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Do you save like your parents? Intergenerational effects of RRSP withdrawal timing

par

Jean Mary Samuel

Philippe d'Astous
HEC Montréal
Directeur de recherche

Sciences de la gestion
(Spécialisation Finance)

Mémoire présenté en vue de l'obtention
Du grade de maîtrise ès sciences en gestion
(M.Sc.)

Septembre 2022

Résumé

Le régime enregistré d'épargne-retraite (REER) a été créé par le gouvernement fédéral pour inciter les Canadiens à épargner en vue de leur retraite. Cet outil de report d'impôt est l'un des moyens les plus populaires pour épargner pour la retraite. Il n'y a pas de restriction sur la période d'immobilisation ou le montant du retrait et les sommes investies fructifient à l'abri de l'impôt. Dans ce mémoire, nous utilisons des informations anonymisées sur les REER d'individus provenant des données fiscales administratives, dans une structure longitudinale intergénérationnelle. Cela nous permet d'analyser la transmission intergénérationnelle du comportement d'épargne et d'évaluer la similitude entre les comportements financiers des enfants et de leurs parents.

Pour étudier la transmission intergénérationnelle, nous analysons la décision de retrait du REER en conjonction avec une analyse du taux effectif marginal d'imposition (TEMI) des enfants et de leurs parents. Cela nous permet d'observer si le moment du retrait des sommes investies dans le REER des enfants suit la même tendance que le retrait des parents par rapport à leur TEMI respectifs. Ce faisant, nous testons l'adage - "La pomme ne tombe jamais loin de l'arbre" de Ralph Waldo Emerson.

Mots-clés: Mobilité intergénérationnelle, Régime enregistré d'épargne-retraite (REER), Taux effectifs marginal d'imposition (TEMI), Retraits.

Abstract

The Registered Retirement Savings Plan (RRSP) was created by the federal government to incentivize people in Canada to save for their retirement period. Given its advantage of being a tax- deferral tool, it is one of the most popular means in which people have been saving for retirement. RRSPs do not have any restrictions on the lock-in period or the withdrawal amount, and the invested amounts grow tax free while they are in the account. We use anonymized administrative tax data on RRSP from which we observe an intergenerational longitudinal structure. This enables us to analyse intergenerational transmission of saving behavior and to assess the similarity between the financial behaviors of children and their parents.

To study the intergenerational transmission, we analyze the RRSP withdrawal decision in conjunction with an analysis of the Marginal Effective Tax Rate (METR) of children and their parents. This allows us to observe whether the timing of withdrawals from the children's RRSP follow the same trend as the withdrawals of their parents in relation to their respective METRs. In doing so, we test the adage - ‘The apple doesn’t fall far from the tree’ by Ralph Waldo Emerson.

Keywords: Intergenerational mobility, Registered retirement saving plan (RRSP), Marginal Effective Tax Rates (METR), Withdrawals

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Acknowledgements

I would like to first thank my supervisor Philippe d'Astous, to whom I am extremely grateful for his invaluable feedback, patience, and constant guidance in addition to giving me such a precious and memorable opportunity to be part of such a research team under which this project was made possible. I would like to express my deepest gratitude to Gaëlle Simard-Duplain for consistently supporting me, sharing her knowledge, and encouraging me to learn and grow since we met. Looking back, being part of this research team has been one of the most exciting phases of my journey at HEC Montréal.

I would also like to thank professors Martin Boyer, Pascale Valery and Piotr Orlowski for their advice and support throughout my student life. Many thanks to Franck Larouche and Xuefeng Hu at CIQSS for all the help during this research. I thank Think Forward Initiative for their generous support by providing me with a financial grant under the project "Intergenerational transmission of saving propensity: new insights from Canadian tax data and policy changes"

I would have not been able to travel this journey this far had it not been the prayers, love and motivation by my dear parents, brother, and little sister. Words cannot express my deepest gratitude to my closest friends who have been my strong support during the past couple of challenging months. Lastly, I thank God for guiding and helping me to face the challenges and work every day to do better.

I. Introduction

The Canadian federal government provides various types of public and private retirement savings plans. This research focuses on the Registered Retirement Savings Plan (RRSP) which was started in 1957 by the federal government with the objective of encouraging individuals with positive earnings to save for their retirement. In particular, this plan enables individuals who might not have access to Registered Pension Plans (RPPs) offered by employers to save for their retirement. The reason for focusing on RRSP is because it has twin purposes of being a retirement saving vehicle and a tax deferral tool. In 2019, over half (53.8%) of tax filers with more than $80,000 in total income contributed to an RRSP (Statistics Canada, 2019). The idea behind introducing the RRSP was to promote retirement saving, particularly for those who are self-employed, by taking advantage of deferring tax payment to the future (i.e., when the funds are withdrawn). Nonetheless, there are many situations in which people can decide to withdraw from their RRSPs prior to their retirement.

This research focuses on intergenerational transmission of savings by studying the saving behavior of each generation and analyzing whether each generation makes optimal withdrawal decisions. Doing so, we recognize the intergenerational factors that impact each generation's attitude towards the quality of withdrawal from their savings. Although defining the optimality of an RRSP withdrawal is certainly not an easy task, we compute simple measures relating to the timing of withdrawals to individuals' Marginal Effective Tax Rate (METR) and propose a definition of optimality. Because withdrawals are taxed at the individual's METR, we define an optimal RRSP withdrawal as occurring when a withdrawal happens in a year in which the individual's METR is lower than the average observed over our sample. We therefore define a "mistake" as a dichotomous variable which takes the value of 0 if the individual withdraws from RRSP at the optimal time and 1 otherwise. We highlight potential caveats with this definition which open the door to further research on this issue.

The following 3 questions are studied in this research: (1) Do children and their parents make RRSP withdrawals at the optimal time i.e., when the observed year's tax rate for the individual is less than or equal to his or her average tax rate observed in our sample? (2) How does parental

saving behavior impact their children's decision to save during their adulthood? Do the children make greater or lesser mistakes compared to their parents? (3) How does the parents' propensity to make mistakes in terms of savings influence their children?

The main project "Intergenerational transmission of saving propensity: new insights from Canadian tax data and policy changes", started in December 2019 and financed by a Think Forward Initiative grant, has focused on understanding the intergenerational transmission of savings and major policy changes in RRSP rules. This thesis explores one part of this broader research agenda.

To conduct this research, we use the Intergenerational Income Database (IID) created by Statistics Canada (2017 version) which includes personal tax and family information of Canadian population from 1978 to 2016. Using this administrative tax record, we set some exclusion criteria such as the parents' age during childbirth restricted to 15 to 45 years old, a certain range of birth years for parents and children, availability of RRSP withdrawal information, etc., and create the sample for testing our hypotheses. The age-at-birth restriction is standard in intergenerational analyses when using administrative data (Chetty, Hendren, Kline, & Saez, 2014). We estimate the Marginal Effective Tax Rates (METRs) using this sample for analysing the relationship of the tax rate with RRSP withdrawals. The sample creation method is further explained in Appendix – Table A1.

We contribute to the literature on intergenerational saving behavior by using anonymized administrative data on RRSP withdrawals to study the behaviour of different generations and the influence that parental decisions can have on their children. We find that parental saving behavior affects the children's behavior. We also investigate the intergenerational transmission of quality of participation in the program and find that the quality of participation is transmitted across generations: children are more likely to have erratic withdrawal behaviour when their parents exhibit the same patterns.

The following sections of this paper will be in the order explained here: Section 2 gives a brief introduction to the Canadian tax system and about the tax saving vehicle – Registered Retirement Savings Plans (RRSPs). The section also explains the optimal timing of withdrawing from RRSP. Section 3 discusses the literature review. Section 4 describes the dataset along with the descriptive

statistics of both the main dataset and the sample used for the research. Section 5 enumerates the different models used for analyzing the data to answer the research questions. Section 6 presents the empirical results. Section 7 gives the interpretation of the empirical results along with any drawbacks of the models used. Lastly, this paper is concluded with the main findings, implication of the results and provides information on the scope for future research.

II. The Canadian Tax System and Registered Retirement Savings Plans (RRSPs)

The Canadian Tax system is progressive, meaning that a person pays more taxes if they earn a higher income and must be filed annually. The amount of income is taxed as a percentage and is categorized by tax "brackets".[1] Taxes must be paid both at the federal and provisional (territorial) levels. Income that is taxable includes T4 earnings, self employment income, investment and interest income, commission income, retirement income, etc. The amount of earnings determines the tax bracket under which the person falls and thereby the amount of tax to be paid at the federal level each year. At the provisional (territorial) level, the tax brackets and percentages vary depending on the location. The province of residence is determined based on the location as on 31 December of the tax year.

There are different ways to earn retirement income.[2] The "three main pillars" of the Canada's retirement income system are:

1. Canada Pension Plan (CPP) or Quebec Pension Plan (QPP)
2. Old Age Security (OAS)
3. Employer-sponsored pension plans such as RPP; and personal investment and savings.

The primary sources of personal retirement income are: Registered Retirement Savings Plans (RRSP) and Tax-Free Savings Account (TFSA).[3] Both these types of accounts consist of savings and investment products. RRSPs can be sponsored by the employer as well, where both the employee and employer (or just the employer) contribute money regularly to the retirement savings plan. The amount contributed to the RRSP as well as the income earned from though the investment of these funds have tax-advantage until they are withdrawn from the RRSP . The tax payment can be deferred as long as the money is moved into an RRSP account on time; there is no

[1] Tax system in Canada : https://dynamic.ca/eng/snapshots/newcomer/newcomer_taxsystem.html#:~:text=In%20Canada%2C%20the%20tax%20system,steps%2C%20or%20%22brackets.%22

[2] Sources of retirement income (Government of Canada) : https://www.canada.ca/en/financial-consumer-agency/services/retirement-planning/sources-retirement-income.html

[3] What is a registered retirement savings plan in Canada? : https://www.theglobeandmail.com/investing/article-rrsp-what-is-registered-retirement-savings-plan/

requirement to invest the money transferred to RRSP. TFSAs differ from RRSPs because the contributed amount is tax-paid, and tax does not have to be paid on the principal amount or investment income amount withdrawn. The contribution limit differs between the two types of saving plans, with RRSP having a much higher limit compared to TFSA. The amount withdrawn from TFSA can be easily replaced in the following year but cannot be done under RRSP as the limit is considered to be utilized already. Lastly, the contribution limit for RRSP depends on the previous year's earned income (plus other factors which are discussed below) whereas the limit for TFSA does not depend on earned income. The decision to choose between RRSP and TFSA depends on many factors such as age, current income, financial goals, debt levels, retirement income, etc.

A. Registered Retirement Savings Plans (RRSP):

The Canada Revenue Agency sets the rules of the RRSP which consists of annual contribution limit, contribution timing and the assets in which the funds can be invested. As long as the money is moved to an RRSP account, the tax payment is deferred to the year of withdrawal. The contribution limit is set at lower of 18% of earned income in the previous year or maximum contribution amount that is set by the government. Additionally, the unused contribution room, pension plan contributions and amount of contribution on behalf of the spouse or common law partner can affect the amount of RRSP contributable each year. Any earnings from the RRSP investment such as interest or dividend that remains in the account is not subjected to tax until withdrawal.

The amount from the limit that is not utilised in a year is cumulated to the total outstanding contribution room. There is an excess contribution room of $2000, however tax payment cannot be deferred on this amount. At the age of 71, the RRSP account will have to be liquidated or will be converted to Registered Retirement Income Fund (RRIF) which has a minimum annual withdrawal, and the tax is paid annually on the withdrawn amount. RRSP investments can be held in a single type or combination of the following kinds of investments: stocks, bonds, mutual funds,

exchange traded funds (ETFs), segregated funds, cash deposits, guaranteed investment certificates, etc. There is no limit on the investment in foreign assets.[4]

B. Optimal timing of RRSP Contribution and Withdrawal:

Contribution to RRSP can be made during any time within the set period for each tax year. The contribution can be done at frequent intervals or in a single transfer during the contribution period. However, there are 4 main points to consider while planning the contribution to RRSP:

(1) Optimally utilising the contribution limit: It is recommended to not use the full contribution limit in order to use this limit at a later period when a person earns higher income in a particular year. This enables the person to pay lesser tax when he or she earns a higher income later by contributing a higher amount that year to the RRSP account and thereby reducing the amount of total taxable income for that year.

(2) Ensuring timely contributions: One method is to set up an automatic contribution plan with which a pre-decided amount is transferred to the RRSP account in a timely frequency, for example, each month. Setting aside money into the RRSP account frequently is beneficial due to the tax-free compounding of funds for the long-term. People prefer to put money into the RRSPs during the last 2 months of the contribution period for the tax year. However, this prevents people from optimally saving as they tend to withdraw from their savings to meet their expenses and therefore have a shortage of funds to save for retirement each year. Another reason to prefer timely contribution is to prevent the possibility of making a lump sum investment when the financial market is at an all-time high.[5]

(3) Avoiding penalties: Contributions without proper planning or making last-minute contributions can lead to mistakes by over contributing. This can cause penalty charges

[4] RRSP: What is a registered retirement savings plan in Canada? : https://www.theglobeandmail.com/investing/article-rrsp-what-is-registered-retirement-savings-plan/
[5] Big mistakes to avoid when trying to meet the March RRSP deadline: https://www.theglobeandmail.com/investing/globe-advisor/advisor-news/article-here-are-some-big-mistakes-to-avoid-when-trying-to-meet-that-march/

and even require the person to withdraw the funds to stop paying the penalty every month until the contribution limit is increased.

(4) Contribution does not mean investment: Transferring funds to an RRSP account does not make it an investment directly. An RRSP is an account which holds different sets of investments based on the contributor's decisions. Depending on the institution or the online service used for setting up the RRSP account, the account includes or excludes different types of investments. It is therefore important to have a proper understanding of these rules and then choose investments which offer flexibility.

These decisions vary on risk tolerance, preference, age, and personal plans of each person. It is critical to do asset allocation in consideration of the client's objectives, risk tolerance and comfort level. Diversifying the investments enables one to match the risk level of the portfolio to that of his or her risk tolerance.

The growth of funds in the RRSP account depends on the amount contributed and the type of investments using the funds. Therefore, it is important to consider the above four points in order to optimally contribute and make money using the RRSP. Wrong decisions or lack of planning can lead to insufficient funds during retirement due to poor investment choices or incorrect timing of withdrawal of funds.

Withdrawals from RRSP accounts are usually taxable. There are 2 ways to avoid taxable withdrawals: (1) The Home Buyers' Plan (HBP)[6]- to buy a residence (2) Lifelong Learning Plan (LPP)[7]- to meet educational expenses. The withdrawal limit differs under each plan - $35,000 under HBP and $10,000 per calendar year with a total amount of $20,000 under LLP. Under both these plans, the withdrawals must be contributed back to the RRSP account (within 15 years for HBP and 10 years for LPP), otherwise the outstanding amount of withdrawal that is not replaced

[6] Home Buyers Plan (CRA) : https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/rrsps-related-plans/what-home-buyers-plan.html
[7] Lifelong Learning Plan (CRA) : https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/rrsps-related-plans/lifelong-learning-plan.html

in a particular tax year will be taxed along with the year's total earned income. The repayment terms differ for HBP and LLP.

It is an ideal decision to make early withdrawals from RRSP during one of the following scenarios:

- To buy a house by taking advantage of the Home Buyers' Plan (HBP)
- To pay for one's or the spouse's full-time training or education using Lifelong Learning Plan (LLP)
- To optimize funds by withdrawing during a zero- or lower-income year and therefore benefit from paying lesser tax. These funds can be moved to TFSAs to benefit from income earned on investments made with tax-free money[8].

Early withdrawals from RRSPs are advised against due to the following reasons[8]:

(1) Losing tax-sheltered compounding power investments: One of the primary benefits of RRSP is its ability to grow tax-deferred amounts at a compounded growth rate. The investment and income amount is only taxed at the time of withdrawal. However, early withdrawal affects the long-term savings that could have been generated from these funds, which can have a huge impact on the future savings.

(2) Permanent loss of RRSP contribution room: The RRSP contribution room that was utilized by the amount of withdrawal will no longer be available after the withdrawal. It is not possible to re-contribute the amount that is withdrawn. A person can contribute only up to the contribution room that is available based on the total contribution limit available each year. Note that the funds withdrawn under HBP and LPP will not lose their contribution room.

(3) Tax payable on RRSP withdrawal: The withdrawals from RRSP are subject to withholding tax (provisional tax in case of Quebec) in addition to the federal withholding

[8] RRSP deadline and Contribution Limit 2022, and Everything in between : https://www.cashflowsandportfolios.com/rrsp-contribution-limit-rrsp-deadline-and-everything-rrsp/

tax. Additionally, the amount of withdrawal is added to the earned income, after which the marginal tax is computed. If the marginal tax is higher than the withholding tax, additional tax must be paid on the withdrawn amount.

(4) Reduction in retirement savings: Early withdrawal from RRSP can make it difficult to save back the money withdrawn plus each year's planned contribution or saving. Replacing the amount withdrawn can make it impossible to set aside more funds to catch up with the total amount of savings to be made each year until retirement. Plus, the income to be earned from the amount withdrawn and savings that weren't contributed due to repayment of withdrawal amount can impact the final amount available for retirement period.

For this research, we focus on whether optimal withdrawals are done by parents and their children. An RRSP is said to be withdrawn at the "wrong" time if the estimated Marginal Effective Tax Rate (METR) for the observed tax year is higher than the average METR for the observed individual over our sample. The average METR per person is computed by taking the average value of METRs over the observed tax years for each person. One caveat of this definition which we cannot easily rule out is that if both income and METR are increasing in time, one could withdraw money out when income drops, while still being higher than average income over the lifetime. This would then not be suboptimal, although our methodology would characterize it as such.

III. Literature Review

Intergenerational transmission has been researched since the early 1970s and is defined[9] as the transfer of individual abilities, traits, behaviors, and outcomes from parents to their children (Lochner, 2008). This can be due to genetic factors such as abilities and non-genetic factors such as cultural or environmental influence. The research on intergenerational transmission has covered topics such as wealth, education, welfare, saving behaviour, riskiness, fertility decisions and many more. The studies focus on understanding the correlation between the parents and children on these different aspects. A strong correlation or intergenerational transmission indicates that the children are very similar to their parents. In other words, there is a weak intergenerational mobility. "Intergenerational mobility is defined as the extent to which some key characteristics and outcomes of individuals differ from those of their parents." (OECD, 2007)[10] Therefore, the term intergenerational transmission and intergenerational mobility has been interchangeably used in research, where the former refers to the similarities between the parents and children's outcomes, the latter refers to the persistence between the two groups.

There is a lot of literature available on this topic using administrative and / or survey data in Europe (especially Scandinavia) and North America (Black & Devereux, 2010). The research has been done by categorizing families based on wealth, education, debt, earning, employment stability, marital status as well as by categorizing children based on biological or adopted, gender, age, etc. This enables us to get an in-depth understanding of the role that genetic and non-genetic factors have played in influencing intergenerational transmission of behavior. Intergenerational transmission incorporates both causal and non-causal channels[9]. Economic conditions and government policies can play a role in the extent to which the earnings, education, riskiness, saving, and welfare are correlated between generations. If the intergenerational transmission is primarily influenced by genetic factors, then government policies, environmental factors and

[9] As per "Intergenerational Transmission" by Lance Lochner in The New Palgrave Dictionary of Economics, 2nd Edition, Palgrave Macmillan, London.
https://economics.uwo.ca/people/lochner_docs/intergenerationaltransmission.pdf
[10] OECD, 2007, Society at a Glance: OECD Social Indicators, 2006 edition, OECD, Paris
https://stats.oecd.org/glossary/detail.asp?ID=7327

economic conditions play an insignificant or a very small part in the transmission of behaviour. However, if the behaviour or ability of the children is altered primarily due to aspects such as social assistance, educational support system or government subsidies for low-income families, we will see a lesser influence by the genetic characteristics of the parents.

According to Black and Devereux (2010), the literature on intergenerational mobility took an interesting turn since the publication of 1999 Chapter by Gary Solon in the Handbook of Labour Economics. It not only focused "on obtaining precise estimates of correlations and elasticities [but also] placed increased emphasis on the causal mechanisms that underlie this relationship". Some of the leading research work on income mobility has been by Anders Björklund (1997, 2006, 2011), Gary Solon (1992, 2009), Paul J. Devereux (2010, 2015, 2020), Raj Chetty (2014, 2017), and Sandra E. Black (2010, 2015, 2020). "'Intergenerational income mobility' refers to the degree to which position in the income distribution persists or changes from one generation to the next." (Solon, 2008)[11]. The most popular method of measuring intergenerational economic (income) mobility is the Intergenerational Income Elasticity (IGE), which estimates the degree of income persistence between generations (Mazumder, 2018)[12]. IGE is a coefficient which is estimated through a regression model that captures the relation between the parent's and children's income, when the children become adults. A higher value of IGE indicates a strong connection between the two generations and therefore means a lower intergenerational mobility[13].

Most models for the estimating IGE come from the simple model using a measure of child income (y_c) and a measure of parental income(y_p) (Carneiro, García, Salvanes & Tominey, 2021):

$$y_c = \alpha + \beta y_p + u \qquad (1)$$

[11] Taken from: Intergeneration Income Mobility by Gary Solon in The New Palgrave Dictionary of Economics, 2nd Edition, Palgrave Macmillan, London. https://doi.org/10.1057/978-1-349-95121-5_2081-1

[12] Intergenerational Mobility in the United States: What We Have Learned from the PSID by Bhashkar Mazumder (2018). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6820674/

[13] Intergenerational mobility in the US: One size doesn't fit all by Gustavo A. Marrero, Juan C. Palomino and Juan Gabriel Rodríguez (2019) https://cepr.org/voxeu/columns/intergenerational-mobility-us-one-size-doesnt-fit-all

A drawback of this method is that the estimates are derived using ordinary least square (OLS) method and thereby reflects the impact at the mean of the income distribution. This ignores the differences in relationship between the parents and children at different levels of income[13]. To avoid this mistake, some researchers have split the sample based on income distribution into quartiles or quintiles to study the mobility across different groups of quantiles. Some papers use a log-log specification of IGE, while others use rank-rank specification. The rank-rank specification is preferred compared to the log-log specification as the estimates from the latter method can be sensitive to the outcomes of the children from lower income groups.

Gary Solon (1992) studied the intergenerational income correlation in United States using the Panel Study of Income Dynamics data and found that income correlation was at least 0.4. This study found that the correlation was much weaker compared to the previous studies but was more accurate as it corrected for the measurement error and bias from taking homogenous samples which therefore exaggerated the intergenerational income mobility in the United States. Chetty, Hendren, Kline and Saez (2014) obtain an IGE estimate of 0.45 when restricting the sample to between 10^{th} and 90^{th} percentile of the parent income distribution and excluding children with zero income. This finding supports the finding by Solon. When they use rank-rank specification, they find that a 10 percentile point increase in parent rank leads to 3.41 percentile increase in the child's income rank on average. This paper highlights how intergenerational mobility varies significantly across the United States and therefore must be studied based on locations within the country. In short, there is a positive correlation between the parents' and children's transmission of income. There are many other papers that study the relationship between parents' income and its impact on child outcomes and find a positive intergenerational transmission.

Carnerio et. al (2021) uses data from Norway to study the impact of parental income timing on the human capital development of their children and find that the parental income earned during the middle childhood period has low productivity. Children experience better outcomes when parents earn better during the children's early childhood than their later years of childhood. This paper has studied the impact of timing of parents' income on different outcomes of children such as education, earning, IQ and teenage pregnancy.

Another method of studying intergenerational mobility is based on the influence by genetics. This takes the study further by analyzing the impact that environmental and biological factors have on children. Using the Swedish Adoption data, Björklund, Lindahl and Plug (2005) study the intergenerational relationship of the children with their biological and adoptive parents to understand the effect of pre-birth and post-birth factors on children. They find a positive relationship between the adopted children's earnings and education with that of their biological as well as adoptive parents. However, the correlation varies for the biological versus the adoptive parents. For education, the transmission is stronger for the biological mothers than the adoptive mothers and is equally important when it comes to the biological and adoptive fathers. The biological mothers also have a slightly larger influence than the biological fathers in terms of intergenerational education impact. For intergenerational transmission of earnings, the adoptive fathers have a stronger influence on the children. Similar studies on the influence of genetics between generations have been studied by Cesarini, Johannesson, Lichtenstein, Sandewall and Wallace (2010), Barnea, Cronqvist, and Siegel (2010) and Cronqvist and Siegel (2014, 2015), which have all found positive effect of parents' characteristics on their children although the extent of influence varies based on the outcome studied.

Additionally, there is a lot of literature on strong correlation between parents' and children's wealth in countries such as the United States (Charles & Hurst, 2003; Black et al., 2015, 2019, 2020), Denmark (Boserup, Kopczuk & Kreiner, 2013, 2014[14]) and the United Kingdom (Clark & Cummins, 2014). Charles et al. (2003) study the factors that determine the association for intergenerational wealth transmission and find that lifetime income and assets owned jointly account for approximately two-thirds of the wealth elasticity, while the education, previous parental transfers, etc. account for the rest. The main findings from these papers are as follows: (1) The intergenerational relationships due to wealth are strong mainly because of children of very low wealth or very high wealth parents because they mostly result in having wealth which is very similar to that of their parents. (2) Income has the largest impact of all factors on wealth transmission between parents and children. (3) Even when the parents' income and education are

[14] Stability and persistence of intergenerational wealth formation: Evidence from Danish wealth records of three generations* by Boserup, Kopczuk & Kreiner (2014) https://web.econ.ku.dk/ctk/Papers/WealthAcrossGen.pdf

controlled for, the parents and children are found to have similar preference in allocating their portfolio. (4) The intergenerational relationship based on wealth is stable across subsamples after controlling for the key socioeconomic factors. (5) It is important to consider different quantiles of the distribution as the simple measures of mobility on the overall distribution of data can portray misleading information, especially of the observations closer to the tail of the distribution.

Studies on intergenerational transmission of behaviours have also covered research on risk preference across generations (Dohmen, Falk, Huffman & Sunde, 2012; Alan, Baydar, Boneva, Crossley & Ertac, 2017). Doheman et al. (2012) find that risk and trust attitudes are strongly positively correlated between parents and children and the correlations persist even when they control for personal or environmental factors. Additionally, they find that the region in which the children are living also influence their attitude. Alan et al. (2017) studied the transmission of risk attitude from mothers to their children when the children are aged 7 to 8 years and find that the correlation exist only for the daughters and that the degree of transmission increases with the increase in the mother's involvement. Therefore, maternal effort plays an important role in influencing the child's behavior during later years. In addition, there have also been studies on understanding the impact that risk preference has on financial stability of future generations (Kreiner, Leth-Peterson and Willerslev-Olsen, 2019). Kreiner and his co-authors find a very strong positive correlations between the parents and their children's probability to default. They found that the default propensity of children who parents in default are greater than four times compared to those whose parents do not default. This relationship is evident when the children became adults and can legally lend money. The parental behaviour is identified as a primary reason for children to default. This finding is also supported by Charles et al. (2003) when they study the risk tolerance across generations.

The focus of the research in this paper falls under the category of intergenerational transmission of saving behavior. People tend to save money for various reason such as wealth accumulation, saving for retirement, transfer of wealth to children or even as precautionary savings. Laurence J. Kotlikoff (1988) tries to understand the saving mechanism and its implication on wealth accumulation in the United States and finds that savings play a key role in wealth acquisition. Although he does not state the primary reason for which savings are transferred between

generation, he feels that the primary reason would be intergenerational altruism. Brown and Weisbenner (2004) in their paper on Intergenerational Transfers and Savings Behavior also researches on the impact the transfer of savings on the household wealth. They find that approximately one-fourth of current household wealth comes from the transfer of savings from the previous generation and thus the rest is due to the life-cycle savings. Therefore, even though transfer of savings or wealth play a vital role in wealth accumulation, the savings made by the individual plays a more important role in his or her wealth creation on an aggregate level. However, when testing this on different groups, they find that a subset of the population account half of their wealth on average to the intergenerational transfer of savings. Cronqvist and Siegel (2015) find that parents do influence the children's propensity to save, although the influence decays over time. With the data on identical versus fraternal twins, they find that genetic differences explain one-third of the variation in saving behavior across individuals.

To study the intergenerational saving behaviour of people in Canada, we use data on personal income, tax and saving plan – RRSP information to analyse how different generations behave in using RRSP as a saving instrument. Although RRSP was originally created with the purpose of motivating and enabling people to save money for their retirement by deferring taxes to the time of withdrawal, evidence shows that people have been making early withdrawals. Frenken (1996) stated that amongst Canadians under the age of 65 years, about one dollar of RRSP savings has been withdrawn for every five dollars contributed[15]. Maser and Giles (2005), when studying the RRSP withdrawal behavior of tax filers who are aged 20 to 59 years old in the year 1992, find that more than 25 percent made at least one withdrawal between 1993 and 2001. Furthermore, they find that 39% of people who contributed to RRSPs withdrew during this period. Messacar (2017) also notes an increase in the number of RRSP withdrawers from 2000 to 2013, although the amount of withdrawal has remained stable since 2000. Given the availability of information on RRSP, we decide to use it to understand whether children behave similar or not to their parents, considering RRSP as a saving tool. Boyer, d'Astous and Michaud (2020) study whether financial literacy can improve asset allocation behaviour. Another study which focuses on the influence of financial

[15] RRSP withdrawals revisited by Hubert Frenken (1996): https://www150.statcan.gc.ca/n1/en/pub/75-001-x/1996004/article/2921-eng.pdf?st=S4CR2RJr

literacy on saving behavior is by Laurin, Messacar and Michaud (2021). They find that individuals with high financial literacy are more sensitive to the changes in METR and hence withdraw from RRSPs accordingly. Also, RRSP is used as a contingent saving fund prior to retirement by people with low and high financial literacy and this finding is supported by Mawani and Paquette (2011). Milligan (2002) find that the marginal tax rate only explains 5.1 percent of the trend in RRSP participation during the observed years. Additionally, he finds that RRSP participation influenced the carry forward option so that people can contribute at a later period when they expect to earn higher in the future and therefore want to save the contribution room for later to reduce the tax rate. We seek to build on this literature on how individuals use RRSP as a saving tool and learn the intergenerational behaviour by focusing on RRSP withdrawals while considering different factors that can affect the decisions of how the RRSP is used.

IV. Data

The data was accessed at Quebec Interuniversity Centre for Social Statistics centre (QICSS) at the University of Montreal which gathers data from surveys conducted by Statistics Canada.

A. Data source

For this research, we use the Intergenerational Income database (IID), which contains administrative data collected by the Canada Revenue Agency (CRA) and links the personal income tax records of a large proportion of Canadian tax filers who are born between 1963 and 1985 with that of their parents. This data allows us to analyse the intergenerational transmission of saving behaviour between the parents and their children as it includes variables on demographics, family information, income, in addition to other information from the tax records.

The database consists of earning, income and family information of tax filers who were aged 16 to 19 years old and lived with their parents in the years 1982, 1984 or 1986 (Panel A) and in 1991, 1996 or 2001 (Panel B). Panel A and Panel B consist of 6 cohorts in total - 3 years under each panel when the children were linked to their parents. The longitudinal structure of this database enables us to observe individuals over the years 1981 to 2016. The IID has 2 main categories of files which are used for this research.

- **Family File**: Consists of children and parent information that are not time-varying such as case numbers (identification numbers), date of birth, gender, family case number, year in which information is linked, 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 or the lack 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.

About 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 the children who are linked during the 6 cohort 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.

B. Marginal Effective Tax Rate (METR)

The annual Marginal Effective Tax rate is estimated for the individuals using the Canadian Tax and Credit Simulator (CTaCS)[16]. CTaCS is an open-source software package that contains various tax parameters as per the 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.

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

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. Using CTaCS, we estimate the METR by incrementing the total taxable income by $100 and taking the difference between the original taxable income and incremental taxable income, while applying the tax rules for the observed year[17]. We get similar tax rate estimates to that of Laurin, Messacar and Michaud (2021).

C. Data linkage and sampling

For this research, we use the 1991 and 1996 cohorts from Panel B. The 1991 cohort consists of children born between 1972 and 1975 and the children are linked to their parents during the years 1991 to 1995. The 1996 cohort consists of children born between 1977 and 1980 and the children are linked to their parents during the years 1996 to 2000. We do not use Panel A dataset because the observed years mostly capture information on parents much closer to their retirement period. 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 population dataset[18]: (i) Child is 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

[17] Laurin, Messacar and Michaud (2021) estimated the disposable income using annual tax variables and computes one income variable where RRSP withdrawal amount is $0 and the other where the withdrawal amount is $0. Taking the difference between these two estimates, Laurin et al. compute the METR for the individuals.
[18] Refer Appendix - Table A1 for more information on the exclusion criteria.

information must be properly recorded in the Family income file. The first criterion is set to be able to observe the children and parents during the ages mentioned above.

The T1 Individual data contains information for the tax years 1988 to 2016. However, to ensure that 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 dataset created based on these restrictions are referred to as the Population-subset. The children's data is analysed for the tax years 1998 to 2015 and the parents' data is analysed for the 1988 to 2016. Table A1 from the Appendix shows how the sample dataset for this research was created using the 1991 and 1996 Family File cohorts and T1 Individual files. All the income variables are adjusted for inflation.

Table 1 presents the summary statistics of the 3 groups – children, mothers, and fathers from the research sample data[19]. 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. The first important information that we see from this table is that the children are observed at the much younger age compared to that of their parents. Therefore, the withdrawal behaviour can be biased due to the life cycles at which the children and the parents are at. The percentage of parents by gender 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.

Secondly, from the average income variables, we see that the children earn higher than their mothers, but lesser than their fathers on average. However, this behaviour is only seen for 3 of the income variables – Total income, T4 Earnings, and self employment income, which are the 3 main variables considered while analysing the saving behaviour of these 3 groups.

The RRSP contribution and withdrawal is the highest for the fathers, followed by the mothers and the least is by the children. On average, the amount of RRSP contributed by the children is 73.68%

[19] Table A3 presents the summary statistics of the Population subset data.

and 43.75% that of mothers and fathers respectively. For RRSP withdrawal, the percentage of average amount of RRSP withdrawn by children is 37.33% and 31.11% that of the mothers and fathers respectively. The difference in the saving behaviour can be because the children are observed during their early to mid stages of their career, while the parents are closer to their retirement age. Both the children and the mother are very similar in terms of the average number of times the RRSP is withdrawn at the wrong time i.e., when the observed tax year's marginal tax rate is higher than the average marginal tax rate. This mistake ratio is slightly higher for the fathers. The behaviour of each group will be observed more closely in the following section using Table 2.

We create two variables, one based on the income and the other on the rate of RRSP withdrawal mistakes. Using these two variables, we categorize the children, mothers and fathers into subgroups and analyze their saving behavior. The first group is based on whether the individual is a high-income earner or not. A high-income earner is defined as someone who belongs in the top 30^{th} percentile based on the average total income. 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 group categorizes individuals based on the RRSP withdrawal mistakes. If the percentage of RRSP withdrawal mistake is greater than 50% for the individual, he or she is considered to make a "big withdrawal mistake".

Table 1 – Descriptive statistics of the 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

Notes- Descriptive statistics of the research sample for children, mothers, and fathers: 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.

The percentage of individuals who are high income earners and make big RRSP withdrawal mistake is the highest for fathers, followed by the children and lastly, the mothers. Using these categories, we observe whether the transmission of saving behaviour varies for children within these subgroups.

The RRSP contribution and withdrawal is the highest for the fathers, followed by the mothers and the least is 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 percentage of average amount of RRSP withdrawn by children is 37.33% and 31.11% that of the mothers and fathers respectively. The difference in the saving behaviour can be because the children are observed during their early to mid-stages of their career, while the parents are closer to their retirement age. Both the children and the mother are very similar in terms of the average number of times the RRSP is withdrawn at the wrong time, which is approximately 52 percentage. We

understand that there are some limits to the way in which we define this variable because we do not observe the liquid assets, debt or understand the reason for the individual withdrawing from the RRSP. Therefore, there can be factors which are not considered in this study that influences individual's propensity to make the "mistake".

The average percentage of METR for each type of family member 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.

D. Registered Retirement Savings Plans (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 section: high versus low-income earners, big 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 makes 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.

Table 2 – Descriptive statistics on 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

Notes- Descriptive statistics of the RRSP withdrawal and total income variables: The high-income group belongs to the top 30^{th} percentile and the low-income group belongs to the bottom 70^{th} 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.

We find that high-income earners across children and the parents withdraw more amount from RRSPs on average, compared to the low-income earners. This finding is further supported while observing the average RRSP withdrawal amount based on the income quartile categorisation. There is a positive relationship between the income earned and RRSP withdrawal. 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 lesser than them. Therefore, the amount withdrawn would increase as the earning increases.

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. Part B represents 29.49%, 25.05% and 23.76% of the research sample for children, mothers, and fathers respectively.

E. Advantages and Disadvantages

Due to the nature in which the dataset is build, we consider the benefits and drawbacks from using this dataset for the research.

Advantages

(1) Factual data:

The Intergenerational Income Database is an administrative data and therefore displays the real financial decisions made by the observed individuals. The information in this database has been gathered for approximately 35 years and is very useful due to the year-to-year consistency in the information added and how the variables are defined. Since the database is frequently updated and reviewed, the quality of the data is high.

(2) Linked database:

As the dataset links the children with their parents, we can study whether the parent's financial choices affect their children's decision in the future and understand which factors contributed to this transmission of behaviour. Although, it would be helpful to have more information on factors such as wealth, educational background, employment status, immigration status, biological data, etc., this dataset provides ample information to begin with in order to study the influence of parents on the children.

(3) Longitudinal data:

Due to the longitudinal structure of IID, we can study the behaviour of children and their parents during the tax years 1978 to 2016 for Panel A and 1981 to 2016 for Panel B. The children are observed from early to mid stage of their career (depending on the cohorts), while the parents are observed from mid stage of their career to their retirement period.

Disadvantages

(1) Does not represent the reasoning behind the decisions:

IID lacks the benefits that a survey dataset provides. Therefore, while we do benefit from knowing the actual decisions made by people in managing their finances, we do not know the reason behind these decisions. Getting an insight into how people would behave in different scenarios and connecting this with factual data enables one to understand if people deviate from their hypothetical reasoning and to study how the behavior is similar or different across various sub-groups.

(2) Lack of some important personal information:

The IID does not provide information on residential status, wealth, family background, education, etc., which would enrich the quality of research. This can lead to endogeneity as some vital information which can explain the causal effect is missing. Another important limitation of this study is that we are unable to observe whether the RRSP withdrawals we study are made as part of the Home Buyers' Plan or the Lifelong Learning Plan.

(3) Availability of RRSP contribution limit data from only 1994:

Having information on the RRSP contribution limit, enables us to understand if a person did not contribute to RRSP in a particular year due to the lack of contribution room or unwillingness. This information can help in further study the saving behavior of the children and their parents. Even though this data is available from 1994, it still is very limited because this dataset is primarily used for conducting panel study. Given this study observes parents from 1988 onwards, the analysis could not be done using the RRSP contribution variable.

V. Empirical Method

In this section, we present the study of intergenerational behavior in three parts. In the first section, we try to identify the average effect of METR on RRSP withdrawal. The second section tests the influence of parent's mistake on their children to withdraw from RRSP when the METR is higher than the average METR. Here, we use 2 models, one where the dependent variable is the RRSP withdrawal amount by children and the other where the dependent variable is the indicator variable for whether the child withdrew from RRSP. In the last section, we investigate the influence of frequency of parent's mistakes on the children.

A. Relationship between RRSP withdrawals and METR:

We try to identify the average effect of METR on RRSP withdrawal. Because RRSP withdrawals are taxed at the individual's METR, we would expect individual *i* 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 based on family member type 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 by testing on data of the children, mothers and fathers as well as the children sub-grouped based on their parents' 'Big versus Small' RRSP mistake

category. The standard errors are clustered at individual level. Through stepwise method, we begin to estimate the above model by running regression of METR on RRSP withdrawal amount, while only applying fixed effects for the tax years. Then, in the second specification, we add variables for the fixed effects by creating dummy variables for individual *i* during year *t* for age, marital status and tax years. This helps to control for any changes within these variables across time for each individual and thereby getting a better understanding of the relationship between the RRSP withdrawal and METR. Lastly, we add the different controls for income variables such as total income, T4 earnings, self-employment income, and finally, investment[20] and dividend income. For the income variables, we add two explanatory variables each – the actual income variables and its quadratic term to capture their non-linear relationship with the RRSP withdrawal amount. The results are displayed in Table 3, 4 and 5 in the Section VI.

B. Relationship between parents' and children's saving behavior:

Using the amount of RRSP withdrawals as the dependent variable-

To study the focus of this research, which is the intergenerational saving behavior, we use an interaction model separately for the mothers and fathers. Here, we test the extent to which the mothers' or the fathers' RRSP withdrawal mistakes impact the children's behavior to make similar mistakes. The interaction term is an indicator variable named Big RRSP withdrawal mistake, which represents whether the parent withdrew at the wrong time for more than 50% of the observed years or not. Using the model from the previous section, we add the dummy variable for the mistake indicator and determine if the difference between the coefficients of big and small mistake group is statistically significant.

$$RW_{i,t} = \delta_i + \alpha_0 * METR_{i,t} + \alpha_1 * METR_{i,t} \cdot BM_i + X'_{i,t} * \beta_0 + X'_{i,t} * \beta_1 \cdot BM_i + \varepsilon_{i,t} \qquad (3)$$

where, BMi represents the Big RRSP withdrawal mistake indicator variable of the mother or father

[20] Investment income includes interest income. Refer Table A2.

The coefficients α_1 and β_1 from equation (3) captures the additional effect that the parent's big withdrawal mistake behaviour has on all the explanatory variables. Using the estimate of coefficient α_1, we can determine whether children whose parent makes big mistakes place lesser importance on his or her METR when deciding the amount to be withdrawn from RRSP. Theoretically, this coefficient should have positive since marginal increase in METR should influence children to make larger amounts of RRSP withdrawals when their parents have made big RRSP withdrawal mistakes. Here, we estimate the coefficients twice, once for the mother's influence on the children and the second for the father's influence on the children.

Using the indicator variable for RRSP withdrawals as the dependent variable-

In this section, we estimate the impact of parent's withdrawal mistakes on the children's decision to withdraw from RRSP. In this model, we use equation 3, but change the independent variable from the RRSP withdrawal amount variable $RW_{i,t}$ to a binary variable $D_{i,t}$ which is equal to 1 if the child *i* withdrew from RRSP in the year *t* or 0 otherwise. Using OLS, we estimate the following linear probability model:

$$D_{i,t} = \delta_i + \alpha_0 * METR_{i,t} + \alpha_1 * METR_{i,t} \cdot BM_i + X'_{i,t} * \beta_0 + X'_{i,t} * \beta_1 \cdot BM_i + \varepsilon_{i,t} \quad (4)$$

From Table 1 and A3, we can see that only 15.23% of the children make withdrawal from RRSP at least once during the observed years, which is a significantly small portion of the population subset[21]. To test the influence of the mothers' and fathers' mistake on the child's withdrawal tendency, we run the model for children based on 3 criteria: (i) mothers versus fathers – Table 7 (ii) low versus high income mothers – Table 8 and (iii) low versus high income fathers – Table 9.

C. Relationship between parents' and children's propensity to make mistake:

In the last model, we test the intergenerational transmission of erratic behaviour in the program using the ratios of withdrawal mistakes by parents and by children respectively. To study this, we

[21] The proportion of children who make RRSP withdrawals at least once are only computed at the total level of the database. These numbers could not be computed based on categories of parent's mistake indicator due to the restriction in exporting such values from CIQSS which would restrict future release of research findings of the main project.

use RRSP withdrawal mistake ratio variable as a measure of the erratic behavior. 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).

A caution for the use of this measure is that we cannot observe liquidity shocks to individuals. The identifying assumption is therefore that liquidity shocks are orthogonal to annual METRs. The potential threat to identification 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 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

We expect to see similar findings to that of Kreiner et al. (2018, 2020) in the context of inherited financial behavior 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 would theoretically repeat such mistakes more frequently compared to the children of parents who have not made such mistakes. In Table 10, we see the influence of mothers versus fathers on the children. Table A5 shows the results by categorising children based on single parent versus both parents.

VI. Results and Interpretation

We begin by estimating equation (2) and generate the results shown in Tables 3, 4 and 5. In the model represented by this equation, we test the relationship between METR and RRSP withdrawal amount for the children, mothers, and fathers separately, while including other variables to explore their effects as well on the amount withdrawn by RRSPs by these family members.

In each sub-sections within these tables, the first column represents the estimates of METR with martial status, tax year, age and gender. The second column adds control for the total income variable. Lastly, the third column includes controls for a few main elements of income variables such as T4 earnings, self employment, and investment and dividend income. In the following 3 tables, we try to find if the children and their parents withdraw from their saving plan account-RRSP optimally.

Table 3 – Fixed Effect Regression on RRSP Withdrawals amount ($)

	CHILDREN			**MOTHERS**			**FATHERS**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
METR	7.633***	-0.229***	11.563***	23.028***	28.599***	40.024***	62.038***	49.596***	92.424***
	(0.39)	(0.49)	(0.54)	(2.36)	(3.79)	(3.04)	(3.18)	(7.29)	(6.29)
Income variable									
Total income		256.736***			3446.625***			570.954	
		(13.12)			(178.83)			(359.66)	
Total income ^ 2		-0.650***			-6.058***			4.348	
		(0.1)			(0.57)			(3.49)	
T4 Earning			-113.715***			-820.562***			-926.313***
			(6.51)			(53.73)			(137.25)
T4 Earning ^2			0.256***			2.411***			2.779***
			(0.05)			(0.18)			(0.41)
Self employment income			-150.101***			-765.258***			-718.532***
			(22.93)			(129.15)			(174.76)
Self employment income ^2			0.59			-7.170***			3.663***
			(1.00)			(1.2)			(0.86)
Investment income & dividend			-94.566***			-628.853***			-352.419*

			(13.12)			(195.12)			(170.02)
Investment income & dividend ^2			0.337***			7.631**			3.830***
			(0.06)			(2.52)			(1.12)
Marital status									
Common law	-20.68	-4.843	-27.348	1086.054***	534.924*	1077.889***	386.992	317.815	378.156
	(23.63)	(23.47)	(23.64)	(283.7)	(246.26)	(282.74)	(279.28)	(263.59)	(277.07)
Widow	4824.077***	4672.508***	4813.147***	12370.015***	5914.558***	12401.423***	7188.168***	6479.811***	7195.997***
	(1377.23)	(1343.68)	(1375.64)	(794.45)	(568.06)	(794.31)	(867.55)	(838.23)	(877.61)
Divorced	80.52	83.414	87.262	1215.046***	10.786	1284.362***	-129.865	-120.134	-191.371
	(53.50)	(52.86)	(53.40)	(179.96)	(174.22)	(178.94)	(249.81)	(243.13)	(247.44)
Separated	187.904***	197.389***	189.581***	894.178***	194.387	903.481***	468.103*	436.736*	407.953*
	(29.66)	(29.42)	(29.69)	(172.32)	(158.33)	(172.05)	(185.81)	(187.29)	(183.09)
Single	84.568***	118.055***	83.016***	1759.526***	429.690*	1806.164***	505.614	511.499	396.586
	(23.28)	(23.24)	(23.27)	(216.18)	(202.97)	(214.68)	(303.93)	(291.46)	(301.08)
Unstated	318.305***	358.561***	302.973***	748.724*	566.236*	719.108*	164.092	140.653	155.183
	(91.99)	(92.78)	(91)	(336.24)	(266.73)	(334.85)	(241.2)	(232.88)	(236.05)
Married	-	-	-	-	-	-	-	-	-
Intercept	1236.666***	580.625***	1464.362***	4162.044***	-6606.911***	5743.916*	6290.004***	2635.64	9452.320***
	(62.23)	(69.85)	(63.75)	(536.56)	(955.45)	(526.61)	(748.29)	(2060.72)	(861.13)
Fixed effects									
Tax year	✓	✓	✓	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓	✓	✓	✓
R^2	0.004	0.022	0.008	0.016	0.317	0.023	0.006	0.206	0.025
Number of observations	725,690	725,690	725,690	365,080	365,080	365,080	330,530	330,530	330,530

Notes: 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- $RW_{i,t}$. 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.

In Table 3, we find a positive relation between the METR and RRSP withdrawal amount for most specifications. This indicates that the amount withdrawn is higher when the METR is higher than the average value of METR. All the coefficients of the METR are significant and therefore reject our null hypothesis of METR having no impact on the RRSP withdrawal amount. However, the finding goes against the theoretical prediction of METR and RRSP withdrawals being negatively correlated. We arrive at this understanding due to the positive sign of the METR coefficients.

When we compare the sub-sections in Table 3 i.e., by children, mother, and father, we see that coefficient for the METR variable is the smallest for children and the largest for fathers, while that of the mothers' lies in between. From this, we derive that the children and parents make mistakes by withdrawing from RRSPs when the METR is higher.

In Table 4 and 5, we sub-group children's data based on their mothers' and fathers' withdrawal mistake information. We do so to find if the behavior of the children is statistically significantly different when their parents make huge versus small frequencies of withdrawal mistakes.

Table 4 – Fixed Effect Regression on Children's RRSP Withdrawal amount ($)

(•) Children's data categorized based on mothers' Big versus small withdrawal mistake indicator

	MOTHERS WITH BIG MISTAKES			**MOTHERS WITH SMALL MISTAKES**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
METR	7.507***	-1.628*	10.929***	7.076***	0.280	11.016***
	(0.65)	(0.77)	(0.85)	(0.59)	(0.88)	(0.79)
Income variable						
Total income		308.377***			234.128***	
		(20.62)			(24.22)	
Total income ^ 2		-0.710***			-0.566**	
		(0.07)			(0.20)	
T4 Earning			-100.966***			-122.516***
			(11.89)			(11.13)
T4 Earning ^2			0.225***			0.232*
			(0.03)			(0.10)
Self employment income			-220.892***			-131.999***
			(39.64)			(34.50)
Self employment income ^2			5.744*			0.017
			(2.85)			(0.71)
Investment income & dividend			-115.893***			-127.844***
			(33.60)			(28.93)
Investment income & dividend ^2			2.024			1.935*
			(1.87)			(0.90)
Marital status						
Common law	-30.499	-25.148	-30.920	16.837	37.428	5.759
	(45.57)	(44.90)	(45.59)	(38.34)	(38.33)	(38.33)
Widow	4689.829*	4603.144**	4652.763*	6737.468	6548.016	6722.104
	(1850.66)	(1784.88)	(1853.08)	(3944.05)	(3863.64)	(3934.15)
Divorced	26.996	33.876	34.035	85.603	85.933	92.874

	(91.76)	(90.91)	(91.50)	(83.70)	(82.89)	(83.53)
Separated	218.106***	217.986***	223.593***	187.163***	201.451***	185.096***
	(56.59)	(55.56)	(56.65)	(48.93)	(48.76)	(48.88)
Single	72.605	97.190*	77.580	121.205**	154.563***	117.069*
	(43.75)	(43.48)	(43.72)	(38.05)	(38.03)	(38.04)
Unstated	288.692	312.865	289.070	327.981	356.662*	315.539
	(158.05)	(162.07)	(156.27)	(171.96)	(171.32)	(170.72)
Married	-	-	-	-	-	-
Intercept	1303.778***	506.737***	1513.622***	1252.468***	636.338***	1507.533***
	(133.66)	(141.55)	(136.16)	(88.68)	(109.41)	(91.53)
Fixed effects						
Tax year	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
R^2	0.005	0.029	0.008	0.005	0.020	0.009

Notes: Estimated coefficients with fixed effects model using OLS method. The dependent variable is the RRSP amount withdrawn ($) by child- $RW_{i,t}$. 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.

From the coefficients of METR in the above tables, we see that the mean amount of RRSP withdrawal is similar amongst the children of mothers who make big or small mistakes, as the METR increases. In the second specification of the model, the income variable has a positive correlation with the RRSP withdrawal amount. This supports our finding in Table 2, which is the descriptive statistics of RRSP withdrawal variable, where the average amount of withdrawal increases as the income quartile goes higher. However, in the third specification, we find a negative relationship between the income variables and withdrawal amount. This could mean that correlation between total income and withdrawal amount is mainly influenced by the other sub-categories of total income that are not taken in this regression analysis. Also, the coefficient of METR is different in the second specifications in these tables. This can be because a subset of the total income variable type might weirdly be interacting with the marginal tax rate variable. To get a clear picture, we will have to test the relation of METR with RRSP withdrawal amount controlling for each sub-category of the total income variable.

We get similar findings from Table 5. The coefficients of all the income variables from Table 3-5 are statistically significant at 1 percent level meaning that they too are key factors in influencing the saving (withdrawal) behavior of the children and their parents.

Table 5 – Fixed Effect Regression on Children's RRSP Withdrawal amount ($)

(•) Children's data categorized based on <u>fathers</u>' Big versus small withdrawal mistake indicator

	FATHERS (BIG MISTAKES)			**FATHERS (SMALL MISTAKES)**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
METR	8.234***	-2.137**	12.471***	8.894***	0.445	13.780***
	(0.83)	(0.77)	(1.23)	(0.69)	(0.77)	(0.92)
Income variable						
Total income		321.378***			255.055***	
		(17.40)			(18.24)	
Total income ^ 2		-1.260***			-1.123***	
		(0.12)			(0.21)	
T4 Earning			-115.750***			-135.064***
			(11.79)			(11.26)
T4 Earning ^2			0.490***			0.965***
			(0.09)			(0.28)
Self employment income			-185.551***			-112.879***
			(36.60)			(26.48)
Self employment income ^2			3.986*			-0.065
			(1.89)			(0.54)
Investment income & dividend			-91.888***			-92.005***
			(26.13)			(20.42)
Investment income & dividend ^2			0.519			0.355***
			(0.47)			(0.08)
Marital status						
Common law	-4.570	7.999	-9.821	-48.793	-25.123	-58.342
	(40.72)	(40.43)	(40.78)	(44.90)	(44.30)	(44.91)
Widow	2219.771	2112.206	2225.651	4634.653**	4457.320**	4638.012**
	(1336.95)	(1297.70)	(1336.60)	(1616.62)	(1573.74)	(1618.16)
Divorced	166.161	153.050	175.684	117.275	138.208	117.123
	(97.90)	(95.98)	(97.75)	(98.48)	(97.28)	(98.34)
Separated	222.802***	229.817***	226.256***	210.916***	235.357***	209.072***
	(52.00)	(51.50)	(52.05)	(55.75)	(54.93)	(55.92)
Single	104.530**	151.048***	101.240*	58.276	93.923*	56.330*
	(39.81)	(40.01)	(39.80)	(43.28)	(43.02)	(43.22)
Unstated	313.690	374.527*	291.951	482.733**	537.934**	454.013**
	(167.97)	(168.14)	(166.95)	(164.03)	(167.93)	(160.92)

Married	-	-	-	-	-	-
Intercept	1137.119***	338.754**	1358.998***	1261.817***	648.689***	1504.904***
	(103.25)	(112.35)	(105.98)	(87.92)	(98.74)	(90.91)
Fixed effects						
Tax year	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
R^2	0.004	0.028	0.007	0.004	0.021	0.009

Notes: Estimated coefficients with fixed effects model using OLS method. The dependent variable is the RRSP amount withdrawn ($) by child- $RW_{i,t}$. 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.

In the following table, we estimate the model in equation (3) to test the difference between the effect of METR on the withdrawal amounts of the children based on their parents' mistake indicator. Here, the interaction term is statistically not significant mostly. This means that parent's who frequently make mistakes fail to have much or even any effect on the children's withdrawal behavior. Almost all the interacted terms are not statistically significant, while the explanatory variables without the interaction term are statistically significant at 1 percent levels mostly. Therefore, we can say that the children's own factors such as their tax rates and income variables play a very important role in influencing their attitude towards the amount withdrawn from RRSPs.

Table 6 – Interactive Fixed Effect Model on Children's RRSP Withdrawal amount ($)

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

	MOTHERS			**FATHERS**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
METR * Big Mistake (BM)	0.308	-1.849	-0.280	-0.765	-2.545*	-1.555
	(0.88)	(1.11)	(1.13)	(1.07)	(1.03)	(1.49)
METR	7.137***	0.258	11.106***	8.946***	0.423	13.901***
	(0.59)	(0.87)	(0.79)	(0.69)	(0.75)	(0.91)
Income variables * BM						
Total income * BM		73.182*			66.709**	
		(30.55)			(24.02)	
Total income ^ 2 * BM		-0.141			-0.136	
		(0.21)			(0.24)	
T4 Earning * BM			24.919			24.078
			(15.36)			(15.32)

T4 Earning ^2 * BM			-0.013			-0.500
			(0.10)			(0.29)
Self employment income * BM			-85.404			-68.275
			(52.14)			(44.86)
Self employment income ^2 * BM			5.727			4.127*
			(2.94)			(1.97)
Investment income & dividend * BM			16.606			5.240
			(43.98)			(32.90)
Investment income & dividend ^2 *BM			-0.019			0.159
			(2.08)			(0.47)
Income variables						
Total income		234.642***			255.153***	
		(23.94)			(17.84)	
Total income ^ 2		-0.567**			-1.124***	
		(0.20)			(0.20)	
T4 Earning			-123.963***			-137.427***
			(10.87)			(10.99)
T4 Earning ^2			0.234*			0.981***
			(0.10)			(0.28)
Self employment income			-133.400***			-114.814***
			(34.50)			26.50)
Self employment income ^2			0.015			-0.169
			(0.72)			(0.55)
Investment income & dividend			-130.086***			-94.350***
			(28.77)			(20.41)
Investment income & dividend ^2			1.978*			0.323***
			(0.90)			(0.08)
Intercept	1276.971***	577.827***	1511.166***	1197.744***	491.606***	1430.318***
	(78.81)	(88.53)	(80.68)	(68.13)	(75.07)	(70.12)
Fixed effects:						
Tax year	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓
Marital status	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
R^2	0.005	0.024	0.009	0.004	0.024	0.008

Notes: Coefficients of the LPM are estimated using OLS method. The dependent variable is the RRSP amount withdrawn ($) by child – $RW_{i,t}$.. Clustered standard errors are presented in the parenthesis. The interaction term is the indicator variable for mother's or father's big withdrawal mistake i.e, value is equal to 1 if the mistake ratio is higher than 50% and 0 otherwise. 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.

In Table 6, the dependent variable is the RRSP withdrawal amount for the children, while in Table 7, the dependent variable is the indicator variable for whether the children withdrew from their RRSP account during the observed year. Table 6 depicts the influence of parent's behavior on the amount of RRSP withdrawn whereas Table 7 shows the influence of parent's behavior on whether the child will withdraw or not on average when the METR increases.

Table 7 – Interactive Fixed Effect Model on Children's RRSP Withdrawal indicator variable

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

	MOTHERS			**FATHERS**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
METR * Big Mistake (BM)	0.0000559	0.0000598	0.0000579	0.0000313	0.000032	-0.0000179
	(0.0000573)	(0.0000589)	(0.0000698)	(0.000059)	(0.0000604)	(0.0000739)
METR	0.000313***	0.000340***	0.00101***	0.000278***	0.000304***	0.00103***
	(0.0000388)	(0.0000398)	(0.0000466)	(0.0000408)	(0.0000416)	(0.0000504)
Income variables * BM						
Total income * BM		-0.00011			-0.0000284	
		(0.000502)			(0.000477)	
Total income ^ 2 * BM		-0.00000134			0.000000751	
		(0.00000203)			(0.00000214)	
T4 Earning * BM			-0.000347			0.0014
			(0.000776)			(0.00084)
T4 Earning ^2 * BM			0.0000222*			-0.0000264
			(0.00000958)			(0.0000207)
Self employment income * BM			-0.00263			-0.0207***
			(0.00292)			(0.00227)
Self employment income ^2 * BM			0.000068			0.000143
			(0.00012)			(0.000141)
Investment income & dividend * BM			-0.00453**			-0.00667***
			(0.00173)			(0.00176)
Investment income & dividend ^2 *BM			0.0000201***			0.000108***
			(0.00000435)			(0.0000243)
Income variables						
Total income		-0.000744*			-0.000721*	
		(0.00034)			(0.000329)	
Total income ^ 2		0.00000219*			-0.000000421	
		(0.000000926)			(0.000000458)	
T4 Earning			-0.0177***			-0.0192***
			(0.000545)			(0.000634)
T4 Earning ^2			0.0000332***			0.0000846***
			(0.0000399)			(0.0000177)

Self employment income			-0.0195***			-0.0207***
			(0.00166)			(0.00227)
Self employment income ^2			0.0000931***			0.000117
			(0.0000189)			(0.0000789)
Investment income & dividend			-0.00774***			-0.00499***
			(0.00111)			(0.0011)
Investment income & dividend ^2			0.0000201***			0.00000499***
			(0.00000435)			(0.00000134)
Intercept	0.149***	0.151***	0.181***	0.144***	0.145***	0.176***
	(0.00305)	(0.00311)	(0.00316)	(0.00312)	(0.00318)	(0.00324)
Fixed effects:						
Tax year	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓
Marital status	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
R^2	0.05	0.05	0.055	0.052	0.052	0.057
Number of observations	1,634,970	1,634,970	1,634,970	1,539,650	1,539,650	1,539,650

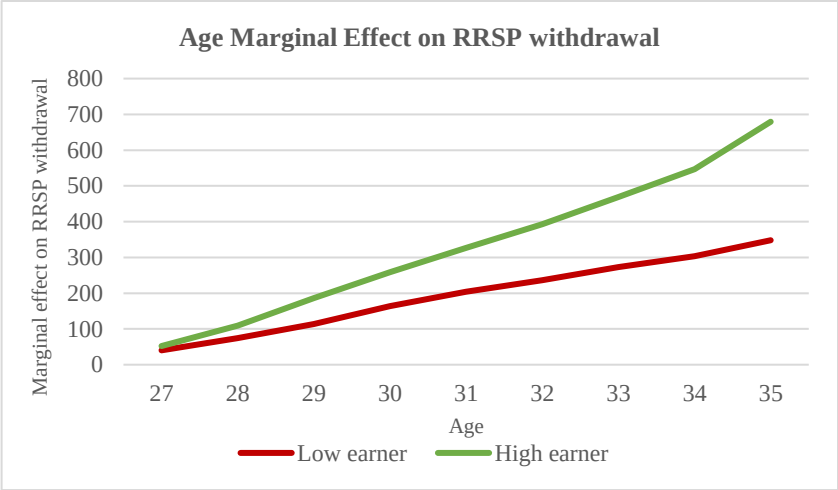
Notes: Coefficients of the LPM are estimated using OLS method. The dependent variable is the binary variable- $D_{i,t}$ indicating if any RRSP withdrawal is made by the child during each observed year. Clustered standard errors are presented in the parenthesis. The interaction term is the indicator variable for mother's or father's big withdrawal mistake i.e, value is equal to 1 if the mistake ratio is higher than 50% and 0 otherwise. 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.

From the results in Table 7, we once again see that the coefficients of the explanatory variables with the interaction term is not statistically significant as seen in the previous table. This means that the change in METR does not have an impact on the decision to withdraw between the groups of children based on the parents' big or small withdrawal mistake.

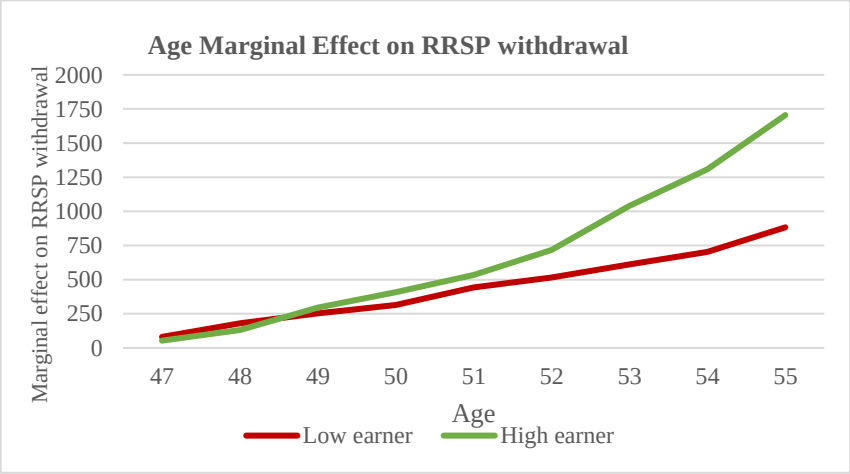
Graph – Age Marginal Effects on RRSP withdrawal

Before, we run more tests to understand the intergenerational saving behavior, we plot the coefficients the represent the effect of age with amount withdrawn. The children are observed during the ages of 26 to 35, while the parents are observed during the ages of 46 to 55 years old. In the following 3 graphs, each family member type is sub-grouped based on low versus high income criteria.

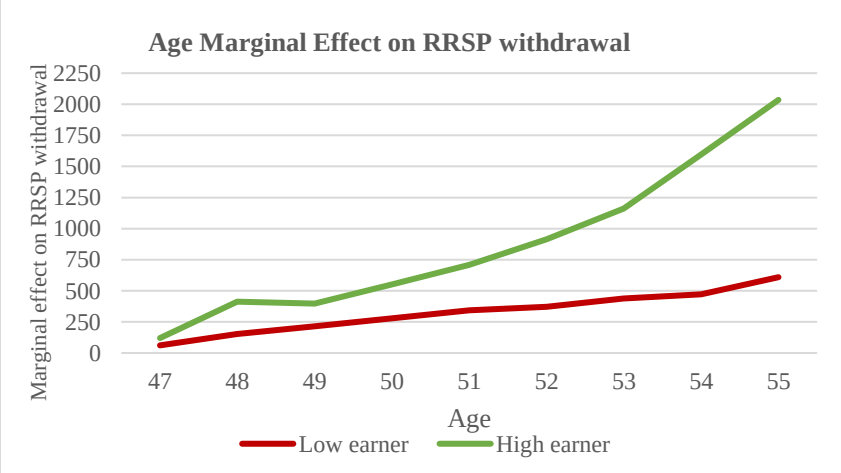
Graph 1 – RRSP withdrawal of Children by age



Graph 2 – RRSP withdrawal of Mothers by age



Graph 3 – RRSP withdrawal of Fathers by age



Notes: The graphs 1, 2 and 3 show the trend of the coefficients estimated using OLS method. These graphs are created for the children during their ages of 27 to 35, using 26 years as the reference point and for the parents during their ages of 47 to 55, using 46 as the reference point.

We find similar trends between all the children, mothers, and fathers. Almost all the coefficients are statistically significant at 1 percent level. The coefficient of mothers and fathers who are high income earners have a significance at 10 percent level when they are 47 and 48 years old. This trend in consistent with the values shown in Table 2 where the average amount of RRSP withdrawal is higher for the high-income earners than the low-income earners across all family members.

In the following two tables, we want to understand the intergenerational transmission of saving behavior from parents to their children by testing the influence that high- versus low-income parents have on their children's decision to withdraw from RRSP:

Table 8 – Intergenerational relationship between Children and Mothers

(•) Children's data categorized based on mother's earning indicator category – low versus high

	LOW INCOME EARNERS			**HIGH INCOME EARNERS**		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
METR * Big Mistake (BM)	0.0000588	0.0000513	0.0000654	0.0000396	0.0000403	-0.0000336
	(0.0000725)	(0.0000746)	(0.0000867)	(0.0000953)	(0.0000981)	(0.000119)
METR	0.000300***	0.000294***	0.00108***	0.000347***	0.000418***	0.00108***
	(0.0000462)	(0.0000474)	(0.0000545)	(0.0000717)	(0.0000738)	(0.0000884)
Income variables * BM						
Total income * BM		0.000274			-0.000304	
		(0.000711)			(0.000702)	
Total income ^ 2 * BM		-0.00000657			0.00000112	
		(0.00000562)			(0.00000185)	
T4 Earning * BM			0.00136			-0.00069
			(0.000909)			(0.00115)
T4 Earning ^2 * BM			-0.0000586*			0.0000179**
			(0.0000267)			(0.00000634)
Self employment income * BM			-0.00815*			-0.00182
			(0.00329)			(0.00308)
Self employment income ^2 * BM			0.000432***			-0.0000238
			(0.000106)			(0.000076)

Investment income & dividend * BM			-0.00567**			-0.00222
			(0.00265)			(0.00242)
Investment income & dividend ^2 * BM			0.000112			0.0000383
			(0.0000585)			(0.0000244)
Income variables						
Total income		0.00022			-0.00173***	
		(0.000474)			(0.000479)	
Total income ^ 2		-0.00000576			0.00000448***	
		(0.000000319)			(0.000000858)	
T4 Earning			-0.0217***			-0.0163***
			(0.000676)			(0.00088)
T4 Earning ^2			0.000152***			0.0000291***
			(0.000024)			(0.0000026)
Self employment income			-0.0234***			-0.0167***
			(0.00281)			(0.00234)
Self employment income ^2			0.000179*			0.0000734***
			(0.0000765)			(0.0000186)
Investment income & dividend			-0.00935***			-0.00823***
			(0.00162)			(0.00166)
Investment income & dividend ^2			0.0000224***			0.0000379***
			(0.00000441)			(0.0000106)
Intercept	0.149***	0.148***	0.185***	0.149***	0.153***	0.179***
	(0.00372)	(0.00381)	(0.00383)	(0.00533)	(0.0054)	(0.00551)
Fixed effects:						
Tax year	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓
Marital status	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
R^2	0.05	0.05	0.055	0.05	0.05	0.055
Number of observations	1,066,170	1,066,170	1,066,170	568,800	568,800	568,800

Notes: Coefficients of the LPM are estimated using OLS method. The dependent variable is the binary variable- $D_{i,t}$ indicating if any RRSP withdrawal is made by the child during each observed year. Clustered standard errors are presented in the parenthesis. The interaction term is the indicator variable for mother's big withdrawal mistake. 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 9 – Intergenerational relationship between Children and Fathers

(•) Children's data categorized based on father's earning indicator category – low versus high

	LOW INCOME EARNERS			HIGH INCOME EARNERS		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
METR * Big Mistake (BM)	0.0000715	0.0000826	0.000025	-0.0000826	-0.000085	-0.00012
	(0.0000689)	(0.0000706)	(0.0000874)	(0.000115)	(0.000118)	(0.000136)
METR	0.000260***	0.000265***	0.00104***	0.000327***	0.000383***	0.00109***
	(0.0000476)	(0.0000488)	(0.0000586)	(0.0000791)	(0.0000807)	(0.0000969)
Income variables * BM						
Total income * BM		-0.000382			0.0000615	
		(0.000678)			(0.000746)	
Total income ^ 2 * BM		0.00000286			0.000005	
		(0.00000296)			(0.00000493)	
T4 Earning * BM			0.00114			0.00145
			(0.00093)			(0.00136)
T4 Earning ^2 * BM			-0.0000308			-0.0000254
			(0.0000189)			(0.0000379)
Self employment income * BM			0.00915			-0.00343
			(0.00387)			(0.00434)
Self employment income ^2 * BM			-0.000185			0.000203
			(0.000225)			(0.000141)
Investment income & dividend * BM			-0.00426			-0.00611*
			(0.00254)			(0.00243)
Investment income & dividend ^2 * BM			0.0000717**			0.000118***
			(0.0000242)			(0.0000323)
Income variables						
Total income		-0.0000947			-0.00136**	
		(0.000499)			(0.000486)	
Total income ^ 2		-0.00000413*			0.000000505	
		(0.00000178)			(0.000000569)	
T4 Earning			-0.0205***			-0.0178***
			(0.000709)			(0.00111)
T4 Earning ^2			0.0000842***			0.000109**
			(0.0000173)			(0.0000348)
Self employment income			-0.0272***			-0.0158***
			(0.00246)			(0.00296)
Self employment income ^2			0.000409**			0.0000775***
			(0.000144)			(0.0000606)
Investment income & dividend			-0.00863***			-0.00440**
			(0.00181)			(0.00141)
Investment income & dividend ^2			0.0000222***			0.00000394**
			(0.00000522)			(0.00000146)

Intercept	0.146***	0.146***	0.180***	0.139***	0.142***	0.170***
	(0.00371)	(0.0038)	(0.00384)	(0.00577)	(0.00585)	(0.00595)
Fixed effects:						
Tax year	✓	✓	✓	✓	✓	✓
Age	✓	✓	✓	✓	✓	✓
Marital status	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓
R^2	0.052	0.052	0.057	0.052	0.052	0.057
Number of observations	1,092,730	1,092,730	1,092,730	446,920	446,920	446,920

Notes: Coefficients of the LPM are estimated using OLS method. The dependent variable is the binary variable- $D_{i,t}$ indicating if any RRSP withdrawal is made by the child during each observed year. Clustered standard errors are presented in the parenthesis. The interaction term is the indicator variable for father's big withdrawal mistake. 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.

Just as we have seen in Tables 6 and 7, we find similar results in Tables 8 and 9, where the explanatory variables with the interaction term are not statistically significant. In Table 8, we find that the relationship between METR and RRSP withdrawal becomes stronger for the children of high-income mothers compared to the low-income mothers, as we move from the first to the third specification. We get the same similar results in Table 9 when the children are grouped based on the earning capacity of the fathers.

Until now, we have tested if the parents' behavior has influenced the children in terms of the amount withdrawn or if they should withdraw with the METR increases. In the last part of this analysis, we test the impact of the frequency of withdrawal mistakes by parents on their children's tendency to make mistakes. Based on previous literature, we predict children to make more mistakes if parents have a high frequency of withdrawals when the METR is high than the average rate.

Table 10 – Effect of Parental RRSP withdrawal mistake frequency on Children

(•) Children's data categorized based on <u>parent type</u> – 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

Notes: 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- KR_i. The main independent variable is the ratio of withdrawal mistakes at parental level- PR_i. 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.

In Table 10, we show the regression results for children that are classified based on mother' and fathers' category. Table A4 shows the results for the same model [from equation (5)], but for both parents, single mothers, and single fathers. Here, 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 not significant. 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. The results in Table A5 are consistent with the findings in Table 10.

VII. Conclusion

In this research, we investigate the relationship between individuals' METR and RRSP withdrawals across generations of children and their parents. The children are sub-grouped based on parent type (mother versus father), parents' withdrawal mistake frequency indicator (big versus small mistake), or parental earnings (low versus high income). We study whether the parents' behavior in terms of optimal time of withdrawal of savings impacts their children's behaviour. The optimal or right time of withdrawal is defined as years in which the METR for the individual is less than or equal to the average METR observed in our sample. Secondly, we seek to understand the influence that parents have on their children in terms of making withdrawal mistakes. Lastly, we examine the impact of parents' frequency of mistakes have on the children during their adulthood.

Using the Intergenerational Income Database prepared by Statistics Canada, we test the models built based on the above-mentioned questions to understand the intergenerational behaviour of the Canadian population. First, we find that the RRSP withdrawal amount increases as the income increases. A reason for this can be that people who earn more, contribute more to their RRSP account, and therefore can withdraw higher amounts when in need, compared to a person who earns lesser. Second, the METR and RRSP withdrawal amounts are positively correlated for the children and the parents. The coefficients are statistically significant at 1 percent level. This means that when the METR increases, the amount withdrawn from the RRSP account will increase on average. It is important to note that the calculation of METR based on administrative data requires important modeling assumptions. In this study, we cannot rule out that alternative ways of calculating the METR could lead to a different relationship between the amount of withdrawal and the METR. We let further research on this topic investigate this important question. Third, the parents' withdrawal mistake frequency does not create a difference in the effect of METR on the RRSP withdrawal amount withdrawn and whether a withdrawal is made by the children. Lastly, the mothers' withdrawal mistake frequency has a significantly positive relationship with the children's mistake frequency. However, this does not hold true for the fathers.

In this study we focus on the RRSP withdrawal decisions made by individuals, which enables us to learn about one aspect of the intergenerational transmission of saving behaviour in terms of RRSPs. This research could be further extended by linking survey data incorporating information on wealth, education, and job stability to understand the factors that drive this behavior.

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Appendix

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 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		

Notes: 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 – variables considered in the analysis

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

Table A3 – Descriptive statistics of the Population subset

	CHILDREN			MOTHERS			FATHERS		
	Mean	**SD**	**Count**	**Mean**	**SD**	**Count**	**Mean**	**SD**	**Count**
Demographics									
Birth year	1976	2.70	1,738,460	1951	4.23	1,631,190	1949	4.11	1,541,090
Age in year 2002	26	2.70	1,738,460	51	4.25	1,631,190	53	4.19	1,541,090
Parent age at childbirth	-	-	-	25	3.99	1,631,190	27	3.98	1,541,090
Female (%)	48.70	-	846,550	100	-	1,631,190	-	-	-
Male (%)	51.30	-	891,910	-	-	-	100	-	1,541,090
Time-variant									
Marital status									
Married (%)	38.97	-	6,062,650	76.74	-	11,625,640	86.87	-	12,697,220
Common law (%)	16.09	-	2,503,970	3.05	-	462,060	2.78	-	406,110
Single (%)	40.16	-	6,247,800	3.46	-	523,580	2.01	-	294,320
Widow (%)	0.08	-	12,110	3.46	-	524,770	0.82	-	119,280
Divorced (%)	1.10	-	170,690	7.79	-	1,179,360	3.48	-	507,950
Separated (%)	3.32	-	517,060	4.83	-	732,080	3.23	-	471,630
Unstated (%)	0.29	-	44,580	0.67	-	101,000	0.82	-	119,460
Income									
Total income	36,100.00	38,162.88	15,558,850	28,700.00	114,933.46	15,148,490	56,800.00	119,699.28	14,615,960
T4 Earning	31,100.00	31,760.49	15,558,850	22,100.00	28,906.82	15,148,490	43,600.00	85,676.85	14,615,960
Self-employment	1,400.00	15,072.80	15,558,850	1,200.00	14,780.52	15,148,490	4,500.00	206,105.21	14,615,960
Capital gain	170.00	8865.09	15,558,850	590.00	13,729.12	15,148,490	1,400.00	34,990.91	14,615,960
Dividend	610.00	11,206.52	15,558,850	710.00	16,378.33	15,148,490	1,400	38,868.99	14,615,960
Investment	100.00	1,569.42	15,558,850	660.00	4,300.68	15,148,490	740.00	9,185.72	14,615,960
Other	2,700.00	9,385.92	15,558,850	3,400.00	107,957.92	15,148,490	5,200.00	205,407.45	14,615,960
Saving Plan									
RRSP contribution	1,200.00	3,170.52	15,558,850	1,500	5,161.39	15,148,490	2,900.00	6,724.16	14,615,960
RRSP withdrawal	180.00	1,377.89	15,558,850	440	4,596.81	15,148,490	520.00	5,148.75	14,615,960
RPP contribution	630.00	1,724.23	15,558,850	600	1,822.57	15,148,490	900.00	2,396.68	14,615,960
Withdrawal at wrong time (%)	51.95	49.96	1,586,730	51.58	49.97	1,057,800	55.25	49.72	985,780
Tax rate									
METR	26.11	17.35	15,558,850	22.75	18.49	15,148,490	32.95	16.89	14,615,960
Time invariant									
# of RRSP contributions	3.42	3.62	1,738,460	3.35	3.77	1,631,190	4.48	3.90	1,541,090
# of RRSP withdrawals	0.90	1.80	1,738,460	0.63	1.42	1,631,190	0.63	1.38	1,541,090
High income earner (%)	28.30	45.05	1,738,460	27.52	44.66	1,631,190	27.06	44.42	1,541,090
Big RRSP withdrawal mistake (%)	47.63	49.94	591,050	46.31	49.86	463,870	50.42	50.00	443,670

Notes: Descriptive statistics of the population subset for children, mothers, and fathers: 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. All monetary figures are in nominal dollar values.

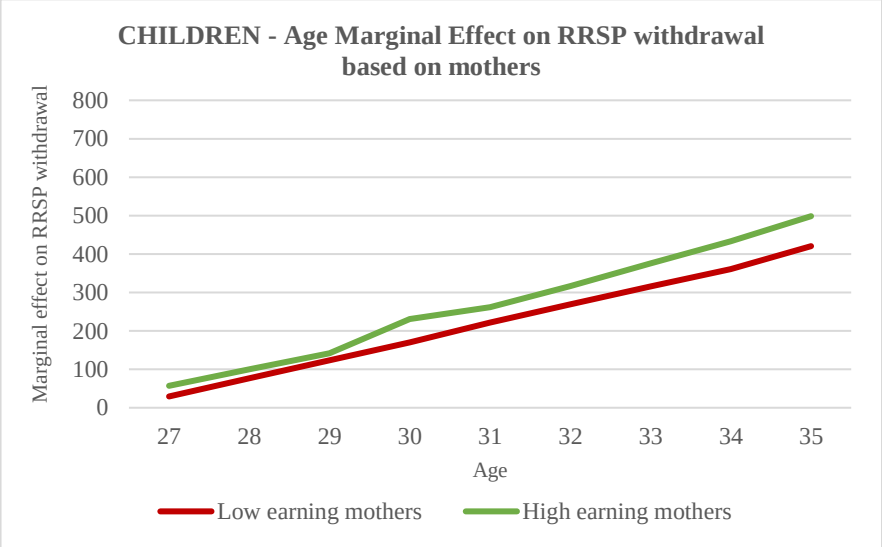
Table A4 – Effect of Parental RRSP withdrawal mistake frequency on Children based on parent

(•) Children's data categorized based on the <u>number of parents and parent type</u>

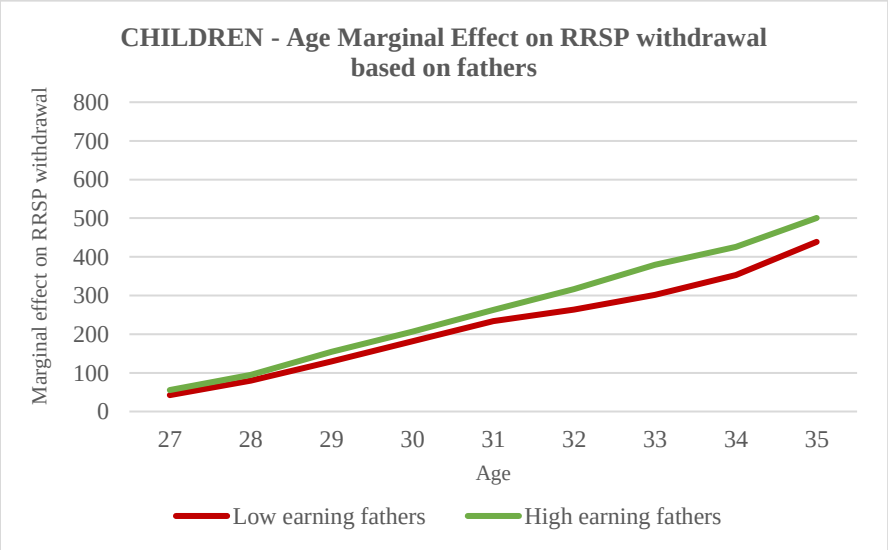
	BOTH PARENTS			SINGLE MOTHERS			SINGLE FATHERS		
	(1)	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**	**(1)**	**(2)**	**(3)**
Mother's MR	0.000876*	0.00839*	0.00832*	0.00928**	0.00934**	0.00934**			
	(0.00368)	(0.00367)	(0.00367)	(0.00308)	(0.00308)	(0.00308)			
Father's MR	0.000416	0.00028	0.000254				0.00266	0.00249	0.00251
	(0.00371)	(0.0037)	(0.0037)				(0.00326)	(0.00326)	(0.00326)
RRSP withdrawal		0.0753***	0.0743***		0.0487***	0.0489***		0.0628***	0.0611***
		(0.00537)	(0.00543)		(0.00398)	(0.00402)		(0.0043)	(0.00434)
RRSP withdrawal ^ 2		-0.00480***	-0.00474***		-0.000782***	-0.000785***		-0.000839***	-0.000822***
		(0.00102)	(0.00101)		(0.000097)	(0.0000973)		(0.0000517)	(0.000052)
Average Total Income			0.00213*			-0.000203			0.00258***
			(0.000956)			(0.000652)			(0.000659)
Average Total Income ^2			0.0000721*			-0.00000628*			-0.0000199***
			(0.0000367)			(0.00000279)			(0.00000281)
Intercept	0.507***	0.491***	0.485***	0.508***	0.497***	0.497***	0.503***	0.489***	0.482***
	(0.00594)	(0.00601)	(0.00654)	(0.00475)	(0.00482)	(0.00518)	(0.00516)	(0.00522)	(0.00555)
Fixed effects									
Age	✓	✓	✓	✓	✓	✓	✓	✓	✓
Gender	✓	✓	✓	✓	✓	✓	✓	✓	✓
R^2	0.001	0.005	0.005	0.001	0.003	0.003	0.001	0.004	0.004
Number of observations	76,810	76,810	76,810	99,350	99,350	99,350	88,450	88,450	88,450

Notes: 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- KR_i. The main independent variable is the ratio of withdrawal mistakes at parental level- PR_i. 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.

Graph A1 – RRSP withdrawal of Children by age – categorized by Mothers' income group



Graph A2 – RRSP withdrawal of Children by age – categorized by Fathers' income group



Notes: The graphs A1 and A2 show the trend of the coefficients estimated using OLS method. These graphs are created for the Children during their ages of 27 to 35, using 26 years as the reference point.