INTERGENERATIONAL TRANSMISSION OF SAVING PROPENSITY: NEW INSIGHTS FROM CANADIAN DATA

Technical Report

Philippe d'Astous
Pierre-Carl Michaud
Jean Mary Samuel
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Abstract

In this report, we investigate the intergenerational transmission of saving behaviour using Canadian administrative tax records data. We investigate whether parental participation in large-scale tax-preferred retirement savings accounts affects children's decision to participate in the same programs in their working life. We find evidence that higher parental participation and contribution amounts can fuel children's participation and contributed amount as well. We find modest evidence that parental mistakes in withdrawal decision could transmit intergenerationally to their children.

***Keywords*:** Intergenerational mobility, Registered retirement saving plan, Marginal Effective Tax Rates, Withdrawals

Philippe d'Astous, HEC Montréal, philippe.dastous@hec.ca
Pierre-Carl Michaud, HEC Montréal, pierre-carl.michaud@hec.ca
Jean Mary Samuel, HEC Montréal, jean-mary.samuel@hec.ca
Gaëlle Simard-Duplain, Carleton University, gaelle.simardduplain@carleton.ca

1. Introduction

Governments around the world are facing the pressures of an aging population. Individuals are asked to save more for retirement. However, the literature currently offers limited evidence on the potential for policy to improve saving outcomes by intervening on parents. Our study asks whether there is transmission of saving behaviour from parents to children in the Canadian Registered Retirement Savings Plan program (RRSP). We leverage the Intergenerational Income Database (IID), an administrative dataset which links the personal income tax records of tax filers to their parents' tax records.

RRSPs were originally introduced in 1957 as a way to incentivize retirement savings by allowing savers to deduct contributions from taxable income. These tax-deferred retirement accounts are similar to 401(k) and Individual Retirement Accounts (IRAs) in the United States. Over the years, the program was substantially expanded, among other things, by increasing the ceiling on contributions (indexed to earned income) and by extending and finally abolishing the time limit for making contributions. In 2020, over 6.2 million Canadians contributed to an RRSP, or approximately one third of employed individuals (Statistics Canada, 2020).[2] Originally, eligible contributions not made in a given year were lost. Later on, tax filers were allowed to delay contributions for the first time, for up to seven years. If an eligible contribution was not made in a given year, the ceiling faced by a tax filer in the following year included the current and the previous years' allowed contributions, and so on. The seven-year limit was finally completely abolished and more minor adjustments were made to the contribution ceiling.

The objective of this project is to document the relationship between parents' and children's saving behaviour in RRSPs. We investigate this relationship across three dimensions of the saving behaviour. First, we investigate the determinants of participation and the amount contributed to the program. We start with an empirical investigation of the extent to which parents' contributions affect their children's participation in RRSP when they are themselves in the work force. We measure participation and the amount contributed. Second, we then investigate withdrawals from the program in the lens of optimality decision rules based on marginal tax rates. Put simply, because withdrawals are taxed, withdrawals should be less desirable in years where the Marginal Effective Tax Rates (METRs) are higher. We find support for such predictions. Finally, we then investigate whether erratic participation patterns from parents, which could be sub-optimal, transmit intergenerationally to their children. To this end, we measure how often parents and children withdraw from RRSPs in years where their METRs are relatively high. We then investigate the intergenerational transmission of the propensity of parental mistakes to that of the children. We therefore address the extent to which the relationship between parents' and children's financial decision making contribute to the intergeneration transmission of economic (dis)advantage.

We find that parental saving behaviour, in terms of their RRSP, are correlated with their children's own behaviour. In cohort regressions of the effect of parental participation on children participation, we find evidence of intergenerational transmission of participation and the average amount contributed in the program. Having a parent who contributed to their own RRSP is associated with a 14.75% higher probability of contributing for children. The association is present both at the intensive and at the extensive margin. We find that having a parent who

[2] https://www150.statcan.gc.ca/n1/daily-quotidien/220401/dq220401a-eng.htm

contributed to their own RRSP is associated with a 300$ higher amount in yearly contributions on average. In term of withdrawal behaviour, we find that children tend to withdraw in years in which their marginal tax rate is lower, as predicted by METR rules. The negative correlation between the marginal tax rate and withdrawal from RRSP is statistically significant. Having documented this association, we then investigate the intergenerational transmission of sub-optimal withdrawals in the program. In this domain, we also find that the sub-optimal participation is transmitted across generations: children are more likely to have erratic withdrawal behaviour when their parents also exhibit the same patterns.

Existing work has studied a broad range of specific behaviours and outcomes through which intergenerational correlation in wealth is expressed, including the propensity to save (Cronqvist and Siegel, 2015) or to default (Ghent and Kudlyak, 2015; Kreiner et al., 2017), home ownership (Cronqvist and Siegel, 2014), portfolio choice (Cesarini et al., 2010; Knüpfer et al., 2019), stock market participation (Fagereng et al., 2018), credit scores and credit constraints (Ghent and Kudlyak, 2015), and returns to financial wealth (Knüpfer et al., 2019). The literature has also found a strong role for genetics in the transmission of these behaviours and outcomes (Cronqvist and Siegel, 2014, 2015), and demonstrated that primitive parameters such as risk preferences and trust are transmitted across generations (Alan et al., 2017; Dohmen et al., 2011).

The literature has documented a strong relationship between the financial decision making of parents and children, not only in the United States (Charles and Hurst, 2003) and the United Kingdom (Clark and Cummins, 2014), but also in Denmark (Boserup et al., 2014) and Sweden (Adermon et al., 2018).[3] On the one hand, this suggests that children born in poorer environments may be more limited in their potential to accumulate assets and ensure their financial well-being. Cronqvist and Siegel (2015) estimated that 33% of variation in saving propensity among individuals was explained by genetic differences. Importantly, they found that the expression of genetic traits pertaining to saving behaviour could be altered by family environment, highlighting the role that policy may play with respect to the intergenerational transmission of wealth. This points to the important role that policy can play in improving financial well-being and intergenerational mobility, by impacting the saving behaviour of parents, and through them, of their children. It also offers policy makers a great opportunity to leverage transmission mechanisms to improve the economic mobility of future generations.

We contribute to research on intergenerational wealth dynamics by focusing on assets that are key to the financial well-being of a large number of families. Unlike equity and non-residential real estate, the decision to save for retirement and for the next generation's education is one faced by a great number of people. As such, our results can further academic understanding of the (im)mobility of individuals who are further down the income and wealth distributions. Our work also contributes to the growing research demonstrating that heterogeneity in financial decision-making and well-being cannot be fully understood without considering people's family background. This points to the importance of re-thinking government programs and business practices that account for the complex interaction between family and saving.

The results from our research also have implications for businesses that design and sell investment products. They can inform financial institutions on the similarity of saving behaviour across parents and children. This allows businesses to determine whether and how to use information about parents' investments to target their children

[3] As is the case for intergenerational correlations in income or consumption, policy makers and researchers alike have expressed concern that this may reflect inequalities in the opportunities available to children born to differing circumstances (eg. Chetty et al., 2014). Parallel to that, failing to account for the role of family misses out on an important aspect of underlying heterogeneity in financial decision-making (Curcuru et al., 2009; Guiso et al., 2002).

when proposing saving products. Even more so, it will make it possible for businesses to rely on parents' financial history to help children define and achieve their financial objectives. When advising them on investment, it may be more effective to ask young adults about their parents' saving habits than to ask them abstract questions about their financial objectives; and simpler than trying to assess their risk and time preferences. This would help target the right products to the right customers and therefore improve the customer experience. Finally, our results will also assist financial institutions in better planning the evolution of the broader population's demand for different products over time.

2. Data and descriptive statistics

We use data from the Intergenerational Income Database (IID), which gathers the personal income tax records of a large proportion of Canadian tax filers born between 1963 and 1985, and of their parents. More specifically, the IID was constructed to include all tax filers who were 16 to 19 years old and lived with a parent in 1982, 1984, or 1986 (Panel A), and in 1991, 1996 or 2001 (Panel B). For every parent-child pair in the sample, the data set provides detailed panel information on various sources of income, as well as on contributions to a number of savings plans. The data set also informs basic demographics, namely age, sex, marital status, and family composition.

Although data availability differs to some extent across variables, the panel extends from 1978 (1981 for Panel B) to 2016, providing as much as 39 years of data. Importantly, most of the retirement income and savings variables are available from 1988 to 2016, for a maximum of 29 years of data for parents and children. The IID can be accessed in local data centres by all researchers associated with a Canadian university and who hold a strict government security clearance.

The longitudinal structure of this database enables us to observe individuals over a period of time. The IID is classified into two modules:

- ***Family File:*** Consists of children and parent information that are not time-varying such as case numbers (identification numbers), date of birth, sex, family case number, cohort year (i.e., the year in which the child is linked with the parent(s)), weights, etc. The observations can be tracked individually using the child's case number as they are uniquely stored. The parents' information will be repeated in cases where they have more than one child included in the IID. Each observation in this file consists of information of the child, mother and/or father.

- ***T1 Individual File:*** Unlike the Family File, the T1 Individual File consists of time-varying information ranging from marital status, province of residence, income variables, RRSP contribution and withdrawal information, etc. for both the children and parents. The observed tax years vary depending on the cohort and variables. The availability of information on variables over different tax years restricts the variables considered for this research.

The unique link between the Family File and T1 Individual File is the child's case number. Each individual's Family and T1 Individual information is linked using the combination of his or her case number along with the tax year.

3.1 Data sample

We establish that Panel B is best suited for our research question, based on the ages at which it would allow us to observe the children and their parents. In particular, we include in our analysis sample children born in 1972-1975, 1977-1980, and 1982-1985, whose parents were between 15 and 45 years old when they were born. The age-at-birth restriction is standard in intergenerational analyses that rely on administrative data (e.g., Chetty et al. 2014). Furthermore, the chosen sample allows us to observe children for a non-negligible number of years at the beginning

of their work life, so that we can reasonably expect to observe them over a period of time during which they are not only earning income but also starting to save for their retirement. Similarly, the age range for which parents are observed allows us to observe them while they are still of working age. We use a different sample selection for contribution and withdrawal analysis, detailed below.

3.1.1 Data sample for RRSP contribution analysis

We separately analyse children from the three subgroups of Panel B, as defined by their birth year (1972-1975, 1977-1980, and 1982-1985). Since the IID covers approximately 70% of all Canadians born in the target birth years, the sample size is considerable and allows for this level of disaggregation. These are the age ranges over which RRSP contribution variables can reliably be constructed for children and parents, since they depend on the children's birth year and the age at which parents had their child. We focus on the saving behaviour of parents between 25 and 59 years old and children between 20 and 44 years old.

3.1.2 Data sample for RRSP descriptive statistics and withdrawal analysis

We take the above dataset and restrict it further down to the children that belong to the 1991 (birth years from 1972 to 1975) and 1996 cohorts (birth years from 1977 to 1980) from Panel B. We do not use Panel A dataset because the observed years mostly capture information on parents much closer to or at their retirement. As for cohort 2001, parents were much younger to the desired age group chosen for this study.

The children are observed during the age of 26-35 years and the parents during the age of 46-55 years. Observations that do not meet the following criteria were excluded from the dataset: (i) Child must be born during the years 1972-1975 and 1977-1980; (ii) Both parents must be between 15 and 45 years old, inclusively, when the child is born; (iii) At least one parent's information must be properly recorded in the Family income file; and (iv) Parents must withdraw at least once from the RRSP. Appendix Table A1 summarizes the data construction for analysing the RRSP withdrawal behaviour.

To ensure that all the parents could be observed when they were 46 to 55 years old, the children's observations were chosen only if their parents were born during 1942 to 1961. The children's data is analysed for the tax years 1998 to 2015 and the parents' data is analysed for the 1988 to 2016. All the variables in Canadian dollars are adjusted for inflation using the Consumer Price Index (CPI) produced by Statistics Canada (2002 base year).

3.2 Construction of key variables

Our first research objective was to determine the nature and strength of the relationship between parents' and children's saving behaviour for retirement. To do so, we constructed two dependent variables that describe children's participation in Canada's large-scale retirement savings program, the Registered Retirement Savings Plan (RRSP); and a set of independent variables that characterize parents' and children's earnings and saving behaviour over their lifetime. Our dependent variables are, either a binary variable equal to one if a child ever contributed to their RRSP at ages between 20 and 44, or the child's mean RRSP contribution at ages between 30 and 44. We include as independent variables the child's mean earnings during the ages of 20 to 44 and an

educational attainment proxy for when they were between 18 to 21 years old.[4] We observe the parents' contribution behaviour during the ages between 25 and 59.

For the second objective, where we study whether the children withdrew from their RRSPs at the optimal time, we use the RRSP withdrawal amount as the dependent variable. Additionally, we create a few categorical variables to observe some of the characteristics of this data set which are shown in Tables 1 and 2 as descriptive statistics. First, we categorize tax payers based on the average value of total income earned. Here, we define a high-income earner as someone who belongs in the top 30th percentile as per the average total income. Individuals that belong to the bottom 70th percentile are termed as low-income earners. Average total income is computed as the sum of total income divided by the number of observations of the total income variable where the value is greater than $0. The second category is created by using the RRSP withdrawal mistake indicator variable. As mentioned earlier, this variable is equal to 1 if an individual during a given year has withdrawn from his or her RRSP when the marginal tax rate is higher than his or her average tax rate for the observed years. Using this information, we create a "large RRSP withdrawal mistake" indicator variable, which is equal to 1 if the percentage of RRSP withdrawal mistake is greater than 50% of the observed years of the individual. When the value is 0, it is defined as a "small RRSP withdrawal mistake".

In the last objective, we compute the rate of withdrawal mistakes per individual to analyse the parents and children withdrawal behaviour. This variable is termed as ratio of withdrawal mistakes. It is equal to the number of times an individual withdraws from the RRSP at the wrong time divided by the total number of times of his or her withdrawal. Table A2 describes how the variables used for this analysis were created.

3.3 Weights

The weights are used to achieve a representation of the Canadian population at the time of gathering the data. Firstly, the IID represents roughly 70% of children aged 16-19 in the linkage years: 1982, 1984, 1986, 1991, 1996 and 2001. This is because if children who belonged to the selection group [i.e., 16-19 years of age during the linked year and lived with parents] did not file their taxes, they were excluded from the database. Secondly, this database underrepresents children who come from low-income families, which are usually harder to target in these types of datasets. Lastly, the parents' tax information had to be available for the family's information to be included in this database. The process used for computing the weights is explained by Cook and Demnati (2000). The variable A1W_T1FF2 (also referred to as Weight 2) is taken for the analysis in this research.

3.4 Marginal Effective Tax Rate

The annual Marginal Effective Tax rate (METR) is estimated for individuals, using the Canadian Tax and Credit Simulator (CTaCS)[5]. CTaCS is an open-source software package that contains various tax parameters as per the

[4] Note that the IID does not provide a direct measure of educational attainment. To circumvent this limitation, we applied a methodology developed by Finnie and Pavlic (2013), who build a post-secondary education (PSE) proxy based on tax filers' reporting of educational expenditures that qualify for deductions. Their approach is most reliable for educational expenditures made in 1999 or later, due to fiscal changes that took place in 1997. For our purposes, this implies that the PSE proxy is more appropriate for cohort of children born in 1982-1985. Nevertheless, we include it in our analysis of the older cohorts and obtain comparable results.

[5] Refer CTaCS user guide (2019) by Kevin Milligan through the link: https://sites.google.com/view/kevin-milligan/home/ctacs.

Canadian Income Tax Act for the years 1962 to 2016. The parameters include information varying from federal, provincial, and territorial tax rates for each year to the deduction limits for different types of expenses, rules for different pension plans and other factors.

To compute the METR, it is mandatory to have all the following 3 variables for each observation: id, year, and province. Adding further information from the personal income database to these variables enables us to estimate the tax rate more precisely. If the additional information is not available, the CTaCS software assigns a default value prior to estimating the tax rate. Since the program already incorporates the changes in tax policies for each year, no adjustments based on policy changes must be made to the income variables that are taken in the input files. For example, the RRSP contribution amount is restricted as per the contribution limit until 1990, however from 1991 onwards the restriction is removed as the contribution limits can be carried forward.

3.5 Descriptive statistics

3.5.1 At a glance – the research sample

Table 1 presents the summary statistics of the 3 groups – children, mothers, and fathers from the research sample data. In this sample, each individual is selected within a group based on whether he or she has withdrawn from the RRSP during at least one of the observed years. Therefore, the number of parents does not represent the actual data, but instead is based on the selection criteria for the sample creation. An important information to note about the data is that the children are observed at the much younger age compared to that of their parents. Therefore, the withdrawal behaviour can be different between the children and their parents due to the different points in their life cycle at which we analyse them. The percentage of parents by sex is taken based on the number of children. A small percentage (less than 5%) of mothers and fathers includes individuals other than female and male respectively.

We see that the children earn more on average than their mothers, but less than their fathers, when we look at the total income. This seems to be mainly driven by employment and self-employment income. However, when we observe the capital and investment income, mothers earn more than their children on an average. The fathers earn more than the mothers and children in all the income category variables. This echoes the findings on gender earnings gap that men typically earn more than women (Goldin et al., 2017; Blau and Kahn, 2017). The gender earnings gap increases further between individuals who are married, have children and are older. This is also present at an international level using data from eight developed countries (Blau and Kahn, 1992).

RRSP contributions and withdrawals are highest for the fathers, followed by the mothers and finally by the children. On average, the amount of RRSP contributed by the children is 73.68% and 43.75% that of mothers and fathers respectively. For RRSP withdrawal, the average amount of RRSP withdrawn by children is 37.33% and 31.11% that of the mothers and fathers respectively. One explanation for this finding is that children are observed at a younger age and therefore at an early phase of wealth accumulation. Both the children and the mothers are very similar in terms of the average number of times funds are withdrawn from RRSPs at the wrong time, which is approximately 52%. One limitation of these data is that we do not observe liquid assets and debts, or understand the reason for the individual withdrawing from the RRSP. Therefore, there could be other factors that influence individuals' propensity to withdraw without this being a mistake. On average fathers are more prone to time incorrectly their withdrawals. We investigate further the determinants of this in the Results section (Table 2). The

percentage of individuals who are high income earners and make large RRSP withdrawal mistakes is the highest for fathers, followed by the children and lastly, the mothers.

The average percentage of METR for each sub-sample aligns with the average total income calculated. The children paid an average tax rate of 28.55% which lies between the average tax rate of 25.09% paid by the mothers and 33.76% paid by the fathers.

3.5.2 RRSP withdrawal and Income

Using the RRSP withdrawal data, we observe the behaviour of the children and their parents using three sub-groups discussed in the previous sub-section: high versus low-income earners, large versus small RRSP withdrawal mistakes and finally, income quartiles. Part A of Table 2 displays the descriptive statistics of the research sample where the observations for all the years of individuals who make at least one RRSP withdrawal is taken. Part B further restricts the same sample to only observations where the withdrawals are made from RRSPs, thereby excluding any observations with missing value or zero withdrawals.

We find that high-income earners across children and parents withdraw more heavily from RRSPs on average compared to low-income earners. Similarly, we find that the average RRSP withdrawal amount increases across income groups. There is a positive relationship between the income earned and RRSP withdrawal amount.[6] The percentage change of average amount withdrawn between each quartile is much higher for the parents than the children. A reason that explains this relationship would be that richer people can contribute more to their RRSP account due to their higher income. Additionally, their expenses will be more compared to a person who earned less than them. Therefore, the amount withdrawn would increase as the earnings increase.

As seen in Table 1, the children, on average, earn higher than the mother but lower than the fathers. This pattern is consistent within each income quartile category that we see in Table 2. Part B represents 29.49%, 25.05% and 23.76% of the research sample for children, mothers, and fathers respectively.

[6] Bateman et. al. (2022) uses data on retirement savings in Australia and finds that higher income participants are more likely to withdraw the maximum amount in their retirement savings account. They suggest that this behaviour could be due to the participants' belief in easily replacing the amount withdrawn using their future discretionary savings. This can be one of the reasons contributing to the positive relationship between income and RRSP withdrawal amount.

3. Methodology

We consider three aspects of saving behaviour: extensive and intensive margin participation in RRSPs, and the prevalence of erratic participation in this program.

4.1 Relationship between parental and children RRSP contribution

Our hypothesis is that increased savings among parents lead to increased savings among children, through two channels: first, wealthier parents are more likely to be able to assist children financially, and second, parents who save more are likely to pass on higher savings expectations and financial literacy skills to their children. In addition, the expectations/literacy channel may further contribute to an increase in savings among children. On the other hand, there is evidence among younger children that receiving financial support from parents is associated with lower savings (e.g. Brown and Taylor, 2016). We estimate regressions of the following form:

$$RC_i = \delta + \alpha * W_i + X'_i * \beta + \varepsilon_i \quad (1)$$

where,

RC_i – the RRSP contribution amount or indicator for individual *i*

W_i – mean of earnings for individual *i*

X_i – set of explanatory variables such as indicator if parent ever contributed, education proxy, etc.

ε_i – residuals

4.2 Relationship between RRSP withdrawals and METR

In this section, we try to identify the average association between METRs and RRSP withdrawals. Because RRSP withdrawals are taxed at the individual's METR, we would expect individuals to time withdrawals from RRSPs in years when their annual $METR_{i,t}$ is lower than their average $METR_i$. Therefore, withdrawal behaviour should be negatively correlated with METR. If the individual withdraws when the tax rate is higher than the average rate, it reduces the net income due to the higher tax amount that is to be paid. To test this relationship, we estimate the regression using the research sample created from the IID. We estimate the following fixed effect linear regression:

$$RW_{i,t} = \delta_i + \alpha * METR_{i,t} + X'_{i,t} * \beta + \varepsilon_{i,t} \quad (2)$$

where,

$RW_{i,t}$ – the RRSP withdrawals for individual *i* during tax year *t*

δ_i – captures the time invariant characteristics for individual *i*

$METR_{i,t}$ – the marginal tax rate for individual *i* during tax year *t*

$X_{i,t}$ – set of explanatory variables that has time-varying information for the individuals

$\varepsilon_{i,t}$ – residuals

We estimate the coefficients for this model on data of the children. The standard errors are clustered at the individual level.

4.3 Relationship between parents' and children's saving behaviour

We then test the intergenerational transmission of erratic behaviour in the program. Because withdrawals are taxed at the individual's METR, we use a simple measure of erratic behaviour – which we refer to as a mistake – as the cases in which individuals withdraw from RRSP when the METR is higher than the average METR. Research has shown that financially literate individuals have a lower propensity to exhibit these patterns of behaviour when contributing to their RRSP (Laurin et al., 2021). One important caveat for the use of this measure is that we cannot observe liquidity shocks to individuals. Our interpretation of this as a mistake relies on the assumption that individuals are not liquidity constrained. An important channel through which this could be violated would be that individuals withdraw from their RRSP following adverse liquidity shocks, which in any case should correlate with lower income, and therefore lower METRs, all else constant. For this reason, we believe that this simple measure can inform us on erratic behaviour in the program.

We seek to determine the relationship between the ratios of withdrawal mistakes by parents and the ratios of withdrawal mistakes by children. We test if the proportion of withdrawal mistakes by children is impacted by the proportion of mothers' and fathers' mistakes separately.

$$KR_i = \delta + \alpha * PR_i + X'_i * \beta + \varepsilon_{i,t} \quad (5)$$

where,

KR_i – the RRSP withdrawal mistake ratio for child *i*

PR_i – the RRSP withdrawal mistake ratio for parent of child *i*

X_i – set of explanatory variables including income

$\varepsilon_{i,t}$ – residuals

Estimating separate regressions for mothers and fathers is standard in the intergenerational literature. Its relevance is grounded in repeated observations that intergenerational transmission mechanisms operate differently based on the sex of the parent considered (e.g., Alan et al. 2017; Chen, Ostrovsky, and Piraino 2017).

We expect to see similar findings to that of Kreiner et al. (2018, 2020) in the context of inherited financial behaviour being a key factor that influences children to make withdrawal mistakes. In other words, children of parents who have made withdrawals from RRSP at the wrong time are theoretically expected to repeat such mistakes more frequently compared to the children of parents who have not made such mistakes.

4. Results

5.1 Intergenerational transmission of saving behaviour

First, we present the results from estimating models where the dependent variable is a binary variable equal to one if a child ever contributed to their RRSP, for the cohort of children born in 1972-1975 and their fathers (Table 3). We highlight relevant similarities and differences for other cohorts and parent-child pairs at the end of this section. As expected, we find that children's propensity to contribute to their RRSP is increasing in earnings over their life-cycle (Column 1). For instance, a $1,000 increase in earnings between ages 20-24 (40-44) is associated with a 0.79% (0.040%) increase in the probability to contribute between ages 20-44. To put these estimates in perspective, the difference in mean earnings at ages 20-24 (40-44) between individuals who only have a high school diploma and individuals with at least a bachelor's degree is approximately $2,000 ($35,000).[7] This implies a 1.58% (1.40%) difference in the probability to contribute over that age range. Between ages 20-44, individuals with only a high school diploma would be roughly 10% less likely to contribute than individuals with at least a bachelor's degree.

In comparison, having a father who contributed to their own RRSP is associated with a 14.75% increase in the probability of the children contributing (Column 2), conditional on mean earnings over the life-cycle. Interestingly, coefficients on mean earnings are essentially unchanged by the inclusion of the parent contributor variable.

The continuous variation captured by mean earnings over the life-cycle may not reflect relevant differences between individuals in terms of their likelihood of saving for retirement through RRSPs. As an alternative specification, we regress the dependent variable on the parent contributor dummy and the post-secondary educational attainment proxy. As anticipated, having attended post-secondary education increases the probability of contributing to an RRSP by 18.98% (Column 3).[8] The estimate on the parent contributor variable is unchanged.

In Columns 4 to 6, we investigate the relevance of the timing of parental contributions. Column 5 reproduces Column 2, including a set of interaction between the main parent contributor dummy and a set of indicator variables equal to one respectively if parents contributed at ages 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, or 55-59. At baseline, having a parent who contributed at any point between 25 and 59 years old is associated with a 6.30% increase in the probability of contributing. Our results show that the probability of contributing is increasing in the age at which parents contributed. For instance, having a father who contributed when they were 35-39 increases the probability of contributing by 0.74%, while having a father who contributed when they were 55-59 increases the probability of contributing by 4.56%. These results are robust to the inclusion of the PSE proxy (Column 6) and to the exclusion of the child's earnings variables (Column 4).[9]

[7] Statistics Canada. Table 37-10-0152-01 Average earnings or employment income, by age group and highest certificate, diploma or degree (x 1,000).

[8] The difference between the estimated coefficient on the PSE proxy and our back-of-the-envelope calculations for the difference between high school and university graduates stems in part from the fact that the PSE proxy captures participation in any post-secondary program, including apprenticeship and trade programs that are typically well compensated on the labour market.

[9] As illustrated in Table 2, parents of children born in 1972-1975 who had their child at 30 years old are observed at ages 39-74 in our data (1981-2016). As such, parents with non-missing mean contributions at the earlier age ranges are necessarily parents who had their children relatively early in their lifetime. For the results presented here, we set contributions to zero when they were not observed. While this has implications for the interpretation of the coefficient, our findings are generally robust to alternative treatments of missing values. In our causal analysis, missing data will be treated to account for selection based on parent age at birth.

Finally, in Columns 7 to 9, we investigate the relevance not only of the timing of parental contributions, but also of the mean value of these contributions. Column 8 reproduces Column 2, including a set of interactions between the parent contributor dummy and a set of variables equal to mean parental contributions at ages 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, or 55-59. Results are qualitatively similar to what we observe in Column 7: the probability to contribute is increasing in the age at which parental contributions were made: a $1,000 increase in parental contributions at ages 35-39 (55-59) increases the likelihood of contributing by 0.06% (0.21%). Results are generally robust to the inclusion of the PSE proxy (Column 9) and to the exclusion of the children's mean earnings variables (Column 7).

Our findings are qualitatively very similar when we use children's mean contribution over their lifetime as the dependent variable (Table 4): mean contributions are higher among children of parent contributors (by $306.47, Column 2); and the impact is increasing in the age at which parents contribute and in the value of parental contributions at each age. Again, these effects are generally robust to the inclusion of the PSE proxy and to the exclusion of the child's mean earnings variables.

In short, there is a positive association between parents' and children's retirement savings behaviour, which is robust to the inclusion of controls for children's earnings over their life cycle and children's post-secondary educational attainment. The effect is economically and statistically significant and increasing in parental age at the time of contributions.

Comparison to results with alternative samples

Notably, the estimates discussed for the sample of children born in 1972-1975 and their fathers differ very little when younger birth cohorts are considered. The impact of having a parent contributor, conditional on children's mean earnings over their life cycle, ranges from 14.75% among those born in 1972-1975 to 16.31% among those born in 1982-1985. As for the older cohort, the impact of parental contributions is increasing in the age of parents at the time of said contributions: for instance, having a parent who contributed at ages 35-39 increases the likelihood of contributing by 0.74%, 1.54%, and 2.17%, respectively for the three cohorts; and having a parent that contributed at ages 50-54 increases the likelihood of contributing by 3.54%, 4.07% and 7.54%. Generally, we find that the impact of parental saving behaviour is higher for the younger cohort. Individuals in that cohort are at most 34 years old in 2016. As a result, we observe relatively little of their career earnings, which is likely to explain the greater importance of parental outcomes as determinants of their saving behaviour. In line with this interpretation, including the PSE proxy has a bigger impact on the size of the estimated coefficients on the parental contribution variables for this cohort.

As mentioned previously, we treat the relationship between parents' and children's saving behaviour separately based on parent sex (results for mother-child pairs are not shown here). In the older cohort, we find that having a mother who contributed to her own RRSP is associated with an increase in the probability of contributing of 11.92%, nearly three percentage points below the effect of a father contributor (14.75%). This gap decreases as we move on to younger cohorts: among children born in 1982-1985, the effect of a mother contributor is 14.11%, compared to 16.31% for a father contributor. This result is in line with the growth in women's participation to the labour force, and therefore with the incentives to save for their retirement through RRSPs.

Interestingly, the growth in the impact of having a parent contributor with the parent's age is similar whether we consider fathers or mothers. In other words, conditional on having a mother contributor, the impact of these

contributions having taken place at different ages is very similar to the patterns we see for fathers. This will be of interest when we start thinking about the mechanisms that underlie the observed correlations.

5.2 Withdrawal behaviour of children

In Table 5, we measure the effect of METRs on withdrawals from RRSPs, for the sample of children. We note that, as one would expect, the marginal effect of the tax rate on the amount of RRSP withdrawal is significant and is negatively correlated. From the results, we can see that a one percentage point change in METR can reduce the RRSP withdrawal amount by $22.90. In other words, given the METR standard deviation of 15.72, one standard deviation change in the METR will reduce the amount withdrawn by approximately $360. A one percentage point change in the METR leads to a 1/28.55 percent change in the METR or 3.5%. That same percentage point change leads to a 22.90$ change in RRSP withdrawals. Since the average withdrawal is 560$, this represents a change of 4.1%. Hence, the METR elasticity of withdrawals is 4.1/3.5 = 1.17. Of course, this interpretation as an elasticity assumes the association we uncover is causal.

We also see that the total income variable is positively correlated with the RRSP withdrawal. As already stated in one of the earlier sections, this can be because children who earn more also spend more and therefore withdraw higher amounts from their RRSPs to meet their needs.

5.3 Intergenerational transmission of withdrawal mistake behaviour

Lastly, we estimate the impact of the rate of withdrawal mistakes made by the parents on the children, The results of this analysis are presented in Table 6. Here, the regression results for children are categorized based on the mothers and fathers. We see that the mothers' mistake frequency is positively related with the children's mistake frequency. Also, the coefficients are statistically significant at 1 percent levels. When the mothers make mistakes in terms of withdrawal decision, this influences the children's tendency to make withdrawal at the wrong time by approximately one percentage point. From the coefficient of the intercept, we find that children make mistakes roughly half of the time. So, on a baseline of 0.507, the mother's wrong decision leads to a 1.76 percent increase in the child making such mistake.

Interestingly, the same does not hold true for the fathers. The coefficients of their mistake ratio variable are insignificant. Therefore, it is only the mother's mistake that influences the children's withdrawal behaviour. We need to investigate this more to understand what forces are at play that result in this finding, which will be done later.

5. Conclusion

The results of our research have implications for our understanding of intergenerational wealth inequality by analysing an important domain of saving that concerns most families: retirement. They can inform policy makers and industry partners to keep in mind how the choices parents make when investing in their family's future may impact the financial decisions of their children later.

It is well known that wealth is substantially more concentrated than income (eg. Black et al., 2019). Most of the literature has focused on the transmission of financial wealth (Knüpfer et al., 2019), or on the transmission of a very broad measure of wealth, such as net worth (Cronqvist and Siegel, 2015). However, the incomes of children born to the bottom and to the top of the parental income distribution are much more strongly correlated with those of their parents. This is true in countries like the United States, but also to some extent in higher-mobility places like Canada or Scandinavia (Björklund et al. 2012; Corak and Heisz, 1999; Landersø and Heckman, 2017).

Governments worldwide are under pressure to find ways to stimulate saving for retirement. In this context, it is particularly important for effective policy design to understand the repercussions of parents' saving behaviour on their children's financial decisions. In the presence of aging populations, there is growing concern for both the intergenerational equity and the sustainability of public and private pension systems. Because the young bear the cost of policy changes that affect pensioners, there are important issues of fairness with contributions to the pension system across generations.

There are a number of limitations worth mentioning. First, the sample design does not allow us to observe children age into the same age range as their parents. Hence, we have to rely on the comparison at different points in the life-cycle. Second, our estimates suggest interesting associations but we cannot detect causation from these estimates. We have explored a number of ways of generating exogeneous variation in RRSP savings behaviour of parents to estimate a causal effect on children. For example, we have spent a considerable amount of time exploring changes in the contribution limits in the 1990s. Although we found a relatively strong first stage for these regressions, results were not robust to a number of assumptions. We have therefore decided to focus on documenting these new associations in the data. We could not identify if parents underwent any liquidity shocks, which could have played a key role in influencing them to withdraw from RRSPs. However, financial institutions could record the liquidity shocks at the parental level and use this information to predict the saving behaviour of their children.

We think that a promising research agenda is to look more closely at these intergenerational links and potentially uncover intergenerational transmission mechanisms of saving behaviour. It would be interesting to understand the reasons behind the asymmetric effect of the mothers and fathers on the withdrawal decision mistakes by children during future research. Additionally, a systemic assessment of within-between family behavioural patterns of saving behaviour across generation must be conducted to identify the factors that have probably changed across generations, that are not due to familial relationships.

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7. Tables

Table 1: Descriptive statistics of IID research sample

	CHILDREN			MOTHERS			FATHERS		
	Mean	**SD**	**Count**	**Mean**	**SD**	**Count**	**Mean**	**SD**	**Count**
Demographics									
Birth year	1976	2.69	264,790	1951	4.10	176,280	1949	4.09	165,370
Age in year 2002	26	2.69	264,790	51	4.10	176,280	53	4.09	165,370
Parent age at childbirth	-	-	-	25	3.84	176,280	27	3.90	165,370
Female (%)	46.95	-	124,330	100.00*	-	176,280	-	-	-
Male (%)	53.05	-	140,460	-	-	-	100.00*	-	165,370
Time-variant									
Marital status									
Married (%)	42.66	-	1,049,750	72.97	-	1,217,370	85.57	-	1,361,720
Common law (%)	15.35	-	377,640	3.27	-	54,470	2.87	-	45,740
Single (%)	36.57	-	899,970	3.39	-	56,530	1.78	-	28,380
Widow (%)	0.10	-	2,350	4.76	-	79,370	1.25	-	19,930
Divorced (%)	1.33	-	32,810	9.43	-	157,390	3.94	-	62680
Separated (%)	3.76	-	92,610	5.55	-	92,650	3.78	-	60,150
Unstated (%)	0.23	-	5,560	0.63	-	10,460	0.81	-	12,830
Income									
Total income	40,700.00	31,771.26	2,460,690	31,900.00	36,677.92	1,668,240	55,300.00	71,035.70	1,591,440
T4 Earning	36,000.00	29,797.69	2,460,690	24,500.00	26,428.10	1,668,240	42,500.00	56,497.40	1,591,440
Self-employment	1,100.00	8,803.11	2,460,690	1,000.00	9,555.25	1,668,240	3,200.00	21,083.40	1,591,440
Capital gain	140.00	5,726.39	2,460,690	470.00	9,561.38	1,668,240	1,000.00	20,607.75	1,591,440
Dividend	560.00	9,740.27	2,460,690	570.00	17,868.32	1,668,240	1,000.00	15,819.33	1,591,440
Investment	60.00	1,244.16	2,460,690	410.00	2,717.42	1,668,240	390.00	4,238.92	1,591,440
Other	2900.00	6,897.25	2,460,690	4,900.00	13,130.55	1,668,240	7,100.00	24,679.50	1,591,440
Saving Plan									
RRSP contribution	1400.00	3,310.95	2,460,690	1,900.00	7,415.42	1,668,240	3,200.00	7,743.03	1,591,440
RRSP withdrawal	560.00	2,374.24	2,460,690	1,500.00	7,827.23	1,668,240	1,800.00	9,929.78	1,591,440
RPP contribution	670.00	1,426.12	2,460,690	590.00	1,262.26	1,668,240	760.00	2,050.88	1,591,440
Withdrawal at wrong time (%)	51.99	49.96	725,690	51.91	49.96	417,490	55.38	49.71	378,140
Tax rate									
METR	28.55	15.71	2,460,690	25.09	18.08	1,668,240	33.76	16.14	1,591,440
Time invariant									
# of RRSP contributions	4.65	3.23	264,790	4.23	3.50	176,280	5.05	3.35	165,370
# of RRSP withdrawals	2.74	2.23	264,790	2.36	1.91	176,280	2.28	1.82	165,370
High income earner (%)	36.10	-	264,790	33.45	-	176,280	38.02	-	165,370
Big RRSP withdrawal mistake (%)	47.54	-	264,660	46.54	-	176,250	50.52	-	165,350

Note: The mothers and fathers are taken uniquely at the children case number level. Therefore, if the parents have more than 1 child, their case numbers are repeated for the number of their children taken in the research sample. This was done to truly represent the sample at the unique child ID level. The unique number of mothers are 154, 530 and fathers are 144,820. All monetary figures are in nominal dollar values. (*) Less than 5% of mothers are not female and fathers are not male.

Table 2: Descriptive statistics of RRSP withdrawal and income

	CHILDREN			MOTHERS			FATHERS		
	Mean	**SD**	**Count**	**Mean**	**SD**	**Count**	**Mean**	**SD**	**Count**
	Part A: Research Sample – observations with at least 1 withdrawal								
RRSP WITHDRAWAL									
Earning group									
Low	450.00	0.00	1,533,880	1,200.00	0.00	1,073,430	1,500.00	0.00	1,123,820
High	740.00	0.00	926,820	2,200.00	0.00	594,810	2,700.00	0.00	467,630
RRSP withdrawal mistakes									
Small	550.00	0.00	1,285,980	1,500.00	0.00	887,730	1,700.00	0.00	785,990
Big	560.00	0.00	1,174,150	1,600.00	0.00	780,340	1,900.00	0.00	805,310
Income quartiles									
Quartile 1	370.00	0.00	314,820	980.00	0.00	228,800	1,300.00	0.00	286,120
Quartile 2	420.00	0.00	620,650	1,100.00	0.00	426,160	1,500.00	0.00	464,490
Quartile 3	530.00	0.00	752,920	1,400.00	0.00	528,060	1,800.00	0.00	460,040
Quartile 4	780.00	0.00	772,330	2,400.00	0.00	485,230	2,800.00	0.00	380,800
INCOME									
Quartile 1	13,100.00	12,300.00	314,820	6,800.00	6,100.00	228,800	19,300.00	18,700.00	286,120
Quartile 2	26,500.00	26,800.00	620,650	18,100.00	17,800.00	426,160	38,900.00	38,600.00	464,490
Quartile 3	39,600.00	39,500.00	752,920	31,700.00	31,500.00	528,060	58,200.00	57,400.00	460,040
Quartile 4	66,300.00	60,500.00	772,300	58,500.00	51,600.00	485,230	105,900.00	85,500.00	380,800
	Part B: Research sample – observations with only RRSP withdrawals								
RRSP WITHDRAWAL									
Earning group									
Low	1,600.00	610.00	435,270	4,900.00	2,600.00	261,290	6,300.00	3,500.00	269,440
High	2,400.00	730.00	290,420	8,500.00	3,600.00	156,200	11,400.00	5,200.00	108,770
RRSP withdrawal mistakes									
Small	1,800.00	610.00	396,520	6,000.00	2,700.00	227,680	7,100.00	3,700.00	189,530
Big	2,000.00	700.00	329,170	6,400.00	3,200.00	189,820	8,300.00	4,300.00	189,610
Income quartiles									
Quartile 1	1,400.00	530.00	83,500	4,100.00	2,500.00	54,340	5,700.00	3,300.00	64,680
Quartile 2	1,500.00	610.00	172,700	4,900.00	2,600.00	100,340	6,100.00	3,300.00	113,320
Quartile 3	1,700.00	660.00	226,490	5,400.00	2,700.00	135,970	7,300.00	4,100.00	112,410
Quartile 4	2,500.00	740.00	243,010	9,100.00	3,800.00	126,840	12,200.00	5,500.00	87,740
INCOME									
Quartile 1	13,000.00	12,000.00	83,500	8,500.00	7,500.00	54,340	20,400.00	19,600.00	64,680
Quartile 2	27,300.00	27,700.00	172,700	19,700.00	19,100.00	100,340	39,500.00	39,000.00	113,320
Quartile 3	41,200.00	41,100.00	226,490	33,500.00	32,900.00	135,970	58,600.00	57,700.00	112,410
Quartile 4	69,400.00	63,500.00	243,010	60,800.00	53,000.00	126,840	102,200.00	86,400.00	87,740

Note: The high-income group belongs to the top 30th percentile and the low-income group belongs to the bottom 70th percentile within each family member type (child / mother / father). A person is said to make 'Big' RRSP withdrawal mistakes when > 50% of the withdrawals are made when the $METR_{i,t}$ is higher than the average tax rate for the individual, where i represents the individual and t represents the tax year. Otherwise, labelled as 'Small' mistake. Income quartiles are created based on the average total income variable and categorises individuals within a family member type into one of 4 groups ranging from lowest (Quartile 1) to highest (Quartile 4) quartile based their income value. All monetary figures are in nominal dollar values.

Table 3: RRSP contributions and intergenerational earnings

	Dependent variable: Child ever contributes								
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Mean earnings 20-24 (1,000s)	0.0079	0.0074			0.0074	0.0072		0.0074	0.0072
	(12.86)	(12.80)			(12.88)	(13.05)		(12.85)	(13.02)
Mean earnings 25-29 (1,000s)	0.0048	0.0046			0.0045	0.0043		0.0045	0.0043
	(9.48)	(9.46)			(9.44)	(9.36)		(9.45)	(9.38)
Mean earnings 30-34 (1,000s)	0.0007	0.0007			0.0007	0.0006		0.0007	0.0006
	(4.42)	(4.43)			(4.44)	(4.55)		(4.38)	(4.51)
Mean earnings 35-39 (1,000s)	0.0006	0.0006			0.0006	0.0005		0.0006	0.0005
	(4.88)	(4.85)			(4.85)	(4.83)		(4.85)	(4.83)
Mean earnings 40-44 (1,000s)	0.0004	0.0003			0.0003	0.0003		0.0003	0.0003
	(5.09)	(4.97)			(4.91)	(4.70)		(4.93)	(4.72)
Parent ever contributed (PEver)		0.1475	0.1898	0.0852	0.0630	0.0597	0.1791	0.1301	0.1218
		(80.69)	(143.15)	(44.13)	(35.78)	(34.37)	(108.30)	(78.93)	(79.84)
Post-secondary education proxy			0.1549			0.0831			0.0852
			(175.17)			(48.09)			(49.21)
PEver X Contributed at 25-29				-0.0381	-0.0326	-0.0293			
				(-8.08)	(-7.23)	(-6.57)			
PEver X Contributed at 30-34				-0.0043	-0.0100	-0.0098			
				(-2.64)	(-6.50)	(-6.39)			
PEver X Contributed at 35-39				0.0184	0.0074	0.0051			
				(15.89)	(6.85)	(4.79)			
PEver X Contributed at 40-44				0.0247	0.0149	0.0125			
				(21.11)	(13.62)	(11.55)			
PEver X Contributed at 45-49				0.0342	0.0213	0.0188			
				(26.57)	(17.65)	(15.84)			
PEver X Contributed at 50-54				0.0526	0.0354	0.0323			
				(37.71)	(26.85)	(25.00)			
PEver X Contributed at 55-59				0.0664	0.0456	0.0419			
				(53.51)	(36.67)	(34.87)			
PEver X Mean cont. 25-29 (1,000s)							-0.0044	-0.0047	-0.0045
							(-3.43)	(-3.59)	(-3.73)
PEver X Mean cont. 30-34 (1,000s)							-0.0001	-0.0014	-0.0015
							(-0.35)	(-3.94)	(-4.32)
PEver X Mean cont. 35-39 (1,000s)							0.0019	0.0006	0.0002
							(7.97)	(2.67)	(0.79)
PEver X Mean cont. 40-44 (1,000s)							0.0019	0.0007	0.0003
							(7.83)	(4.46)	(2.01)
PEver X Mean cont. 45-49 (1,000s)							0.0036	0.0014	0.0010
							(13.31)	(7.75)	(6.06)
PEver X Mean cont. 50-54 (1,000s)							0.0035	0.0017	0.0014
							(5.94)	(5.26)	(4.84)
PEver X Mean cont. 55-59 (1,000s)							0.0039	0.0021	0.0017
							(23.54)	(16.73)	(15.21)
Constant	0.4845	0.3821	0.5338	0.5776	0.3852	0.3699	0.5776	0.3840	0.3682
	(97.16)	(96.88)	(420.62)	(458.43)	(98.05)	(103.98)	(458.43)	(97.08)	(102.89)
R^2	0.1876	0.2064	0.0731	0.0548	0.2116	0.2200	0.0495	0.2079	0.2167
Number of observations	928290	928290	928290	928290	928290	928290	928290	928290	928290

Note: t statistics in parenthese

Table 4: RRSP amount ($) contributed and intergenerational earnings

	Dependent variable: Mean child contribution								
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**
Mean earnings 20-24 (1,000s)	-7.0509	-8.0131			-8.2928	-9.2644		-8.4037	-9.3294
	(-3.56)	(-4.10)			(-4.31)	(-4.95)		(-4.39)	(-5.01)
Mean earnings 25-29 (1,000s)	16.9251	16.4671			16.0148	15.0094		15.9302	14.9762
	(5.96)	(5.89)			(5.82)	(5.63)		(5.84)	(5.66)
Mean earnings 30-34 (1,000s)	6.2854	6.2178			6.1501	6.0859		5.9692	5.9209
	(3.00)	(2.99)			(2.98)	(2.99)		(2.91)	(2.92)
Mean earnings 35-39 (1,000s)	8.3348	8.2638			8.2021	8.0724		8.1446	8.0247
	(4.28)	(4.27)			(4.26)	(4.24)		(4.25)	(4.23)
Mean earnings 40-44 (1,000s)	21.4549	21.3952			21.3323	21.1950		21.2893	21.1612
	(14.69)	(14.71)			(14.75)	(14.79)		(14.78)	(14.82)
Parent ever contributed (PEver)		306.4653	676.7889	9.9105	-115.4616	-130.2430	414.8545	80.3917	46.1760
		(23.01)	(82.47)	(0.75)	(-9.65)	(-10.98)	(36.54)	(7.26)	(4.50)
Post-secondary education proxy			976.3108			368.4308			350.3894
			(114.09)			(25.45)			(24.59)
PEver X Contributed at 25-29				-335.9873	-207.8074	-193.0894			
				(-8.03)	(-5.21)	(-4.87)			
PEver X Contributed at 30-34				-59.7840	-56.2853	-55.2670			
				(-3.45)	(-3.60)	(-3.54)			
PEver X Contributed at 35-39				171.1821	68.8068	58.5960			
				(14.38)	(6.41)	(5.50)			
PEver X Contributed at 40-44				195.1763	107.5691	96.7033			
				(17.86)	(10.77)	(9.78)			
PEver X Contributed at 45-49				229.6956	119.7385	108.7282			
				(20.65)	(11.90)	(10.91)			
PEver X Contributed at 50-54				268.9894	127.0048	113.1803			
				(23.32)	(12.06)	(10.89)			
PEver X Contributed at 55-59				430.9166	228.6793	212.3160			
				(40.61)	(22.14)	(21.09)			
PEver X Mean cont. 25-29 (1,000s)							-36.9005	-21.8398	-20.8952
							(-1.39)	(-1.07)	(-1.05)
PEver X Mean cont. 30-34 (1,000s)							6.2153	-1.7195	-2.2432
							(1.18)	(-0.36)	(-0.47)
PEver X Mean cont. 35-39 (1,000s)							41.3826	23.0117	21.3392
							(10.26)	(7.56)	(7.15)
PEver X Mean cont. 40-44 (1,000s)							34.1978	22.0000	20.3276
							(8.04)	(7.55)	(7.26)
PEver X Mean cont. 45-49 (1,000s)							37.7239	20.7521	19.1663
							(14.02)	(10.41)	(9.92)
PEver X Mean cont. 50-54 (1,000s)							30.0632	14.1245	12.7410
							(6.47)	(6.01)	(5.83)
PEver X Mean cont. 55-59 (1,000s)							41.8585	21.9760	20.5908
							(25.14)	(17.17)	(16.65)
Constant	-102.7858	-315.5250	633.8006	910.0285	-299.5750	-367.2626	910.0285	-289.9965	-354.8515
	(-3.24)	(-12.99)	(95.01)	(136.11)	(-12.27)	(-16.74)	(136.11)	(-11.88)	(-16.13)
R^2	0.2167	0.2177	0.0228	0.0142	0.2193	0.2213	0.0190	0.2208	0.2227
Number of observations	928290	928290	928290	928290	928290	928290	928290	928290	928290

Note: t statistics in parentheses

Table 5: RRSP Withdrawals amount ($) and METR of children

	(1)
METR	-0.229***
	(0.49)
Income variable	
Total income	256.736***
	(13.12)
Total income ^ 2	-0.650***
	(0.1)
Marital status	
Common law	-4.843
	(23.47)
Widow	4672.508***
	(1343.68)
Divorced	83.414
	(52.86)
Separated	197.389***
	(29.42)
Single	118.055***
	(23.24)
Unstated	358.561***
	(92.78)
Married	-
Intercept	580.625***
	(69.85)
Fixed effects	
Tax year	✓
Age	✓
Gender	✓
R^2	0.022
Number of observations	725,690

Note: Estimated coefficients with fixed effects model using OLS method. The dependent variable is the RRSP amount withdrawn ($) by individuals as per the family member category i.e., child, mother, or father- RWi,t. Clustered standard errors are presented in the parenthesis. The METR variable is expressed in percentage. Income variables are divided by 10,000. Investment and dividend income variable includes the interest income. Individual and year fixed effects are applied. ***, ** and * represents statistical significance at 1, 5, and 10 percent levels respectively.

Table 6: Effect of Parental RRSP withdrawal mistake frequency on Children

(•) Children's data categorized based on parent type – mother versus father

	MOTHERS			FATHERS		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Parent's Mistake ratio (MR)	0.00894***	0.00884***	0.00882***	0.00194	0.00177	0.00175
	(0.00236)	(0.00236)	(0.00236)	(0.00245)	(0.00244)	(0.00244)
RRSP withdrawal		0.0538***	0.0536***		0.0614***	0.0601***
		(0.00288)	(0.00292)		(0.00296)	(0.003)
RRSP withdrawal ^ 2		-0.000873***	-0.000870***		-0.000841***	-0.000827***
		(0.000115)	(0.000115)		(0.0000521)	(0.0000521)
Average total income			0.000408			0.00195***
			(0.000481)			(0.000484)
Average total income ^ 2			-0.0000103***			-0.0000193***
			(0.00000293)			(0.00000349)
Intercept	0.507***	0.495***	0.494***	0.507***	0.493***	0.488***
	(0.00362)	(0.00366)	(0.00392)	(0.00381)	(0.00384)	(0.00409)
Fixed effects:						
Age	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
R^2	0.001	0.003	0.003	0.001	0.004	0.004
Number of observations	176,170	176,170	176,170	165,270	165,270	165,270

Note: Coefficients are estimated using OLS method. Clustered standard errors are presented in the parenthesis. The dependent variable is the ratio of withdrawal mistakes at child level- KRi. The main independent variable is the ratio of withdrawal mistakes at parental level- PRi. The RRSP withdrawal and income variable is divided by 10,000. The average total income variable is the average amount of total income for each child i. ***, ** and * represents statistical significance at 1, 5, and 10 percent levels respectively.

8. Appendices

Table A1: How the research sample was built from IID - Panel B

	Dataset created		Exclusions
1	Family file 1991 and 1996 cohort - merged		
		(-)	Parents aged less than 15 years or more than 45 years during childbirth
		(-)	Both parents' information is not available
		(-)	Child is not born during 1972-1975 or 1977-1980
2	Population dataset		
		(-)	Parents born before 1942 or after 1961
3	Population subset		
		(-)	Child did not make even 1 RRSP withdrawal in observed period
		(-)	Both parents do not make even 1 RRSP withdrawal in observed period
		(-)	Child does not have T1 Individual data
		(-)	Both parents do not have T1 Individual data
		(-)	Child lived in province not considered by CTaCS for estimating METR
		(-)	Both parents lived in province not considered by CTaCS for estimating METR
4	Research sample		

Note: Data Source: Canada Revenue Agency – Intergenerational Income Database
CTaCS – Canadian Tax and Credit Simulator; METR – Marginal Effective Tax Rate
CTaCS drops observations that are located in any of the 4 provincial codes which represented the following cases: (1) Non-resident (2) CIDA [Canadian International Development Agency] (3) Other [multiple jurisdictions or external aid] (4) No input

Table A2: Variable Construction

Variable Name	Variable ID	Definition	Method / Formula
		DEMOGRAPHICS	
Birth year	*yob	The year in which the individual is born	Build from the longitudinal date of birth variable (ldob) in the Family File
Age	*age	Age of the individual during the observed tax year	Age is assigned for each individual [26-35 for children ; 45-55 for parents]
Tax year	*year	Tax year observed	Birth year + Age
Age in 2002	*age_FY2002	Age of individuals in the tax year 2002	31/12/2002 – Date of birth
Parent's age at childbirth	*age_kbirth	Age of the mother or father when the child was born	Date of birth of the child – Date of birth of the parent
Female (d)	*_female	Gender as per Family File	if lsex = = 2
Male (d)	*_male	Gender as per Family File	if lsex = = 1
Married (d)	*_ms_married	Marital status as of the observed tax year	if marital_status_cd = = 1
Common law (d)	*_ms_common_law	Marital status as of the observed tax year	if marital_status_cd = = 2
Single (d)	*_ms_single	Marital status as of the observed tax year	if marital_status_cd = = 6
Widower (d)	*_ms_widower	Marital status as of the observed tax year	if marital_status_cd = = 3
Divorced (d)	*_ms_divorced	Marital status as of the observed tax year	if marital_status_cd = = 4
Separated (d)	*_ms_separated	Marital status as of the observed tax year	if marital_status_cd = = 5
Unstated (d)	*_ms_unstated	Marital status as of the observed tax year	if marital_status_cd = = 0
		TAX RATE	
Marginal Effective Tax Rate (METR)	*mtr	Rate of tax payable on the individual's income for the year	Computed using CTaCS
Average METR	*mtr_avg	Average rate of estimated tax rate paid by an individual over the observed period.	Mean of METR for the observed years per individual
METR percentage	*mtr_percent	METR as percentage	*mtr × 100
Average METR percentage	*mtr_avg_percent	Average METR as percentage	*mtr_avg × 100
		INCOME VARIABLES	
Self-employment income	*_self_emp_inc	Income from personal business or activity that generates profit	Business income + Commission income + Farming income + Fishing income + Professional income
Other income	*other_inc	Income remaining from the total income after excluding T4 earnings, self employment income, capital gain, dividend, and investment income	Total income – T4 Earnings – Self employment income – Capital gain – Dividend – Investment and Interest income
Average Total Income	*_total_inc_avg	Average amount of total income earned per individual	Sum of total income per individual ÷ Count of total income observations for the individual
Income percentile (c)	*_income_percentile	Categorizes individuals from child, mother, and father category into 100 groups from lowest (1) – highest (100) score based on average total income	Computed into 100 equal groups based on total average income distribution
Income quartile (c)	*_income_quartiles	Categorizes individuals from child, mother, and father category into 4 groups from lowest (1) – highest (4) score based on average total income	Computed into 4 equal groups based on total average income distribution
High income indicator (d)	*_high_inc_id	A person is considered as an high income earner if they belong to the top 30th percentile	= = 1 if *_income_percentile > 70 = = 0 otherwise
Total income in 10000s	*_total_inc_tt	Total income in 10,000s	Total income ÷ 10000
Total income squared in 10000s	*_total_inc_tt_sq	Square of total income in 10,000s	(Total income ÷ 10000) ^ 2
T4 Earnings in 10000s	*_earning_tt	T4 Earnings in 10,000s	T4 Earnings ÷ 10000
T4 Earnings squared in 10000s	*_earning_tt_sq	Square of T4 Earnings in 10,000s	(T4 Earnings ÷ 10000) ^ 2
Self-employment income in 10000s	*_self_emp_inc_tt	Self-employment income in 10,000s	Self-employment income ÷ 10000
Self-employment income squared in 10000s	*_self_emp_inc_tt_sq	Square of self-employment income in 10,000s	(Self-employment income ÷ 10000) ^ 2

Investment and interest income in 10000s	*_invest_inc_tt	Investment and interest income in 10,000s	Investment and interest income ÷ 10000
Investment and interest income squared in 10000s	*_invest_inc_tt_sq	Square of investment and interest income in 10,000s	(Investment and interest income ÷ 10000) ^ 2
REGISTERED RETIREMENT SAVINGS PLAN (RRSP)			
RRSP contribution in any 1 year (d)	*_if_rrsp_contrib	Indicator if RRSP is contributed in at least one of the observed years by the individual	=1 if the sum of RRSP contributed per case number is greater than $0. =0 if the sum RRSP contributed per case number is equal to $0. =. if data is not available for all years
RRSP contribution per year (d)	*_if_rrsp_contrib_per_year	Indicator if RRSP is contributed during the observed year by the individual	=1 if the amount of RRSP contributed per year-case number combination is greater than $0. =0 if the amount of RRSP contributed per year-case number is equal to $0. =. if data is not available each year
RRSP contribution count	*_rrsp_con_count	Number of times the individual contributed towards RRSP	sum (*_if_rrsp_contrib_per_year), for each case number
RRSP withdrawal in any 1 year (d)	*_if_rrsp_withdrawn	Indicator if RRSP is withdrawn in at least one of the observed years by the individual	=1 if the sum of RRSP withdrawal per case number is greater than $0. =0 if the sum RRSP withdrawal per case number is equal to $0. =. if data is not available for all years
RRSP withdrawal per year (d)	*_if_rrsp_withdrawn_per_year	Indicator if RRSP is withdrawn in the observed year by the individual	=1 if the amount of RRSP withdrawal per year-case number combination is greater than $0. =0 if the amount of RRSP withdrawal per year-case number is equal to $0. =. if data is not available each year
RRSP withdrawal count	*_rrsp_wd_count	Number of times the individual withdrew from RRSP	sum(*_if_rrsp_withdrawn_per_year), for each case number
RRSP withdrawal at wrong time (d)	*_wrong_rrsp_wd	Indicator if RRSP is withdrawn in the observed year by the individual when the year's METR is greater than the average METR of the individual	=1 if RRSP is withdrawn when METR > average METR per year-case number combination =0 if RRSP is withdrawn when METR < / = average METR per year-case number combination =. if otherwise
Ratio of RRSP withdrawal mistakes	*_ratio_wrong_rrsp_withdraw	Ratio of the number of times the individual withdrew from RRSP when the year's METR is greater than the average METR of the individual	Mean (*_wrong_rrsp_wd), by individual
Big withdrawal mistake (d)	*_big_rrsp_mistake	Indicates if RRSP is withdrawn at the wrong time more than 50% of the time	= = 1 if (*_ratio_wrong_rrsp_withdraw) > 0.5 = = 0 if otherwise
OTHER VARIABLES			
Reason for dropping observations (c)	*_drop_per_year	Different reasons for which observations are dropped to create the research sample	= = 1 if the province is not accepted by CTaCS for calculating METR = = 2 if T1 Individual data is not available for observed years = = 3 if METR is not calculated and is not in group 1 or 2 above = = 4 if RRSP is not withdrawn or withdrawal information is missing for all observed years for the individual = = 0 if observations are to be kept for research sample
Indicator for sample selection	thesis_split_id	Categorizes the population data into 4 groups based on selection criteria listed in Table A1.	= = 0 if child and both parents' data are dropped = = 1 if child and both parents' data are taken in the sample = = 2 if child and only mother's data is taken in the sample = = 3 if child and only father's data is taken in the sample

The authors

Philippe d'Astous
Associate Professor of Finance
HEC Montréal
E-mail: philippe.dastous@hec.ca

Pierre-Carl Michaud
Professor of Economics
HEC Montréal
E-mail: including hyperlink

Jean Mary Samuel
Research Associate
HEC Montréal
E-mail: jean.samuel@hec.ca

Gaëlle Simard-Duplain
Assistant Professor of Economics
Carleton University
gaelle.simardduplain@carleton.ca