ESTIMATING THE TOP TAIL OF THE FAMILY WEALTH DISTRIBUTION IN CANADA: UPDATES AND TRENDS

OFFICE OF THE PARLIAMENTARY BUDGET OFFICER
BUREAU DU DIRECTEUR PARLEMENTAIRE DU BUDGET

The Parliamentary Budget Officer (PBO) supports Parliament by providing economic and financial analysis for the purposes of raising the quality of parliamentary debate and promoting greater budget transparency and accountability.

Senator Rosa Galvez requested that the PBO update the High-net-worth Family Database for the year 2019 and that the same methodology be applied to previous years in order to study the trends in the distribution of Canadian net wealth. PBO applies a modelling approach from a past report to estimate the top tail of the family wealth distribution in Canada for the year 2019. The approach is also applied to the years 1999, 2012, and 2016 in order to study the trends in wealth held by the wealthiest families in Canada. This report provides the details of the update and the results.

Analysts:
Louis Perrault, Advisor-Analyst
Krista Duncan, Analyst

This report was prepared under the direction of:
Xiaoyi Yan, Director, Budgetary Analysis

Nancy Beauchamp, Marie-Eve Hamel Laberge and Rémy Vanherweghem assisted with the preparation of the report for publication.

For further information, please contact pbo-dpb@parl.gc.ca

Yves Giroux
Parliamentary Budget Officer

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Executive Summary

On September 15, 2021, Senator Rosa Galvez requested that the PBO update the High-net-worth Family Database (HFD) with the most recent data from the Survey of Financial Security (SFS) for the year 2019 and that the methodology be applied to the SFS of previous years in order to study the trends in Canadian net wealth distribution. This report addresses the request, using the methodology laid out in PBO's June 2020 report titled "Estimating the top tail of the family wealth distribution in Canada."[1]

Consistent with the June 2020 report, we use the SFS Public Use Microdata File (PUMF) and the National Balance Sheet Accounts (NBSA) as data sources to construct the HFD for 2019. However, the Canadian Business (CB) magazine's Richest People List used in the 2020 report is no longer published and unavailable for the year 2019. As such, this updated version uses World's Real Time Billionaires lists published by Forbes as a complementary source of information to the SFS.

The updated HFD shows that the top one percent of high-net-worth families in Canada hold 24.8 percent of the country's total net wealth. Furthermore, using the SFS PUMF for the years 1999, 2012, 2016, and 2019, along with the Forbes billionaire lists in the corresponding years, PBO finds that the top one percent's share of net wealth in Canada has increased by approximately 5 percentage points over the period of 1999-2019. The increase is corroborated by similar estimates made with the Canadian Business Lists for the years 1999-2016.

Table ES-1 **Family net wealth distribution in Canada, 2019**

Percentile of family net wealth	Statistics Canada's SFS PUMF Share of total net wealth (per cent)	PBO'S HFD Share of total net wealth (per cent)
Top 0.01%	0.4	5.0
Top 0.1%	2.8	11.2
Top 0.5%	8.9	19.5
Top 1%	13.7	24.8
Top 5%	33.1	43.5
Top 10%	47.8	56.9
Top 20%	66.9	73.9
Middle 40%	30.4	25.1
Bottom 40%	2.7	1.1

Sources: PBO calculations of the SFS PUMF; PBO High-net-worth Family Database

Figure ES-1   Share of wealth of top 1%, 1999-2019
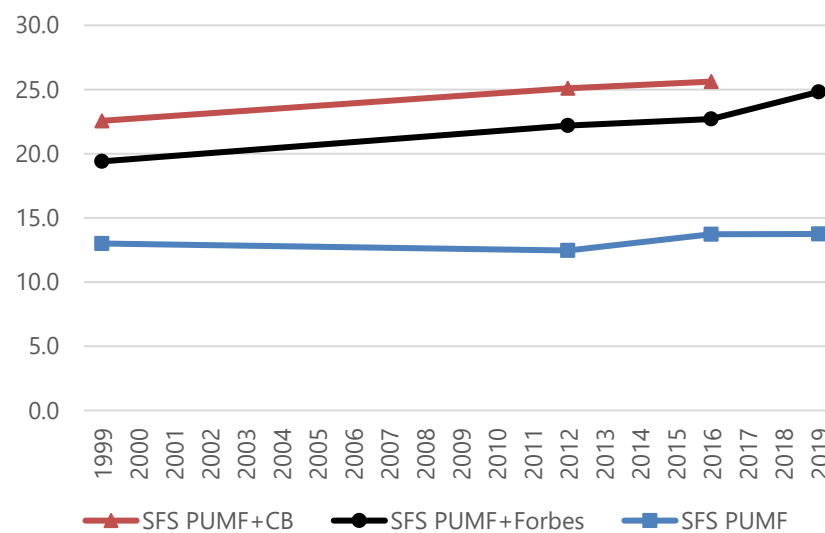
Source: PBO calculations for 1999, 2012, 2016, and 2019.

1. Introduction

Senator Galvez requested that the PBO update the High-net-worth Family Database (HFD) with the most recent data from the Survey of Financial Security (SFS) for the year 2019 and that the methodology be applied to create the HFD with the SFS of previous years to study the wealth distribution in Canada over time.

This report uses the modelling approach laid out in PBO's June 2020 report titled "Estimating the top tail of the family wealth distribution in Canada." Briefly, the approach consists of a Pareto interpolation which creates a synthetic dataset bridging microdata on wealth from the SFS PUMF and the Forbes Billionaires list. This resulting dataset is constrained to produce aggregates that match those found in the NBSA.

The report proceeds as follows. First, the HFD is updated to reflect the latest information available from the SFS, the NBSA and the World's Real Time Billionaires lists published by Forbes. These results are then grown to the second quarter of 2021. Next, using the 1999, 2012, 2016, and 2019 SFS PUMF, along with previously published rich lists, the top tail of the distribution is estimated for the corresponding years. This latter step gives a glimpse at the evolution of wealth concentration in Canada from 1999 to 2019 using a consistent approach.

2. Estimating the HFD with the 2019 SFS

2.1. Method for constructing the 2019 HFD

As in PBO's previous estimation report, the HFD is created using both the SFS PUMF and a rich people list. Forbes Real Time World's Billionaires list from November 1st, 2019 is used for the 2019 HFD, to match the SFS collection period of 2019 Q4.[2] The Forbes values of net wealth were converted from USD to CAD.[3] As before, the rich list is adjusted to take into account economic families; as a result, all split entries that fall below the lowest individual entry on the list are dropped.

The bottom threshold value for the interpolation used for the estimation of the 2016 HFD is adjusted to reflect the increase in the Consumer Price Index (CPI) between 2016 and 2019. Using the newly constructed dataset, we iteratively estimate the HFD, such that aggregate asset, liabilities, and net worth values align with those published in the NBSA by Statistics Canada.[4]

2.2. Results

The 2019 HFD shows that the top one percent of high-net-wealth families in Canada hold 24.8 percent of the country's total net wealth. Table 2-1 provides the share of total net wealth by various percentiles. Similar to the 2016 HFD, the 2019 HFD adds 11.1 percentage points to the share of total net wealth held by the top 1 percent of families, compared to the 2019 SFS PUMF.

Table 2-1 **Family net wealth distribution in Canada, 2019**

Percentile of family net wealth	Statistics Canada's SFS PUMF Share of total net wealth (per cent)	PBO'S HFD Share of total net wealth (per cent)
Top 0.01%	0.4	5.0
Top 0.1%	2.8	11.2
Top 0.5%	8.9	19.5
Top 1%	13.7	24.8
Top 5%	33.1	43.5
Top 10%	47.8	56.9
Top 20%	66.9	73.9
Middle 40%	30.4	25.1
Bottom 40%	2.7	1.1

Sources: PBO calculations of the SFS PUMF; PBO High-net-worth Family Database

Table 2-2 summarizes the total net wealth and share of total net wealth held by selected percentiles of net wealth distribution. The threshold for being in the given percentile, along with the number of families in each percentile, is included. The cut-off for the top one percent of family net wealth is $6.3 million. There are currently 160,600 families in Canada in that group, compared to 159,300 in the 2016 HFD.

Table 2-2	Net wealth distribution, by selected percentiles, Canada, 2019			
Percentile of family net wealth	Net wealth threshold ($ millions)	Number of families (thousands)	Total net wealth ($ billions)	Share of total net wealth (per cent)
Top 0.01%	129.5	1.6	583	5.0
Top 0.1%	28.8	16.0	1,309	11.2
Top 0.5%	9.9	80.2	2,285	19.5
Top 1%	6.3	160.6	2,903	24.8
Top 5%	2.4	800.4	5,088	43.5
Top 10%	1.6	1,591.7	6,653	56.9
Top 20%	1.0	3,183.7	8,643	73.9
Middle 40%	0.1-1.0	6,365.6	2,931	25.1
Bottom 40%	under 0.1	6,365.7	123	1.1

Source: PBO High-net-worth Family Database

Additional summary statistics from the 2019 HFD are provided in Table 2-3. There are approximately 3 million families in Canada with net wealth above one million dollars. Collectively, these families hold 73 percent of the total wealth in Canada.

Table 2-3	Net wealth distribution, by selected net wealth thresholds, Canada, 2019		
Family net wealth threshold Families with net worth above:	Number of families (thousands)	Total net wealth ($ billions)	Share of total net wealth (per cent)
$1 billion	0.1	185	1.6
$500 million	0.2	277	2.4
$250 million	0.6	407	3.5
$100 million	2.4	668	5.7
$50 million	6.8	968	8.3
$25 million	19.5	1,390	11.9
$10 million	78.4	2,261	19.3
$5 million	225.2	3,254	27.8
$2.5 million	722.4	4,904	41.9
$1 million	3,078.2	8,534	73.0

Source: PBO High-net-worth Family Database

As illustrated in previous reports, the 2019 HFD can be projected forward to answer questions regarding the amount of wealth held by families and potential tax revenues from a wealth tax. Table 2-4 summarizes the results of projecting the 2019 HFD to the second quarter of 2021. The approach and

assumptions made in the report are consistent with PBO's 2020 report and the subsequent report titled "Revenue Estimates of M-68: One-time Tax on Extreme wealth."[5]

Table 2-4   Net wealth distribution, by selected percentiles, Canada, Q2 2021

Percentile of family net wealth	Net wealth threshold ($ millions)	Number of families (thousands)	Total net wealth ($ billions)	Share of total net wealth (per cent)
Top 0.01%	153.2	1.6	720	5.1
Top 0.1%	33.8	16.1	1,578	11.1
Top 0.5%	11.7	80.8	2,733	19.2
Top 1%	7.3	161.7	3,464	24.3
Top 5%	2.8	802.3	6,055	42.5
Top 10%	1.9	1,602.4	7,924	55.7
Top 20%	1.2	3,207.6	10,328	72.6
Middle 40%	0.2-1.2	6,407.3	3,664	25.7
Bottom 40%	Under 0.2	6,408.6	239	1.7

Source: PBO High-net-worth Family Database

3. Estimating the top of the wealth distribution using past SFS

3.1. Data and methodology

In this section, we discuss how past SFSs and our interpolation methodology are used to investigate the concentration in net wealth over the last twenty-year period.

The SFS has been conducted in the years 1999, 2005, 2012, 2016, and 2019. The available Public Use Microdata Files (PUMF) for the latest three editions of the survey are relatively comparable in methodology and format. However, the 1999 and 2005 editions both have issues that need to be taken into consideration. First, the 2005 SFS has a significantly smaller sample size compared to the other years and is therefore not considered as reliable for

assessing the top of the wealth distribution. As in Davies and Di Matteo (2020), we exclude the 2005 SFS from our estimates.

Second, the 1999 SFS PUMF has some entries with debt totals considered "Not applicable", making our calculation of net wealth impossible for these entries. To address this issue, we drop these entries and proceed in calculating family net wealth as in previous years.[6] The share of net wealth held by the top one percent in 1999 with observation dropped are roughly equal to the one reported in Brzozowski, Gervais, Klein, and Suzuki (2010) for the same data source which includes top-coded entries.[7] The 1999 SFS PUMF is kept in the report as it has a large enough sample size, and that the Pareto interpolation methodology could reduce problems stemming from dropping these entries.

To investigate the evolution of wealth concentration in Canada, we apply the Pareto interpolation methodology using both the Forbes and Canadian Business lists, although the Canadian Business lists, as previously noted in the 2020 report, are more comprehensive than the Forbes list. For each of the survey years, the PBO pairs it with a corresponding rich list.[8] Finally, the quarter of the NBSA that corresponds with the period of data collection of each SFS is chosen.

Using the above data, we estimate, for each survey year, the family net wealth distribution. To keep the estimates consistent, the bottom threshold for the Pareto interpolation remains the same as in the 2016 HFD estimation, except that it is CPI adjusted.

3.2. Results

The estimated distributions indicate that the share of net wealth held by the top one percent has increased over the past twenty years. PBO's results mirror those of Davies and Di Matteo (2020) and Hempel (2020). Table 3-1 summarizes the results. Figure 3-1 shows graphically the evolution of the share of net wealth owned by the top one percent from the SFS PUMF and the adjusted SFS PUMF with rich lists.

Table 3-1   **Net wealth distribution over time, SFS PUMF+CB and SFS PUMF+Forbes**

Percentile of family net wealth	1999		2012		2016		2019	
	SFS PUMF+CB	SFS PUMF +Forbes	SFS PUMF +CB	SFS PUMF +Forbes	SFS PUMF +CB	SFS PUMF +Forbes	SFS PUMF +CB	SFS PUMF +Forbes
	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)	(per cent)
Top 0.01%	5.4	3.7	5.4	4.1	5.6	4.3	N/A	5.0
Top 0.1%	11.4	8.3	11.9	9.6	12.2	9.9	N/A	11.2
Top 0.5%	18.4	15.0	20.1	17.3	20.5	17.7	N/A	19.5
Top 1%	22.6	19.4	25.1	22.2	25.6	22.7	N/A	24.8
Top 5%	40.1	37.7	43.5	41.2	43.5	41.2	N/A	43.5
Top 10%	53.3	51.4	57.2	55.4	56.5	54.8	N/A	56.9

Source: PBO calculations for 1999, 2012, 2016, 2019

Figure 3-1   **Share of wealth of top 1%, 1999-2019**
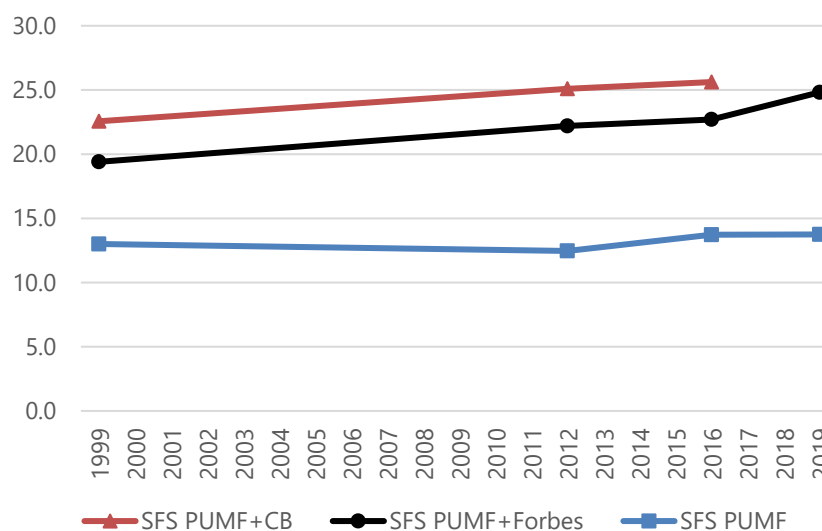
Source: PBO calculations for 1999, 2021, 2016, and 2019.

3.3.   Uncertainty

Caveats applied to the creation of the HFD remain valid for each year of estimation. In addition, how the 1999 SFS PUMF is modified to overcome issues related to censored entries may lead to an understatement of wealth concentration in 1999. This would result in overstating the increase in wealth concentration over the last twenty year. Alternatively, estimation of wealth concentration made on the SFS data from a Statistics Canada Research Data Centre (RDC), where observations are not bottom-coded or top-coded, could shed light on any potential bias stemming from using SFS PUMFs.

Furthermore, the Forbes Billionaires lists, as previously noted in PBO's 2020 HFD estimation report, are missing entries present in the Canadian Business lists for years in which both lists are published. These missing entries may bias downward the estimated share of net wealth owned by the very top of the distribution when made with the Forbes lists.

References

Brzozowski, M., Gervais, M., Klein, P., & Suzuki, M. (2010). Consumption, income, and wealth inequality in Canada. Review of Economic Dynamics, 13(1), 52-75.

Davies, J., & Di Matteo, L. (2020). Long Run Canadian Wealth Inequality in International Context. Review of Income and Wealth. Advance online publication. https://doi.org/10.1111/roiw.12453

Hempel, A. (2020). Estimating the Wealth Distribution in Canada: An Application of the Capitalization Method. University of Toronto Second Year Paper. Mimeo. https://drive.google.com/file/d/1BUgEuXxYcOvBCTB9sSQwpV_7yN_vSiKF/view

Notes

1. Our past report can be found here: https://www.pbo-dpb.gc.ca/en/blog/news/RP-2021-007-S--estimating-top-tail-family-wealth-distribution-in-canada--estimation-queue-superieure-distribution-patrimoine-familial-au-canada

2. The Forbes Real Time list for November 1, 2019 was obtained from the Forbes website using the Wayback Machine, the current Forbes Real Time list can be retrieved here: https://www.forbes.com/real-time-billionaires/#5ca518463d78. November 1, 2019 was chosen as the SFS collection period for the 2019 rendition was the fourth quarter of 2019.

3. After the Forbes data was collected, the values of net wealth were first converted from USD to CAD using data from the Bank of Canada. This was done by taking the exchange rate from November 1, 2019, the same day stock exchange and exchange rate information was taken by Forbes.

4. In the iterative process, the SFS PUMF is first adjusted to align with the NBSA. Asset and debt variables in the SFS are grouped into three categories: financial assets, non-financial assets, and total liabilities. Then these categories are adjusted to align with the ratio of financial assets to non-financial assets to total liabilities in the NBSA. Next, the NBSA adjusted SFS data was combined with the Forbes Real Time Billionaires list, and a Pareto parameter is estimated to interpolate the missing families in between the top of the SFS and bottom of the Forbes list. This synthetic dataset consists of families with wealth between $3,181,959.60 and $1,315,700,000. The range of wealth in the synthetic dataset is chosen to remain consistent with the 2016 HFD. After aggregating totals of financial assets, non-financial assets, and total liabilities from the resulting dataset, the ratios are adjusted to better match the NBSA and the process is repeated until the aggregate values in the final dataset align with those of the NBSA. The Pareto parameter obtained in the last iteration is 1.517655.

5. The report can be found here: https://pbo-dpb.gc.ca/en/blog/news/RP-2122-012-M--revenue-estimates-m-68-one-time-tax-extreme-wealth--estimation-recettes-mesures-prevues-dans-motion-m-68-impot-unique-richesse-extreme. However, now that Forbes rich lists are being used, the rich list adjustment process has been modified. The 2019 list is first replaced with the 2021 Forbes Billionaires List, and then adjustments are made to ensure that our results still aggregate to NBSA totals.

6. These entries have values of 999999999.

7. The top one percent share we obtain from the SFS PUMF from 1999 is 13.03% compared to 13.23% in Brzozowski, Gervais, Klein, and Suzuki (2010). Thus, dropping the observations with "not applicable" entries of debt may slightly bias downwards estimates of wealth owned at the top of the distribution.

8. For 1999 and 2012, Forbes World's Billionaires list is used. For 2016 and 2019, the November 1st Forbes Real-Time World's Billionaires list is referenced.