

**The Canadian Tax-Free Savings Account:
An Analysis of Early Participation, Current Opportunities
and Considerations for the Future**

**By
Chris Dickinson**

**An essay submitted to the Department of Economics in partial
fulfillment of the requirements for the degree of Master of Arts**

**Queen's University
Kingston, Ontario, Canada**

July 2013

Copyright © Chris Dickinson 2013

Acknowledgments

I want to thank Professor Robin Boadway for all the assistance he has provided in the formation of this essay. I would also like to thank everyone in the Department of Economics at Queen's University for their tremendous support through both my undergraduate and graduate careers at such a fantastic institution.

Table of Contents

Acknowledgments	ii
Table of Contents.....	iii
Introduction.....	1
What is a TFSA?	3
Tax-Prepaid Accounts Abroad.....	5
TFSAs Place in the Domestic Canadian System	7
Early TFSA Participation.....	11
Rational Investors? (Calculating the Marginal Tax Rates of TFSA Savers).....	14
Household Saving and Other Extensions.....	20
What Kind of Savings are going into TFSAs?	21
Regression Model	24
The Future of TFSAs	25
Future Considerations and Recommendations.....	27
Conclusion	30
Bibliography	33
APPENDIX A - TABLES AND FIGURES	35
APPENDIX B - METR CALCULATION DETAILS	44

Introduction

Personal and household savings play a major and increasingly important role in modern economies across the globe. In the most basic economic sense savings are funds from current income that are not spent on immediate consumption but are saved for use at a later date. Individuals and family units are provided with a variety of options and methods to go about such savings, from traditional savings accounts to government and employer assisted pension and retirement accounts. These different savings vehicles are tailored to suit specific savings targets and goals through variations in term structure, interest rate, and tax treatment.

Savings can be done for a number of different purposes; it may be savings for everyday use and “rainy-day” expenses or as retirement savings to be used once one has transgressed past working age as support in old age. Saving may be done with the intention of making bequests to one’s heirs as well, which raises some additional issues that affect the form of savings in ways that are relevant for tax policy and assistance. Two recent trends have brought the issue of savings to the forefront of policy debates and discussion in the Canadian system. The first of these is the demographic change that our population is poised to experience in the next few decades as the baby boomer generation moves into retirement and old age. As an increasingly large proportion of our population enters into retirement age, their savings will play an even more important role in providing support and supplementing our government’s old age security programs. Despite this, the second trend indicates a startling decrease in national savings levels over the recent past,

mirroring the savings situation in many other developed countries over that time. “The personal savings rate of Canadians has decreased dramatically over the past several decades. Thirty years ago, in 1982, Canada had a personal savings rate of 20.2 percent. Since 2000, the annual rate has never been above 5.2 percent.” (Donnelly *et al*, 2012: 364).

In response to these pressures the Canadian government introduced a new initiative in the 2008 federal budget in the form of the Tax-Free Savings Account (TFSA). These accounts were introduced in 2009 and as the name suggests, provided a new tax-assisted savings vehicle for individuals to take advantage of as part of their overall savings portfolio. The remainder of this paper will analyze the performance of the TFSA system through its first three years of operation and address a number of important issues and concerns inherent in the system. In this regard the paper will cover three main areas of analysis into the performance of the TFSA system. First, we will examine the participation in the regime and the characteristics of those individuals investing in these accounts, focusing more specifically on the marginal tax rates facing these savers. Second, we will examine the kinds of savings that are going into these accounts and try to estimate what proportion of these funds can be seen as “new” savings rather than simply crowding out savings that would have otherwise gone into different savings vehicles. Lastly, we will examine forecasts of the performance of the TFSA system into the future that provide predictions of the effects that a fully “mature” system will have on savings behaviour and government revenue generation in years to come. This analysis will provide an overview of the performance of the TFSA system through its

infancy and highlight areas for further research and policy debate to strengthen and improve the system going forward.

What is a TFSA?

The tax-free savings accounts introduced into the Canadian tax system in 2009 are individual savings accounts administered in a tax-prepaid fashion. Jonathan Kesselman and Finn Poschmann originally proposed tax-prepaid savings plans in a 2001 paper published in the *Canadian Tax Journal* (Kesselman *et al*, 2001). In their paper they eloquently described the structure of such plans as “a mirror-image of the RRSP approach to taxing savings on a consumption basis—there is no tax deduction for the initial plan contribution (hence the savings are “tax-prepaid”), but there is no subsequent taxation on the investment returns or the withdrawal of funds” (Kesselman *et al*, 2001: 42). The TFSA system was crafted along these lines and shares many similarities to the tax-prepaid savings plans (TPSP) proposed in their seminal paper.

Starting in 2009 every Canadian over the age of 18 has been able to contribute up to \$5,000 annually into a TFSA held at a bank or other financial institution. Individuals are not limited to holding only one account and may have multiple accounts across different institutions as long as they stay below the contribution limit. The annual contribution limit is indexed with inflation, increasing at \$500 intervals, so that the real level of contributions remains fixed. This inflation indexation took place for the first time in 2013 when the annual contribution limit was increased to \$5,500. Additionally, one of the central features of the TFSA system

is that unused contribution room can be carried forward indefinitely and used at any time in the future. This means that savers are not constrained by a “use-it-or-lose-it” policy and contribution room can be accumulated for use in future years, although not indexed for inflation, when saving may be more practical or appropriate.

This “carryover” policy has the effect of ensuring that all individuals of the same age have the same total room available in a TFSA, whether they have contributed in the past or not. While this may seem like the ultimate in equitable policies, it is not without its critics who believe that contribution room should be based on something more analogous to needs such as income level. The policy raises additional issues in respect to the fact that the “young” TFSA system we have in operation right now will be quite different from the “mature” system to which we will be subject to in a few decades if no reforms are made. The evolution to a “mature” system will be gradual as younger cohorts age with the TFSA initiative and their contribution room accumulates with them. Whereas individuals who are 40 years old with the current system are limited to total contributions of up to \$25,000 (2009 dollars) in 2013, a 40-year old in 2040 who is subject to a “mature” TFSA system will have total contribution room of \$115,000 (2009 dollars). In the absence of reforms such a difference will have a major effect on the way in which governments collect tax revenue and the size of the tax base from which it is collected. While some of these concerns about the future can be examined by looking at the performance of similar tax-prepaid systems around the globe that

have had more time to mature, this contribution room accumulation policy is a uniquely Canadian issue as will be discussed below.

Tax-Prepaid Accounts Abroad

While the TFSA initiative was no doubt influenced by early proposals from Kesselman, Poschmann and others along with a strong desire to spur savings among the general population, Canada can be seen as following in the footsteps of other countries around the globe who have introduced similar programs in the recent past. It is interesting to note that tax-free saving has been available in Canada in the past through housing equity, which acts like a TFSA without limits. Similar tax-prepaid savings vehicles were introduced in both the United States (U.S.) and United Kingdom (U.K.) at the end of the 90's whose performance can help us make predictions about the opportunities and experiences that we might encounter as our system matures.¹

The U.K. introduced its version of a tax-prepaid account known as the Individual Savings Account (ISA) in 1999. While having somewhat more structure and a few more restrictions than the Canadian TFSA, ISAs are similar in terms of their tax treatment. UK residents above 18 year of age are able to hold either or both of cash or stocks and shares ISAs with a combined contribution limit of £7,200 per year. These accounts follow a long tradition of the U.K. government offering tax-preferred savings vehicles to their population (e.g. Tax-exempt special savings

¹ For a detailed comparison of tax-prepaid accounts abroad see Certified General Accountants Association of Canada (CGA Canada), Issue in Focus (2009) - "Tax-Free Savings Accounts – Shifting Opportunity" - http://www.cga-canada.org/en-ca/ResearchReports/ca_rep_2009-01_tfsa.pdf

accounts, or “TESSA”, coming before) and have seen high participation since their inception.

The U.S. introduced their Roth Individual Retirement Accounts (Roth IRA) in 1998 as an extension to its already complex saving system that includes a number of tax-deferred vehicles. Not restricted by age these accounts are open to anyone who has taxable compensation or self-employment income. Roth IRAs are additionally restricted by the fact that individuals above a certain income threshold (which varies due to marital status) have their contribution room drop to zero.

Contributions limits are otherwise set to US\$5,500 a year up to age 50 and US\$6,500 a year for individuals 50 or over. The other major difference in the operation of the Roth IRA is that there is a minimum age of 59 ½ required for withdrawals as well as a 5-year lock in period, making these accounts more specifically focused on saving for retirement.

From the basic descriptions above it is apparent that U.K ISAs provide a savings vehicle that more closely resembles the TFSA offered in Canada, making it more appropriate for use in comparison and drawing conclusions. That being said, both the ISA and Roth IRA differ substantially from the TFSA in their treatment of unused contribution room. Where in the TFSA this room can be carried forward indefinitely, in the U.K. and U.S. plans this yearly contribution room cannot be accumulated and is lost if not used. This difference could have major implications for the performance of the TFSA as it evolves to a “mature” system throughout the next few decades.

The longer duration of operation for tax-prepaid accounts in the U.K. and the U.S. has enabled evaluation of their performance on empirical grounds in a number of different studies. The focus of these studies has generally been on what proportion of the savings going into these accounts actually accounts for “new” savings. As explained in a 2004 OECD paper, for these accounts to increase savings it must be the case that “the funds going into such accounts need to have come from individuals reducing their consumption levels as opposed to simply moving money from one form of saving to another” (Attanasio *et al*, 2004: 146). Unfortunately, the results and conclusions from such studies are mixed, providing a rather ambiguous understanding of the consequences of these programs.

Studies commissioned by Her Majesty’s Revenue and Customs (HMRC) in the U.K., revealed that ISAs have been successful in extending saving habits across all income levels (Hall *et al*, 2007). However studies done elsewhere provide less convincing evidence of the savings incentives provided by these tax-prepaid savings vehicles. Researchers for the OECD found that the evidence, “for IRAs in the US, and TESSAs and ISAs in the UK, suggests that, at the most, only relatively small fractions of the funds going into tax-advantaged savings vehicles can be considered to be “new” saving” (Attanasio *et al*, 2004: 166).

TFSA's Place in the Domestic Canadian System

Now that we have a better idea of what TFSA's are and the structure of tax-prepaid plans more generally it is important to understand how they fit within Canada’s domestic savings system. Individual savers and families in Canada have a

choice between a number of different vehicles when making saving decisions for their future. Some of the more popular alternatives are Registered Pension Plans (RPP), Registered Retirement Savings Plans (RRSP), Registered Education Savings Plans (RESP), or using home equity as a sheltered savings vehicle. As an insightful paper done by TD Economics states, “Canada’s retirement income system is comprised of three pillars: 1) income-tested old-age transfers, 2) contributory but mandatory public pensions, and 3) individuals’ tax favoured registered self-saving accounts and employer provided pensions” (Alexander *et al*, 2010: 2). These different pillars each serve specific functions and goals in the domestic Canadian retirement and saving system. The consequences of investing in one or more of these vehicles rather than others becomes important for individuals with finite resources who are unable to maximize their contributions into each vehicle.

For most of these savers the choice between savings vehicles will most likely be deciding whether to invest in a RRSP or a TFSA. Both of these savings accounts are part of the third pillar of retirement savings that consists of all forms of voluntary and government-assisted savings. While optimally these two accounts should be used in combination to provide the most tax-efficient savings portfolio, the use of one or the other by itself may be beneficial under certain circumstances and at different points in a saver’s life. The difference stems from the fact that RRSPs are treated on a tax-deferred basis while TFSAs are tax-prepaid. “The key condition for equivalence of the two types of savings plans from the taxpayer’s standpoint is that the marginal effective tax rate (METR) be equal at the time of saving (METR0) and when funds are withdrawn for consumption (METR1)” (Kesselman *et al*, 2001:

57). For individuals with a low METR at the time of saving relative to when the funds are withdrawn it is beneficial to save using the TFSA, and vice-versa for individuals who expect to face a lower METR when withdrawing relative to when saving. The hypothesis that individuals with lower current METR will be investing in TFSAs will be tested later in the paper by examining the actual participation in the program over its first few years. Another advantage to TFSA investing for some individuals is the fact that, unlike RRSP withdrawals, those made from a TFSA will not affect eligibility for federal income-tested benefits. The vehicles differences in tax timing leads to differences in the treatment of investment returns as well. By taxing at the time of withdrawal, RRSPs tax above-normal capital income while a TFSA does not. This may have consequences for the types of investments that people are willing to make in these accounts.

More specialized RESP accounts were introduced to help parents save in a tax-free manner for their children's post-secondary education. RESP accounts have additional benefits in the fact that the Canadian government will supplement contributions through the Canada Learning Bond (CLB) and the Canada Education Savings Grant (CESG). As long as the withdrawals are used for an approved educational purpose, any income or gains and government grants are taxed in the hands of the student beneficiary who will most likely face little or no tax on these withdrawals, making them equivalent to the tax-prepaid nature of TFSAs. Due to the specialized nature of the RESP it is likely that they will continue as the most viable post-secondary education savings vehicle rather than being replaced by the TFSA in this regard.

The similarities between investing in a TFSA and increasing home equity are important to understand as they are both comparable forms of tax-prepaid saving. Because there is no tax on the imputed income or capital gains generated through home ownership, individuals can save in a tax-prepaid manner by paying down mortgage debt and building up home equity. The tax-prepaid treatment of home equity is a vital component of the tax system as it is, “quantitatively almost as important as pensions and retirement savings in the life-cycle savings of Canadians” (Davies 2009). The availability of this form of tax-prepaid saving has the potential to compete with and reduce the interest in TFSA savings for certain individuals. The high level of substitutability between these two forms of savings suggests that TFSAs may come to replace the use of RRSP funds as a source for home equity in the future.

As it stands now, many individuals contribute to RRSPs and RPPs through employer-sponsored programs where, for RPPs, contributions may be subsidized or even matched by their company. This means that a fair amount of the savings we see going into these vehicles is unlikely to be moved in the near future as these plans continue operating. As TFSAs gain wider recognition and contribution room continues to accumulate it is likely that we will see companies begin to offer additional employer sponsored plans that are held in TFSAs as well as the traditional accounts. These changes will mirror the gradual transition in the Canadian savings system to a more balanced variety of options that can work in unison to promote the most efficient savings portfolios for individuals and family units with different characteristics.

Early TFSA Participation

Entering into its fifth year of operation at the beginning of 2013 the TFSA regime has already become a popular savings option for Canadians across the country. While financial data is only available up until the 2011 tax year it is already apparent that TFSA accounts have become a viable alternative savings vehicle for savers across all incomes and age groups. “By the end of 2011, approximately 8.2 million Canadians had opened a TFSA, and financial assets held in TFSAs were valued at over \$62 billion” (Finance Canada, 2013). Currently at about 31% of adult tax filers, participation growth is expected to continue into the future as individuals become more knowledgeable about the options and the financial industry continues to advertise and promote the program.² A 2013 report titled “Tax Expenditures and Evaluations 2012: Tax-Free Savings Accounts: A Profile of Account Holders” by the Department of Finance provides the most accurate and up-to-date overview of the TFSA initiatives performance over its first few years of operation.

Some of the most important aggregate statistics compiled by the study are expressed in Figure 1 of Appendix A. This chart includes data on the number of individuals holding an account, the total annual contributions made, and the end-of-year fair market value of all TFSA accounts. As is apparent, each of these statistics has increased steadily over the first three years of operation. The total number of individuals holding a TFSA has risen from 4.9 million in 2009 to 6.7 million in 2010

² A simple Google search of “TFSA” yields a wealth of bank advertisements for the accounts along with a Globe and Mail article whose comments section sheds light on the publics backing of the program (for the most part) – “Who will benefit most from the TFSA increase?” - <http://www.theglobeandmail.com/globe-investor/personal-finance/household-finances/who-will-benefit-most-from-the-tfsa-increase/article5671686/>

and finally to 8.2 million by the end of 2011. Total annual contributions to TFSAs have been on an upward trend as well, increasing from about \$19 billion in 2009 to over \$25 billion in 2010 and to over \$30 billion in 2011. It is interesting to note that over the same period average annual contributions to RRSP accounts have remained relatively steady at around \$34 billion. “Therefore, only three years after its introduction, the TFSA has approached the RRSP in terms of contribution flows even though TFSA contributions are invested from after-tax dollars whereas RRSP contributions are made from pre-tax dollars” (Finance Canada, 2013). Likewise the end-of-year fair market value of all TFSA accounts has risen from around 18 billion in 2009 to over 62 billion in 2011.

TFSA participation rates have followed a similar pattern and increased steadily over the first three years of operation. “Overall, the number of TFSA holders as a proportion of adult tax filers (or the participation rate) has risen over time, increasing from 19% in 2009 to 26% in 2010 and to 31% in 2011” (Finance Canada, 2013). In terms of provincial participation, Figure 2 was taken directly from the Finance Canada study and provides a comparison of TFSA participation rates across the provinces for the 2011 tax year. These rates ranged from 15% to 36%, and were highest for British Columbia, Alberta, and Ontario.

Figures 3 and 4 are also taken from the Finance Canada study and show the variation in participation rates along both age and income levels for each of the first three years of operation. TFSA participation rates are relatively stable between ages 25 and 49, and generally increase with age thereafter. In relation to income, we see that TFSA participation rates steadily rise with total income, increasing from 20%

for individual tax filers with annual income of less than \$20,000 to 58% for individual tax filers with annual income of greater than \$200,000 in 2011. As the TFSA continues to mature and savers transfer their existing unsheltered assets into TFSAs, it is expected that an increasing proportion of savers will contribute less than the maximum annual amount. The report found that, “while the portion of TFSA holders who contributed less than \$5,000 has been increasing over time for all income groups, this portion decreases as income rises” (Finance Canada, 2013). The high participation rate for individuals above age 71 can be explained by the fact that, by this point in their lives, they are ineligible for savings in other tax-assisted plans such as RRSPs. The gradual increase in TFSA savings by individuals after the age of 49 is likely related to the increase in general savings seen by individuals in this age bracket, as they grow closer to retirement.

These participation statistics will play a major role in the next section of this paper when we take a closer look at the marginal effective tax rates (“METR”) facing individuals investing in these plans. What we would expect to see is a lower METR facing those with higher participation rates, suggesting that they are investing rationally in the TFSA that offers them a higher return. The Finance Canada evaluation and data set provide a valuable summary as to the short-term performance of the system but, with only three years of data to analyze, it is difficult to make any well-supported long-term predictions as to the consequences of the TFSA regime. That being said, “it is estimated that, by 2030, in combination with other registered savings accounts, [TFSAs] will permit over 90% of Canadians to hold all their financial assets in tax-efficient savings vehicles” (Finance Canada,

2013). The transition of the TFSA system from its current infancy to full maturity will take place over a number of decades. It is expected that, as this transition takes place and “investment income compounds tax-free, TFSA funds will comprise a progressively larger portion of private savings” (Finance Canada, 2013).

Rational Investors? (Calculating the Marginal Tax Rates of TFSA Savers)

As was discussed in previous sections of this paper, the individual benefit gleaned from using a tax-prepaid versus a tax-deferred savings vehicle depends upon the relative marginal effective tax rates (METR) at the time of contribution versus withdrawal. Because funds that go into a TFSA are after-tax dollars, we would expect individuals investing in these accounts to be ones that are expecting to face a lower tax rate when working than when in retirement. For individuals expecting a higher tax rate when working it will be more beneficial to invest in a RRSP where contributions can be deducted from current tax liabilities. In order to test this hypothesis we will use the Canadian Tax and Credit Simulator (CTaCS) STATA code developed by Professor Kevin Milligan at UBC to compare METR for individuals across income levels, provinces, and time (Milligan, 2012A).³

In a 2010 paper by the CD Howe institute, researchers performed a similar study through the examination of the Marginal Effective Tax Burden of both the TFSA and RRSP. They concluded that, contrary to expectations, “for many people, marginal effective tax rates on income from retirement savings are higher than those they face during working life” (Laurin *et al*, 2010: 1). It is important to note

³ All responsibility for the data and their interpretation lies with the author

that most of the METR calculations done in this section and the CD Howe paper are at the individual level. The additional options and effects of saving in a household context are explored in the next section. If the findings from our calculations match those found in the CD Howe study it would suggest that it is advantageous for many individuals to be saving for retirement in a tax-prepaid vehicle – such as a TFSA – rather than traditional tax-deferred accounts such as RRSPs.

The first calculation of METRs done using the CTaCS will be a simple comparison of the tax rates facing individuals with the same income in different provinces. These METRs will then be compared to the provincial participation rates we have witnessed to see if those provinces experiencing higher participation rates are in fact experiencing lower METRs. The CTaCS was used to calculate hypothetical METRs for a representative family unit with a primary earner making \$31,000 and a spouse making \$10,000. A number of other characteristics were also held constant across individuals to calculate the 2011 METRs for this representative household in each province. Further clarification of the analysis done and program used is included in Appendix B. The results are shown in Figure 5 alongside the TFSA participation rate for each province shown earlier. While not matching exactly, the results do show a trend that provinces with lower METRs tend to have higher participation rates for TFSA investment. That being said there are a number of provinces that deviate from this trend. The most obvious example is Quebec, which has the highest METR by far, yet has a higher participation rate than six other provinces. The decision to invest in a TFSA does not simply depend on the METR

facing an individual when working, but also the relationship between working and retirement METRs that is examined in the remainder of this section.

On the surface, evaluating METRs facing individuals of different income levels is relatively straightforward, as it mirrors the statutory rates that have been set by the government. In reality this evaluation is made more complex by the interaction of numerous provincial and federal tax provisions. These complexities are taken into account in the calculation done in the CD Howe paper for individuals in Ontario, Quebec, and Alberta, where it was found that the METR facing individuals is almost always higher in retirement across a wide variety of income levels. The CD Howe study calculated METRs using Statistics Canada's Social Policy Simulation Database and Model (SPSD/M), in much the same way that we will calculate them here using the CTaCS. Mirroring the decision by the researchers at CD Howe we have chosen to compare METRs in working and retirement by using a income replacement rate of 70% in retirement. As stated in the CD Howe paper, "The view that retirees need to replace about 70 percent of their gross working income to maintain their living standards in retirement is so widespread that it seems a natural benchmark figure for this analysis" (Laurin *et al*, 2010: 4).

Figures 6, 7 and 8 present comparisons of working and retirement METRs across different income levels for individuals in Ontario, Alberta and Quebec; three provinces with relatively high participation rates. Each of the charts presents the METR facing a working individual of age 50 for incomes at \$2,000 intervals from \$0 to \$150,000. These are then compared with the METR facing 70-year-old individuals earning retirement income at 70% of their working-life income. These comparisons

provide a general look at the basic METRs facing individuals earning employment or retirement income across a range of incomes. Retirement incomes and sources are formulated based on a 2008 paper by Statistics Canada on income in retirement (LaRoche-Côté *et al*, 2008). These calculations are focused solely on METRs for different income levels and more realistic examples are provided later when we construct a life cycle earnings and METR chart for hypothetical individuals.

The charts drawn from the calculations above present METR comparisons between employment and retirement similar to those in the CD Howe paper. They are presented for a range of employment income levels starting at the point when government benefits from old age security programs in retirement are just sufficient to replace their employment earnings at the specified replacement rate.

Importantly, the charts show that, for a number of income brackets, the METRs facing individuals in retirement (even at 70% replacement rate) are higher than the rates they would face when they were earning employment income. This would suggest that it is optimal for savers to be investing their savings, or as much as they can of them, into a TFSA account rather than a traditional tax-deferred vehicle. In Ontario, at the 70% replacement rate, we see that METRs are higher during employment than in retirement for individuals with incomes in two intervals, between \$34,000 and \$52,000, and between \$70,000 and \$94,000. Alberta has an even smaller percentage of income levels that face a higher METR during working life, only for individuals with incomes between \$34,000 and \$58,000. The situation in Quebec is similar in that we see higher METRs during employment years only for individuals with incomes between \$34,000 and \$56,000.

These higher METRs in retirement are in a large part due to the implementation of certain tax provisions that target retirement income above specific thresholds. Two such provisions are clawbacks of government benefits such as those on Guaranteed Income Supplement, “GIS”, income at a rate of 50% and on Old Age Security, “OAS”, pension payments at a rate of 15% for incomes above \$67,000.⁴ While all three provinces examined follow the same general trend, there are some differences that can be seen on closer examination due to differences in provincial tax policies. Similar analysis done for other provinces follows the same trend in that a large majority of income levels face a higher METR in retirement than while working. These results match those obtained in the CD Howe study and suggest that TFSA saving may be advantageous for a majority of the Canadian population.

The evaluation of METRs for individuals of different ages requires more complex analysis. This is necessary because it is impossible to predict the state of the future tax system and therefore the METRs that individuals will face as they age. This issue can be avoided by simplifying the process and assuming the tax system remains constant into the future. While this provides a less realistic prediction of the future state, it has the benefit of allowing some basic conclusions to be drawn. In Figure 9 and 10 we present a more realistic example for the METRs facing hypothetical individuals throughout their life cycle. The model is calculated for the primary earner and spouse in a household from the age of 20 until 90. The primary earner enters the workforce at 20 with an income of \$30,000 and gets a raise of

⁴ Service Canada- “Old Age Security Program” - <http://www.servicecanada.gc.ca/eng/isp/oas/oastoc.shtml>

\$1,000 each year until he or she retires at age 65 with an income of \$75,000.

Throughout retirement the primary earner has an income of \$52,500 a year, which matches a replacement rate of 70% of their employment income. The low-income spouse has earnings that follow a similar pattern, but start at \$10,000 and increase by \$500 a year until retirement at 65. As can be seen from the chart in Figure 9, the METR facing the primary earner in retirement is just over 34%, which is higher than they face in every year during employment except for between ages 32 and 38 and during significant spikes at ages 28 and 62. This example suggests that the TFSA provides a valuable and efficient savings vehicle for individuals at many points throughout their working life. Figure 10 shows the METRs facing the low earning spouse and presents a similar situation where employment METR only exceeds that in retirement between the ages of 40 and 49. These results suggest the advantage of using both tax-prepaid and tax-deferred savings vehicles over the life cycle to tax average and save in the most efficient manner. Apart from having different METR schedules, the addition of a low-earning spouse adds even more options for saving that will be explored in the next section.

One point of particular interest is the spike in TFSA participation that has been seen in the first three years by individuals between the ages of 25 and 29. This age group corresponds to individuals at the beginning of their working life who are relatively new to the labour force and for whom saving is generally done with a longer time horizon in mind. For these individuals the TFSA may constitute a more attractive savings option because of its flexibility and ease-of-use in relation to the other options available. Funds saved in a TFSA are free to be withdrawn at any time

and therefore savings does not have to be focused solely on retirement but can also be earmarked for shorter-term goals such as major purchases or expenditures.

Individuals in this age bracket may also be optimistic about future earnings potential and are investing into TFSAs now when their incomes are lower and they face lower METRs than they would expect in the future.

Household Saving and Other Extensions

The METRs in Figures 6, 7 and 8 above were calculated and analysed on an individual basis focusing on a sole income earner in both their working years as well as retirement. In reality, for many Canadians, savings and spending behaviour is conducted on a household basis where income and responsibilities may be split between more than one spouse, similar to the situation presented in Figures 9 and 10. For two-earner families with relatively equal incomes, the results will generally follow the ones shown above, as income is split between spouses both in working life and in retirement, resulting in similar METRs. For households with larger earnings differentials, or where only one spouse works, differences in working life METRs can have an effect on the optimal allocation of savings between spouses. In such a situation, the availability of pension sharing in retirement opens up additional savings opportunities. The Canadian pension sharing process combines the pension entitlements that have accumulated for both spouses during the time they have been together, and reallocates 50% of the combined total to each spouse. In this way, the process may result in tax savings through a reduction in the household tax bill. The introduction of pension sharing means that the METRs facing the higher income partner in their retirement years may be substantially lower than

those they faced when working, increasing the attractiveness of tax-deferred savings and pension plans.

Differentials in earnings and METRs between partners in a household may also introduce savings opportunities through the utilization of TFSAs and spousal RRSP plans. For more sophisticated savers, it may be possible to lower their overall household tax burden by having the high-earner contribute to a spousal RRSP for the lower-income spouse, who would subsequently withdraw the funds, incurring lower tax rates, to then contribute them to their TFSA after waiting the required three-year period when attribution rules apply. In this way, the income of a high-earning spouse can be contributed to the spouses TFSA at their lower rate of tax, while still receiving a RRSP contribution receipt for savings. The combination of savings vehicles available to individuals and households with the introduction of the TFSA introduces a number of new tax strategies that need to be fully understood and may require stronger government enforcement or reforms to control.

What Kind of Savings are going into TFSAs?

As a program with the intention of increasing savings, it is important to get a better understanding of what constitutes the savings that are actually going into TFSAs. One important aspect of this is trying to decipher what proportion of the funds going into TFSAs constitutes new savings rather than crowding out savings that would otherwise go into other accounts or vehicles. Similar studies on tax-prepaid plans abroad found that a relatively small amount of the savings going into these vehicles was actually “new” savings.

Unfortunately, being such a new program there is still relatively little data available on the savings going into TFSAs. This section explores the savings that comprise TFSAs by examining aggregate data from Statistics Canada and the Finance Canada study as well as survey results from a 2009 survey by Statistics Canada⁵. Despite only containing information from the first year of the TFSAs operation, the CFCS provides a wealth of information on early TFSA holders, their assets and financial situation. This cross-sectional survey was conducted between February and May 2009 and involves 15519 individual cases and 335 variables.

Before analyzing the CFCS data, we will briefly look at some aggregate statistics that give us a basic idea of how the introduction of the TFSA has crowded out and impacted investments and savings held elsewhere. Statistics Canada data on RRSP contributions show that the percentage of adult tax filers that have been contributing to RRSPs has been declining since 2000. Figure 11 shows that, while there was a noticeable decrease in the percentage of RRSP contributors from 25.7% to 24.5% in 2009, this seems to be part of a longer trend showing a decreasing percentage of contributors. The other major area of investment that has the potential to be crowded out by the introduction of the TFSA is savings that are held outside any specific tax-assisted vehicle or account. We would expect anyone holding a TFSA to move their unsheltered funds into such an account whenever room is available. Figure 12 shows the percentage of adult tax filers reporting taxable interest or dividend income from 2006 to 2011. The data is taken from the Finance Canada expenditure report based on T1 tax data from the Canadian

⁵ Canadian Financial Capability Survey (CFCS)

Revenue Agency (CRA). It shows a decrease in the percentage of tax filers reporting such income for each year TFSAs have been available, including a striking decrease from 37% to 33% between 2008 and 2009. It is important to note that the changes in both RRSP contributions and unsheltered interest/dividend income reported may have been influenced by various factors other than the introduction of the TFSA.

Included in the CFCS are a number of variables that can provide a clearer picture of the earlier adopters of the TFSA. The first two tables below are taken from weighted survey data and show the percentage of TFSA holders based on value of household income and demographic characteristics. From the Table 1 we can see that as income rises, TFSA participation raises from 6.8% for incomes below \$25,000 to 21.6% for incomes above \$150,000. These aggregate statistics suggest a total participation rate of around 14.7% of the population when weighted which is slightly below the 19% rate provided by the Finance Canada report. Some of this difference is no doubt due to the fact that the survey data was collected in the first half of the year while the Finance Canada data is from year-end. Table 2 shows TFSA participation rates based on age and sex of individuals. The results are consistent with those presented in the Finance Canada report and suggest that TFSA participation rises with age.

The abundance of survey variables with relation to financial situation and capability allows for an even more in-depth examination of early TFSA holders. Of particular interest is how TFSA holders believe they can handle unexpected expenses or maintain living standards in retirement relative to those who do not hold such accounts. As can be seen from Table 3, 57.8% of TFSA holders believe they

have a “good idea of how much money you will need to save to maintain your desired standard of living when you retire?” relative to 39.4% of non-TFSA holders. When asked if they would be able to use savings to handle an unexpected expense of \$5000, 46.3% of TFSA holders answered in the positive compared to only 27.9% of non-holders. These rough statistics speak to the flexibility of TFSAs and suggest that individuals and households using these accounts had more confidence in their financial capabilities than those without.

Regression Model

While the presentation and comparison of aggregate data can be informative in a general sense, we will use a simple regression model to get a more accurate estimate on the effect that TFSAs have had on actual saving behaviour. The cross-sectional and subjective nature of the survey responses means that the regression is more suited for drawing broad conclusions than empirically precise projections. The dependant variable in the regression model that is used as a proxy for savings is the “value of financial assets” as reported by the participants. Survey responses for this variable took one of 6 values, which represented different intervals of asset values. The independent variables included were region, age, sex, personal income, household income, and a number of binary responses for whether or not the respondent held a TFSA, RRSP, RESP, Cash Savings, or “Other Investments”. Summary statistics for the data are provided in Table 4. The regression results for the model are shown in Table 5. Included in the table are the OLS regression coefficients along with robust standard errors reported below each of the parameter estimates. The coefficient on the TFSA variable is .47216 and suggests that holders

of TFSAs have a higher value of financial assets, all else being equal. The TFSA variable has the highest coefficient other than that on the “Investments” category that includes a huge variety of different investment products such as stocks, bonds, term deposits, GICs, and Non-RRSP Mutual funds. These two variables are closely related as can be seen from the fact that, of the 1256 people in the data set who contributed to a TFSA only 349, or 27.8% reported having no “other investments”. It is interesting to note that the coefficient on RESP ownership is negative suggesting that people holding RESPs may have lower total savings, perhaps due to other current expenses related to childcare and rearing. While not providing exact dollar amounts the coefficients help to give us an idea of the strength and direction of the connection between each of the variables and saving.

Unfortunately, because we only have cross-sectional data and nothing over time that shows changes in behaviour after individuals open TFSAs, causality becomes an issue, as we cannot be sure what is the cause and what is the effect. It may simply be the case that those individuals more inclined to save and who already had accumulated more savings were more likely to take advantage of TFSAs. That being said, the advantages offered by the TFSA accounts to savers in all income brackets and circumstances along with the increasing popularity of the accounts, is likely to increase savings as TFSAs gain popularity and traction in the future.

The Future of TFSAs

The fact that the TFSA has just entered its fifth year of operation and the regime is still in its infancy makes it difficult to draw any strong conclusions about

the future consequences of the program. That being said, the projection of estimated tax revenue costs is an important issue for public policy reasons. As mentioned earlier, it is estimated that by 2030, the broader combination of savings vehicles available to Canadians means that a majority of taxpayers will hold all of their savings in tax-efficient vehicles. This could have a major effect on the timing and sources of government tax revenue in future decades. To help guide policy and prepare for such a situation in future years it is imperative to make forecasts of the future savings environment in light of the introduction of TFSAs.

This is exactly the type of simulation done by Kevin Milligan in his 2012 paper for the *Canadian Tax Journal*. Rather than project forward what a mature TFSA system will look like, Milligan proposes a “counterfactual supposition that a mature TFSA was already in place in 2005” (Milligan, 2012B: 2). In the paper Milligan simulates revenue costs in the tax system under a number of different levels of accumulated contribution per account, representing different levels of TFSA maturity. While there are some limitations to these simulations based on the infancy of the system and lack of significant data, they do provide an effective projection of potential revenue costs. Milligan’s results suggest substantial revenue costs associated with the operation of a mature TFSA system, which would have an effect on the way our income tax system functions. He concludes that, “A large proportion of now-taxable assets would become sheltered, leading to a noticeable decline in the federal tax base and an even bigger impact on federal revenues” (Milligan, 2012B: 6).

It is important to note the discrepancy between the simulations done by Milligan in his paper and the \$220 million in estimated forgone revenue calculated in the most recent Tax and Expenditure Evaluation report. This is in large part due to the fact that Milligan is estimating the impact of a mature TFSA program whereas the expenditure guide is examining the current system in its infancy. Milligan also makes the assumption that existing taxable assets will be shifted into TFSAs whenever room is available which may not prove true to be the case for a number of reasons. Nevertheless, the maturity of the TFSA system going forward will no doubt bring significant changes to the taxation of capital income in Canada, and as such the operation of our federal tax base and system.

Future Considerations and Recommendations

The flip side of future revenue concerns potentially caused by the TFSAs, is the problem that TFSAs were introduced to combat, being inadequate savings for retirement. A vast body of current research, analysis and forecasts, “suggests that far more lower-middle income Canadians (roughly those with incomes in the \$30,000 to \$60,000 range) will experience a decline in their standard of living over the coming four decades” (Alexander *et al*, 2010: 1). The introduction of TFSAs can be seen as a first step in reforming the current Canadian tax system and promoting increased retirement savings for individuals and households of all types.

The popularity of the TFSAs and continued concerns over retirement savings in our aging population suggest the need for further reforms and amendments to our current retirement income security system. A recent Finance Canada report on retirement income adequacy suggests that it is “likely that the attractiveness of

TFSA tax treatment to a large segment of the population will result in pressure to allow TFSA tax treatment of some RPPs, or for the replacement of some pension plans by group TFSAs” (Horner 2009). The TD economics report mentioned earlier suggests a number of potential options for expanding and enhancing the current pension system and other pillars of retirement saving. One consideration given considerable merit is, “instituting a lifetime limit rather than an annual limit for contributions to RRSPs and TFSAs” (Alexander *et al*, 2010: 18). Such a policy would allow more flexibility for individuals who face significant variance in their personal financial situation from year to year.

The early performance of the TFSA regime was the focus of a recent issue of the *Canadian Tax Journal* where a number of distinguished academics made proposals. A particularly interesting article was written by one of the fathers of the Canadian TFSA system, John Kesselman, where he articulated three deficiencies with the current system and possible reforms to address them. These deficiencies were raised with the intention of making the TFSA system more equitable and efficient in light of a proposal to double the annual contribution limit. The first deficiency had to do with the fact that all income from TFSAs is immune from income tests as was discussed earlier. Such a policy has the potential to allow individuals who otherwise wouldn’t and shouldn’t be eligible for government benefits such as GIS receive support from such programs by taking all their retirement income from TFSA withdrawals. Kesselman suggests “several possible methods of limiting the TFSA savings that are disregarded in the computation of GIS eligibility and benefits” (Kesselman, 2012: 380). The second deficiency concerned

the fact that the benefits from doubling the contribution limit would be disproportionately concentrated on high earners. One potential solution to this problem would be to integrate the TFSA and RRSP/RPP limits for individuals so that an increase in TFSA room would be additionally constrained by available RRSP contribution room.

The final deficiency raised by Kesselman is the inequity of the TFSA system for older persons in relation to younger cohorts who will grow up with the accounts. One interesting solution would be to grant all individuals above age 50, “a retroactive TFSA allowance equal to \$5,000 times his or her current age minus 50; this sum would be capped at \$100,000 and could be added to the ongoing \$5,000 annual limit” (Kesselman, 2012: 387). We think such a proposal holds considerable merit, as it strikes an effective compromise between full equity for older cohorts versus the revenue cost and the windfall gains to certain individuals with significant taxable assets relative to employment earnings (Kesselman, 2012: 387).

Not everyone has viewed the introduction of TFSAs as a desirable policy decision. A 2009 article from the *Canadian Tax Journal* examined a number of features of the TFSA regime and raised some concerns over the appropriateness of introducing such accounts in the Canadian system (Alarie, 2009). One of the papers major points was that many of the much-applauded features of TFSAs could have been incorporated into existing tax-deferred accounts, and “should therefore be assessed separately from the tax-prepaid versus tax-post-paid question, since they have simply been “bundled” with TFSAs, perhaps out of political convenience” (Alarie, 2009: 511). The paper raises a number of other criticisms about the design

of TFSAs including their treatment of supernormal returns, and lack of income tests for contribution limits. The second of these design features is a concern as it may lead to situations where, “some types of income that have not in fact borne tax (inheritances, gifts, strike pay, illegal income, windfalls, gambling gains, etc.) will be transferred to TFSAs, where they will earn further tax-free income” (Alarie, 2009: 527).

Conclusion

The introduction of the TFSA system just over 4 years ago brought a new era of opportunities and options for Canadian savers. The addition of a flexible tax-prepaid account for all adult savers has augmented a system mostly focused on tax-deferred plans. Savers in Canada have been given an additional tool to save not just for their retirement but also in a tax-free manner for unexpected expenses in their future. The rapid popularity of TFSAs across all income levels and provinces serves to reinforce the advantages and opportunities that they bring to the domestic saving system.

Canadian savers have and will be drawn to the flexibility and ease of use that the TFSAs provide. Because contributed funds are from after-tax dollars, the withdrawal procedure is less cumbersome when compared to traditional tax-deferred plans, and can be done whenever it suits the individual. As has been shown by the METR calculations shown earlier, TFSAs are the optimal vehicle for the long and medium-term savings of individuals in almost every age and income bracket. Their addition to the domestic Canadian tax system will allow individuals to plan

their savings accordingly and spread their tax burden more efficiently across their life cycle. While the desirability of the TFSA regime as a whole is still an area of considerable policy debate it cannot be denied that a number of design features within the system have the potential to make our tax system more efficient and effective.

As they gain popularity and traction in the future, TFSAs will constitute a larger and larger portion on our national savings portfolio. Concerns about the ability of the CPP and other programs to support our increasingly large retirement population means that funds held in these accounts will play an important role in supporting future cohorts of retirees as they transition from working life to retirement. That being said, as a larger portion of our country's savings are moved into TFSAs and other savings vehicles, it will have significant effects on our income tax system. It is important that these impacts are taken into account now when the system is in its infancy so that we can make reforms and changes to the system as it grows. If such public policy concerns are not addressed and understood then we may run into an unfortunate situation where a future government is forced to abandon the initiative altogether.

There can be no denying that the introduction of the TFSA system has made the Canadian tax and saving system more equitable and efficient by providing a new tax-prepaid vehicle to all individuals. While the effect on actual savings behaviour is less clear it is apparent that these accounts will play an increasingly important role in both everyday and retirement saving portfolios in years to come. The unique contribution carry-over rules will no doubt spur policy reforms and debates going

forward as the system evolves to full maturity. Twelve years after Kesselman and Poschmann's original proposal for the expansion of our recognition of personal savings in the Canadian tax system, it is clear that the introduction of TFSAs has served to augment the economy's efficiency and long-run growth and paved the way for a society "better prepared for a future with growing numbers of retirees, with more of them self-sufficient on the basis of their savings." (Kesselman *et al*, 2001: 91).

Bibliography

- Alarie, Benjamin, "Policy Forum: Assessing Tax-Free Savings Accounts—Promises and Pressures" *Canadian Tax Journal* vol. 57, no. 3 (2009): 504-32.
- Alexander, Craig, Grant Bishop and Francis Fong, "Retirement Income Security Reform: Rush Prudently, Don't Run Blindly" TD Economics Special Report. (June 10, 2010)
- Attanasio, Orazio P., James Banks, and Matthew Wakefield, "Effectiveness of Tax Incentives To Boost (Retirement) Saving: Theoretical Motivation and Empirical Evidence" *OECD Economic Studies* vol. 39, no. 2 (2004): 145-72.
- Certified General Accountants Association of Canada (CGA Canada), Issue in Focus (2009) - "Tax-Free Savings Accounts – Shifting Opportunity"
<http://www.cga-canada.org/en-ca/ResearchReports/ca_rep_2009-01_tfsa.pdf>
- Davies, James B., "Efficiency and Effectiveness of Savings Instruments Design" Department of Finance Canada. Research Working Group on Retirement Income Adequacy. (December 3, 2009) (3rd Revision)
- Donnelly, Maureen and Allister Young, "Tax-Free Savings Accounts--A Cautionary Tale from the UK Experience" *Canadian Tax Journal* vol. 60, no. 2 (2012): 361-374.
- Finance Canada, "Tax Expenditures and Evaluations 2012: Tax-Free Savings Accounts: A Profile of Account Holders" (2013)
- Hall, Suzanne, Nick Pettigrew and Stephen Bell, "Saving in ISAs, Final Report 22/10/2007", Research Study conducted for HMRC, (2007)
- Horner, Keith, "Retirement Saving by Canadian Households" Department of Finance Canada. Research Working Group on Retirement Income Adequacy. (December 1, 2009)
- Kesselman, Jonathan R. and Finn Poschmann, "Expanding the Recognition of Personal Savings in the Canadian Tax System" *Canadian Tax Journal* vol. 49, no. 1 (2001): 40-101.
- Kesselman, Jonathan R., "Policy Forum: Expanding the Tax-Free Savings Account—Requisite Companion Reforms" *Canadian Tax Journal* vol. 60, no. 2 (2012): 375-89
- Laurin, Alexandre and Finn Poschmann, "Saver's Choice: Comparing the Marginal Effective Tax Burdens on RRSPs and TFSAs" CD Howe Institute (January 27, 2010)
- LaRochelle-Côté, Sébastien, John Myles and Garnett Picot, "Income Security and Stability During Retirement in Canada" Statistics Canada Research Paper (2008)

Milligan, Kevin (2012A), Canadian Tax and Credit Simulator. Database, software and documentation, Version 2012-1

Milligan, Kevin, "The Tax-Free Savings Account--Introduction and Simulations of Potential Revenue Costs" *Canadian Tax Journal* vol. 60, no. 2 (2012B): 355-360.

Statistics Canada, "Canadian Survey of Financial Capability" (CFCS), (2008)

APPENDIX A - TABLES AND FIGURES

Figure 1

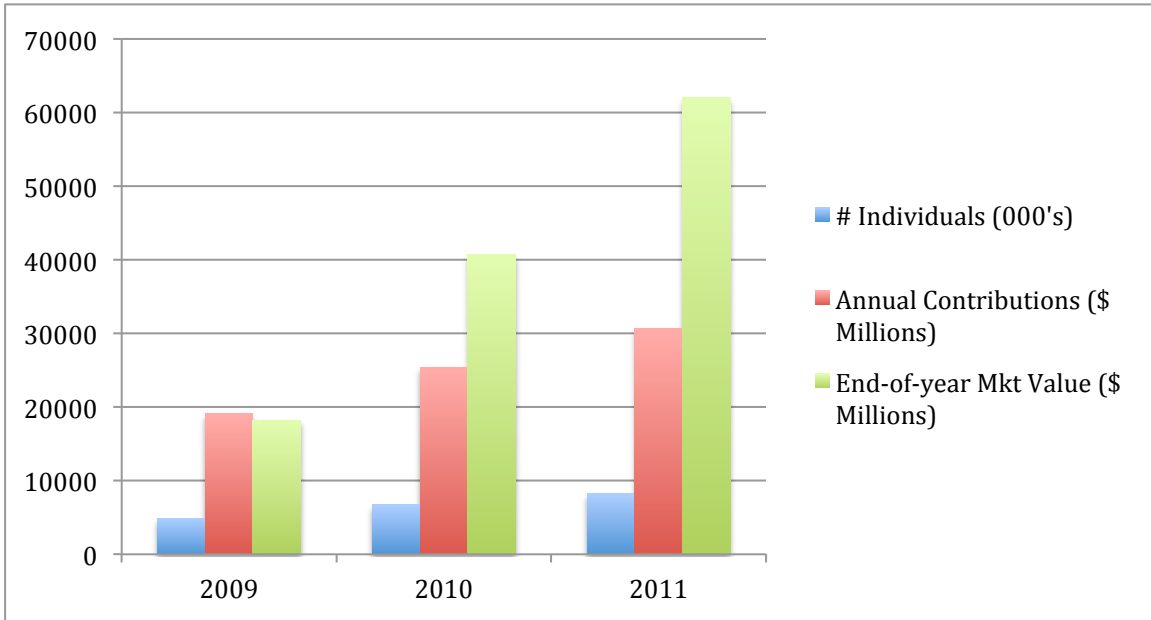


Figure 2 - Finance Canada

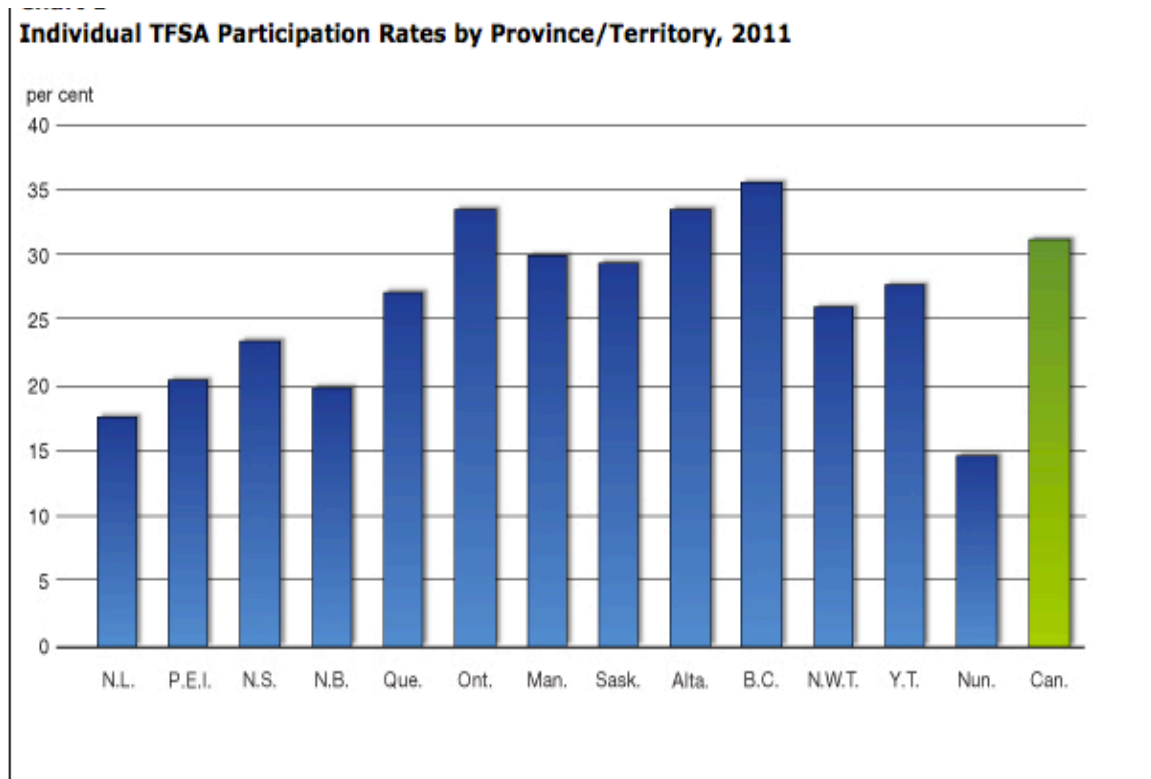


Figure 3 - Finance Canada

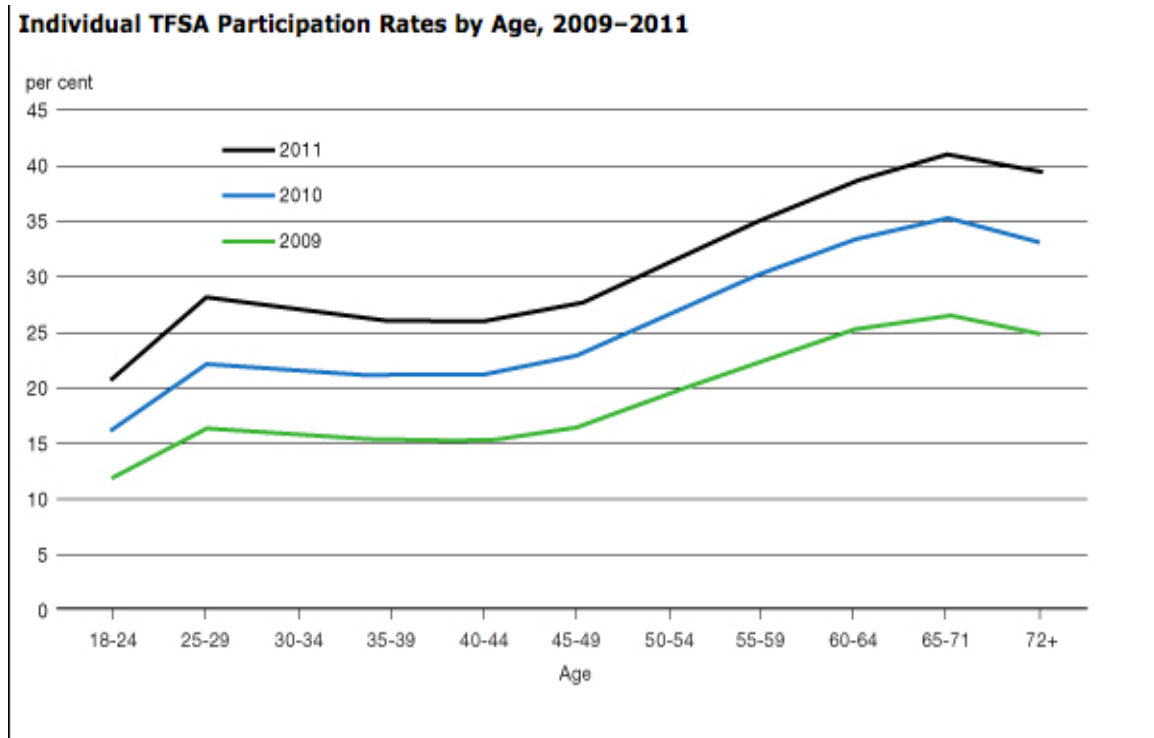


Figure 4 - Finance Canada

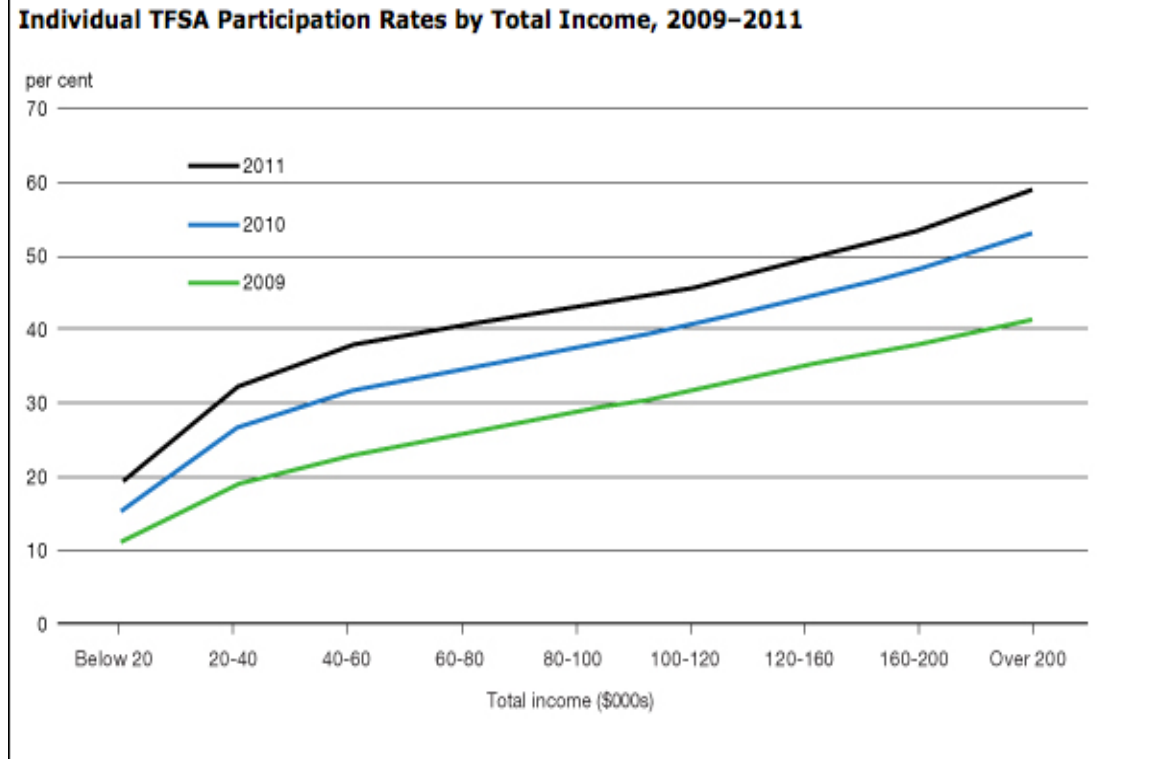


Figure 5

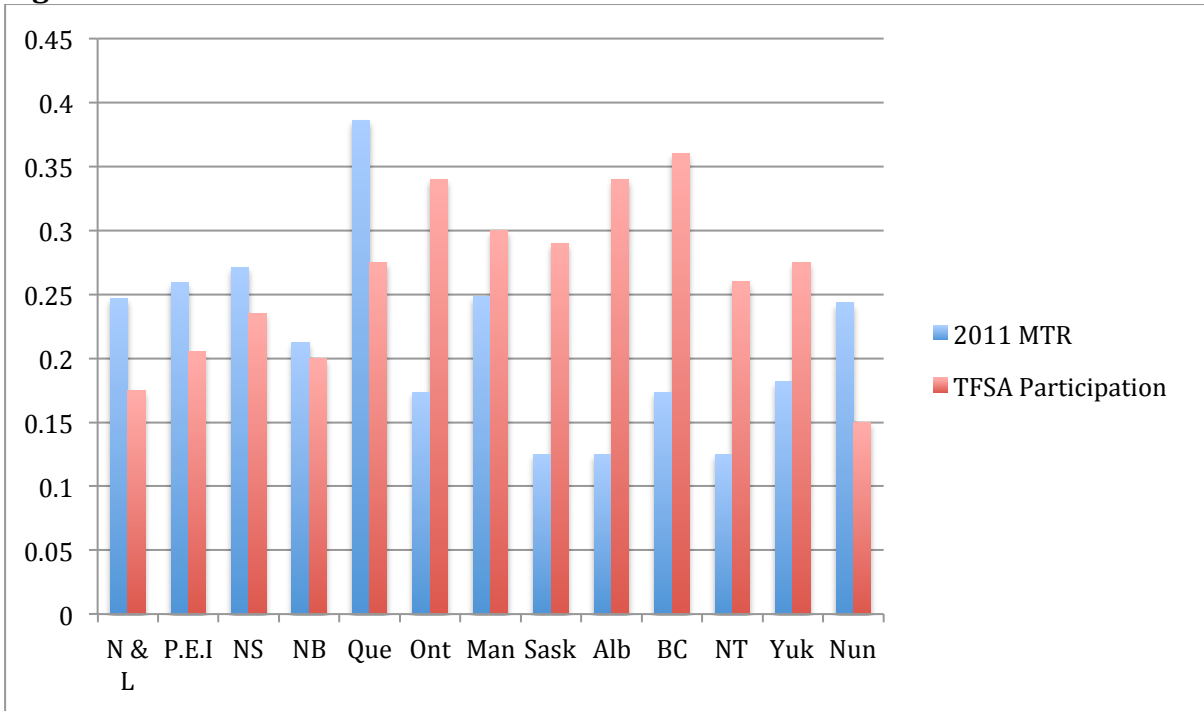


Figure 6

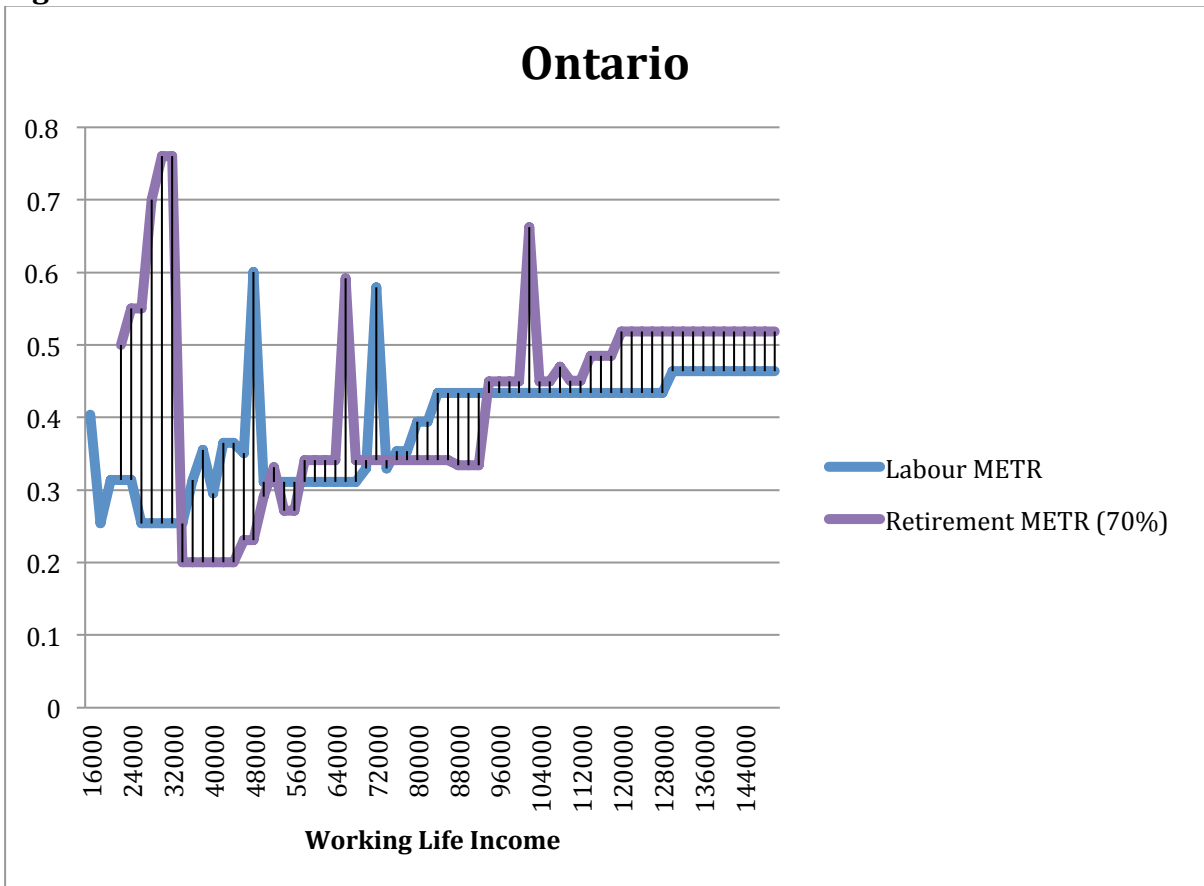


Figure 7

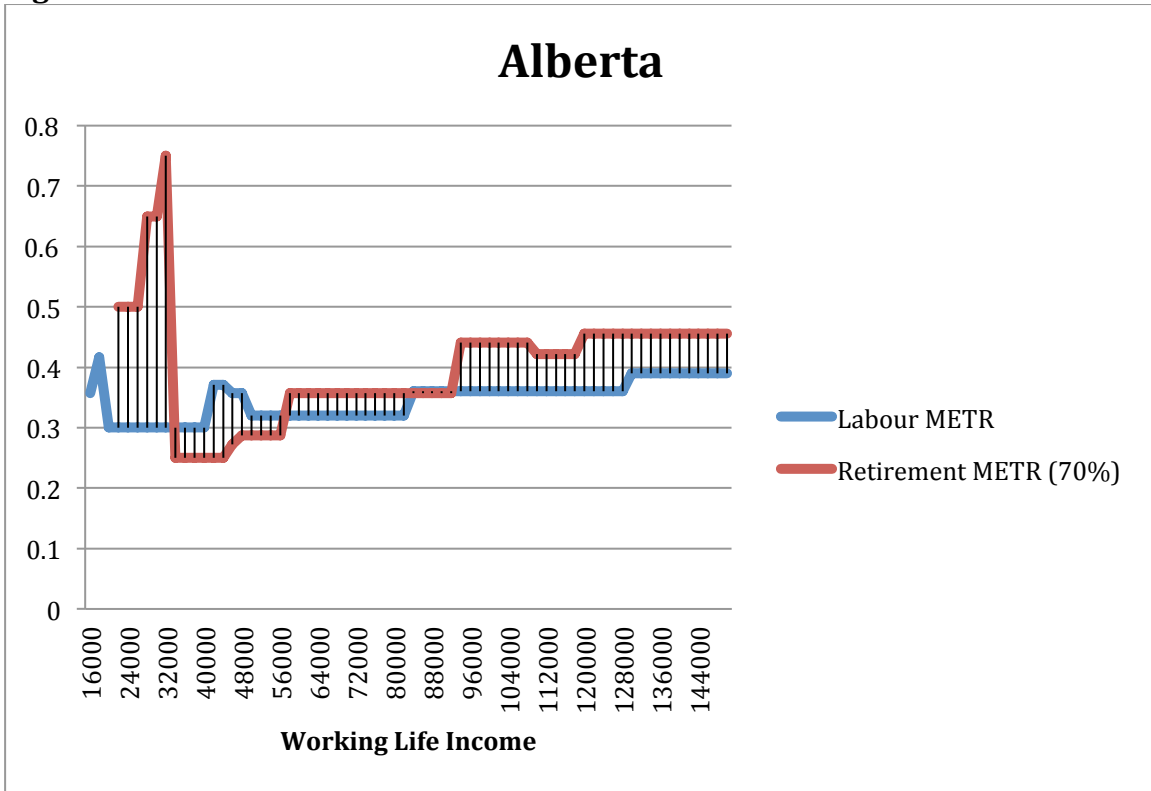


Figure 8

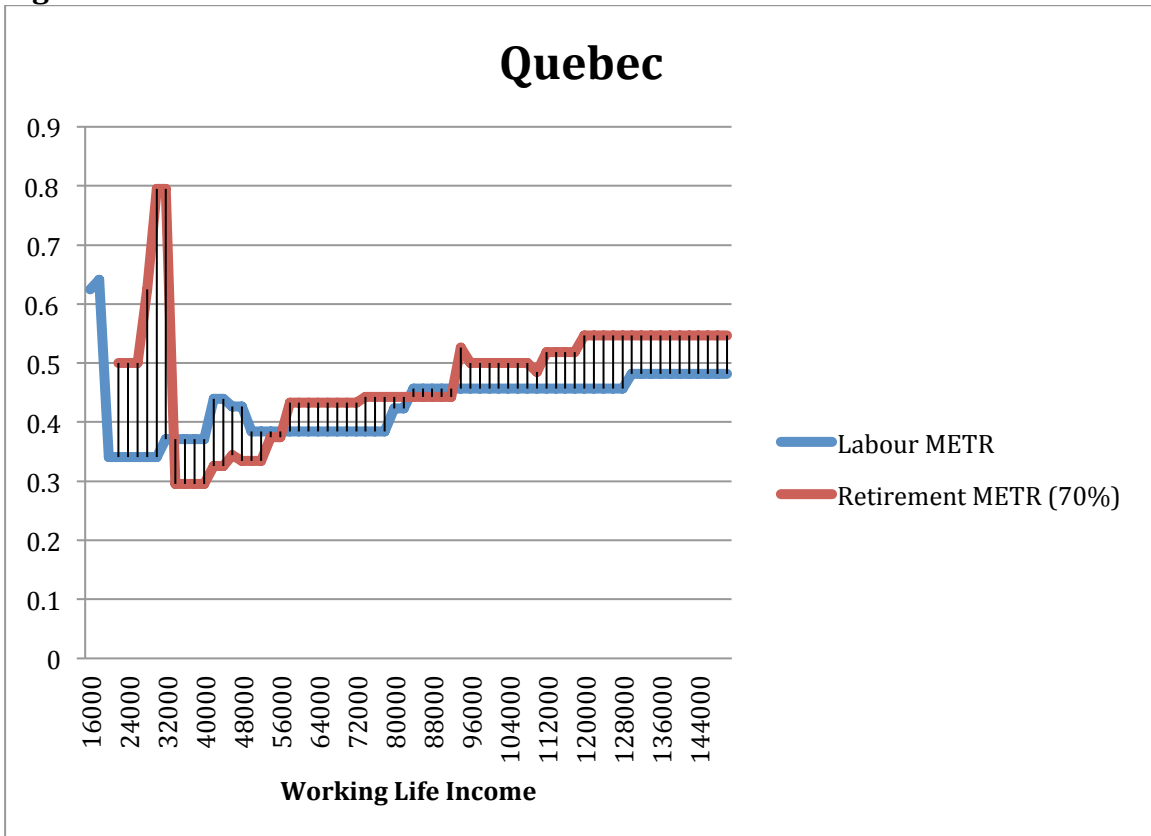


Figure 9

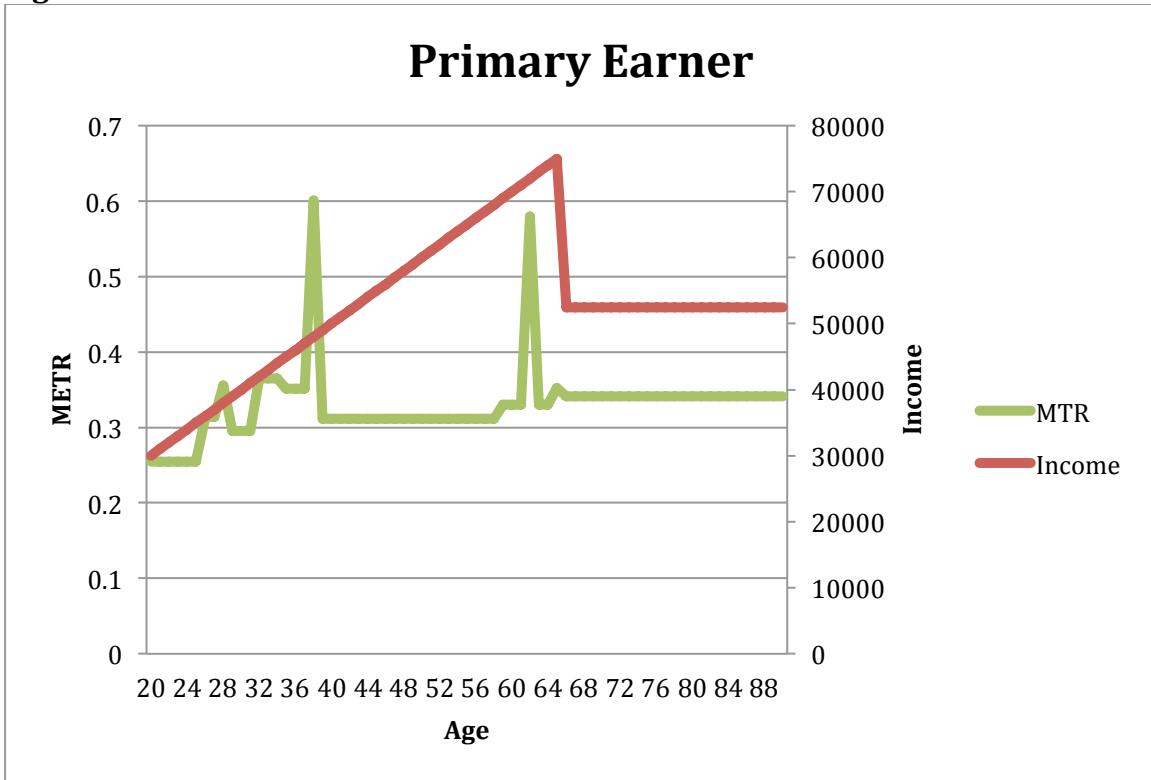


Figure 10

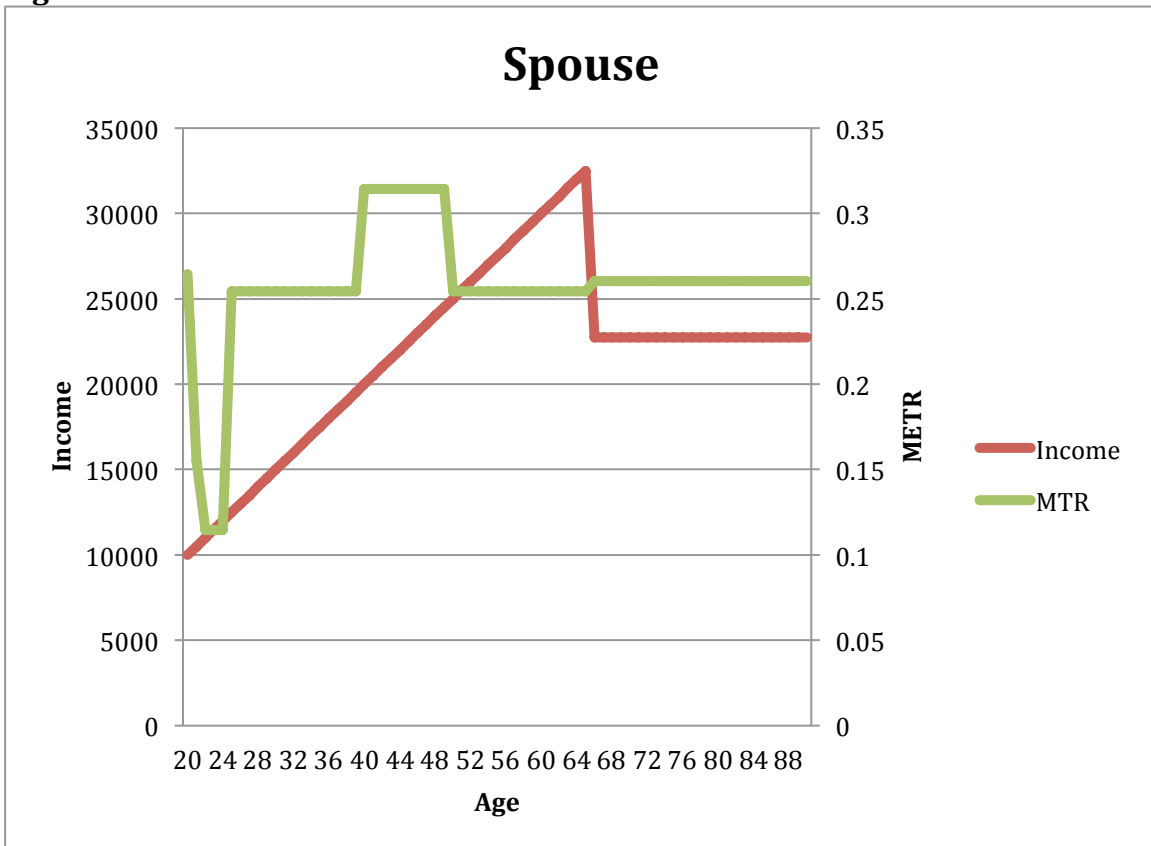


Figure 11

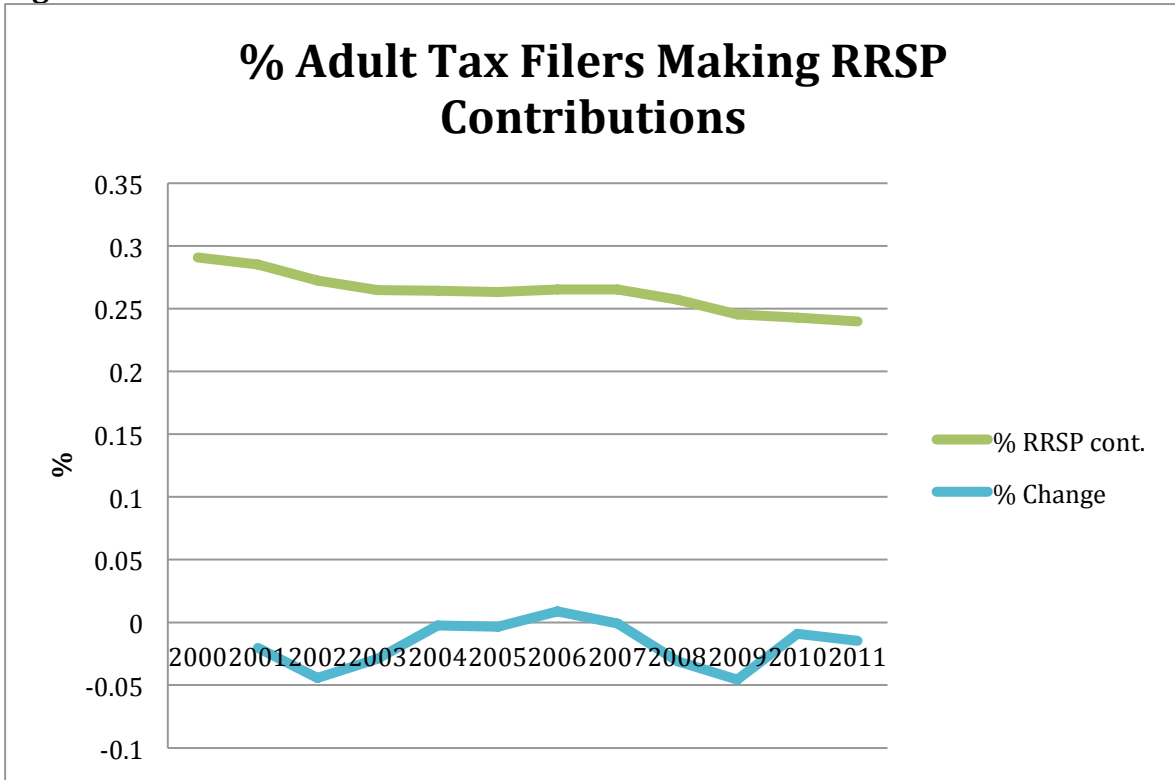


Figure 12

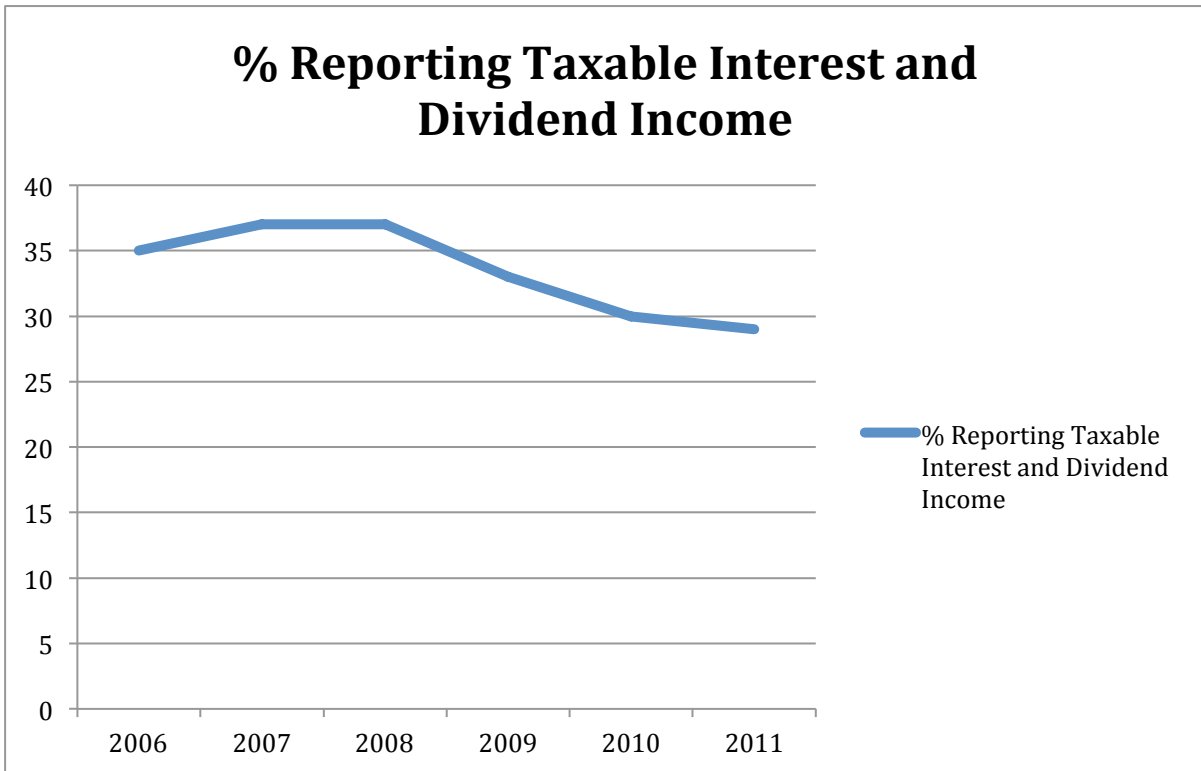


Table 1

Tax free savings plan	Yes	No	Total	N=
Total household income - grouped				
Less than \$25,000	6.8	93.2	100.0	3,210,084.8
\$25,000 to less than \$50,000	11.9	88.1	100.0	5,029,323.3
\$50,000 to less than \$75,000	14.1	85.9	100.0	5,013,863.2
\$75,000 to less than \$100,000	15.2	84.8	100.0	3,459,417.3
\$100,000 to less than \$125,000	18.7	81.3	100.0	3,072,313.8
\$125,000 to less than \$150,000	19.4	80.6	100.0	1,448,875.2
\$150,000 or more	21.6	78.4	100.0	3,233,716.1
Total	14.7	85.3	100.0	24,467,593.8

Table 2

Tax free savings plan		Yes	No	Total	N=
Age of respondent - grouped	Sex of respondent.				
18 to 24	Male	14.1	85.9	100.0	1,416,830.6
	Female	12.5	87.5	100.0	1,377,256.9
25 to 34	Male	13.2	86.8	100.0	2,209,293.5
	Female	11.1	88.9	100.0	2,146,348.2
35 to 44	Male	14.3	85.7	100.0	2,274,460.7
	Female	10.6	89.4	100.0	2,250,161.4
45 to 54	Male	12.6	87.4	100.0	2,519,745.1
	Female	14.5	85.5	100.0	2,489,773.4
55 to 59	Male	19.4	80.6	100.0	1,006,420.5
	Female	16.9	83.1	100.0	1,058,643.5
60 to 64	Male	17.4	82.6	100.0	861,682.0
	Female	18.8	81.2	100.0	870,203.5
65 to 69	Male	22.3	77.7	100.0	616,911.0
	Female	19.1	80.9	100.0	664,721.7
70 and over	Male	19.4	80.6	100.0	1,200,886.5
	Female	18.1	81.9	100.0	1,504,255.3
Total		14.7	85.3	100.0	24,467,593.8

Table 3

	TFSA	Yes	No
\$ to maintain liv stand when retire	Yes	57.8	39.4
	No	42.2	60.6
Unexpected Expense (\$5000). Use Savings?	Yes	46.3	27.9
	No	53.7	72.1

Table 4

<i>n</i>	6088
REGION	2.9361 (1.1984)
AGE	4.2745 (2.0352)
SEX	0.5102 (0.4999)
PERSONAL INCOME	2.9911 (1.5447)
HOUSEHOLD INCOME	3.7219 (1.8749)
RRSP	0.75427 (0.430554)
RESP	0.21058 (0.40775)
CASH SAVINGS	0.84757 (0.35947)
"INVESTMENTS"	0.57687 (0.4941)
TFSA	0.20631 (0.40469)
FINANCIAL ASSETS (DEPENDANT)	3.315046 (2.031206)

Note: Reported is the mean and standard deviation for each variable.

Table 5

REGION**	0.0277869 (0.0191838)
AGE**	0.3179674 (0.0112326)
SEX**	0.064309 (0.0447743)
PERSONAL INCOME**	0.0077246 (0.0190486)
HOUSEHOLD INCOME**	0.2308413 (0.0164205)
RRSP*	0.2126401 (0.0560699)
RESP*	-0.1021434 (0.05218)
CASH SAVINGS*	0.4335363 (0.0595256)
"INVESTMENTS"***	1.416537 (0.0458811)
TFSA*	0.4721648 (0.0525046)

*Note: Variables with "***" have coefficients that are significant at the 5% level while those with "*" are significant at the 10% level*

APPENDIX B – METR CALCULATION DETAILS

All METR calculations were done on STATA using a modified version of the Canadian Tax and Credit Simulator (CTaCS) code originally developed by Kevin Milligan. METRs were calculated by comparing the tax rate facing individuals with that facing them with an additional \$100 of labour income in working years or RRSP income in retirement years.

Provincial based METRs (Table 5)

METRs calculated for a “benchmark” individual in each province: age 50, married, \$31,000 in income, \$10,000 in spousal income, no children

Income-based METRs (Tables 6, 7 and 8)

Working life METR calculated for a single individual age 50. Retirement METR calculated for a single individual age 75. Calculation of income at retirement includes net OAS and GIS payments, and assumes that retirement income from private sources is all taxable. Retirement income is constructed using data from 2008 statistics Canada Research Paper by Sébastien LaRochelle-Côté *et al.* Bar charts start when net OAS plus GIS payments are insufficient to provide for the target income replacement rate.

Life-Cycle METRs (Tables 9 and 10)

Characteristics as described in paper for household in Ontario, no children or other additions, individuals are distinguished simply by age and income level. Retirement income calculated in a similar manner to that done for income-based simulations.