of top observations. If these observations are measured with error, or if the Pareto assumption is misspecified, this can generate an overly thick upper tail and lead to an overestimation of top wealth shares. As can be seen in Appendix Figure 2, the Pareto-interpolation estimates with the restricted access SFS, which does not topcode wealth values, are actually lower than the ones with the PUMF. This suggests that Pareto-interpolation estimates that link to surveys may generate higher top wealth shares when survey coverage at the top is more limited.

This section argues that differences between the capitalization method and the Pareto-interpolation approaches used in the literature cannot be entirely explained by limitations of the capitalization method. The differences stem largely from how wealth is measured at the top of the distribution and the underlying data and assumptions that go into estimating top wealth shares.

4.3 Robustness

This section demonstrates how the main findings are robust to alternative capitalization assumptions, wealth definitions, and housing allocations. Figure 6 presents a few alternative approaches to capitalizing equity wealth and the "Other Investment" category. The first alternative involves capitalizing dividends only, rather than the sum of dividends and capital gains. This yields similar results except for in 1994, which was a big year for capital gains due to a policy change. This suggests that the distribution of capital gains is similar to the distribution of dividends and that aggregate realizations are not overly lumpy over time.

The second and third alternatives involve different assumptions for capitalizing the "Other Investments" category. As discussed in Section 3.3, there is a debate around how to treat these assets and the baseline specification in this paper follows Saez & Zucman (2020) in assigning a rate of return that is 1.4 times higher for the top 1% than the rest of the distribution. The second alternative series shows what would happen if homogeneous returns were assumed to hold across the wealth distribution in this category. As expected, the top 1% wealth share is higher when all returns are treated equally, with a slightly more upward trend since 2009. However, the difference never exceeds 2 percentage points and the overall trend is largely unchanged. This specification can therefore be interpreted as an upper bound based on the raw data. The third alternative follows the correction proposed by Smith et al. (2023), which applies the Moody's AAA corporate bond rate to the top 0.1% and the 10-year Canadian government bond rate to the next 0.9%. This produces a lower top 1% share in all years, but the effect is modest relative to the U.S. case. One reason is that these assets account for only about one-sixth of total wealth, limiting their overall impact.

Another robustness question centres around the definition of wealth used in the paper. The baseline specification used in this paper omits consumer credit and life insurance assets, which is a departure from both the NBSAs and the approach taken by Saez & Zucman (2016). This is done due to a lack of reliable distributional data and a reluctance to make strong assumptions around how these assets are distributed. Appendix Figure 7 presents the results if these two assets were to be included. Consumer credit and life insurance assets are allocated to each wealth group according to the average of the wealth shares for each group found in the 2012, 2016 and 2019 SFS for corresponding assets. The distribution of these assets will not vary over time, but the aggregates will.

The inclusion of these two assets has counteracting impacts on the top 1% wealth share. The addition of more pension assets pushes the top 1% share down about 1-2 p.p. because these are fairly equally distributed across the population. Conversely, the inclusion of consumer debt increases the top 1% share because this debt is typically held by those at the bottom of the wealth distribution, which reduces their wealth by more than those at the top

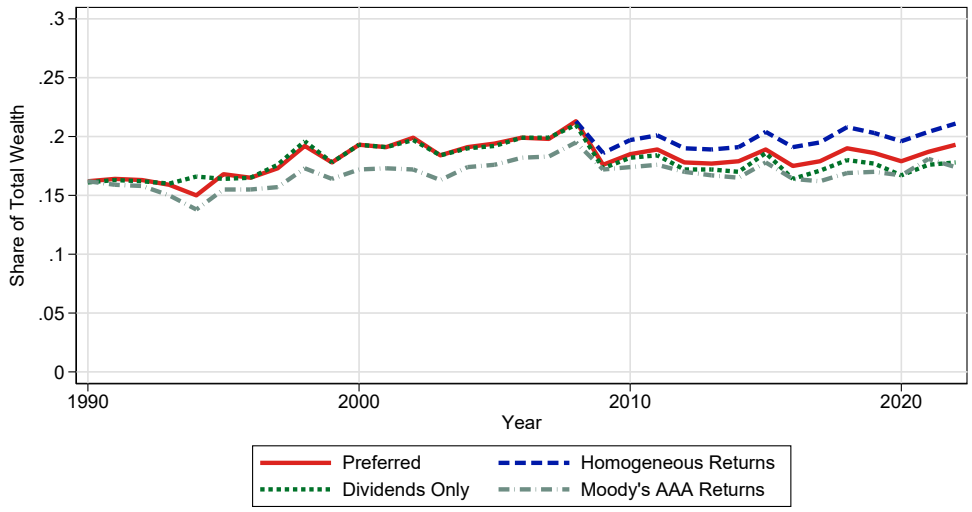


Figure 6: Alternative Estimates of the Top 1% Share

This figure presents the share of wealth held by the wealthiest 1% in Canada from 1990-2022 using different approaches. Three of the variations involve the three approaches to addressing heterogeneous returns to the interest and other investment income asset class discussed in Section 3.3. The Dividends Only series shows how the results change if capital gains are excluded in the calculation of equity wealth.

of the distribution. When including both assets, the top 1% share is practically identical to the baseline specification, which suggests that the omission of these assets does not have a significant effect on the overall estimates of the top 1% share.

A final robustness check revolves around the treatment of housing. Primary housing wealth and secondary housing assets are separated in the NBSAs by assigning 80% of the total to primary and 20% to secondary. Primary housing wealth is distributed using distribution regression methods from the SFS, while secondary housing wealth is distributed by capitalizing *net* rental income in the LAD. Appendix Figure 8 presents alternative series that explore the role of each of these decisions. One series presents the results using gross rental income instead of net rental income, while another does this while including 85% of housing as primary. A final specification shows the results where primary housing is distributed using the distribution of housing values across census tracts as described in the Online Appendix.

These series demonstrate that the use of net rental income instead of gross rental income has a demonstrable impact on the estimates of the top 1% share earlier in the sample, but that this gap has practically disappeared in recent years. Net rental income was chosen because it aligns more closely with the use of net housing wealth in the NBSAs. While the use of gross rental income could portray a more raw reflection of the distribution of housing assets, this measure ignores legitimate rental income deductions like the interest on mortgage payments and repair bills that do negatively impact one's asset position.

Across all alternative specifications, the level and evolution of the top 1% wealth share remains broadly unchanged. While specific assumptions can shift the share by 1–2 percentage points in some years, the baseline specification is roughly in the middle of the various alternative variations. This suggests that the core finding of the paper – that the top 1% share is smaller than prior estimates and those from other countries – is not driven by the particular methodological choices made. Furthermore, these methodological choices cannot explain, on their own, the gap between the baseline results in this paper and those found by the PBO and other sources.

5 Understanding Wealth Inequality Dynamics

5.1 Wealth Inequality Trends

While the previous section focused on how the level of wealth inequality compares to other estimates, this section turns to its evolution over time. A key advantage of the capitalization method is that it produces annual estimates using administrative tax data, rather than relying on more sporadic survey sources. The baseline results reveal two distinct periods. The top 1% share rose from 16.2% in 1990 to 21.3% in 2008, before falling sharply to 17.6% the following year. This increase of over five percentage points in just over a decade represents a substantial rise in wealth inequality. In contrast, the 2010s are characterized by relative stability, with the top 1% share fluctuating between 17.5% and 19.3% through 2022. Overall, wealth concentration at the top has remained broadly stable in recent years following an earlier period of growth.

The top 1% share provides only a partial view of changes in wealth inequality, and conclusions about whether inequality is rising or falling depend critically on the measure used. As seen in Figure 7, other measures of wealth inequality in Canada point to widening gaps in parts of the distribution over time.[25] The top 0.1% share increased from 5.1% in 1990 to 7.4% in 2022. This 45% increase is far larger than the 7% increase for the next 0.9%, indicating that much of the rise within the top 1% is driven by the very top. The average wealth of the roughly 18,000 richest households rose from $15.6 million in 1990 (inflation-adjusted) to $64 million in 2022, with a minimum threshold of $26 million. At the other end of the distribution, the gap between households with no wealth and the median has also grown steadily, from around $100,000 in 1990 to $323,000 in 2022, suggesting that the bar to enter the middle class is rising.

Other measures instead point to a decline in wealth inequality over this period. The Gini

[25] Appendix Table 3 presents these measures in table format.

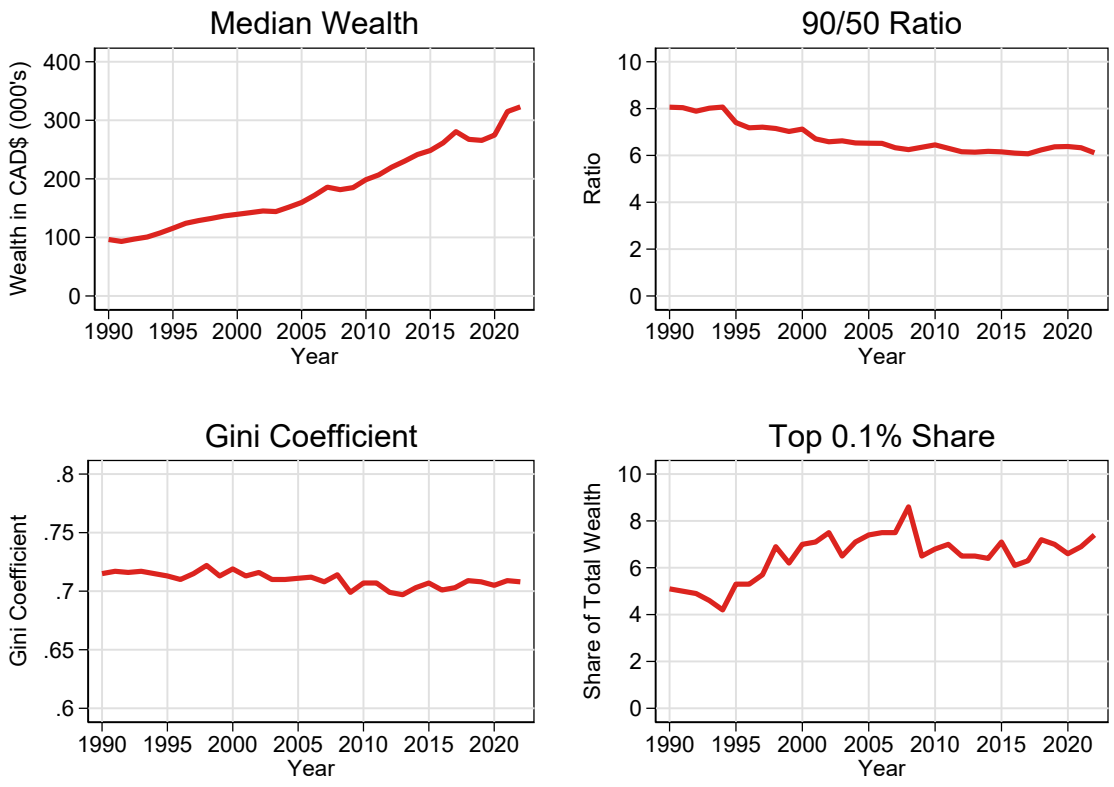


Figure 7: Other Measures of Wealth Inequality, 1990-2022

This figure presents a number of other measures of wealth inequality in Canada over time from 1990-2022. Median wealth is the median wealth in Canada adjusted for inflation to 2022 Canadian dollars. The 90/50 ratio is the ratio between the 90th percentile of wealth and the 50th percentile. The Gini coefficient is computed for the wealth distribution and the top 0.1% share is the share of wealth held by just the top 0.1%.

coefficient falls over time, reflecting reduced dispersion across much of the distribution. This pattern is consistent with a rising top 0.1% share because the Gini is more sensitive to changes in the middle than at the extreme top. The 90/50 ratio, which captures the gap between the median household and the 90th percentile, has also declined, indicating compression in the upper half of the distribution. Evidence from wealth shares across groups reinforces this pattern (see Appendix Figure 9 and Appendix Table 4). The 60th–99th percentiles saw a reduction in their share of 4.8 p.p., while the bottom 60% experienced a modest increase of 1.7 p.p. This suggests that gains at the very top have come primarily at the expense of the rest of the upper distribution rather than households at the bottom.

Overall, these results point to two contrasting patterns. On the one hand, households below the top 1% have become relatively more equal, with the median household moving closer in wealth to those near the top of the distribution. On the other hand, the very

top, the top 0.1%, has pulled further away from the rest. At the same time, the overall increase in top wealth shares remains modest in an international context. The top 1% share in Canada rose by 3.1 percentage points, and by less than 1 percentage point since 2010. This is small compared to countries such as the United States and France, where increases were closer to 7 percentage points over the same period (see Appendix Figure 4). The following sections examine these dynamics more closely, focusing on why top wealth shares have remained relatively stable in recent years and why the overall increase is smaller than in other countries.

5.2 Asset Composition

The contrasting patterns documented above raise the question of what underlying mechanisms are driving these dynamics. To address this, the following sections examine two complementary explanations for changes in wealth inequality. One set of explanations emphasizes the role of asset composition and asset price dynamics in shaping the distribution of wealth. Kuhn et al. (2020) highlight how asset price cycles played a key role in driving wealth inequality in post-war America. While the capitalization approach does not directly observe capital gains, changes in asset composition and ownership patterns provide indirect evidence of how these dynamics affect wealth concentration. To assess the relevance of these mechanisms in the Canadian context, this section examines the evolution of wealth portfolios and decomposes changes in wealth concentration using a linear asset decomposition.

A key mechanism linking asset markets to wealth inequality is the composition of household portfolios. Assets such as housing and pensions make up a large share of wealth for middle-class households, while equities and other financial investments are far more concentrated at the top of the distribution. This pattern is evident in the Canadian data, as shown in Figure 8. For the top 1%, equities and other investments account for nearly 70% of total wealth in 2022, up from roughly 40% in 1990. In contrast, for the bottom 80%, housing and pension wealth account for over 80% of total wealth, with minimal exposure to other assets.

These differences in portfolio composition imply that changes in asset prices can have very different effects across the wealth distribution. For example, increases in housing prices tend to benefit middle-class households and may reduce top wealth shares, while strong equity market performance disproportionately benefits those at the top. More generally, changes in wealth inequality can arise either from shifts in the aggregate composition of assets, which reflects asset price or portfolio dynamics, or from changes in how individual assets are distributed across households.

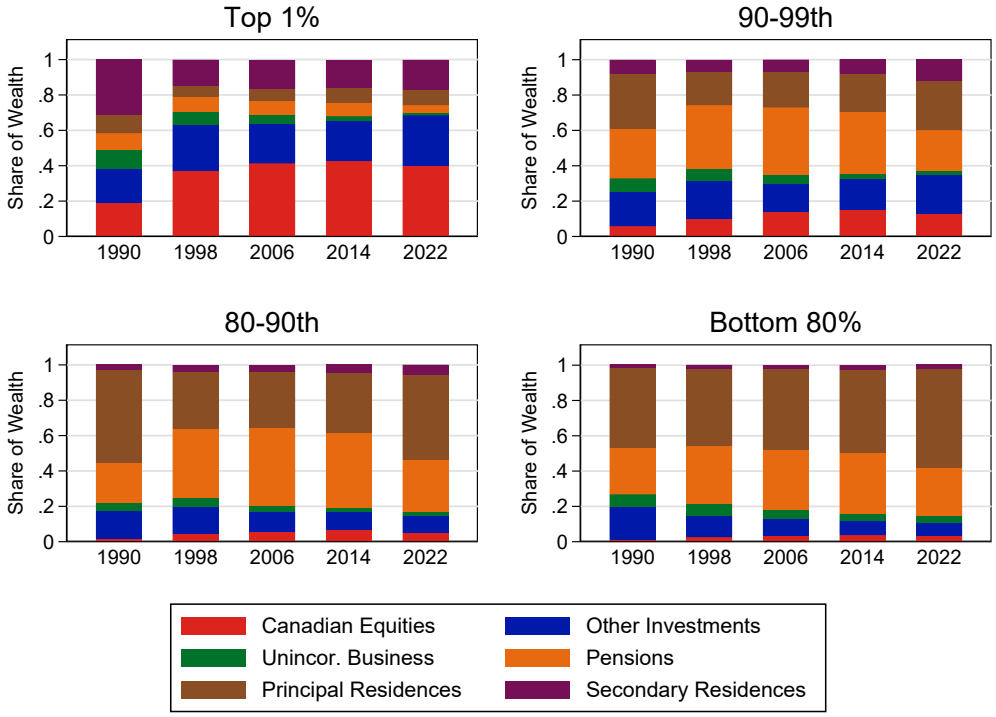


Figure 8: Share of Wealth Holdings by Asset and Wealth Group, Selected Years

This figure plots the share of each wealth groups' wealth portfolio going to each asset type over time. Each bar sums to one and the height of each coloured block denotes the share of that asset in the portfolio. For a breakdown of what is included in each asset category, refer to Section 2.

This intuition can be formalized using a linear asset decomposition.[26] The share of wealth held by a given group, sh_{wg}, can be expressed as a weighted average of asset-specific wealth shares, where the weights reflect the aggregate shares of each asset class:

$$sh_{wg} = \sum_{j} \omega_j \psi_{jg} \tag{1}$$

where ω_j denotes the aggregate share of asset j and ψ_{jg} denotes the share of that asset held by group g.

Changes in wealth shares over time can then be decomposed into a component driven by shifts in the aggregate asset composition and a component driven by changes in within-asset concentration:

$$sh_{wg}^{t_2} - sh_{wg}^{t_1} = \sum_{j} \psi_{jg}^{t_1}(\omega_j^{t_2} - \omega_j^{t_1}) + \sum_{j} \omega_j^{t_2}(\psi_{jg}^{t_2} - \psi_{jg}^{t_1}) \tag{2}$$

The first term captures the effect of changes in aggregate asset shares, while the second

[26] See the Online Appendix for a full derivation and explanation.

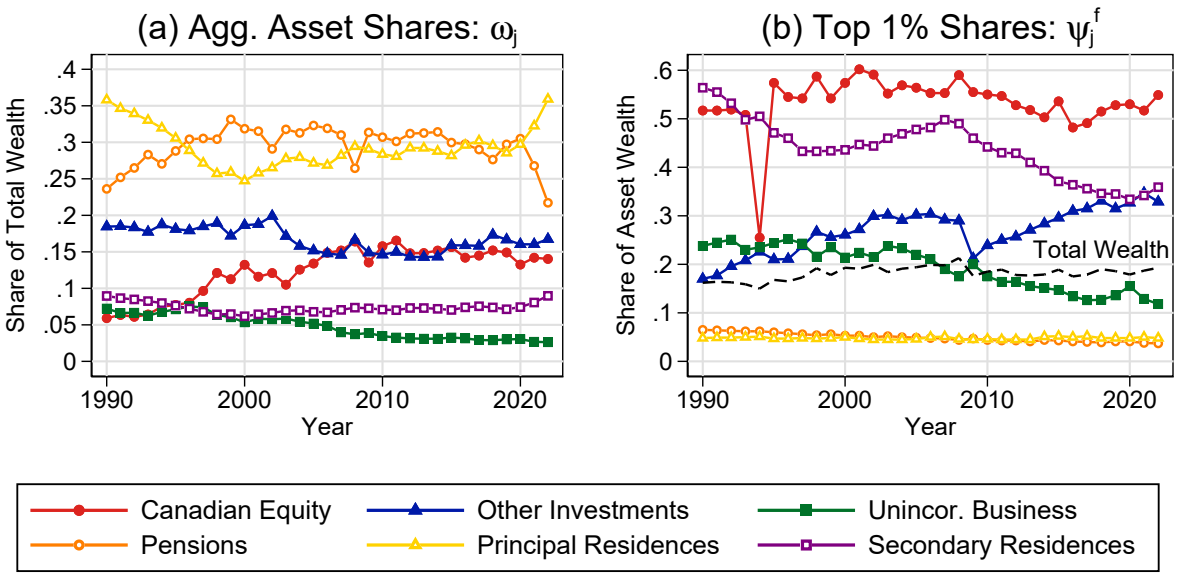


Figure 9: Aggregate Asset Shares and Top 1% Shares by Asset

This figure plots the breakdown of the top 1% wealth share by the aggregate asset share (left-panel), ω_j, and the share of each asset held by the top 1% (right-panel), ψ_{jg}. Wealth is estimated using the capitalization method and the unit is the census family. The overall top 1% wealth share is indicated with the dotted line.

captures changes in how assets are distributed across households.

To illustrate how these components evolve over time, Figure 9 plots the aggregate asset shares and the corresponding top 1% shares for each asset class.[27] The aggregate asset shares show an increasing trend in Canadian equity for the first half of the period before plateauing. Principal residences decreased significantly during the 1990s, which is consistent with a weak Canadian housing market, before rebounding steadily between 2000 and 2020 and shooting up in 2021 and 2022, which is in line with a very strong housing market post-2020. The unincorporated business wealth share saw a prolonged decline during this period. In terms of concentration, the top 1% share of equity wealth remained fairly consistent over the period, but other investment wealth became significantly more concentrated. Conversely, secondary residences and unincorporated business wealth became less concentrated during this time.

To assess the relative importance of these mechanisms, Table 2 presents the decomposition results for several key periods. During the period of the largest increase in the top 1% share (1990–2008), the roughly 5 percentage point rise is driven primarily by shifts in aggregate asset composition, particularly away from housing and toward equity wealth. Changes in within-asset concentration play a more limited role, as increases in the concentration of

[27] To see the shares of each asset type held by other wealth groups, refer to Appendix Figure 10 and Appendix Table 5

	Periods			
	(A) 1990-2008	(B) 2008-2009	(C) 2009-2022	(D) 1990-2022
Δ Total Wealth Share (p.p)	5.06	-3.71	1.70	3.04
Δ Aggregate Wealth Shares, ω_j	3.26	-2.02	1.05	2.70
Δ Share of Asset to Top 1%, ψ_j	1.80	-1.69	0.64	0.35
Equity	1.20	-0.47	-0.08	0.45
Other Investments	2.00	-1.16	1.96	2.66
Unincor. Business	-0.23	0.10	-0.22	-0.32
Pensions	-0.56	0.09	-0.22	-0.61
Principal Residences	-0.06	-0.03	0.11	0.00
Secondary Residences	-0.54	-0.22	-0.91	-1.84

Table 2: Decomposition of Change in Top 1% Share

This table presents the results of the decomposition shown in Equation 2. It tells us the change in top 1% wealth share for various periods between 1990 and 2022 that can be explained by changing the aggregate wealth composition and the shares of each asset going to the top 1%. The change in the share of each asset going to the top 1% is further broken down into the role each asset played.

equity and other investment assets are largely offset by declines in other asset classes.

The decline in the top 1% share during the Great Recession reflects both a reduction in the share of more concentrated assets and a decrease in their within-asset concentration. Unlike in the United States, where housing markets were heavily affected, Canada did not experience a comparable drop in housing prices, implying that losses were more concentrated among higher-wealth households with greater exposure to financial assets. In the post-recession period, the top 1% share increased modestly, driven in part by a gradual shift toward more concentrated asset classes such as other investments and secondary residences, although this effect is partly offset by declining concentration in other assets.

Looking at the period as a whole, the observed increase in the top 1% share can be explained primarily by changes in aggregate asset composition, while changes in within-asset concentration largely offset one another. The 1990s saw a pronounced shift in the composition of wealth away from housing and toward equities, coinciding with the sharpest rise in the top 1% share. In contrast, the aggregate portfolio has remained relatively stable in more recent years, aligning with the observed plateau in top wealth shares. One explanation is the strong housing market in Canada since the early 2000s, which has served as a bulwark

for the middle class by allowing housing-driven wealth gains to offset the rise in equity wealth at the top of the distribution.

This same decomposition framework can also be applied to cross-country comparisons. Canada, the United States (Saez & Zucman, 2016), and France (Garbinti et al., 2020) differ substantially in both their aggregate asset portfolios and the degree of within-asset concentration (see Appendix Figure 11).[28] Business equity accounts for a smaller share of wealth in Canada than in the United States and France, while the United States has a lower share of housing wealth and France a lower share of pension wealth. In terms of within-asset concentration, Canada and France are broadly similar outside of pensions, whereas Canada is substantially more equal than the United States across all asset classes. Applying the decomposition to a single year shows that the gap in top wealth shares between Canada and the other two countries is driven primarily by these differences in within-asset concentration (see Appendix Table 6).

A key insight from this decomposition is that the gap between Canada and France is largely driven by a single category: pensions. In 2014, differences in pension concentration account for 4.7 percentage points of the 6.1 percentage point gap in top 1% shares. France's lower aggregate share and higher concentration of pension wealth reflect the exclusion of public pensions from the definition of wealth used in these estimates. Because France has more generous public pensions, middle-class households rely less on private pension savings, which increases the measured concentration of the remaining pension wealth.[29] Once this definitional difference is accounted for, top wealth shares in Canada and France are very similar, suggesting that the cross-country gap largely reflects differences in measurement rather than differences in underlying inequality.

The comparison with the United States tells a different story. The gap between Canada and the United States cannot be attributed to a single asset category. Instead, the United States exhibits substantially higher within-asset concentration across all major asset classes. Because the underlying methodology and data structure are closely aligned across the two papers, this pattern is unlikely to be driven by compositional or definitional factors. Rather,

[28] The focus in the United States will be on the Saez & Zucman (2016) numbers because the Batty et al. (2022) data uses different criteria in assigning assets to different categories.

[29] France's pension replacement rate—the share of pre-retirement income replaced by public pension benefits—is higher than in Canada (approximately 70% versus 50%). CBO (2024) shows that including Social Security in U.S. wealth measures can reduce the top 1% share by several percentage points, suggesting that differences in the treatment of public pensions can have quantitatively important effects on measured wealth inequality.

it points to genuine disparities in the underlying distribution of wealth.[30]

5.3 Synthetic Savings

A second set of explanations focuses on the role of earnings and savings behaviour. Hubmer et al. (2020) argue that rising after-tax income inequality, driven in part by changes to the U.S. tax system, played a key role in increasing wealth inequality by raising savings at the top of the distribution. In other work, Blanchet & Martínez-Toledano (2023) find that changes to savings behaviour in France plays a larger role in explaining the evolution of top wealth shares. This section will assess the extent to which savings, capital gains, and income inequality account for the observed dynamics of wealth concentration in Canada.

To determine which forces are driving the dynamics of wealth inequality in Canada, I employ the *synthetic savings* decomposition from Saez & Zucman (2016), which provides a framework for separating these channels. The decomposition is based on a simple transition equation for wealth (or any specific asset):

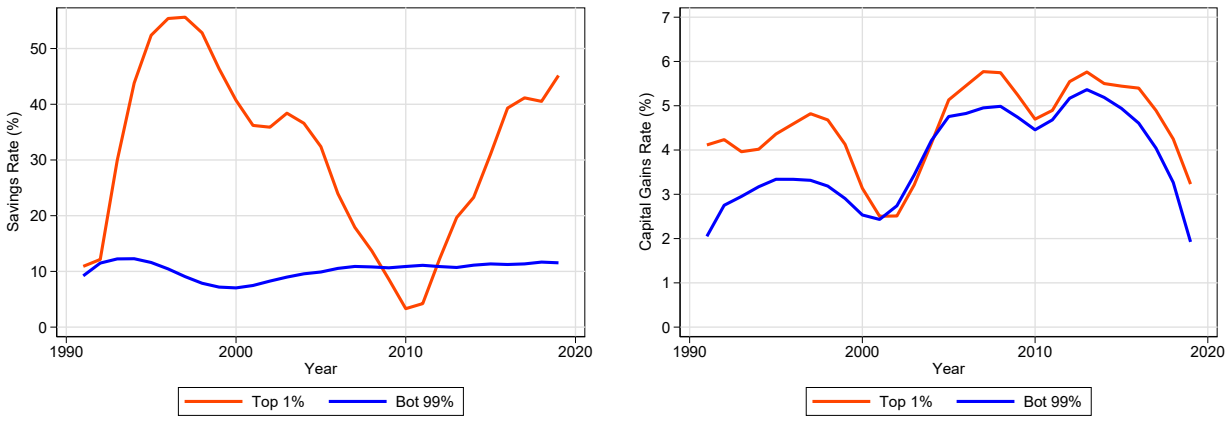
$$W_{t+1}^g = (1 + q_t^g)(W_t^g + s_t^g Y_t^g) \tag{3}$$

where the wealth of group g in period $t+1$, W_{t+1}^g, equals prior wealth, W_t^g, plus savings during the period, $s_t^g Y_t^g$, all scaled by the capital gains rate, q_t^g. Here, s_t^g denotes the savings rate and Y_t^g denotes income. Savings are termed *synthetic* because group composition changes over time, so the measured savings rate reflects the behaviour of the group rather than a fixed set of individuals. This framework allows changes in wealth shares to be decomposed into three components: capital gains, savings rates, and income.

The empirical challenge is that group-specific savings and capital gains rates are not directly observed. Following Saez & Zucman (2016), I first compute asset-level capital gains rates using the Financial Flow Accounts (FFA), which decompose changes in wealth into investment flows and valuation effects.[31] Given these asset-level gains, savings by each wealth group are inferred as the residual required to reconcile observed wealth changes with capital gains. Dividing savings by group income yields the synthetic savings rate, and the implied average capital gains rate can then be backed out. Further details on how this is

[30] One potential concern is that differences in tax systems or reporting behaviour could affect the measurement of capital income and, by extension, inferred wealth. For example, Smart (2021) argue that differences in corporate taxation and tax avoidance contribute to gaps in measured *income* inequality between Canada and the United States beginning in the late 2000s. However, the differences in wealth inequality documented here predate these developments, suggesting that such mechanisms are unlikely to account for the cross-country gap.

[31] Some non-financial assets are not included in these FFAs and additional data sources are used to fill this gap - see the Online Appendix for details.



(a) Savings Rate

(b) Capital Gains Rate

Figure 10: Savings Rate and Capital Gains Rate by Wealth Group, 1990-2022

This figure plots the savings rate and capital gains rate over time by wealth group as determined using the synthetic savings approach. The line represents the LOWESS (locally weighted scatterplot smoothing) estimate of the underlying scatterplot values for both the top 1% and the bottom 99%.

implemented are provided in the Online Appendix.

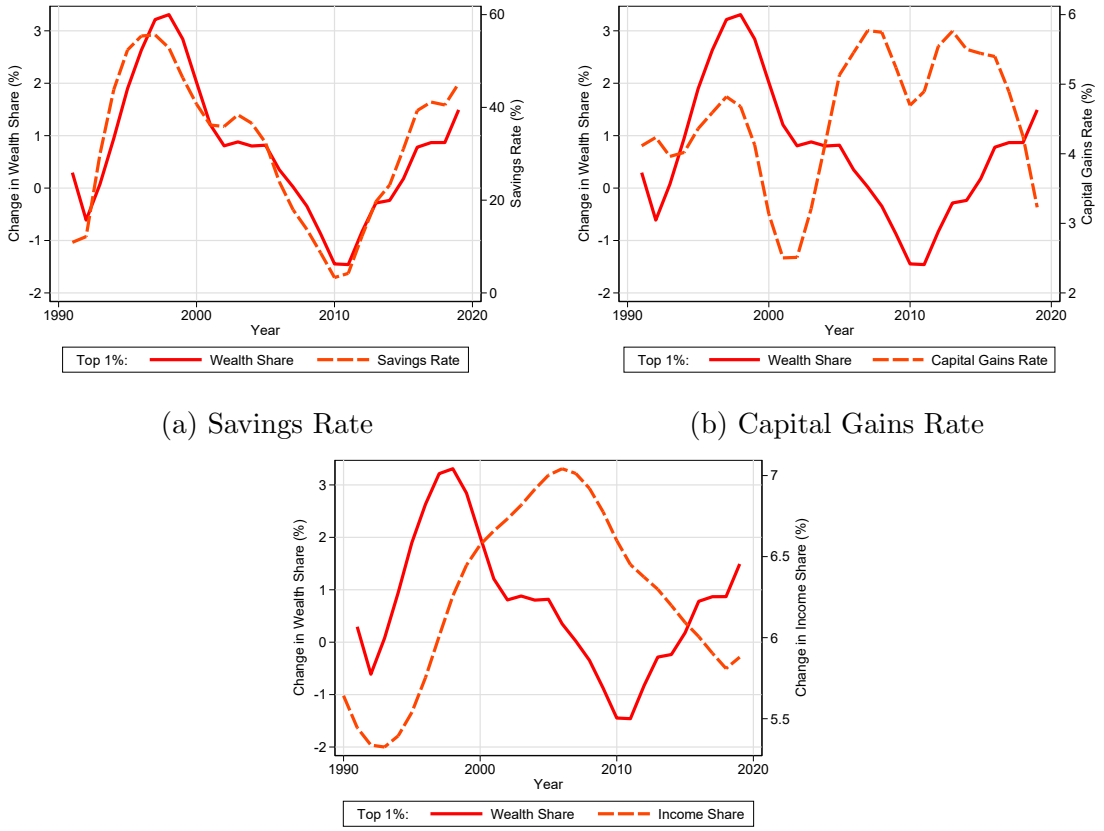
Figure 10 plots the LOWESS (locally weighted scatterplot smoothing) values for the computed synthetic savings rate and the capital gains rate for the top 1% and the remaining 99% of the distribution.[32] The savings rate of the top 1% was rising in the 1990s, from about 10% to over 50% of before-tax income, before falling back down over the 2000s and rising again in recent years.[33] The savings rate of the bottom 99% fluctuates much less and hovers around 10%.[34] The trends in capital gains are quite similar for the top 1% and bottom 99% - between 2% and 6% during this time period.

Figure 11 compares the growth rate of the top 1% wealth share to the evolution of the three main components of the synthetic savings decomposition. In the first panel, the savings rate closely tracks the evolution of top wealth shares, with increases in the 1990s, a decline in the 2000s and then an upswing in recent years. The capital gains rate on the other hand appears to be negatively correlated with trends in the top wealth share. The capital gains rate was declining when the top 1% share was increasing the most and increasing when the top 1% share was falling. Income growth also appears to be somewhat uncorrelated with trends in the top 1% share. As a result, savings dynamics, like in the French case (Blanchet & Martínez-Toledano, 2023), provide the most consistent explanation

[32]The LOWESS values are used since the year-to-year values can fluctuate dramatically in some cases (as seen in Appendix Figure 12), which distorts the broader trends.

[33]The results are cutoff in 2019 because COVID generates some very noisy results.

[34]As discussed in the Online Appendix, the average savings rate baseline in this exercise is higher than the one reported in the capital account and is between 10% and 20%, which lines up with these results.



(a) Savings Rate

(b) Capital Gains Rate

(c) Income Share

Figure 11: Comparison of Top 1% Wealth Share Growth Rate with Key Transition Factors
This figure plots the growth rate of the top 1% share over time in comparison to the growth rate of the three other factors in the synthetic savings decomposition: savings rate (left), capital gains (centre) and income (right). The trends are the LOWESS smoothed values during this period.

for the observed dynamics in Canada.

The synthetic savings analysis provides an additional explanation for why wealth inequality in Canada only increased modestly over this period. Higher savings rates for the rich drove the top 1% share higher in the 1990s, but declined in the 2000s and only partially recovered in recent years, which is consistent with the observed pattern in the top 1% share. Despite capital gains accounting for the majority of the cumulative increase in wealth during this period (see Appendix Figure 13), the implied capital gains rate was very similar for the top 1% and the rest of the distribution, which helps explain why capital gains did not generate a widening gap in wealth shares. This similarity in capital gains rates can be partly attributed to the role of housing, which generated substantial gains for middle-class households and allowed them to keep pace with those at the top of the distribution.

6 Conclusion

This paper provides new estimates of the distribution of wealth in Canada using administrative tax data and the capitalization method. The results indicate that wealth concentration at the top is lower than what is implied by existing Pareto-based estimates and global wealth databases, and that the top 1% share has increased only modestly since 1990, particularly since 2009. These findings provide a nuanced view of wealth inequality in Canada, suggesting that it may be less extreme and increasing less rapidly than commonly believed.

However, the analysis of underlying mechanisms suggests that this recent stability may not persist. Changes in aggregate asset composition, particularly shifts between housing and equity, account for much of the variation in top wealth shares, while changes in within-asset concentration have played a more limited role. A strong housing market has supported middle-class wealth and helped offset rising equity wealth at the top. A slowdown in housing price growth could weaken this offset and place upward pressure on top wealth shares.

The synthetic savings decomposition points to a second mechanism. Variation in savings behaviour, rather than differences in capital gains, provides the most consistent explanation for movements in top wealth shares. The relative stability of the past decade coincided with lower savings rates among the rich. While this may have tempered inequality, it may also reflect weaker investment and slower productivity growth. A reversal of this pattern could support economic growth but would likely be accompanied by rising wealth concentration.

To conclude, the results suggest that recent trends in wealth inequality reflect a balance of offsetting forces rather than a permanent shift in the distribution. How these forces evolve, through asset markets or savings behaviour, will be central to the future path of wealth inequality in Canada.

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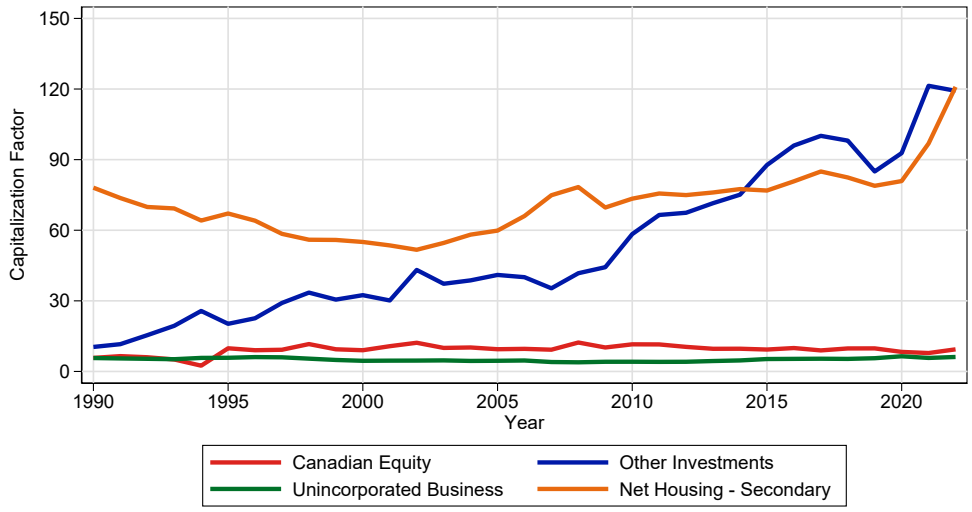
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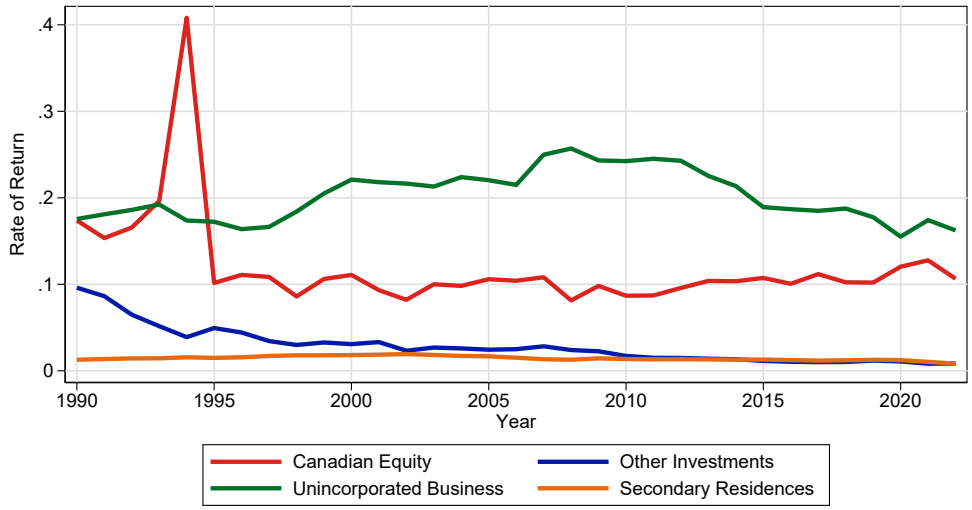
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A Appendix



(a) Capitalization Factors



(b) Rates of Return

Figure 1: Capitalization Factors and Rates of Return by Asset

This figure plots the capitalization factors and rates of return by asset for assets with capital income flows. The capitalization factor is the aggregate wealth in that category divided by the aggregate of the corresponding capital income flow, while the rates of return are the inverse of that.

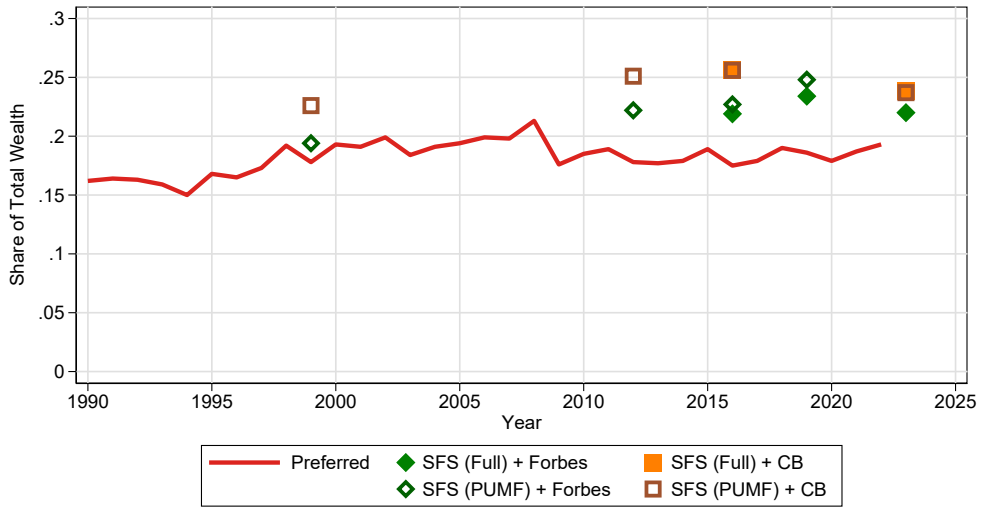


Figure 2: Additional Canadian Estimates of the Top 1% Wealth Share

This figure presents the share of wealth held by the wealthiest 1% for Canada according to previous versions of the Office of the Parliamentary Budget Officers' (PBO) reports on wealth inequality. These estimates document the values going farther back in time and when using the public use microfile (PUMF) version of the SFS as well as the restricted access version of the SFS. The versions that use the Forbes billionaire list are compared to those that use the Canada Business Magazine/Maclean's list.

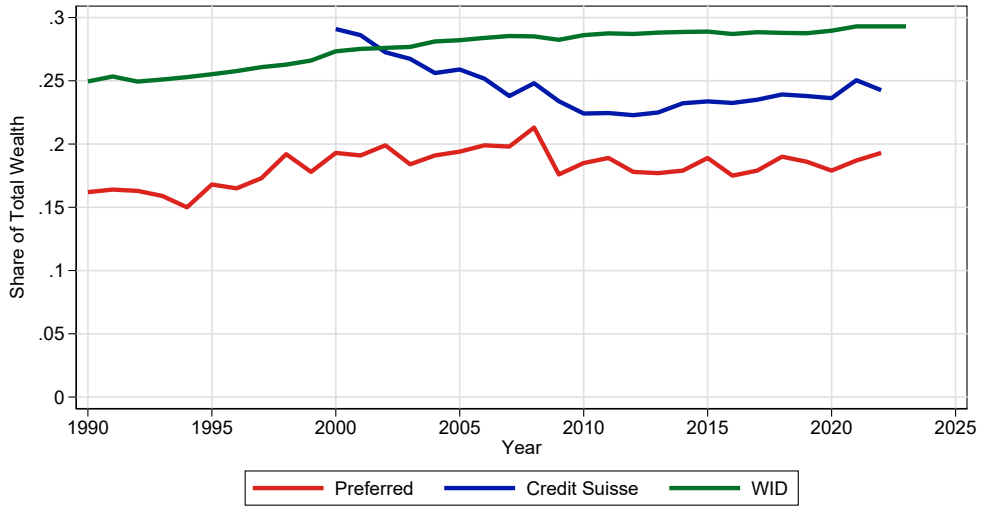


Figure 3: Top 1% Wealth Share in Canada from Global Wealth Databases

This figure presents the share of wealth held by the wealthiest 1% for Canada according to some popular international wealth inequality databases. These sources estimate wealth by extrapolating from the income distribution, which has more accesible data and adding in information on billionaires. The Credit Suisse *Global Wealth Report* and the World Inequality Database (WID) are shown here alongside the baseline estimates from this paper.

	Sources			
	Baseline	SFS PUMF	PBO HFD	DDM (2021)
On Aggregate				
Gini Coefficient	0.701	0.665	0.727	0.746
90/50 Ratio	6.1	5.6	6.3	.
Median Wealth	261,421	348,296	272,808	163,956
N	16,286,165	15,349,388	15,349,369	.
Top 0.1%				
Wealth %	6.1	3.1	12.1	14.9
Threshold	18,763,402	19,665,421	31,500,001	.
Mean	40,665,496	21,282,724	85,858,986	.

Dollar variables expressed in 2022 CAD $

Table 1: Comparing Wealth Inequality Measures in 2016

This table presents some key measures of wealth inequality in Canada across different sources in 2016 (the most recent year with data from all sources). The Gini coefficient is measured on a scale of 0 to 1, with higher numbers meaning more inequality. The 90-50 ratio is the ratio between the threshold for the 90th percentile and the median. N represents the number of families.

	Sources	
	Baseline	SFS PUMF
1999	53.2	44.9
2012	51.9	47.8
2016	52.1	47.7
2019	53.3	47.8

Table 2: Comparing Wealth Shares in the Top Decile With SFS PUMF, Selected Years

This table compares the wealth share of the top decile in the baseline specification to the top decile in the SFS public use microfile (PUMF). This is similar to the top decile observed in Statistics Canada Table 11-10-0075. The top 10% wealth share is reported for each year for total net worth.

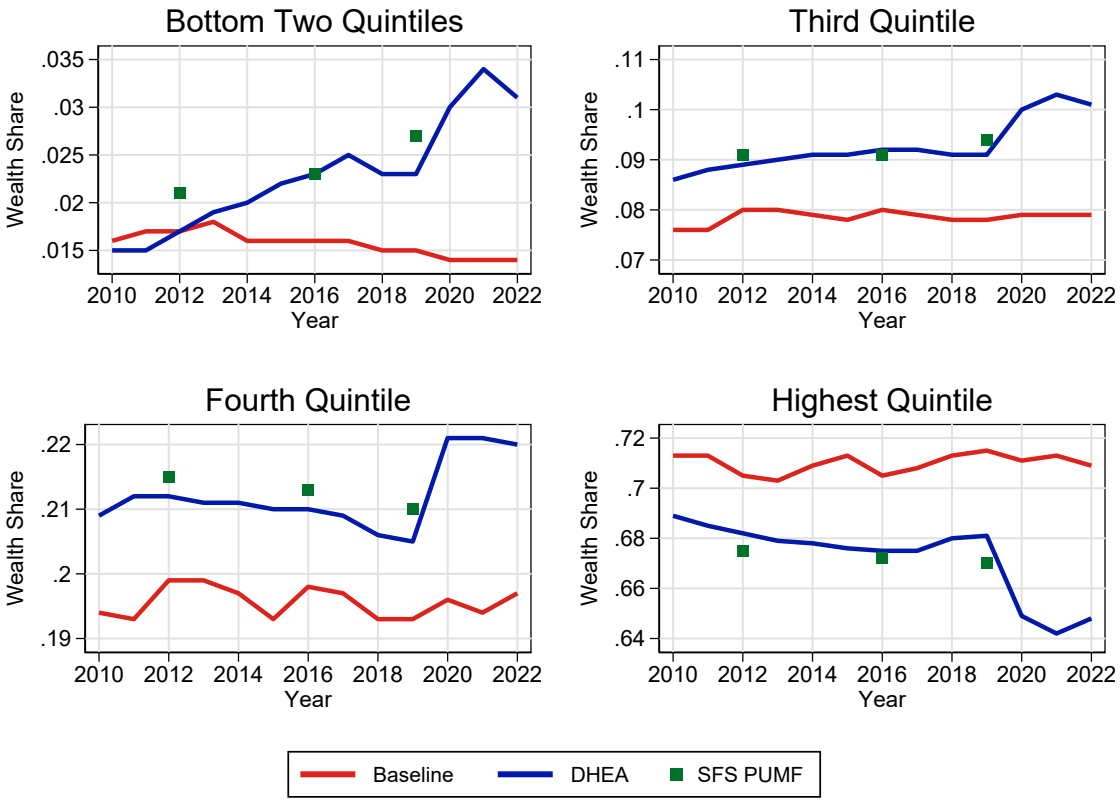


Figure 4: Comparisons to the DHEA Estimates by Quintile, 2010-2022

This figure presents the share of wealth held by various quintiles in Canada from 2010-2022. The Distributions of Household Economic Accounts (DHEA) are based on the SFS and track household inequality over time by quintile (every 20 percentiles) starting in 2010. These estimates are also compared to the SFS values used in this paper for reference.

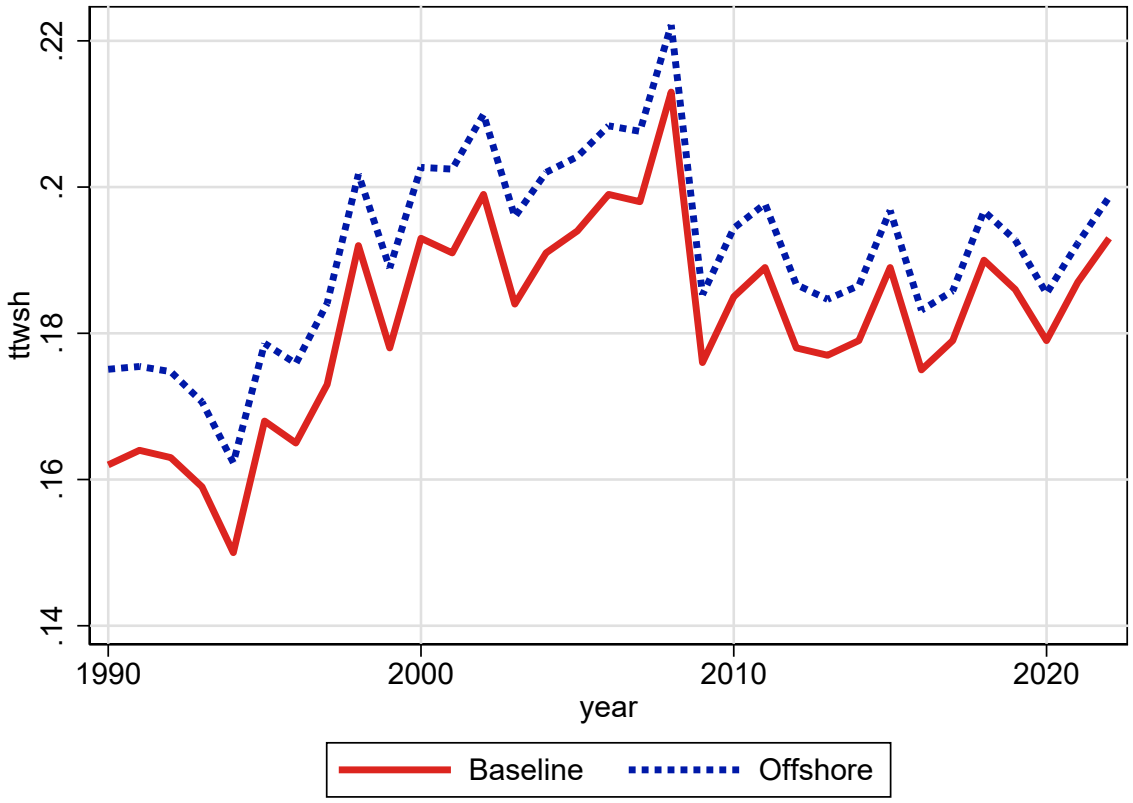


Figure 5: Estimates of the Top 1% Share With Offshore Wealth

This figure presents the share of wealth held by the wealthiest 1% in Canada from 1990-2022 when adding an estimate for offshore wealth. Offshore wealth is estimated as a share of GDP, with 90% of the wealth assigned to the top 1%. Estimates for the share of GDP that is offshore come from Alstadsæter et al. (2018).

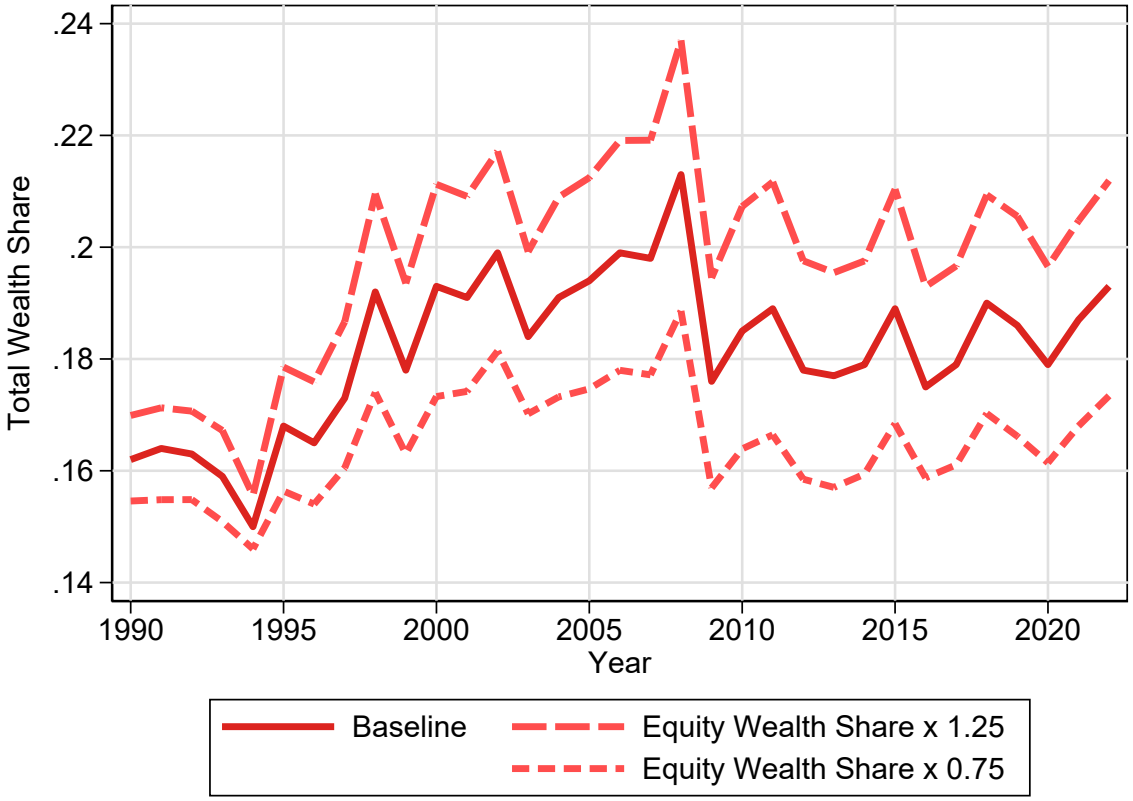


Figure 6: Estimates of the Top 1% Share With Different Equity Wealth Shares

This figure presents the share of wealth held by the wealthiest 1% in Canada from 1990-2022 when varying the share of equity wealth held by the top 1%. Using 2022 as an example, multiplying the top 1% share of equity wealth in that year (54.9%) by 1.25 gives a modified equity wealth share of 68.6%. Assigning this additional wealth to the top 1% yields the modified top 1% share shown in the figure.

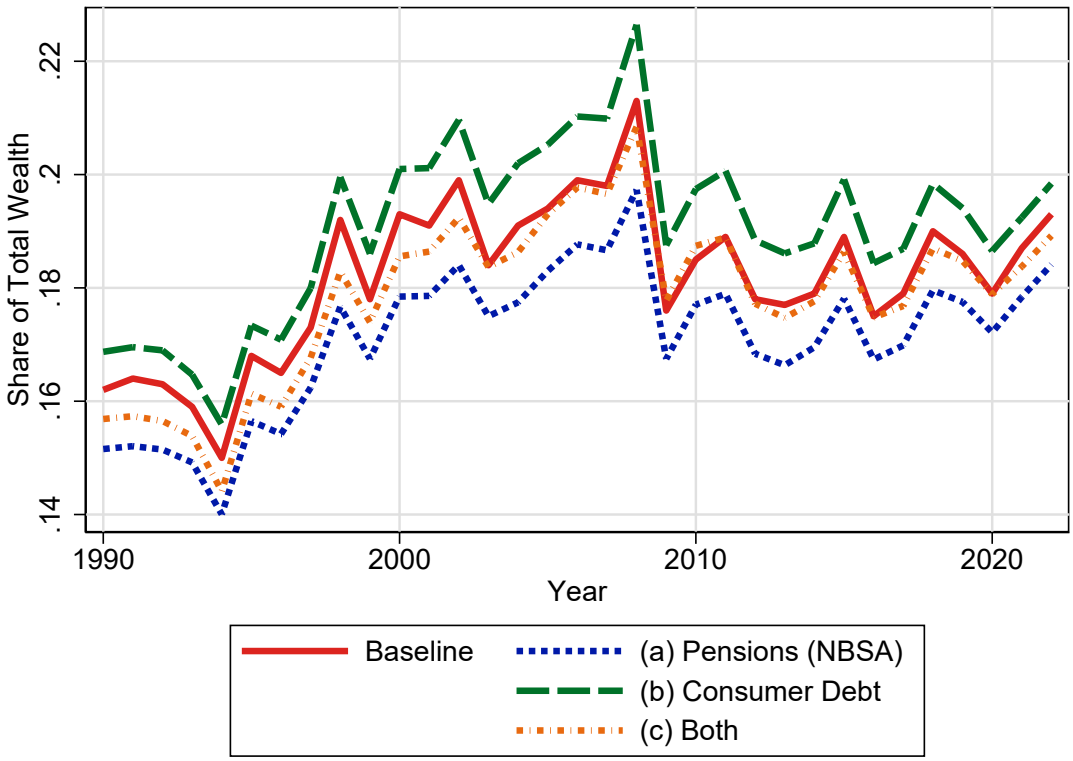


Figure 7: Top 1% Wealth Share in Canada Using Different Wealth Definitions

These figures show how sensitive the top 1% wealth share is to using different definitions of wealth. The first variation uses the NBSA total for pension assets rather than the PSA total. The second variation adds consumer debt to the definition of wealth and the final series includes both. Assets are distributed to each wealth group according to the average value for each wealth group across the 2012, 2016 and 2019 SFS.

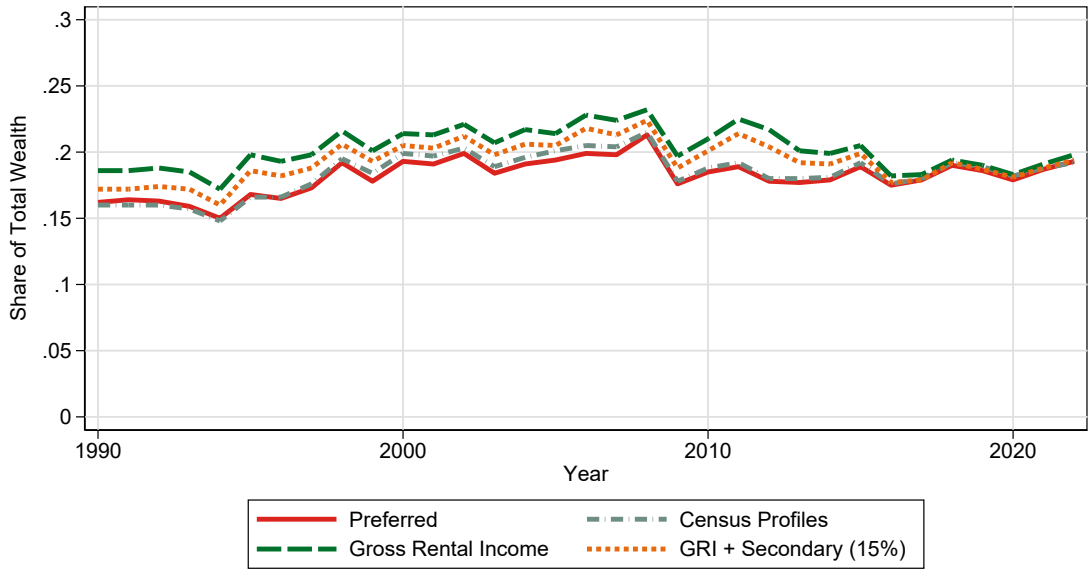


Figure 8: Alternative Estimates of the Top 1% Share - Housing

This figure presents the share of wealth held by the wealthiest 1% in Canada from 1990-2022 using different approaches to capitalizing housing wealth. Census profiles is an alternative imputation measure using average housing value in a census tract as well as an alternative pension method. The other two use *gross* rather than net rental income, with the second also attributing only 15% of all housing wealth to secondary real estate sources.

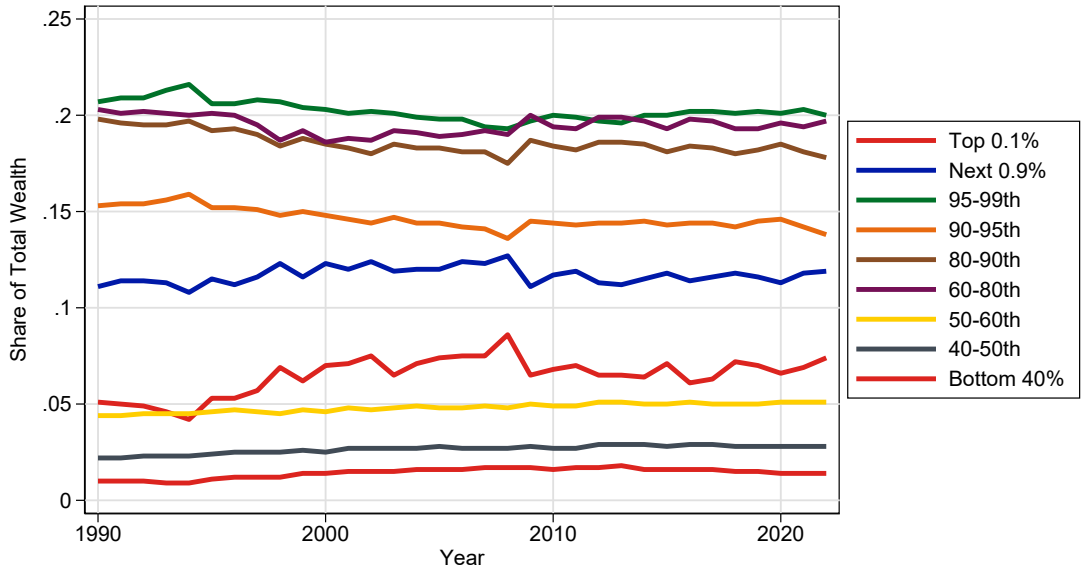


Figure 9: Share of Wealth Held By Various Wealth Groups

This figure presents the share of wealth held by a variety of wealth groupings in Canada from 1990-2022 using the capitalization method from Saez & Zucman (2016). Wealth is inferred based on capital income flows in administrative tax data, the Longitudinal Administrative Databank (LAD), while aggregate wealth is measured in the National Balance Sheet Accounts (NBSAs). The unit of analysis is the census family and so the top 0.1% refers to the wealthiest 0.1% of families.

	Years				
	1990	1998	2006	2014	2022
On Aggregate					
Gini Coefficient	0.715	0.722	0.712	0.703	0.708
90/50 Ratio	8.1	7.2	6.5	6.2	6.1
Median Wealth	96,429	132,486	171,850	241,534	323,000
N	11,498,655	13,000,600	14,273,730	15,945,625	18,128,255
Top 0.1%					
Wealth %	5.1	6.9	7.5	6.4	7.4
Threshold	7,772,143	11,806,186	15,581,500	17,887,974	26,057,000
Mean	15,584,464	26,864,205	35,500,513	39,718,763	63,855,953

Dollar variables expressed in 2022 CAD $

Table 3: Wealth Inequality Measures

This table presents some key measures of wealth inequality in Canada for five years from 1990-2022 using the wealth estimates from this paper. The Gini coefficient is measured on a scale of 0 to 1, with higher numbers meaning more inequality. The 90-50 ratio is the ratio between the threshold for the 90th percentile and the median. N represents the number of families.

	1990	1995	2000	2005	2010	2015	2020	2022	Total Δ
Top 1% Share	16.2	16.8	19.3	19.4	18.5	18.9	17.9	19.3	3.1
Top 0.1%	5.1	5.3	7.0	7.4	6.8	7.1	6.6	7.4	2.3
Next 0.9%	11.1	11.5	12.3	12.0	11.7	11.8	11.3	11.9	0.8
95-99th	20.7	20.6	20.3	19.8	20.0	20.0	20.1	20.0	-0.7
90-95th	15.3	15.2	14.8	14.4	14.4	14.3	14.6	13.8	-1.5
80-90th	19.8	19.2	18.5	18.3	18.4	18.1	18.5	17.8	-2.0
60-80th	20.3	20.1	18.6	18.9	19.4	19.3	19.6	19.7	-0.6
50-60th	4.4	4.6	4.6	4.8	4.9	5.0	5.1	5.1	0.7
40-50th	2.2	2.4	2.5	2.8	2.7	2.8	2.8	2.8	0.6
Bottom 40%	1.0	1.1	1.4	1.6	1.6	1.6	1.4	1.4	0.4

Table 4: Share of Wealth Held By Various Wealth Groups, Selected Years

This table presents the share of wealth held by a variety of wealth groupings in Canada for selected years from 1990-2022 using the capitalization method from Saez & Zucman (2016). Wealth is inferred based on capital income flows in administrative tax data, the Longitudinal Administrative Databank (LAD), while aggregate wealth is measured in the National Balance Sheet Accounts (NBSAs). The unit of analysis is the census family and so the top 0.1% refers to the wealthiest 0.1% of families.

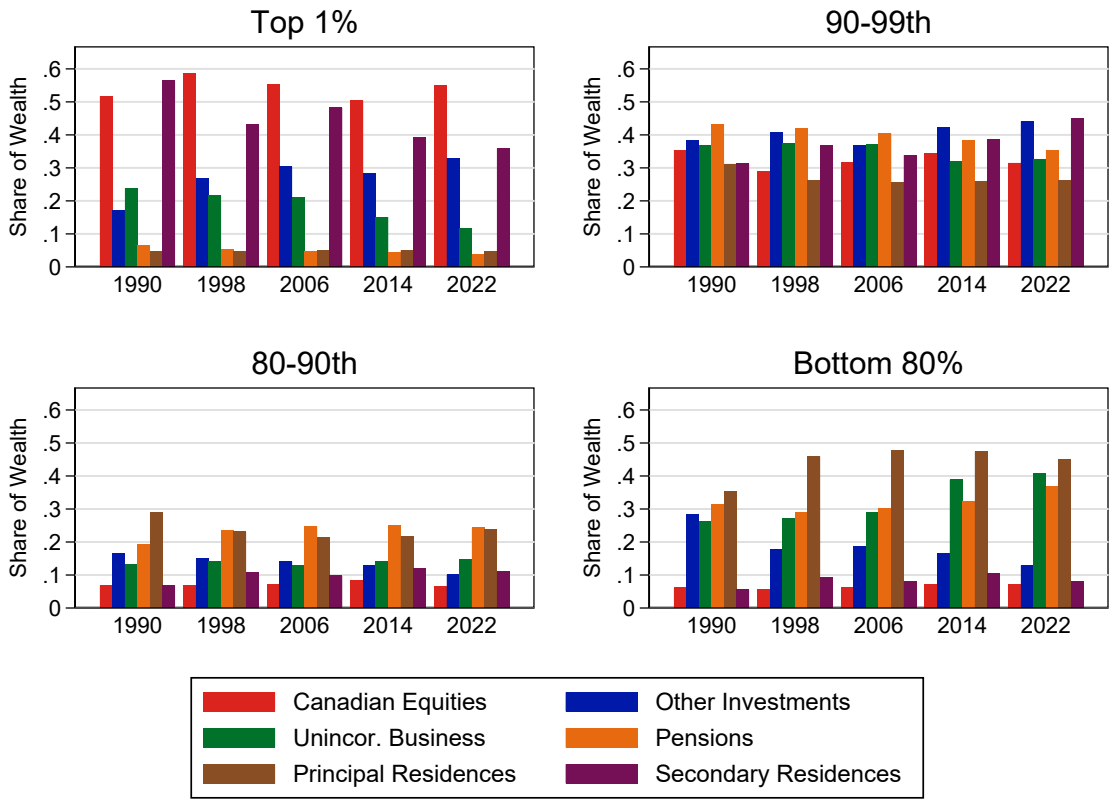


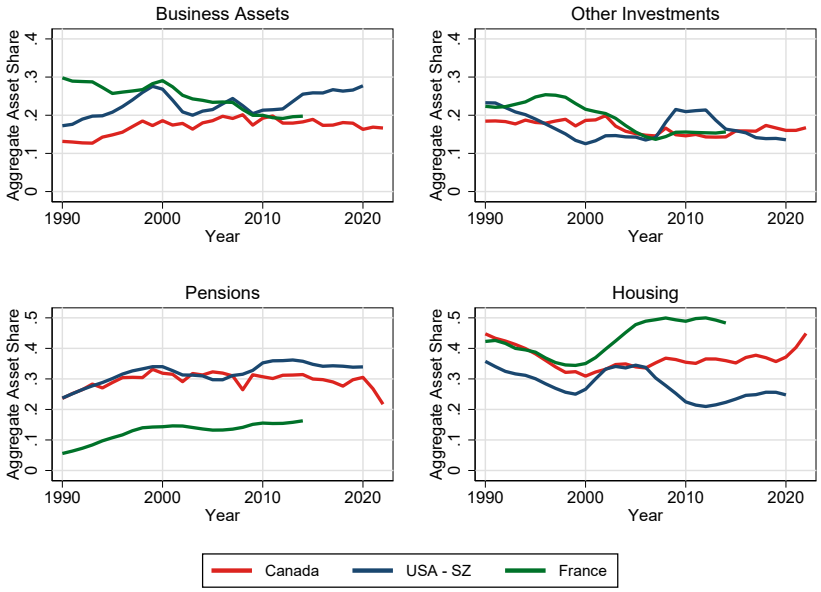
Figure 10: Share of Each Asset Held by Various Wealth Groups Over Time

This figure presents the share of each asset type that is held by the specified wealth groups in different years. Each bar's height corresponds to the share of a given asset that is held by that wealth group in a given year. For details on each asset type, refer to the Online Appendix.

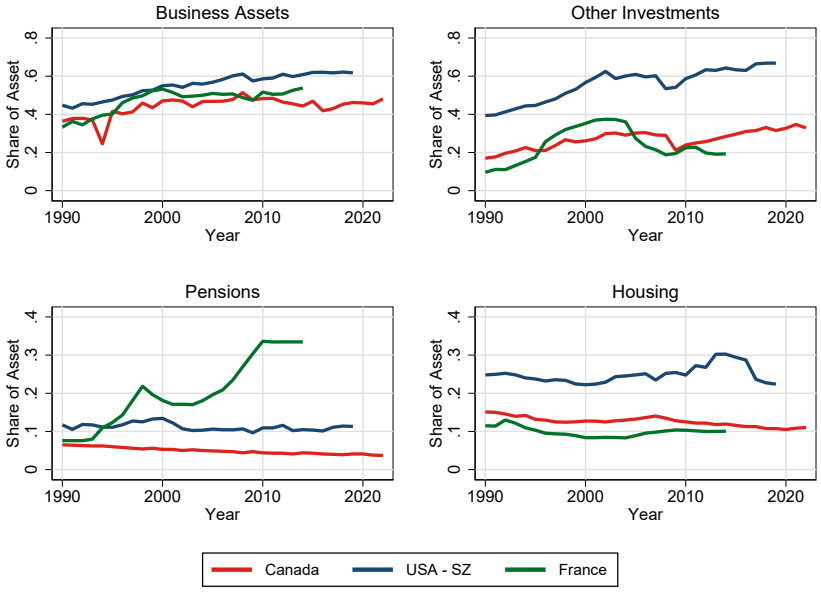
	Total Wealth	Principal Residences	Canadian Equity	Other Investments	Unincorporated Business	Pensions	Secondary Residences	Income
Top 1% Share	19.3	4.8	54.9	32.9	11.8	3.7	35.9	5.7
Top 0.1%	7.4	0.8	28.3	11.7	1.9	0.4	11.8	1.7
Next 0.9%	11.9	4.0	26.6	21.2	9.9	3.3	24.1	4.0
95-99th	20.0	12.7	23.4	32.4	20.5	15.8	31.0	10.6
90-95th	13.8	13.6	8.1	11.7	12.2	19.5	13.9	9.6
80-90th	17.8	23.8	6.6	10.1	14.6	24.3	11.0	14.3
60-80th	19.7	32.9	4.9	7.9	18.6	22.3	6.5	21.4
50-60th	5.1	7.5	1.3	2.4	8.8	7.0	1.1	9.6
40-50th	2.8	3.8	0.6	1.4	7.1	4.1	0.3	8.4
Bottom 40%	1.4	0.8	0.3	1.2	6.4	3.3	0.1	20.4

Table 5: Share of Each Asset Type Held by Each Wealth Group, 2022

This table presents the share of each asset type held by a variety of wealth groupings in Canada in 2022 using the capitalization method from Saez & Zucman (2016). Wealth is inferred based on capital income flows in administrative tax data, the Longitudinal Administrative Databank (LAD), while aggregate wealth is measured in the National Balance Sheet Accounts (NBSAs). The unit of analysis is the census family and so the top 0.1% refers to the wealthiest 0.1% of families.



(a) Aggregate Shares By Asset



(b) Within-Asset Shares By Asset

Figure 11: Comparison of Aggregate and Within-Asset Shares Across Countries

This figure plots the aggregate wealth share and within-asset shares of each asset in Canada, the United States (Saez & Zucman, 2016) and France (Garbinti et al., 2020) between 1990 and 2020. Business assets includes equities and unincorporated business wealth.

	Countries	
	France (2014)	USA - SZ (2019)
Δ Total Wealth Share (p.p)	6.10	16.73
Δ Aggregate Wealth Shares, ω_j	1.84	2.24
Δ Share of Asset to Top 1%, ψ_j	4.26	14.49
Business Equity	1.87	4.14
Other Investments	-1.42	4.92
Pensions	4.73	2.44
Housing	-0.91	2.99

Table 6: Decomposition of Difference in Top 1% Share Between Countries

This table presents the results of the decomposition shown in Equation 2. It tells us how much of the difference between Canada and France and Canada and the USA can be explained by changing the aggregate wealth composition and the shares of each asset going to the top 1%. The values in the table reflect the increase in the top 1% share in Canada as a result of replacing ω_j or ψ_j with the corresponding values from France or the USA.

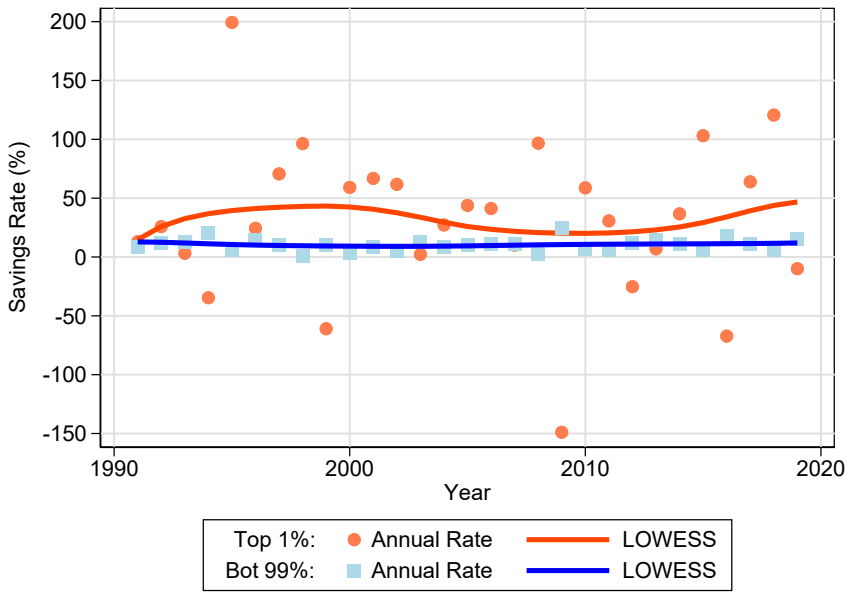


Figure 12: Comparison Between Scatterplot of Savings Rate and LOWESS

This figure plots the synthetic savings rate of the top 1% and bottom 99% as a scatterplot and with the smoothed LOWESS values. Synthetic savings are computed using the Financial Flow Accounts (FFA) as the residual of the change in wealth minus capital gains and then are divided by the pre-tax income of the wealth group.

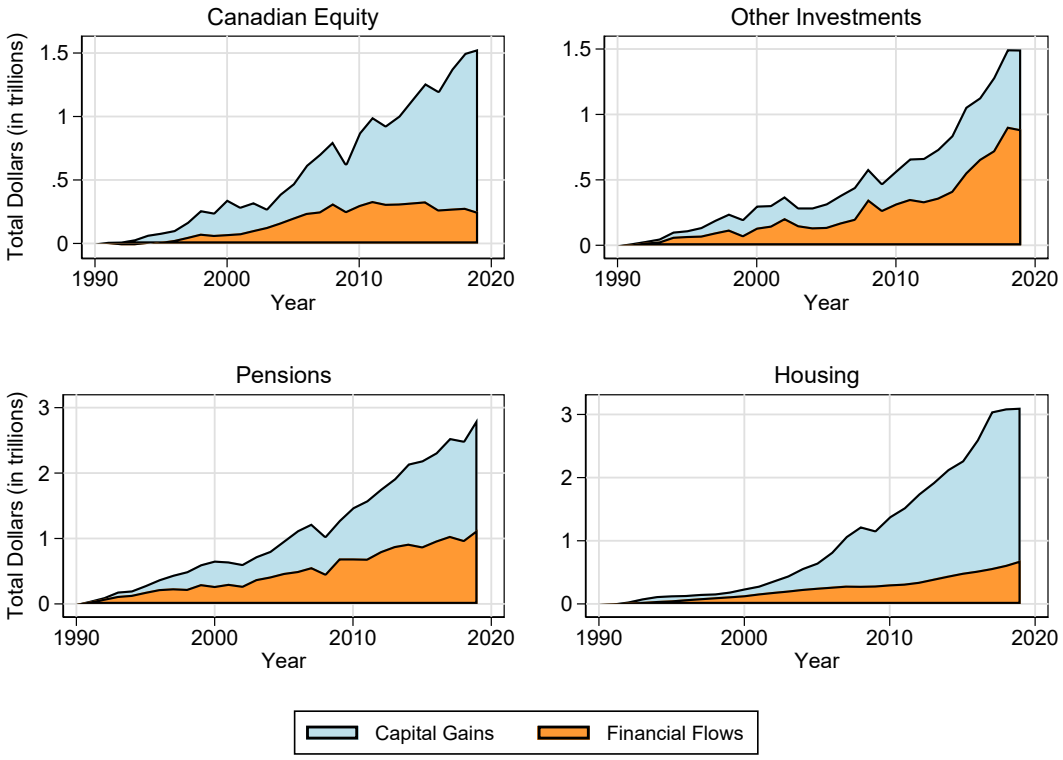


Figure 13: Cumulative Capital Gains and Investment Flows by Asset Category, 1990-2019
This figure shows the cumulative increase in capital gains and investment flows by asset category from 1990-2019. The breakdown is based off data from the Financial Flow Account (FFA) and the Housing Economic Account (HEA).

B Online Appendix: Data

This section describes in detail how total wealth is counted in Canada in this paper. First, I discuss exactly how aggregate wealth in this paper is calculated using the National Balance Sheet Accounts (NBSAs). Second, I explain how I divide wealth and capital income up into different asset classes, which is required for the capitalization method and for understanding overall trends. Finally, I explain how I use the data on financial flows to divide changes in wealth between changes in savings and capital gains to use in the synthetic savings decompositions.

B.1 Aggregate Wealth in Canada

The National Balance Sheet Accounts (NBSAs) are Canada's foremost data source on the aggregate stock of assets and liabilities over time. In Table 7, I present an excerpt of the NBSAs from the first quarter of 2022 to illustrate the components that make up wealth in the official Canadian national accounts. The table reports each category with a non-zero asset value, the share of net worth and the assigned asset class, which says unassigned if it is not considered part of the definition of wealth used in the paper. Total assets summed to nearly $20 trillion, while total liabilities were worth $2.8 trillion, which puts total Canadian net worth at almost $17 trillion in 2022.

Due to a couple categories that are left unassigned, the aggregate net worth used in this paper is slightly smaller than the net worth reported by the NBSAs or found in the SFS. Table 8 documents how the aggregates compare across sources and over time. In 2022, the aggregate net worth in the baseline specification is $15.6 trillion, which is about $1.3 trillion less than the value found in the NBSAs. This can be explained by the omission of three categories of the NBSAs from the definition of wealth used in this paper: consumer durables, consumer credit and life insurance.

The first difference between the NBSAs and this paper is that this paper does not consider consumer durables as wealth, which is in keeping with the work of Saez & Zucman (2016) (henceforth, SZ) and the guidance of the System of National Accounts (SNA) (United Nations, 2010), while the NBSAs do. The SFS and Parliamentary Budget Officer (PBO) estimates also appear to include consumer durables in their definition of wealth.

The next two differences depart from the approach of SZ. First, consumer debt is not included as wealth in the baseline estimates of this paper, while it is included in SZ. This is done for a couple reasons. One reason is that consumer credit is often used to buy consumer durables. To omit the durables as an asset, but include the liabilities seems incongruous. Another is that imputing consumer debt is a more challenging exercise than for housing or

Category	Value ($ M)	% NW	Assigned Asset Class
Total Assets	19,708,497		
Non-Financial Assets	10,261,323		
Dwellings	3,353,104	19.8	Principal Residences (80%), Secondary Properties (20%)
Other Build. & Struc.	79,275	0.5	Unincorporated Business
Machinery And Equipment	32,941	0.2	Unincorporated Business
Intellectual Property	4,564	0.0	Unincorporated Business
Consumer Durables	831,262	4.9	Unassigned
Inventories	18,005	0.1	Unincorporated Business
Land Underlying Dwellings	5,649,170	33.4	Principal Residences (80%), Secondary Properties (20%)
Land Under Build. & Struc.	28,880	0.2	Unincorporated Business
Agricultural Land	264,122	1.6	Unincorporated Business
Total Financial Assets	9,447,174		
Total Currency And Deposits	1,939,038	11.5	Other Investments (69%), Pensions (31%)
Debt Securities	137,399	0.8	Other Investments (69%), Pensions (31%)
Loans	7,537	0.0	Other Investments (69%), Pensions (31%)
Listed Shares	594,182	3.5	Equities (69%), Pensions (31%)
Unlisted Shares	1,444,508	8.5	Equities
Mutual Fund Shares (Units)	2,018,042	11.9	Equities (17%), Other Investments (52%), Pensions (31%)
Foreign Investments: Equity	206,434	1.2	Other Investments (69%), Pensions (31%)
Life Insurance And Pensions	2,883,925	17.0	Replaced by Pension Satellite Account
Other Accounts Receivable	216,109	1.3	Unincorporated Business
Total Financial Liabilities	2,783,399		
Consumer Credit	570,646	-3.4	Unassigned
Non-Mortgage Loans	150,413	-0.9	Unincorporated Business
Residential Mortgages	1,979,875	-11.7	Principal Residences (80%), Secondary Properties (20%)
Non-Residential Mortgages	14,010	-0.1	Unincorporated Business
Other Accounts Payable	68,455	-0.4	Unincorporated Business
Net Worth	16,925,098		

Table 7: National Balance Sheet Account, Household Sector, 2022 Q1

This table shows the values found in the National Balance Sheet Accounts for the Household and non-profit institutions serving households sector in the first quarter of 2022. The values are expressed in millions of dollars and each category share is in terms of net worth. I include the asset type that each category in the NBSA is assigned to in the paper. Since the definition of wealth differs slightly in the NBSA from this paper, the total net worth values will also be slightly different as well.

	2012	2016	2019	2022
Baseline	7,013	9,222	10,995	15,645
NBSA	7,621	9,971	11,840	16,925
PBO (2020)	.	10,339	11,697	.
SFS PUMF	8,068	10,287	11,835	.

Table 8: Aggregate Net Worth Totals from Different Sources (in Billions CAD$)

This table compares the aggregate wealth totals for Canada in a couple years from a few different sources and definitions of wealth. The Baseline row reflects the aggregates used in this paper that omit consumer durables and debt as well as use a different measure of pension wealth. The NBSA's were revised in 2023, which explains the slight differences with the PBO report from 2020. The SFS PUMF file is based on a survey and therefore differs slightly in total wealth from the NBSA based sources. These values are not adjusted for inflation to match directly with values in original source material.

pensions because it is less clear which observable characteristics this will be conditioned on. SZ assume that the distribution of consumer debt follows the distribution in the SCF, which is an assumption this paper does not make in the baseline specification, but does explore in robustness checks.

A second difference is that this paper uses an alternative definition of pension wealth compared to the NBSAs that comes from the Pension Satellite Accounts (PSAs). Table 9 presents an excerpt from the PSAs for 2022 highlighting the main categories. Pension wealth in this paper is measured as trusteed, employer pension plans and individual registered retirement savings plans (RRSPs),[35] which are documented in the PSAs. This is done to ensure that categories of retirement saving such as social security and unfunded pensions are not included to ensure consistency with the SZ approach. However, the NBSAs, simply have a "Life Insurance and Pensions" category that does not provide additional detail. In addition, data on life insurance liabilities held by households is not available. The use of the PSAs in place of the NBSA value therefore omits life insurance policies from the definition of wealth.

The use of the PSAs requires some adjustments to the NBSA values to ensure that double counting does not occur. This stems from the fact that RRSPs, which are retirement investment vehicles, are also counted in the NBSAs as their component parts (ie. equities, deposits). To address this, I reduce each asset that could be included in RRSPs (eg. equities, currency and deposits, mutual funds) by the share that RRSPs take up of those assets combined. For example, in 2022, 31% of these assets are assigned to RRSPs. This assumes that RRSPs are comprised of the same portfolio composition as the NBSAs themselves, which is supported by an annual survey of RRSPs by a major Canadian bank. To see this,

[35] RRSPs are similar to 401(k)'s in the United States.

Category	Value ($ M)	% NW	Assigned Asset Class
Total Plans	4,473,342		
Social Security	648,679	14.5	Unassigned
Employer-Based Pension Plans	2,292,905		
Trusteed Pension Plans	1,866,510	41.7	Pensions
Gov. Consolidated Revenue Arrangements	297,715	6.7	Unassigned
Other Employer-Based Pension Plans	128,680	2.9	Unassigned
Individual Registered Saving Plans (RSP)	1,531,758	34.2	Pensions

Table 9: Pension Satellite Account, 2022

This table shows the values found in the Pension Satellite Account (PSA) for 2022. The PSA provides a more detailed breakdown of assets in Canada's pension system. The values are expressed in millions of dollars and the shares represent the share of total pension wealth. I include which asset class each category is assigned to, where unassigned means it is not included in the definition of wealth in this paper.

mutual funds make up 39.5% of these assets in the NBSAs and 42% in the survey, listed shares and foreign equity make up 17.3% in the NBSAs and 18% in the survey (including ETFs) and currency and deposits are 39.5% in the NBSAs and 34% in the survey (cash and GICs).

B.2 Aggregate Wealth by Asset Class

While the previous section detailed what would be included in the definition of wealth, it is also important to explain how asset categories were determined as this is a crucial detail in how the capitalization method works. In Tables 7, 9, 10, I detail the different asset classes used in this paper and the corresponding categories from the NBSA that they are comprised of. The determination of asset classes is largely driven by the capital income streams that are available in the Longitudinal Administrative Databank (LAD).

The first major category is that of Canadian equity, which is comprised of listed shares, unlisted shares and mutual fund assets. Although breaking this down further into listed and unlisted shares would provide further detail and accuracy, this information in the LAD only goes back to 2006. Mutual funds are more complex since mutual funds are comprised of a variety of different assets and mutual fund distributions are observed in the LAD only as the component parts. For example if a mutual fund is comprised of equities and bonds, the LAD simply captures the dividends and capital gains from the equities and the interest payments from the bonds rather than as a payout from mutual funds. For this reason, the mutual fund category is split into the Canadian equity and other investment categories according to the share of each asset held by the mutual fund sector. Since mutual funds also hold other mutual funds, these asset should also be distributed accordingly. To do this, it is useful to

Asset Class	Value ($ M)	% Total	NBSA Categories
Canadian Equity	2,194,331	14.0	Listed Shares, Unlisted Shares, Mutual Funds
Other Investments	2,618,692	16.7	Currency and Deposits, Debt Securities, Loans, Mutual Funds, Foreign Equity
Unincorporated Business	411,018	2.6	Non-Residential Structures, Machinery and Equipment, Intellectual Property, Inventories, Agricultural Land, Other Accounts Receivable/Payable, Non-Mortgage Loans
Pensions	3,398,268	21.7	Trusteed Pension Plans, Individual RRSPs
Principal Residences	5,617,919	35.9	Residential Structures, Land Underlying Dwellings, Mortgages
Secondary Properties	1,404,480	9.0	Residential Structures, Land Underlying Dwellings, Mortgages
Total Net Worth	15,644,709		

Table 10: Total Marketable Wealth by Asset Class, 2022

This table shows the different aggregate asset categories used in this paper, their value in millions for 2022, the share of the total and the NBSA categories that are used to create them. These values reflect the net asset value of each category after subtracting liabilities such as mortgages.

note that the total sum of an asset class (say, equities) held by households through mutual funds takes the form of an infinite geometric sequence.

$$
\begin{aligned}
EQ^M &= \underbrace{sh^M_{EQ} MF^H}_{\text{\% EQ in MF}} + \underbrace{sh^M_{EQ} sh^M_M MF^H}_{\text{\% EQ of \% MF in MF}} + \underbrace{sh^M_{EQ} sh^{M^2}_M MF^H}_{\text{\% EQ of \% MF of \% MF in MF}} + ... \\
EQ^M &= sh^M_{EQ} \left(MF^H + sh^M_M MF^H + sh^{M^2}_M MF^H + ... \right) \\
EQ^M &= sh^M_{EQ} \left(\frac{MF^H}{1 - sh^M_M} \right) \\
EQ^M &= \frac{EQ^M}{\cancel{TOT^M}} \frac{MF^H \cancel{TOT^M}}{TOT^M - MF^M} \\
EQ^M &= \frac{EQ^M MF^H}{TOT^M - MF^M}
\end{aligned}
$$

After distributing the mutual funds to their corresponding asset classes, I remove the value of assets assumed to be held in RRSPs to avoid double counting with the PSA (RRSPs can include mutual funds). For example, for the equities asset class, I multiply the number of listed and unlisted shares plus the value of mutual funds assigned to equities by the fraction of assets not assigned to RRSPs, $1 - \frac{RSP}{EQ+OI}$. In 2022, this is about two-thirds of the assets that are held in RRSPs. This also implies that the resulting distribution of the mutual funds category is 17% equities, 52% other investment assets and 31% pensions.

The next asset class is called "Other Investment" because it refers to all other assets that pay interest and investment income that are not Canadian equities. This includes currency and deposits, debt securities (bonds) and foreign equity. Foreign equity is included because in the LAD it is grouped in with the "Interest and Other Investment" category. For mutual fund holdings of these assets, a similar exercise is conducted as for Canadian equity.

Real estate assets include residential structures, land underlying dwellings and mortgages. I split real estate assets into principal and secondary residences by noting that about 80% of real estate assets in the SFS are primary residences. This allows the creation of two categories of real estate and for the rental income variable in the LAD to have a corresponding asset class. The drawback to this approach is that potential changes to the share of housing used for investment purposes is not captured.

The remaining assets are more straightforward or have been discussed previously. Pensions are measured in the Pension Satellite Accounts as trusteed pension plans and RRSPs with life insurance assets not included in the definition of wealth. Unincorporated business assets is a catch all for the remaining assets that are generally held by self-employed individuals. This category includes agricultural land because farmers tend to report self-employment income. This used to be its own sector of the NBSAs, but was discontinued. In Canada, self-employment rates have been falling in favour of incorporation so these assets play a very small role in recent years.

Appendix Table 11 shows how the asset aggregates compare between the SFS and the NBSAs/this paper. The first four columns show the values for the definition of wealth that closely matches the one used in this paper. Here, it is clear that the SFS is undercounting financial, non-pension assets relative to the NBSAs and counting more pension and housing assets instead. Financial, non-pension assets total $4.4 trillion (35%) in this paper and only $3.1 trillion (23%) in the SFS. The aggregate total is a bit smaller in this paper compared to the SFS, at $12.7 trillion vs. $13.1 trillion. When looking at the full complement of assets available in the NBSAs, it appears that pension assets are more closely matched (due to the inclusion of life insurance), but the gap between financial assets and housing remains. The additional categories are only slightly different from one another and do not change the overall shares too much. These results do suggest that perhaps the results for the top shares from the SFS are lower because they undercount financial assets and overcount housing assets, which are more equally distributed.

	Baseline Wealth Spec.				Raw Wealth Spec.			
	This Paper		SFS		This Paper		SFS	
Asset Category	$	%	$	%	$	%	$	%
Financial, Non-Pension	4.39	34.6	3.05	23.3	4.39	32.1	3.05	22.5
Pension	3.77	29.7	4.56	34.8	4.62	33.8	4.56	33.6
Housing	4.53	35.7	5.50	41.9	4.53	33.1	5.50	40.5
Durables	.	.	.	.	0.81	5.9	0.85	6.3
Consumer Debt	.	.	.	.	-0.68	-5.0	-0.38	-2.8
Net Worth	12.70	.	13.10	.	13.68	.	13.57	.

Table 11: Comparing Wealth Aggregates by Category, 2019

This table shows the aggregate wealth values and the share of wealth of a variety of asset classes in this paper's definition of wealth and the Survey of Financial Security (SFS) for 2019. Values and categories reflect those found in Statistics Canada Table 11-10-0016. Dollar amount are expressed in trillions and adjusted for inflation to 2023 dollars. The first four columns show the definition of wealth in this paper and the last four columns show the raw values from the NBSAs and the SFS tables.

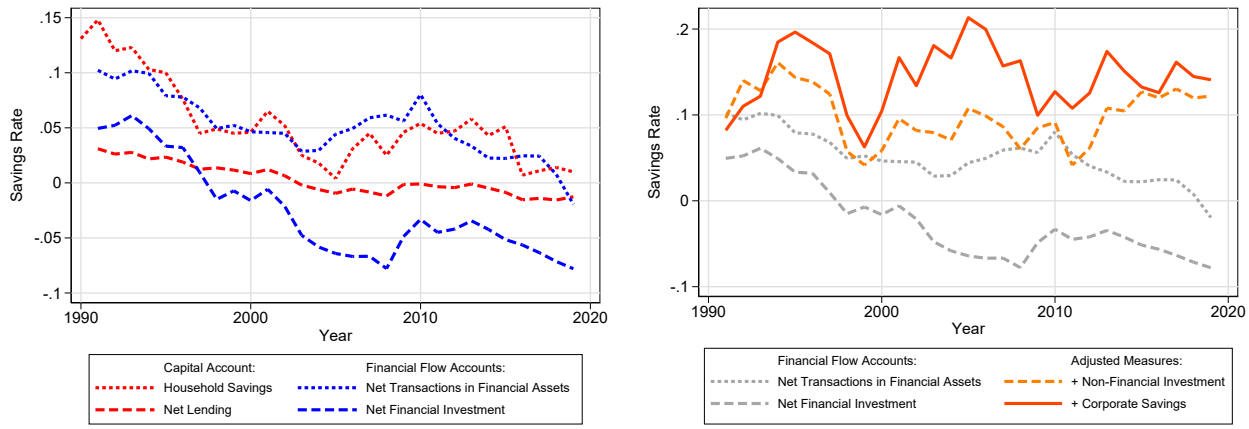
B.3 Financial Flows in Canada

In the analysis section of the paper, I decompose the change in wealth from year to year into different components - capital gains, savings and labour income - for each wealth group. To do this requires an estimate of the average capital gain by asset class, which then can be used to back out the implied savings. I measure capital gains using the Financial Flow Account (FFA) in the Canadian System of Macroeconomic Accounts. The FFA breaks down the changes in aggregate wealth by category into a portion explained by investment and a portion explained by other changes, which typically means capital gains as part of the revaluation account.

It is briefly useful to note what the FFA represents and its connection to the capital account, which includes a measure of the household savings rate that is widely reported. The FFA is the financial counterpart to the capital account that breaks down the net financial transactions by the same asset categories as found in the NBSAs. The closing line in both the FFA and the capital account is net lending or borrowing, although they are reached using different categories and have some slight discrepancies due to differences in measurement.

To see how these measures compare, I show the household savings rate from the two accounts using two separate measures in Figure 14 (left-panel).[36] From the capital account, I include household net saving and net lending or borrowing, which includes the depreciation

[36]I divide the savings measures by primary household income rather than disposable income to be consistent with the use of market income for determining income shares of each wealth group. Also, since the financial flows data is reported quarterly and I use the first quarter of the year for asset values, the flows represent the cumulative total from the second quarter of the prior year up the the first quarter of the given year.



(a) Capital Account vs. FFA

(b) FFA Adjustments

Figure 14: Household Savings Rates from Different Accounts

The figure on the left shows the household savings rate across different macroeconomic accounts and using different measures of savings. From the capital account, this includes the net household savings and net lending. From the Financial Flow Account, this includes net transactions in financial assets, which omits liabilities and net financial investment which includes them. The figure on the right shows the household savings rate after making several adjustments to be more consistent with the rest of this paper. This includes omitting certain asset categories and using the Pension Satellite Account for pension assets, including non-financial investment such as housing and including retained earnings from corporations as savings. Net savings are divided by primary household income rather than disposable income. These values reflect the cumulative savings from Q2 of the prior year up to Q1 of the given year.

of capital assets and the acquisition of new, non-financial capital assets. From the FFA, I include the net transactions in financial assets (not liabilities) and net financial investment, which includes liabilities (such as mortgages). The figure shows how the two sets of measures from the different accounts are roughly aligned. Since this paper uses a definition of wealth that includes liabilities, the net lending or net financial investment measure is a better baseline to consider for the synthetic savings analysis, but it is also worth noting that this measure is negative for much of the period. This means that the household sector is largely a net borrower from other sectors of the economy using this definition.

The negative value for net lending, however, can be explained by a few factors that I adjust for in the synthetic savings analysis. First, this net financial investment does not account for investment in non-financial assets, which are included in the NBSAs, such as housing and unincorporated business assets. I include investment in housing using the Housing Economic Account (HEA), which includes a measure of investment for residential structures over time. I subtract an estimate of housing depreciation of 1.5% of the residential structures stock, which is taken from the Canadian CPI calculation, from the housing investment value. The capital gain for the real estate assets is then the residual of the change in real estate value over time minus the level of net investment in housing calculated from the HEA. I also in-

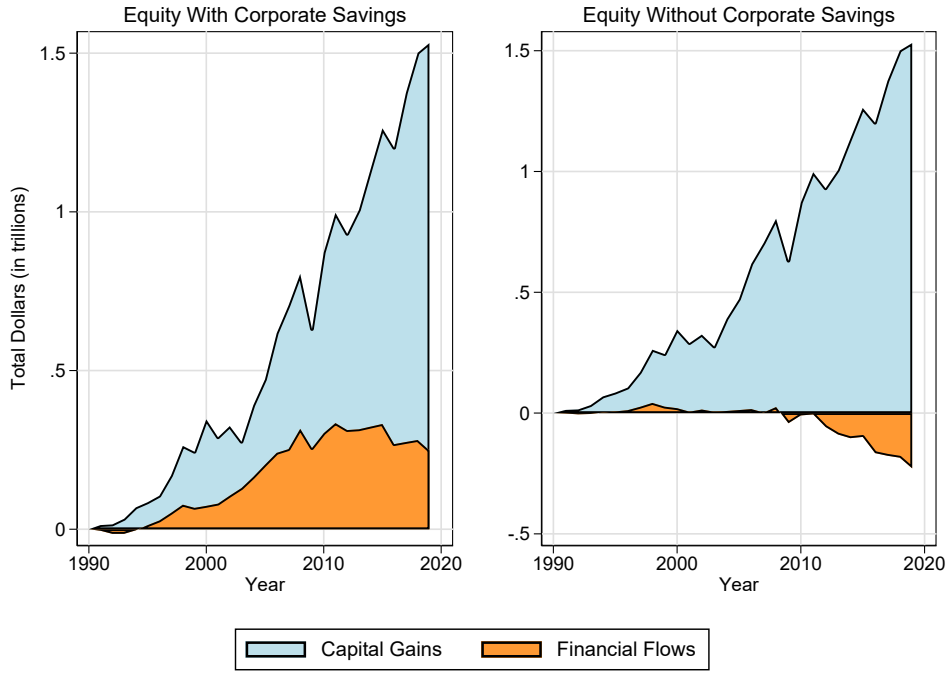


Figure 15: Equity Asset Growth With and Without Corporate Savings

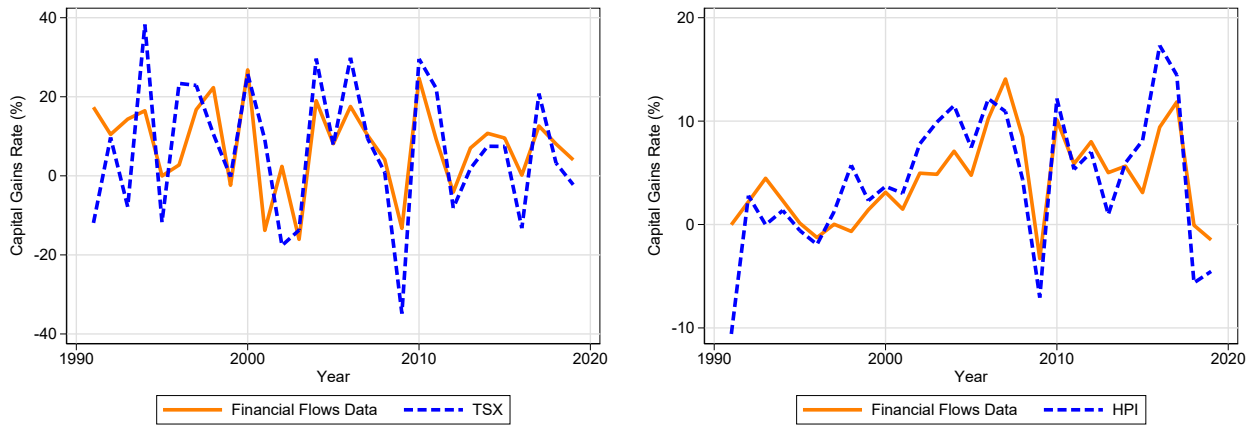
This figure shows the cumulative change in equity wealth over time broken down into savings and capital gains. The figure on the left shows the case where half of corporate savings accruing to Canadians is considered savings, while this is not included in the figure on the right side. Corporate net savings data comes from the Statistics Canada Undistributed Corporation Profits table.

clude investment in unincorporated business assets by just assuming that half of the change in value of these assets is considered a capital gain and half is investment. Since these assets make up only a small share of all assets, they are unlikely to affect the results.

A second adjustment relates to the inclusion of corporate net savings. Corporations can choose to save money from year to year and not distribute dividends to shareholders. However, since households are the shareholders, they are effectively choosing to save this money through the corporation rather than to distribute and reinvest the income elsewhere. In Canada specifically, where many professionals, such as doctors and lawyers, choose to self-incorporate to take advantage of lower tax rates, including corporate net savings as household savings is important. I assume that half of corporate savings is income that could have been distributed and then saved in a way that would register as savings in the FFA.

This choice creates a more realistic measure of investment in equities. As shown in Figure 15, financial flows in the equities category are negative for many years in the raw data when not including corporate net savings.[37] When including corporate net savings as household

[37]Savings can be negative if borrowing from other sectors of the economy, such as the corporate sector or the government sector.



(a) Equities vs. TSX

(b) Housing vs. HPI

Figure 16: Capital Gains from FFA and HEA versus Major Indexes

These figures compare the implied capital gains calculated from the Financial Flow Accounts (equities) and the Housing Economic Account (housing) to major indicators: the Toronto Stock Exchange (TSX) and the housing price index (HPI).

savings, there is a more realistic positive inflow of savings into the equities category. To ensure that only domestic corporate net savings are included, I take the same share of corporate net savings as the share of dividend payouts to Canadians from corporations.

Figure 14 (right-panel), presents the modified savings rate when adjusting for non-financial investment and corporate net savings.[38] Adding non-financial investment, mainly in the form of net housing investment, makes a substantial difference to the savings rate, bringing it up above the rate reported in the capital account. Including corporate savings also increases the savings rate marginally. Together, these adjustments result in an average savings rate around 14% that holds fairly steady over the period unlike the reported savings rate, which declines precipitously during this time. These numbers serve as a useful baseline for thinking about savings rates in the synthetic savings rate decompositions.

These adjustments also help yield more realistic capital gains values for certain categories. I show in Figure 16, how the estimated capital gains for both listed equities, which are measured directly in the FFA, and housing, which is measured this way, track closely with the Toronto Stock Exchange (TSX) and the Canadian Housing Price Index (HPI) over this period. Whereas the capital gains without corporate net saving were negative and there were no estimates of housing capital gains in the FFAs, these adjustment capture fairly realistic dynamics in the evolution of prices for these assets.

The resulting financial flows data after these adjustments serves as the input into the

[38]In addition, these measures only reflect the set of categories in the NBSAs that are included in the definition of wealth. This excludes consumer debt and life insurance and uses the financial flows from the Pension Satellite Account for pensions.

synthetic savings decomposition analysis. The methodology of this approach is discussed later in the Online Appendix: Methodology section.

C Online Appendix: Methodology

This section provides some additional detail on the methods used in this paper. The first part discusses the capitalization method and the approaches used to fill in some of the gaps related to assets without accurate capital income flows. The second part provides greater detail on the two sets of decompositions used in this paper: the linear asset decompositions and the synthetic savings decompositions.

C.1 Capitalization Method

C.1.1 Details of Capitalization Method

The capitalization method is based on the intuition that if you know the rate of return of an asset, you can estimate the amount of wealth a person holds based solely on the capital income flows they report on their income tax forms. The first step in this process involves estimating these rates of return. The simplifying assumption is that the rates of return will be the same for people across wealth groups. With this assumption, the rates of return can be estimated using aggregate estimates of wealth in the NBSAs and aggregates of the capital income flows in the NBSAs. Table 12 outlines the asset classes that will be used for the capitalization method and the corresponding asset categories from the NBSAs and LAD that correspond to those asset classes.

The Canadian Equity category captures listed and unlisted shares in the NBSAs plus the value of these assets held in mutual funds, minus the amount held in RRSPs. The corresponding capital income flows in the LAD are eligible and non-eligible Canadian dividends as well as capital gains. Eligible dividends generally correspond to dividends issued by larger corporations to shareholders that are eligible for a larger dividend tax credit because the corporations pay a higher rate of corporate tax. Non-eligible dividends generally correspond to dividends issued by small Canadian controlled private corporations (CCPCs) that already benefited from lower corporate tax rates. Capital gains are a trickier inclusion because, although they do reflect ownership of shares, they are realized in a very lumpy pattern, which can lead to greater variability in share ownership. In my main results, I include capital gains as a capital income flow, but I also present the results without capital gains as a robustness check in the robustness section, which shows that the overall trend is relatively similar.

The Other Investments category is fairly broad and includes currency and deposits, debt

Categories	NBSA Variables	LAD Variables
Canadian Equity	Listed Shares Unlisted Shares Mutual Funds	Eligible Canadian Dividends Non-Eligible Canadian Dividends Capital Gains
Other Investments	Currency and Deposits Debt Securities (Bonds) Loans Foreign Equity Mutual Funds	Interest and Other Investment Income
Unincorporated Business	Non-Residential Property Agricultural Land Land Underlying Buildings Machinery Inventories Intellectual Property Other Receivables (Minus) Non-Mortgage Loans	Self-Employment Income Long-Term Partnership Income
Pensions	Registered Pension Plans Registered Retirement Savings Plans	No Direct Capital Income Flow
Primary Residences	Residential Structures Land Underlying Dwellings	No Direct Capital Income Flow
Other Real Estate	(Minus) Mortgages	Net Rental Income

Table 12: Categorization of Asset Classes in NBSA and LAD

This table shows the different asset categories used in the capitalization method in both the National Balance Sheet Accounts (NBSAs) and the Longitudinal Administrative Databank (LAD).

securities and foreign equity plus the value of these assets held in mutual funds, minus the amount held in RRSPs. The corresponding capital income flow in the LAD is interest and other investment income. This is a broad category that combines any interest payments received with any other payments from assets that are taxed at 100%. This includes income from foreign equity, which is a somewhat awkward inclusion in this category, but also reflects a fairly small share of overall wealth. In 2022, this represented just 1.3% of aggregate net worth in Canada.

Unincorporated business assets are defined narrowly in this exercise because the NBSAs do not separate non-corporate business activity from the household sector. As a result, this category considers capital assets owned by households for the purposes of operating a business. This includes machinery, non-residential structures and intellectual property and subtracts non-mortgage loans, but does not include assets such as bank deposits or equities since these are just attributed to the household itself. This also includes agricultural land and land underlying buildings and structures that are not dwellings. Agricultural land fits in this category since many farmers will report their income as self-employment income, which makes it consistent to include here. The capital income flow used is self-employment income

and long-term partnership income (after 1994), which captures the income received from these small business ventures.

Other real estate (or secondary residences) captures all real estate holdings that are not the primary residence of the household. This can include rental properties, vacation homes or additional residences. While these properties are not separately identified in the NBSAs, this paper considers 80% of housing wealth as part of principal residences, which is consistent with the numbers from the SFS. For the capital income flow, I use *net* rental income, which is consistent with the use of net housing wealth. An alternative possibility is to use *gross* rental income here instead, which could better reflect the actual value of the property that is owned and not accounting tricks used by landlords to reduce their taxable income. I show the results using gross rental income as a robustness check.

In the Appendix Figures, I plot the capitalization factors and, inversely, the rates of return for the different asset types. The increasing capitalization factor for other investments is consistent with the secular decline in interest rates during this time period. Equity wealth has averaged a rate of return between dividends and capital gains around 10% for most of this period. The one spike in 1994 relates to a change in capital gains taxation policy that led to a one-time spike in realizations. The rates of return on secondary properties is fairly low, which is due in part to the fact that not all secondary properties are rented out all the time and because this is *net* rental income which deducts expenses associated with the property.

Finally, there are no capital income flows that correspond to pensions or primary residences. To address this, I impute these values using information from the SFS. The approach to do this is discussed in the next section.

C.1.2 Distribution Regression

To impute the values of housing and pension wealth in the microdata, I use the distribution regression techniques from Chernozhukov et al. (2020). To start, I compute 100 quantiles of housing or pension wealth in the full sample of the SFS. Then, for every quantile, I estimate a logit regression of whether an individual is above or below that threshold. For the logit regression, I model net housing prices (value of principal residence - mortgage) as a linear function of market income, age, age-squared, family indicators and city fixed-effects for the 15 largest cities in Canada. For pensions, I compute the family pension value per person and model it as a quadratic function of average age, and a linear function of income, pension contributions and pension income (both employer pensions and RRSPs).

Using the estimated coefficients, I can predict the probability of a given household of

being above or below each quantile threshold in the LAD using the common covariates.[39] I then repeat this procedure for all 100 quantiles. This will yield a series of probabilities at a hundred different points. Using linear interpolation, you can compute the conditional quantile values at each integer quantile for each individual. That is, suppose a household in the LAD has a 35% predicted probability of being above $420k in housing wealth and a 37% probability of being above $400k, where the $420k and $400k were consecutive quantiles of housing wealth used in the initial logit regression. Then, by linear interpolation, there is a 36% probability of falling above $410k. Therefore, the 63rd percentile outcome for the household in the LAD is $400k, the 64th percentile outcome is $410k and the 65th percentile outcome is $420k. If the value drawn from the uniform distribution, $p \sim U[0,1]$, is 0.64, then the value of housing wealth assigned to the household is $410k.

This method does a good job replicating the distribution of housing in the LAD that is found in the SFS, especially compared to a more rudimentary alternative. Table 13 reports the share of housing wealth going to the top 1% by total wealth across two different imputation methods and compares the results to the share observed in the SFS (both the PUMF and the full version found in the RDC). In the first column, the top 1% share of housing using the distribution regression approach described above is shown. This does a decent job of matching the values found in the SFS. There are a couple reasons this approach is useful compared to more non-parametric approaches such as in column 2 or as employed by Garbinti et al. (2020).[40] First, the method does a good job dealing with zero values, which is often a challenge in a linear regression model or even tobit and hurdle models. This is because the conditional quantile function can yield many predicted quantiles of 0 for families, giving a high likelihood of drawing a zero value for some families. Second, in non-parametric approaches that use bins, there is a concern of no within-group variation. This will reduce the level of variation and inequality generated. Last, the model provides the opportunity to include several covariates to increase predictive power - including city fixed-effects. Better prediction may not necessarily change the overall distribution, but does raise confidence in the approach. In addition, the parametric assumptions made for housing values are fairly reasonable: housing wealth is linear in market income and quadratic in age.

In the second column, housing values are assigned based on the average housing value in the census tract of residence obtained from the Canadian Census Profiles. In Canada,

[39] I use SFS estimates from the nearest year to the LAD year in question. That is, I use the 1999 SFS estimates for all LAD years prior to 2006. I then re-scale housing and pension values so that they add up to the aggregate wealth value in the NBSAs for that year, which functions as a quasi-inflation adjustment.

[40] In Garbinti et al. (2020), they employ a non-parametric approach where people are assigned to around 200 bins based on income and age. Then using the share of people holding an asset in each bin, they randomly draw to see if the average value should be assigned. In their refined method, they do allow values in the bin to vary according to the observed distribution as well.

	Methods			
	Preferred Estimates	Census Profiles	SFS PUMF	SFS Full
1999	4.80	2.90	.	6.49
2012	4.50	2.70	5.60	5.07
2016	5.00	3.10	6.70	6.16
2019	4.80	3.10	6.00	6.25

Table 13: Comparing Top 1% Share of Housing Across Imputation Approaches

This table compares different approaches to imputing housing wealth to the Survey of Financial Security (SFS) values (column 3 and 4) by comparing the share of total housing wealth owned by the wealthiest 1%. The first method employs the distribution regression approach (Column 1). The second approach involves assigning the average housing value of a census tract to those that live there (Column 2). The distribution regression approach generates housing estimates at the top much closer to what is observed in the actual SFS.

a census tract comprises 2,500 to 8,000 people and there are around 5,000 of them across the country. To deal with the fact that not everyone in a census tract owns a home, the share of home ownership is measured for each census tract and families are sorted based on wealth within a census tract. Then, the share of home ownership is used as the percentile cutoff for assigning the average home value. That is, if the census tract home ownership rate is 65%, then those above the 35th percentile of non-housing wealth in the census tract are assigned the average census tract value and those below are assigned a value of zero. While this approach can get geographically specific values, the data itself does not capture mortgages (which are larger at the bottom of the distribution) and the method of assigning ownership as well as the lack of variation in imputed values likely leads to an underestimate of top share housing wealth.

It is important to reiterate that the objective of this exercise is to impute individual-level values of housing and pension wealth conditional on observable characteristics, in order to construct a measure of total household wealth. Accordingly, the marginal distributions of these assets in the LAD need not exactly replicate those observed in the SFS. Instead, the estimation targets the conditional distribution of assets, $F_{Y|X}(y \mid x)$, so as to preserve the correlation between imputed assets, household characteristics, and other components of wealth. Approaches such as the RIF-regression framework in Davies et al. (2017) are well suited to matching unconditional distributional features, but are less appropriate for imputation in this setting, where the goal is to generate plausible household-level asset values rather than to reproduce marginal wealth distributions.

C.2 Decompositions

C.2.1 Linear Asset Decompositions

Linear asset decompositions are used in this paper to investigate the role of different assets in the dynamics of the wealth distribution. They are based on the observation that the share of wealth held by a given group, sh_{wg}, can be expressed as a weighted average of asset-specific wealth shares, where the weights reflect the aggregate shares of each asset class:

$$sh_{wg} = \frac{W^g}{W} = \sum_j \frac{W_{jg}}{W} = \sum_j \frac{W_j}{W}\frac{W_{jg}}{W_j} = \sum_j \omega_j \psi_{jg} \tag{4}$$

where ω_j denotes the aggregate share of asset j and ψ_{jg} denotes the share of that asset held by group g.

This can be re-written into a familiar decomposition by noting that the difference in wealth shares for a given group over time, from t_1 to t_2, can be written as:

$$sh_{wg}^{t_2} - sh_{wg}^{t_1} = \sum_j \omega_j^{t_2}\psi_{jg}^{t_2} - \sum_j \omega_j^{t_1}\psi_{jg}^{t_1}$$

Adding and subtracting $\sum_j \omega_j^{t_2}\psi_{jg}^{t_1}$, means the above expression can be re-written in terms of the component that is explained by changing aggregate wealth shares and the component that is explained by changing within-asset concentration.

$$sh_{wg}^{t_2} - sh_{wg}^{t_1} = \sum_a \underbrace{\psi_{jg}^{t_1}(\omega_j^{t_2} - \omega_j^{t_1})}_{\text{agg. asset shares}} + \sum_j \underbrace{\omega_j^{t_2}(\psi_{jg}^{t_2} - \psi_{jg}^{t_1})}_{\text{within-asset concentration}} \tag{5}$$

The first term captures the extent to which wealth shares of a group change when the aggregate asset composition changes, holding the share of wealth held by that wealth group constant at their level in t_1. It is important to note that the aggregate asset composition should always sum to one, $\sum_j \omega_j = 1$, so changes to aggregate asset shares should be thought of as a change to the entire distribution and not to a single asset. The second term captures the extent to which changes in the concentration of various assets affect the share of wealth held by a group, holding the composition of assets fixed at their shares in t_2. Computing each of these terms will yield the amount each component contributes to the change in wealth shares over time.

C.2.2 Synthetic Savings Decompositions

Synthetic savings decompositions are used to disentangle broad behavioural dynamics that could affect the evolution of top wealth shares. The synthetic savings decompositions are based on the following transition equation:

$$W_{t+1}^g = (1 + q_t^g)(W_t^g + s_t^g Y_t^g) \tag{6}$$

This equation can be extended to any specific asset on aggregate or asset owned by a specific wealth group. It is assumed that capital gains occur after all savings are invested.

One challenge is that the group-specific capital gains rate, q_t^g, and savings rate, s_t^g, are not directly observed in the data. Therefore, they have to be computed using related information and some assumptions described here. This is done in two main steps. First, the asset-specific capital gains rates are calculated using data from the Financial Flow Account (FFA). The FFA is the flows compliment to the stocks in the NBSAs and breaks the changes in wealth over time that are observed in the NBSA data into the portion explained by investment flows and the portion explained by other changes (eg. capital gains).[41] The average capital gains rate for each asset, q_t^j, can then be computed using the asset-specific transition equation:

$$1 + q_t^j = \frac{W_{t+1}^j}{W_t^j + F_t^j}$$

Here, W_t^j is the stock of the asset and F_t^j is the financial flow observed in the FFA. Under the assumption that asset-specific capital gains are homogeneous across the distribution, then the group-specific capital gain on each asset is $q_t^{jg} = q_t^j$.

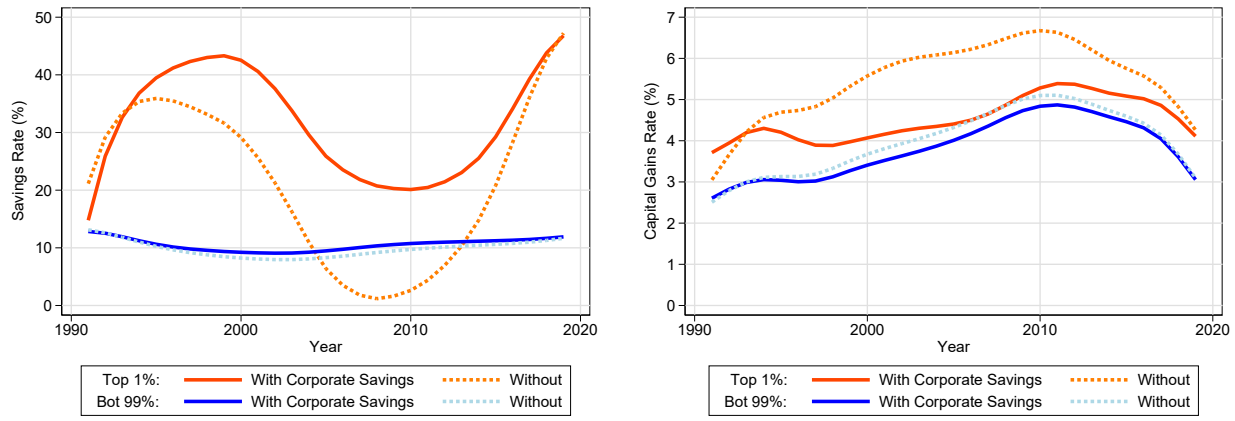
Then, using the asset-specific capital gains, the amount each group invested in each asset can be determined as the residual of the transition equation. From the asset-specific transition equation, the amount invested by each group into each asset is:

$$S_t^{jg} = s_t^{jg} Y_t^g = \frac{W_{t+1}^j}{1 + q_t^j} - W_t^j$$

Summing across all assets yields the total savings for group g, $S_t^g = \sum_j S_t^{jg}$, and dividing this by their income yields their total savings rate, s_t^g.

To recover the group specific capital gains rate, q_t^g, the group savings total, S_t^g, can be

[41] See the Online Appendix: Data section for details on how the financial flows for the categories are measured and how the synthetic savings and capital gains rates are computed for each asset type.



(a) Savings Rate

(b) Capital Gains Rate

Figure 17: Savings Rate and Capital Gains Rate by Wealth Group, 1990-2018

This figure plots the savings rate and capital gains rate over time by wealth group as determined using the synthetic savings approach. The line represents the LOWESS (locally weighted scatterplot smoothing) estimate of the underlying scatterplot values. The figures compare the results with and without corporate savings being included in the savings of households.

inputted into the group-specific transitional equation:

$$1 + q_t^g = \frac{W_{t+1}^g}{W_t^g + S_t^g}$$

Using these equations, data from the FFA and estimates of the wealth and income held by each group , I can recover the values of q_t^g and s_t^g for each group in each year.

As discussed in detail in the Online Appendix: Data section, the inclusion of corporate savings plays a major role in the savings of those at the top of the wealth distribution. In App. Figure 15, I plot the synthetic savings rate if corporate savings is included and if it is not. Naturally, this decreases the savings rate of the top 1% and increases the capital gains since more of the change in wealth is ascribed to larger capital gains. Despite this, the trend is largely preserved, which means that while corporate savings affect the aggregate savings rate, they do not seem to change the finding that savings and not capital gains are the main driver of wealth inequality dynamics in Canada during this period.

One challenge with the synthetic savings approach is that the estimated savings rates are quite noisy. When plotting the figures of q_t^g and s_t^g, there is significant year-to-year variation in the data, which makes it difficult to determine the trends. To address this, I smooth the trends using a LOWESS (locally weighted scatterplot smoothing) approach. In the Appendix Figures, I plot the trends in the savings rate as a scatterplot and with the LOWESS smoothed results. One observation from the figure is that there are certain years with extreme values for the top 1%. In 1995, the year after a major capital gains reform

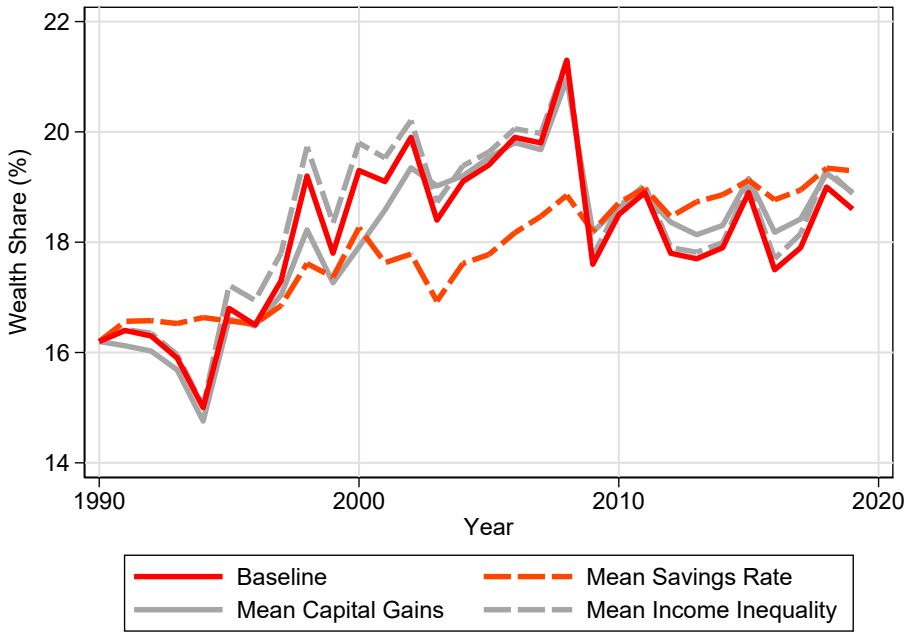


Figure 18: Simulations of the Top 1% Wealth Share Using Component Averages
This figure shows the simulation results for the top 1% share of replacing the computed values for annual savings rates, capital gains rates and income inequality with their averages for the period. Each simulation is run separately for each component.

that encouraged people to make use of a capital gains exemption, there was a large jump in equity wealth from the prior year which was very low. Given that the actual rate of return on assets was not atypical, the transition equation rationalizes this with a very high savings rate - above 100% of income, which should not be possible.

In 2009, the converse occurs as wealth falls dramatically from Q1 2008 to Q1 2009 as estimated using the capitalization method, which is based on dividend payouts and realized capital gains, but actual, overall capital gains were not negative enough to rationalize the decline in wealth - hence the large negative savings rate. Negative savings rates are possible as it implies money is being borrowed either from other wealth groups (note the jump up for the bottom 99%) or other "sectors" of the economy (eg. corporations, government etc.).

A final exercise to explore the role of savings and capital gains in driving the top 1% wealth share is to simulate what would have happened to the top 1% share without the dynamics of each component. Starting from the initial period, I simulate the changes in the wealth share that would have occurred if each component in turn was fixed at its average for the period. I present the results of this simulation in Figure 18. I find that if the savings rate dynamics were ignored and remained constant throughout this period, then the top 1% share would display a steady upward trend throughout the entire period, reaching over

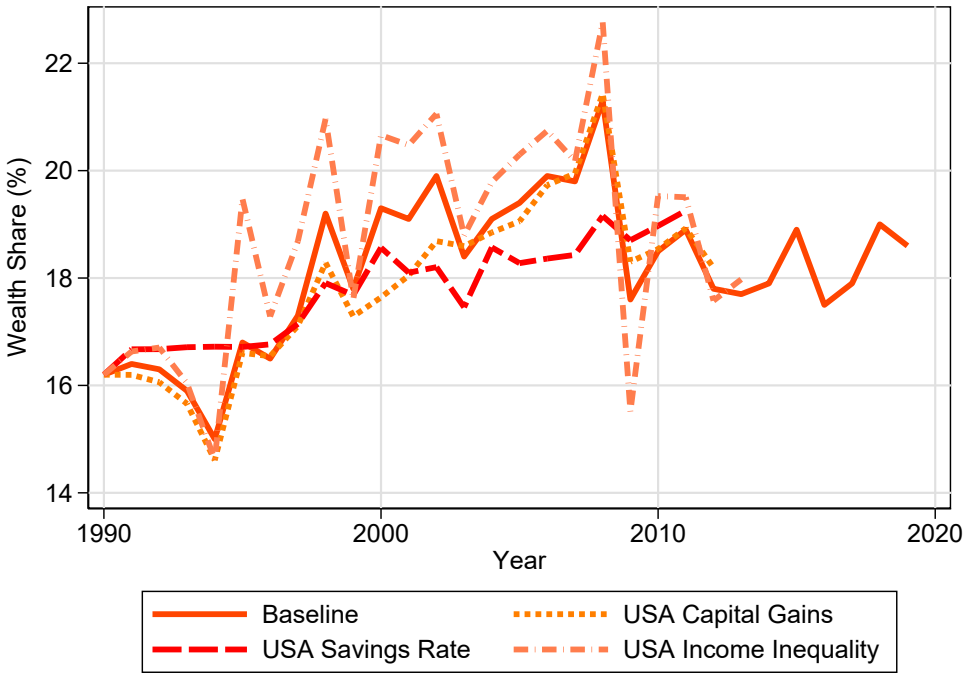


Figure 19: Simulations of Top 1% Wealth Share Using USA Component Averages
This figure shows the simulation results for the top 1% share of replacing the computed values for annual savings rates, capital gains rates and income inequality with the USA averages for the period. Each simulation is run separately for each component.

18% in 2019. Changing the capital gains and income inequality values would not have as significant an effect on the overall trend.

Finally, I run a simulation to see how wealth would have evolved in Canada had it followed trends from the United States. I present the results in Figure 19. I find that had Canada had the capital gains experience of the US during the 1990s, where the US outperformed Canada dramatically, the top 1% share would have been increasing more rapidly. However, the decline during the Great Recession was also far more extreme as well.