

Who gets potentially disadvantaged by high effective marginal tax rates in Canada? Why should we care?

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Data used in this paper is available through Statistics Canada's Longitudinal Administrative Data base. This data cannot be directly accessed by researchers for reasons of confidentiality. We have written all the programs for analysis (with the help of Hélène Crépeau, statistician at Laval University) but relied on personnel at Statistics Canada for data processing.

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Abstract

In order to make optimal financial decisions, taxpayers need to use the correct marginal tax rate. For several taxpayers, this rate is the effective marginal tax rate (EMTR), which differs from the statutory marginal tax rate (SMTR). It is not easy for everyone to calculate the EMTR and, using the wrong rate is likely to lead to sub-optimal financial decisions for taxpayers and to reduce the effectiveness of fiscal policies, both for the redistribution of income and promotion of economic growth and savings.

Several studies have demonstrated that the EMTR can substantially differ from the SMTR. Using real tax return data available in the Longitudinal Administrative Database, our study aims at determining the proportion of taxpayers potentially facing a difference, at quantifying the size of this difference, and at identifying those most likely to be disadvantaged. Using real tax return from Canadian taxpayers available in the Longitudinal Administrative Database, our study examines the extent to which taxpayers are susceptible to high EMTRs and to substantive divergence between their effective

and statutory marginal tax rates in the context of savings decisions pre-retirement. Our data shows that, for the year 2000, approximately 38.5 percent of taxpayers are susceptible to having EMTRs that exceed their SMTR and that those most likely to be disadvantaged have low SMTR or are couples with kids. Furthermore, our analysis by provision that create differences shows that the phase-out of the Canada Child Tax Benefit at the federal level and the reduction of the spousal tax credit at the provincial Quebec level have the largest estimated impact on the divergence between EMTRs and SMTRs.

Our results suggest that the tax credits and benefit provisions put in place by governments may counteract with their goal of promoting the GDP growth through the private sector. Indeed, savings by individuals help finance firms' projects. If high tax rate differentials exist, accumulated savings may be reduced and/or firms may have to offer a higher rate of return to compensate the higher individual tax rate, thus potentially increasing firms' financing costs. Alternatively, savings may increase if those with high EMTRs know their rate and have sufficient disposable income to both increase savings and to optimally choose the timing of their contributions to tax deferred or tax prepaid plans. This remains an empirical question.

Keywords: Social Programs, Effective Marginal Income Tax Rates, Statutory Marginal Income Tax Rates, Quebec Taxfilers, Tax Return Data

*“You have the right to receive entitlements
and to pay no more and no less than
what is required by law”. Taxpayer Bill of Rights¹*

INTRODUCTION

A personal tax system generally pursues two fundamental goals: (1) redistribution of income and; (2) promotion of economic growth and retirement protection, through incentives on savings. Over the last few decades, the proliferation of Canadian tax-based programs and credits aimed at low to middle income individuals and families have added much complexity to the personal tax system (Milligan 2011 among others in Canada). While such measures have the advantage of providing help where it is most needed, the presence of phase-outs, thresholds or clawbacks that reduce the tax benefits or credits, as well as the numerous definitions of income used to calculate the benefits, may also have unintended effects. Indeed, eligibility for tax reductions or benefits and the amounts receivable depend on the level of individual and/or family income, the sources of income, as well as various household characteristics such as the number of children, marital status, and age of family members. As a result, taxpayers' marginal tax rates, known as effective marginal tax rates (EMTRs), calculated taking into account the impact of these programs can be substantially higher than statutory

¹ Taxpayer Bill of Rights (<http://www.cra-arc.gc.ca/E/pub/tg/rc17/README.html>).

marginal tax rates (SMTRs) specified in the tax rate schedules and generally used by taxpayers.²

In order to make optimal financial decisions, taxpayers must be able to incorporate the effect of marginal tax rate information. While prior research suggests that taxpayers are generally capable of doing so when it is explicitly provided (Rupert and Wright 1998), experimental evidence shows that taxpayers are less accurate in determining their rate when faced with a more complex tax system than a simpler one and make sub-optimal investment decisions (Rupert, Single, and Wright 2003). Thus, divergence between the effective and statutory MTRs may not only lead to sub-optimal financial decisions (including the timing, amount, and choice of savings vehicle), but may also undermine the government's objective of increasing savings and spurring economic growth, especially if it is difficult for most individuals to estimate their EMTR. Although policy-makers are generally aware of these rates, the prevalence and cumulative effects of income-tested programs and tax credits warrant further study.³

This paper uses actual tax return data available through Statistics Canada's Longitudinal Administrative Database (LAD) to provide a snapshot of the Canadian tax-filing population aged 24 to 59 in the year 2000. The main objective is to document the extent to which taxpayers are susceptible to high EMTRs and to substantive divergence between their effective and statutory MTRs in the context of savings decisions at the *pre-retirement stage*.⁴ We focus on residents in the province of Quebec who, unlike those in the rest of Canada, are required to file two separate tax returns, one at the federal and the other at the provincial level, making the personal tax system more complex. Furthermore, the province of Quebec has many of its own social programs, in addition to those present at the federal level, which have the potential to exacerbate the differences between EMTRs and SMTRs.

Our data shows that approximately 38.5 percent of taxpayers are susceptible to having EMTRs that exceed their SMTR by at least 2.5 percent. These tax rate differentials occur in all SMTR categories and in almost all individual income categories; however, they are more prevalent for individuals and couples in the low-income range.⁵ Furthermore, our analysis of ten separate provisions that potentially create divergence between the EMTRs and SMTRs reveals that the provision with the highest impact is the phase-out of the Canada Child Tax Benefit, potentially affecting 30 percent of the tax-

² The existence of EMTRs has been documented by prior researchers using different methodologies and is discussed in prior research.

³ As noted by Milligan (2011, p.1189), we can be skeptical about the ability of very capable policy experts to see the most carefully-designed incentives trapped within.

⁴ Taxpayers receiving pension income are excluded, as well as social welfare recipients.

⁵ Unless otherwise stated, «income» in our study refers to net income for tax purposes (section 3 of the Income Tax Act), adjusted to exclude the dividend gross-up and include any provincial refundable tax credits, child tax benefit, family benefits, and goods and service tax credits (federal and provincial), calculated at both the individual and couple levels. Information about the LAD data sources, the variables included in the database, as well as information about data accuracy can be found at:

<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4107> (February 23th, 2018).

filing population.⁶ The impact is increasing in the number of children and the level of family income. As Quebec also provides tax relief to families with children at similar levels of income through the phase-out of the family tax reduction (18.7 percent of taxpayers potentially affected), the combined impact of these two programs alone may cause tax rate differentials to be as high as 42.1 percentage points (37.1 for the CCTB and 5 for the provincial reduction). Furthermore, since eligibility to these programs rely on different measures of family income at the federal versus provincial levels, calculations of EMTRs are even more complex.

In addition to provisions aimed at families with children, we find that the spouse's marital tax credit, in particular at the provincial level, has a potentially large impact on the entire sample (1.2 percent at the provincial). Thus, strategies aimed at increasing the lower spouse's income may not always be optimal as the tax rate differential arising from the reduction of the spouse's tax credit may be as high as 36.2 percent.

Our paper complements and extends prior studies that examine how transfer programs and other tax measures affect the calculation of EMTRs. Following Macnaughton et al. (1998), we calculate effective and statutory MTRs as well as the divergence between the two tax rates for taxpayers that earn an incremental amount of «other» income taxed at the ordinary rate (e.g., interest or taxable withdrawals from RRSPs⁷ as opposed to employment income), as we are interested in the potential adverse effects of these measures on tax planning decisions, in particular, related to savings. While prior studies in Canada have used “synthetic” data, such as that available from the Social Policy and Simulation Database / Model (SPSD/M) (e.g., Macnaughton et al. 1998, Duclos et al. 2008, 2009; and Duclos et al. 2014), our rich database comprises a large representative sample of “real” individual tax-filers and connects these individuals to their family members. As a result, certain sources of bias inherent in the construction of the SPSD/M (e.g., amalgamations and blurred data for high-income individuals) are not present in the LAD.

We extend prior research by further disaggregating the results into particular programs. Our focus on the province of Quebec system allows us to examine the effect of having tax credits and benefit programs with similar policy objectives at both the federal and provincial levels. Duclos et al. (2008 and 2009) also analyze EMTRs in Quebec; however, they focus on EMTR density functions on labor income for heads of households in Quebec (using SPSS data). Contrary to their study, we calculate MTRs for all individual taxpayers, including non-head of households – spouses with low or no taxable income. Our results differ from Duclos et al. (2008, 2009) who find that separated/divorced individuals with children have higher EMTRs on labour income (in Quebec). Instead, we document that high differentials are more prevalent for married and common law taxpayers with children. Furthermore, the same dollar increment may be costlier at the margin for larger families (3 or more children) than for couples that have only one or two children. Finally, our focus on tax-filers pre-retirement (aged 24 to

⁶ Although this program has been significantly revised in the last decade, a large proportion of the tax filing population continue to be impacted by this program, as will be discussed later in the paper.

⁷ Canadian RRSP (Registered Retirement Savings Plan) is similar to the US 401k program.

59) allows us to separate the impact of programs aimed at families from those geared to seniors. This is important because tax planning strategies depend on multiple factors (e.g., marital status and number of children) that differ significantly over the life-cycle of individuals, in particular, in the pre and post retirement stages. Indeed, while Macnaughton et al. (1998) find that the measure with the greatest overall impact is by far the income testing of the guaranteed income supplement (at 2.54 percent), we show that younger couples (married or common law) with children face potentially very high tax rate differentials.

High EMTRs and high tax rate differentials should be a source of concern for policy-makers.⁸ The individuals that governments are supposed to help because of their greater needs may be severely penalized, when they receive additional income. Furthermore, given that eligibility for future benefits depend on their prior year's income, taxpayers are less likely to be able to identify and adapt their planning strategies, if at all possible, to reduce their EMTRs.

The following section presents the relevant prior research. A description of the data and the calculation of effective and statutory MTRs is presented followed by the results section. Although the study focuses on the year 2000, we address the relevance of our study in the current environment in Canada and discuss implications for tax planning and current tax programs in the conclusion.

PRIOR RESEARCH

Tax researchers have long shown the existence of high EMTRs in Canada (e.g., Davies 1998; Macnaughton et al. 1998; Kesselman 1999; Duclos, Fortin, and Fournier 2008, 2009),⁹ OECD countries (e.g., Mirrlees et al. 2011), the U.S. (e.g., Barthold et al. 1998; Rupert and Fischer 1995; Holt and Romich 2007; and Kosar and Moffitt 2016) as well as Australia (e.g., Hodgson 2014), stressing the importance of reforms aimed at reducing these rates and making the income tax system more progressive. Although governments, including Canada, have recognized their existence and have attempted to lower them, EMTRs have remained high over the years, sometimes even exceeding 100 percent for certain groups of taxpayers (e.g., Duclos et al. 2008, among others). Such high EMTRs may create disincentives to work, save, or encourage underreporting (OECD 1997; Saez 2002; Milligan and Stabile 2007; Maag et al. 2012; among others).

Macnaughton et al. (1998) were the first to analyze the distribution of EMTRs across a sample of the Canadian taxpaying population (all ages) and to examine the divergence between EMTRs and SMTRs from the receipt of additional investment (or other) income. They find that more than half of the Canadian population (56 percent) experience at least some difference between effective and statutory MTRs and that more than one-fifth has at least a ten-percentage point difference.

⁸ The importance of using EMTRs in analyzing the efficiency and redistribution of the tax system is highlighted by Richard Blundell (see Milligan 2011).

⁹ Tax educators, in particular, Laferrière-Montreuil, have been publishing for many years effective marginal tax rates for representative Quebec taxpayers. These are available at: https://www.cqff.com/claude_laferriere/accueil_courbe.htm (accessed February 27, 2016).

Duclos et al. (2008 and 2009) examine tax and transfer payments that create high EMTRs for those earning labour income. The authors show that family policy generates high levels of EMTRs, with EMTRs being higher for heads of single-parent households as opposed to two-parent families. The authors emphasize the importance of accounting for EMTR heterogeneity, both with respect to types of families and levels of income, as well as variability of EMTRs.¹⁰

In the US, Holt and Romich (2007) document the extent and distribution of statutory and actual marginal tax rates for certain households in Wisconsin using merged databases. Among their main result is that approximately a quarter of unmarried tax filers with two or more dependents face MTRs of 50 percent or greater. Furthermore, low and moderate income workers who face multiple means-tested programs are more likely to face high rates. Results are consistent with Canadian studies, in that means-tested programs can cause large differences between SMTRs and EMTRs.¹¹

A number of studies have simulated EMTRs for various representative (hypothetical) taxpayers. Consistent with empirical studies discussed above, simulated EMTRs are shown to be generally higher for low to middle income taxpayers, albeit EMTRs may also be sensitive to assumptions about earnings patterns (Maag et al. 2012 in the US). Additionally, EMTRs normally depend on the family profile, the type of income received (e.g., labour or investment, or other), as well as age of family members (e.g., pre or retired individuals).¹² In Canada, province of residence may also be another important determinant because provincial taxing authorities have also multiplied the number of measures applicable to certain categories of taxpayers, “leading to an alphabet soup of credits, programs, and incentives” (Milligan 2011). However, these studies do not provide information with respect to the distribution of EMTRs.

Given the multitude of means tested programs, the various definitions of income and rates used in calculating eligibility, the frequency of changes to these programs, as well as the various profiles of taxpayers, it is questionable as to whether taxpayers can evaluate the effect of the tax system on the optimality of their choices and, thus, their after-tax disposable income in the short, medium, and long term. Prior experimental research shows that most individual taxpayers are not aware of their marginal tax rates (Rupert and Fischer 1995). Furthermore, when hidden taxes are imposed (e.g., deductions, credits, and benefit programs that are dependent on some measure of income), decision performance (i.e., choice of tax-rate-dependent investment decisions) has been found to be significantly better for participants facing a less complex tax system than those facing medium or high complexity systems (Rupert et al. 2003). Furthermore, in a competitive market setting, Boylan and Frischmann (2006) find that

¹⁰ Both Macnaughton et al. (1998) and Duclos et al. (2008 and 2009) use the social policy database model, SPSS/M, which includes “synthetic” taxpayers in the sense that they are composites of several similar individuals whereas the LAD uses actual data and follows both individual and actual family members.

¹¹ See Maag et al. 2012 for a review of the literature in the U.S.

¹² For example, see OECD 1997, Macnaughton et al. 1998, and Hodgson 2014; among others.

tax complexity leads to systematically high trading prices and quantities, which leads to systematic wealth transfers between market participants to the taxing authority.

Similar to Macnaughton et al. (1998), we calculate EMTRs and SMTRs of tax-filing individuals as well as the divergence between the two rates to perform our analyses. However, our study differs from Macnaughton et al. in that we use actual tax return data contained in the LAD and focus on the Quebec non-retired tax-filing population. Finally, while many have examined MTRs on labour income (e.g., Duclos et al. 2008 and Blancquert et al. 2014), we calculate EMTRs and SMTRs derived from earning additional investment income (interest or other income) as in Macnaughton et al. 1998.

DATA

Our study uses actual tax return data from Quebec tax filers contained in the Longitudinal Administrative Database (LAD) (Statistics Canada). This database comprises a 20 percent sample of Canadian tax-filing population (extracted from the annual T1 Family File) and the Longitudinal Immigration Database that are linked by census family. Individuals are linked year to year (starting with 1982 data and by SIN number) and the database is refreshed annually. Demographic variables, annual income measures, (e.g., net income Section B of the Income Tax Act (ITA), taxable income, earned income) and tax return information for the individual, the spouse, and the family are included. Information on benefit programs (e.g., child tax benefit, GST credit) is also available.¹³

Using the LAD to analyze the distribution of EMTRs has some advantages compared to other databases. For example, whereas the SPSD/M creates “synthetic” taxpayers (Macnaughton et al. 1998; and Duclos et al. 2008), the LAD has *actual* tax return information.¹⁴

Our sample consists of Canadian Québec resident taxpayers, aged between 24 and 59 in 2000, having filed a return for all the years 1998 to 2000, and with no pension income (from an employer sponsored pension plan). Furthermore, by focusing on taxpayers aged between 24 and 59, we separate individuals in the pre-retirement period from those who are retired. These two groups have very different characteristics and their EMTRs are affected by different phase-out provisions and transfer programs. Finally, we also exclude taxpayers receiving social assistance income due to lack of information on their level of wealth, a factor used in determining eligibility to the program. These taxpayers are most likely not saving. Finally, a perturbation weight is used in all computations of counts, amounts or other statistical analyses and data points are

¹³ For additional information about the data sources and the variables included in the database, see <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4107> (accessed February 23th, 2018).

¹⁴ Compared to the SPSD, the LAD contains a much larger number of households. Furthermore, no stratification is performed in the LAD whereas the SPSD/M contains amalgamations and blurred data especially for high-income individuals. Furthermore, although the Model component of the SPSD/M can perform projections for multiple years, calculating MTRs is complex and tradeoffs made in the model's design can cause difficulties (Macnaughton et al. 1998, p. 1063). Calculating MTRs using the LAD is also complex, however, this can be done in a single run, contrary to the SPSD/M.

multiplied by five to reflect the population. These procedures result in a sample of approximately 2,914,000 taxpayers.

CALCULATING EFFECTIVE AND STATUTORY MARGINAL TAX RATES

A taxpayer's SMTR is the tax rate that applies to the taxpayer's next dollar of taxable income and is usually found by comparing the taxable income for the year to the applicable rate schedule. Statutory rates for the fiscal year 2000 are presented in the Appendix.

The EMTR measures the effect that a change in an individual's income has on his or her family's net payments to the government. The EMTR takes into account not only the income thresholds and the statutory rates but also the impact of refundable and non-refundable tax credits, income-tested federal and provincial benefits, as well as transfer programs (Macnaughton et al. 1998, Laurin and Poschmann 2010; among others). Similar to Macnaughton et al. (1998), we compute EMTRs assuming that "other income" is increased as opposed to wage income (e.g., Duclos et al. 2008, 2009). The choice depends, among other things, on the source of the taxpayer's additional income (or deduction) and the type of incentive that is under study. We are interested in examining the impact of taxes on incentives to engage tax planning related to the receipt of an additional dollar of interest income or an additional dollar of RRSP withdrawal in the pre-retirement phase.¹⁵ The Appendix provides the framework for calculating SMTRs and EMTRs and discusses the items that are included / excluded in the calculation of EMTRs.

RESULTS

To what extent are taxpayers potentially affected by high differentials between effective and statutory marginal tax rates?

Table 1 provides a detailed distribution of tax-filers based on the differential between their effective and statutory MTR, by size of difference (in percentage points) and by SMTR category. Overall, our results show that 38.5 percent of the population is susceptible to having EMTRs that exceed their SMTR by at least 2.5 percent.¹⁶ Furthermore, tax rate differentials potentially exist in all SMTR categories and are most prevalent in two: (1) 56.2 percent of taxpayers have an expected EMTR that exceeds SMTR in the category SMTR = 0 and (2) 59.1 percent of taxpayers having a positive tax rate differential in the category 35 percent < SMTR ≤ 40 percent.¹⁷

¹⁵ The calculation of an additional dollar of labour income differs from that of an additional dollar of other income as it requires that payroll taxes be considered as well as tax credits related to employment income, work incentives and union dues. Calculating EMTRs on labour income would require that the effect of taxes on social benefits be considered.

¹⁶ The percentages shown in Table 1 may be understated for some taxpayers because some tax measures cannot be simulated; however, these percentages should represent the lower boundary of taxpayers having EMTRs > SMTRs. For ease of discussion, we drop the expression «by 2.5 percent».

¹⁷ SMTR are categories are created based on combined federal and provincial statutory tax rates and taxable income and are detailed in the Appendix.

Table 1
Percent of taxpayers by whether their EMTR differs from their SMTR,
by size of difference (in percentage points), by combined (federal and provincial) SMTR category (2000)

SMTR category	EMTR < (SMTR+2.5%)	(SMTR+2.5%) ≤ EMTR <(SMTR+5%)	(SMTR+5%) ≤ EMTR <(SMTR+10%)	(SMTR+10%) ≤ EMTR <(SMTR+15%)	(SMTR+15%) ≤ EMTR <(SMTR+25%)	(SMTR+25%) ≤ EMTR <(SMTR+35%)	EMTR ≥ (SMTR+35%)	Number of taxpayer s in SMTR category	Percentag e of taxpayer s in SMTR category
SMTR=0	43.8	2.3	3.4	5.6	11.2	10.9	22.7	428,420	14.7
0 <SMTR ≤ 15%	61.6	11.5	9.6	5.6	4.6	4.7	2.5	227,556	7.8
15% <SMTR ≤ 30%	65.8	19.8	11.0	1.2	1.1	0.5	0.7	24,294	0.8
30% <SMTR ≤ 35%	67.5	5.9	18.5	5.0	2.2	0.6	0.3	741,656	25.5
35% <SMTR ≤ 40%	40.9	5.0	26.2	18.4	4.8	3.2	1.6	273,213	9.4
40% <SMTR ≤ 45%	59.5	7.0	18.6	10.1	3.7	0.6	0.5	802,633	27.6
45% <SMTR ≤ 50.8 %	85.9	4.2	9.1	0.7	0.0	0.0	0.0	415,524	14.3
All categories	61.5	5.9	14.9	7.2	4.0	2.6	3.9		100
Total number of taxpayers								2,914,000	

Note: Effective and statutory MTRs are calculated using Statistics Canada's longitudinal administrative dataset, a longitudinal file consisting of a random 20 percent sample of the tax-filing population. Statistics Canada uses a weight to blow the data globally and also multiplies the data points by five such that the sample is representative of the Quebec population. The population includes Québec-resident tax filers aged 24 to 59 (in 2000) who do not receive pension income during each of the three years nor any social assistance benefits. N= 2,914,000 is the number of observations per year. For all SMTR categories, 61.5% have an EMTR that is less than SMTR +2.5% while the remaining 38.5% have an EMTR that exceeds SMTR by 2.5% or more. For those that have an SMTR =0, 43.8% have an EMTR that is less than SMTR +2.5% while the remaining 56.2% have an EMTR that exceeds SMTR by 2.5% or more.

Tax rate differentials are less prevalent for taxpayers whose SMTR is in the top category (between 45 and 50.8 percent). Thus, for a significant proportion of the tax-filing population aged between 24 and 59, SMTRs are not a good indicator of the tax status. Indeed, EMTRs can exceed SMTRs by a significant amount and should be considered by both taxpayers as well as by policy makers.

Who potentially has high divergence between effective and statutory marginal tax rates?

Figure 1 presents the distribution of taxpayers by whether their expected EMTRs differ from their SMTRs, by size of difference and by individual (upper diagram) and couple (lower diagram) income levels.¹⁸ As seen in Figure 1, tax rate differentials can occur in all income categories. However, the incidence of taxpayers, as well as the size of the expected tax rate differentials (in percentage points), are greater for those having income less than or equal to zero up to \$35,000.

At the individual income level, Figure 1 shows that although taxpayers in the lowest income category represent only 0.7 percent of the sample population, 64% have a potential tax rate differential, the majority of which (49.8 percent) have a tax rate differential between 15 and 25 percent. For those in the next income category (representing 33.1 percent of the sample), 42% have a potential tax rate differential, and more than ten percent of these taxpayers have an expected EMTR that exceeds their SMTR by at least 35 percent. These results are non-negligible and significantly affect low-income taxpayers. At the individual level.

At the couple level, Figure 1 shows that the proportion of taxpayers susceptible to high tax rate differentials occurs at higher income levels than when income is measured at the individual level. Indeed, divergence between EMTRs and SMTRs becomes more prevalent for taxpayers with income (at the couple level) beginning at \$25,000 (median couple income equals \$47,900). Taxpayers potentially being the most disadvantaged have income between \$30,000 and \$35,000 and tax rate differentials exceeding 35 percent. Although taxpayers in that income category represent only 7.7 percent of the sample population, almost 90 percent have an EMTR that exceeds their SMTR. Figure 1 illustrates the shifting of the distribution of tax rate differentials when income is measured at the individual versus the couple levels.

¹⁸ As mentioned earlier, income is defined as net income for tax purposes adjusted to include benefits from transfer programs and tax credits which affect disposable income.

Figure 1
Percent of Québec taxpayers whose EMTR is greater than their SMTR, by size of difference (in percentage points), by individual / couple income category (2000)

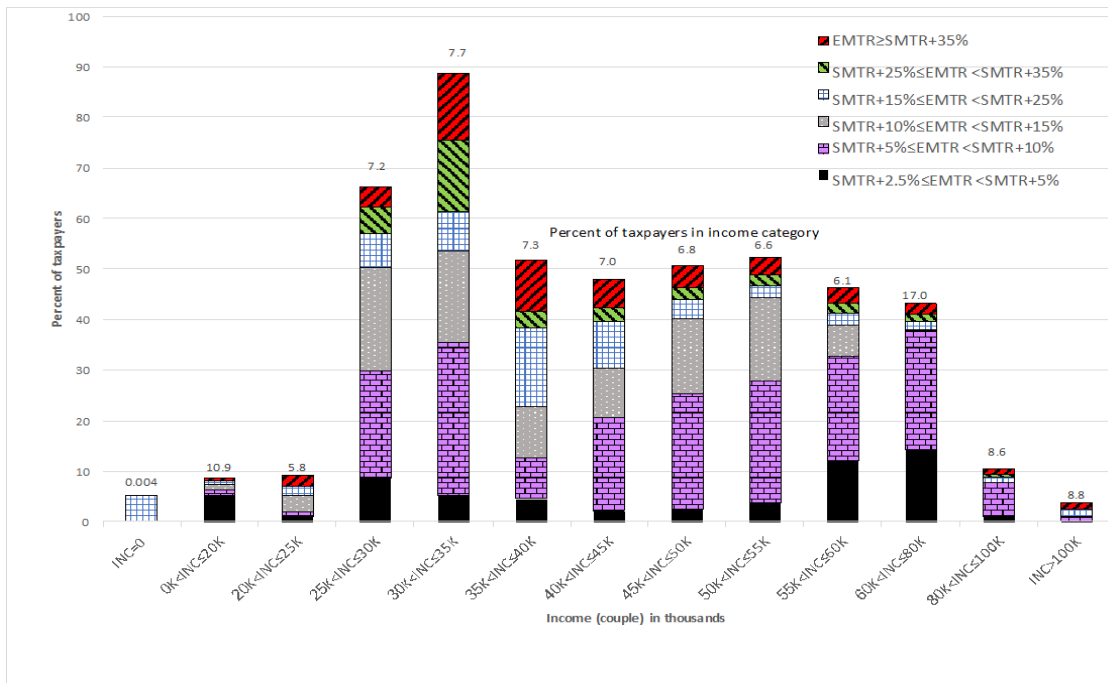
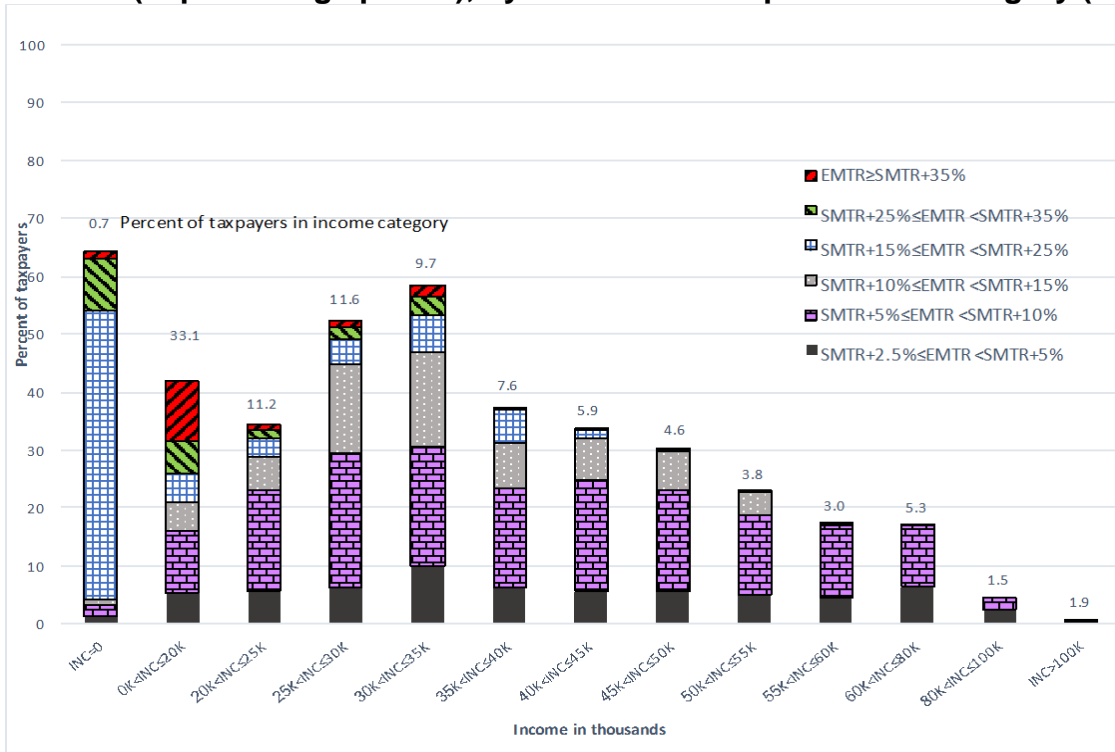


Figure 2 presents the percentage of Québec taxpayers whose expected EMTR exceeds their SMTR by at least 2.5 percent, by size of difference (in percentage points) and by income category (individual and couple level) for the year 2000. The total number of observations (excluding those whose EMTR is less than their SMTR) is 1,151,030 .

Next, we examine demographic characteristics of individual taxpayers by whether their EMTRs and SMTRs differ by number of kids. Figure 2 shows that differences among taxpayer groups are striking. For example, the percentage of taxpayers susceptible to a high tax rate differential increases with the number of children, going from 50.7 percent for those with one child to 73.2 percent for those with four children, then drops slightly to 65.6 percent for those with five or more children. The phase-out of the Canada Child Tax Benefit program partially explains the higher tax rate differentials as the clawback rates are higher for those that have three or more children compared to those that have one or two. Even though most taxpayers have one or two children, results are far from trivial.¹⁹

Figure 2
Percent of Québec taxpayers whose EMTR is greater than their SMTR, by size of difference (in percentage points), by number of children (2000)

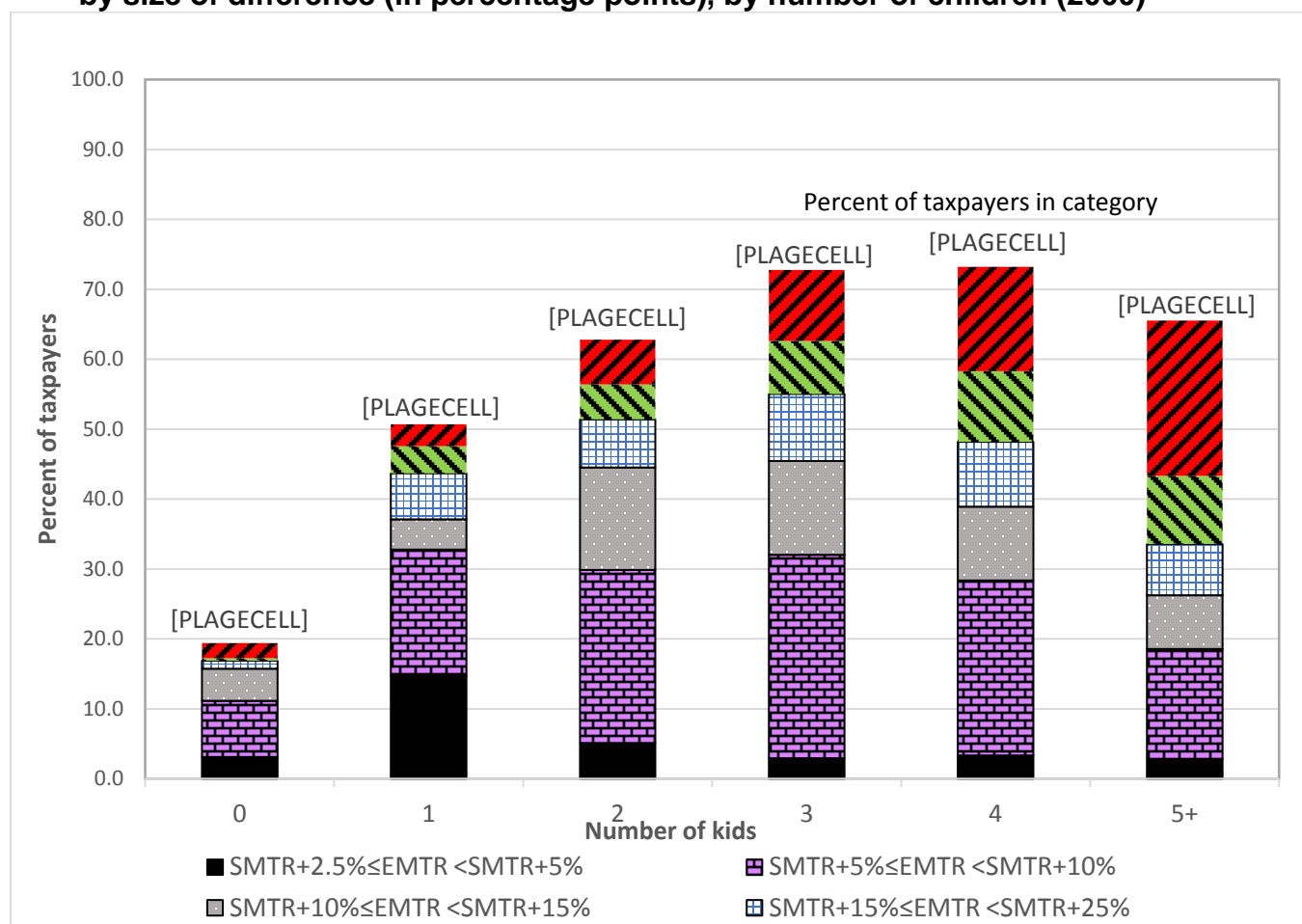


Figure 2 presents the percentage of Québec taxpayers whose EMTR exceeds their SMTR by at least 2.5 percent, by size of difference (in percentage points) and by number of children for the year 2000. The total number of observations (excluding those whose EMTR is less than their SMTR) is 1,151,030.

¹⁹ The clawback rates in respect of the child tax benefit vary by number of children and family income level. These rates can be as low as 2.5 percent for one child and as high as 37.1 percent for those with 3 or more children.

We also examine other demographic characteristics of individual taxpayers such as marital status. In untabulated results, we find that taxpayers who are married or common law are susceptible to higher tax rate differentials compared to those that are single, separated, divorced or widowed. Furthermore, they have the highest proportion of taxpayers with expected EMTRs exceeding SMTRs by 35 percent. Together, married or common law account for 68.7 percent of the sample population.

Overall, our results highlight the importance of considering the number of children when estimating EMTRs to make tax planning decisions well as marital status. Using the single status as the representative taxpayer to calculate EMTRs (e.g., Laurin and Poschmann 2010) in the pre-retirement stage may not be relevant for a large percentage of the population when analyzing decisions such as the timing and choice of investment vehicle such as tax-prepaid savings accounts versus tax-deferred accounts.

Which provisions create high divergence between effective and statutory marginal tax rates?

Our study examines ten separate provisions (tax and transfer measures) that can create differences between EMTRs and SMTRs, five of which are detailed in Table 2. Among the most important provisions, we find that 30.4 percent of the sample population is susceptible to having a decrease in the Canada Child Tax Benefit, 18.7 percent having a decrease in the provincial family tax reduction, 13.4 percent (13.1 percent) having a decrease in GST credit (TVQ credit). Results by income category show that a large proportion of taxpayers potentially affected by at least one of these tax provisions has very low-income, between \$0 to \$20,000. For example, of those that are susceptible to a decrease in the Canada Child Tax Benefit, 34 percent have income in that category. Similarly, 41 percent of the taxpayers susceptible to a decrease in the provincial family tax reduction have income in the same category. Similar results are observed for those susceptible to decreases in GST and TVQ credits. As for those potentially facing a decrease in the credit for person living alone (a Quebec credit), most taxpayers have income between \$20,000 to \$35,000. Finally, Table 2 also shows that the percentage of taxpayers potentially affected by a particular provision decreases as income increases, as expected.²⁰

²⁰ The effect on the spousal marital tax credits is not detailed in Table 2 because the effect is concentrated in the \$0 to \$20,000 income category, as expected. As for the other provisions considered in the paper, the estimated impact is not sufficiently large to report.

Table 2
Percent of Québec taxpayers with differences between EMTRs and SMTRs, by income category and
by provisions that create differences (in percentage points) (year 2000)

(K= 000's)	Number of taxpayers in revenue category	% of taxpayers in revenue category	Number of taxpayers that suffer a decrease in CCTB				Number of taxpayers that suffer a decrease in provincial family tax reduction				Number of taxpayers that suffer a decrease in credit for person living alone			
			Number of taxpayers that suffer a decrease in CCTB	% with effect	Number of taxpayers that suffer a decrease in CCTB	% with effect	Number of taxpayers that suffer a decrease in provincial family tax reduction	% with effect	Number of taxpayers that suffer a decrease in provincial family tax reduction	% with effect	Number of taxpayers that suffer a decrease in credit for person living alone	% with effect	Number of taxpayers that suffer a decrease in credit for person living alone	% with effect
Level of taxation			Federal		Provincial (Qc)		Federal		Provincial (Qc)		Provincial (Qc)			
Income category														
INC≤0	21,049	0.7	2,817	0.3	1,411	0.3	1,529	0.4	1,621	0.4	0	0.0		
0K<INC≤20K	965,183	33.1	300,832	34.0	222,846	41.0	160,734	41.1	151,865	39.9	201	0.2		
20K<INC≤25K	325,224	11.2	100,639	11.4	65,553	12.0	39,347	10.1	37,288	9.8	1,488	1.5		
25K<INC≤30K	337,417	11.6	122,881	13.9	77,418	14.2	76,999	19.7	93,525	24.6	54,036	54.2		
30K<INC≤35K	283,912	9.7	105,646	11.9	71,973	13.2	86,017	22.0	87,101	22.9	42,380	42.5		
35K<INC≤40K	221,190	7.6	79,155	8.9	47,100	8.7	21,063	5.4	7,437	2.0	1,510	1.5		
40K<INC≤45K	172,333	5.9	57,583	6.5	30,158	5.5	3,505	0.9	783	0.2	39	0.0		
45K<INC≤50K	134,543	4.6	40,484	4.6	18,727	3.4	642	0.2	301	0.1	0	0.0		
50K<INC≤55K	111,206	3.8	27,848	3.1	8,200	1.5	282	0.1	270	0.1	0	0.0		
55K<INC≤60K	88,515	3.0	19,889	2.2	674	0.1	210	0.1	150	0.0	6	0.0		
60K<INC≤80K	154,477	5.3	25,952	2.9	40	0.0	239	0.1	195	0.1	0	0.0		
80K<INC≤100K	44,234	1.5	1,892	0.2	10	0.0	43	0.0	32	0.0	0	0.0		
INC>100K	53,964	1.9	210	0.0	0	0.0	50	0.0	19	0.0	0	0.0		
Number of taxpayers in all categories	2,914,000		885,828		544,110		390,660		380,587		99,660			
Percentage of taxpayers in all categories		100.00		30.4		18.7		13.4		13.1		3.4		

Note: Similar to prior tables, effective and statutory MTRs are calculated using Statistics Canada's LAD. The population includes Québec-resident tax filers aged 24 to 59 (in 2000) who do not receive pension income nor any social assistance benefits. N= 2,914,000 is the number of observations per year. The variable income (INC) is defined as net income for tax purposes (section 3 of the ITA), adjusted to exclude the dividend gross-up and include any provincial refundable tax credits, child tax benefit, family benefits, and goods and services tax credits (federal and provincial), calculated at the *individual* level.

Table 3 summarizes the ten provisions considered in our analysis that create divergence between the EMTRs and SMTRs for taxpayers in our sample population.²¹ For each provision, we present the average estimated impact for those affected (third column). Similar to Macnaughton et al. (1998, p. 1043), we capture the importance of the provisions by multiplying the third column by the percentage of taxpayers affected by a particular measure (second column). The product measures the provision's «contribution to the average marginal tax rate» (Davies 1998) which is equivalent to the estimated impact measure on the entire sample (fourth column).²² As can be seen in Table 3, the provision with the highest impact is the phase-out of the Canada Child Tax Benefit (CCTB) at 2.0 percentage points. Furthermore, while the average estimated impact is 6.7 percentage points, untabulated results indicate that 11.2 percent of taxpayers with children are potentially affected by higher phase-out rates, ranging from 12.2 to 37.1 percentage points, with the rate being higher as the number of children increases. In addition to the CCTB, Table 3 shows that, at the provincial level, the phase-out of the family tax reduction can add up to 5 percentage points to the tax rate differential, with an estimated impact of 0.9 percentage points on the entire sample. An estimated 18.7 percent of the sample population may be affected. Furthermore, at certain levels of income, the combined impact of the CCTB and family tax reduction can increase the marginal tax rate by as much as 42.1 percentage points for some taxpayers. The impact of the two measures is additive because the Quebec provincial taxes are calculated separately from the federal level taxes.

Other provisions with a potentially significant impact include the reduction of the spouse's marital tax credit at the provincial level, at 1.2, and at the federal level, at 0.5. As discussed in Macnaughton et al. (1998, p.1048), an increase in income may decrease the amount of a credit that can be transferred to a spouse, including the spousal tax credit. Although the individual receiving the additional income may not have any tax payable, the amount of the credit claimed by the other spouse decreases. This reduction in amount of credit claimed is equivalent to an increase in the EMTR. Similar to the child benefits above, the impact is additive at certain levels of income, such that the tax rate differential is as high as 36.2 percentage points (14.2 plus 22 percentage points). This effect, combined with reductions in family benefits is significant. Other measures with a high impact are the phase-out of the GST credit at 0.7, as well as the phase-out of the Quebec TVQ credit at 0.40. Other measures have a lower impact.

²¹ We do not describe these provisions in detail as they are available online.

²² For example, the proportion of taxpayers affected by a reduction of the spouse's dependent tax credit at the federal level, 3.9 percent, is multiplied by the average estimated impact for those affected; that is, 14.2 percentage points. Thus, the estimated impact on the entire sample is 0.5 percentage points. Although Table 3 is similar to Table 1 presented in Macnaughton et al. (1998, p. 1043), we cannot directly compare the impact of similar provisions between the two studies because due to differences in sample composition. While their study includes taxpayers pre and post retirement, our study focuses on those pre-retirement.

Table 3
Summary of provisions creating EMTRs different from SMTRs (2000)

Provision	Estimated number of taxpayers affected	Percent of taxpayers affected	Average estimated impact for those affected	Estimated impact on entire sample²³
<i>Federal level</i>				
Reduction of spouse's marital tax credit ²⁴	113,072	3.9%	14.2%	0.5
Reduction of medical tax credit ²⁵	339,890	13.0%	0.4%	0.05
Phase-out of the Canada Child Tax Benefit	885,828	30.4%	6.7%	2.0
GST credit				
Increases EMTR	390,660	13.4%	2.0%	0.03
Decreases EMTR	49,511	1.7%	5.0%	0.7
<i>Provincial level</i>				
Reduction of spouse's marital tax credit ³⁰	157,466	5.4%	22.0%	1.2
Reduction of credit for person living alone	99,660	3.4%	3.3%	0.1
Phase-out of family tax reduction	544,110	18.7%	5.0%	0.9
Reduction of medical tax credit ³¹	248,385	8.5%	0.7%	0.06
Phase-out of TVQ credit	380,587	13.1%	3.0%	0.40
Phase-in of Quebec medical insurance plan	51,728	1.8%	4.1% ¹	0.06

N=2,914,000

²³ Similar to Macnaughton et al. 1998, we calculate the impact as the product of the proportion of the population affected and the number of percentage points by which the provision causes the EMTR to differ from the SMTR.

²⁴ Note that the calculations and applicable ranges with respect to the spouse's marital tax credit at the federal and provincial levels differ. Consequently, they must be considered separately.

²⁵ This effect may be understated as it is calculated according to the medical expenses claimed by the taxpayer.

CONCLUSION AND VALIDITY OF OUR FINDINGS FOR CURRENT PERIODS

Using tax return data available in the Longitudinal Administrative Database for the year 2000, we provide a snapshot of the tax-filing population in Quebec aged 24 to 59 that are susceptible to high differentials between the effective and statutory MTRs. Consistent with prior studies (although in different contexts), we find that the divergence between EMTRs and SMTRs is prevalent, with 38.5 percent of taxpayers in our population potentially facing EMTRs that exceed SMTRs by at least 2.5 percent. These differentials may be high; 17.7 percent (3.9 percent) are susceptible to tax rate differentials equal or greater than 10 percent (35 percent). Additionally, for a significant proportion of taxpayers, SMTRs are not a good indicator of the tax status.

Our focus on taxpayers in the pre-retirement phase allows us to separate the impact of programs aimed at helping lower income families from those geared to seniors. Furthermore, in focusing on a single province (Quebec), we highlight the impact of multiple tax and benefit provisions that are additive and have similar objectives at the federal and provincial levels, such as child tax benefits, the marital tax credit, as well as the GST / TVQ credits, all contributing to even higher tax rate differentials. Adding to the complexity of marginal tax rate calculations is the structure of the Quebec tax system, a tax on base system, in which the tax treatment of certain expenses differs from that at the federal level (e.g., union and professional dues as well as child care expenses that are deductions (credits) at the federal (provincial) level), resulting in differences in net /taxable income and, thus, making it even more difficult to estimate MTRs.

Our study adds to the existing body of evidence that tax planning decisions depend on multiple factors that vary over the individual's lifecycle as well as across individuals and that the presence of income-tested tax benefit programs and tax credits may have a significant impact on decisions such as saving for retirement. Furthermore, consistent with Macnaughton et al. (1998), we highlight the importance of calculating EMTRs for all individuals, not only the head of household as in Duclos et al. 2008 and 2009. This is important because "some effects do not apply to the individual earning the extra income but to other members of the family" (Macnaughton et al. p. 1033). Indeed, increasing the income of the lower income spouse, for example, using spousal RRSPs or through payment of dividends not required for immediate consumption, may have unintended consequences because the additional income reduces the marital tax credits claimed by the head of household at both the federal and provincial levels – this is equivalent to an increase of 36.2 percent in the MTR. When both the federal and provincial child benefit programs are considered, EMTRs may exceed 78 percent, a rate much higher than the top SMTR of 50.67 (in 2000). Finally, using the single status as the representative taxpayer to calculate EMTRs (e.g., Laurin and Poschmann 2010) in the pre-retirement stage may not be relevant for a large percentage of the population.

The multiplication of income tested programs at the federal and provincial levels contributes to increasing the tax cost at the margin for the same group of individuals, particularly for those that have larger families. Better coordination of the programs between the levels of government could lower the cost for those individuals or families who are most affected. However, coordination may be difficult to achieve.

Calculating EMTRs is not an easy task for taxpayers and even tax practitioners. Complexity and the presence of income tested programs based on prior year's income make it difficult for taxpayers to identify and adapt their planning strategies, if at all possible, to reduce their EMTRs. Furthermore, implementing programs retrospectively, such as the provincial parental contribution in respect of a child in subsidized childcare introduced in April 2015 make it even more complex for taxpayers to estimate their EMTR.²⁶

In recent years, tax authorities have made “calculators” publicly available to individuals. For example, one can estimate the amount of the new child tax benefit expected to be received, as well as the GST/TVH credit.²⁷ Although this is an improvement with respect to information provided in prior years, detail of the calculations is not easily found. Additionally, calculators may be found on various web pages, making it difficult to estimate the total impact. It is our view that taxpayers should have the ability to access an all-inclusive calculator that would increase transparency. Furthermore, including basic fiscal literacy in the government strategy to increase financial literacy would be desirable since those who are most affected by high differentials do not necessarily have access to specialists when making financial decisions.

Our results suggest that the tax credits and benefit provisions put in place by governments may counteract with their goal of promoting the GDP growth through the private sector. Indeed, savings by individuals help finance firms' projects. If high tax rate differentials exist, accumulated savings may be reduced and/or firms may have to offer a higher rate of return to compensate the higher individual tax rate, thus potentially increasing firms' financing costs. Alternatively, savings may increase if those with high EMTRs know their rate and have sufficient disposable income to both increase savings and to optimally choose the timing of their contributions to tax deferred or tax prepaid plans. This remains an empirical question.

Our study has limitations. One potential limitation is the use of older data, from the year 2000. Although this might limit the generalization of our results to the current period, the issue of high EMTRs remains topical as governments continue to modify and introduce new programs for which eligibility depends on the same factors such as family income as well as number and age of children. For example, a new Canada Child Benefit program was introduced in 2016 with the objective of being simpler than the previous system of child benefits, tax-free, better-targeted to those in greater need, and more generous. Although the structure is similar to the previous program (CCTB), the family income level at which the CCB is completely phased-out is much higher and, thus, potentially affects and even greater proportion of taxpayers. Despite the objectives, the phaseout rates vary from 7 percent for families with one child and income in the lower tier up to 32.5 percent for those with four or more children and income in the second

²⁶ http://www.budget.finances.gouv.qc.ca/Budget/outils/index_en.asp.

²⁷ https://apps.cra-arc.gc.ca/ebci/icbc/prot/proc_financial (accessed July 24th, 2017).

tier.²⁸ Furthermore, the calculation of the benefit does not only vary with the number of children but also the age of the children (less than six years or between seven and seventeen).²⁹

As a second example, the Quebec government modified its rules in respect of the parental contribution payable for a child in subsidized childcare. For the year 2016, the cost of subsidized daycare to the parents comprised a basic fixed contribution (as in prior years) and an additional contribution adjusted based on family income in the prior year (2015), as well as the number of children, and is payable at the tax-filing date (April 2017). This measure has created an additional difference between EMTRs and SMTRs, potentially exceeding 17 percent for certain taxpayer groups.³⁰ This “retrospective tax” has added great complexity to the calculation of the cost of childcare, the choice between subsidized or non-subsidized daycare, the decision on the timing and amount contributed to RRSP, as well as the decision to save in taxable accounts, among other things. Thus, high EMTRs continue to exist even though SMTRs have decreased over time for many taxpayers.

Although future research with current data would be helpful, the results presented in this paper along with the greater complexity of tax legislation nowadays stress even more the importance of basic fiscal literacy. Finally, although using the LAD has important advantages as mentioned in the paper, it is a challenge to calculate provincial MTRs due to some missing information. Nevertheless, we believe that calculated EMTRs in our study are understated rather overstated and, thus, our conclusions would hold.

²⁸<https://www.canada.ca/en/employment-social-development/campaigns/canada-child-benefit.html> (Accessed June 19, 2017).

²⁹ See <http://www.moneysense.ca/save/taxes/budget-winners-and-losers-child-benefit/> for a discussion of winners and losers of the CCB (website accessed February 1, 2018).

³⁰http://quebec.huffingtonpost.ca/2017/06/14/garderies-subventionnees-depenses-familles_n_17091144.html (Accessed June 21, 2017). The new variable contribution increased government revenues of nearly \$130 million dollars during the year 2016 and affected approximately 126,224 taxpayers for an average increase of \$1,029 per family.

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Appendix – Framework for calculating SMTR and EMTR

This appendix provides a general framework for calculating both statutory marginal tax rates (SMTRs) and effective marginal tax rates (EMTRs) at the federal and provincial levels. All variables are calculated except where noted “(from LAD)”. Table 1 below presents the federal and provincial tax rate schedules, including the federal surtax, applicable to the year 2000.

Table 1 – Federal and Provincial Tax Rates for the year 2000

Taxable income	Federal statutory tax rate	Federal tax rate net of Quebec abatement	Federal surtax	Quebec provincial statutory tax rate	Combined federal / provincial statutory tax rate
\$0-\$5,900	0	0	0	0	0.00
\$5,901-\$7,231	0	0	0	19	19.00
\$7,232-\$26,000	17	14.195	0	19	33.20
\$26,000-\$30,004	17	14.195	0	22.5	36.70
\$30,005-\$52,000	25	20.875	0	22.5	43.38
\$52,001-\$60,009	25	20.875	0	25	45.88
\$60,010-\$70,240	29	24.215	0	25	49.22
Over \$70,240	29	24.215	1.45	25	50.67

To calculate SMTRs and EMTRs, we compute **net federal taxes payable** and **adjusted net federal taxes payable** as shown in Panel A below. We then add \$10 to taxable income and recalculate the same variables. We obtain **Fed_SMTR (Fed_EMTR)** by calculating the change in *net federal taxes payable (adjusted net federal taxes payable)*. In calculating EMTRs, we subtract changes in tax credits and transfer programs applicable to non-retired seniors. At the federal level, we consider: (1) the spousal dependent tax credit (if the chosen taxpayer is claimed as the dependent); (2) the medical expense credit; (3) the Canada Child Tax Benefit program; (4) the GST credit.³¹

We use the same approach to calculate the provincial SMTRs and EMTRs in Panel B below. We consider: (1) the spousal dependent tax credit (if the chosen taxpayer is claimed as the dependent); (2) the non-refundable family tax reduction (credit); (3) the credit for a person living alone; (4) the provincial medical expense credit adjusted to reflect the difference in federal / provincial tax legislations; (5) Premium payable under the Quebec prescription drug insurance plan; and (6) the Quebec TVQ credit.

Panel A: Federal level³²

³¹ An extra dollar of other income earned in the fiscal year 2000 will have an impact, if any, on next year's amounts received in respect of GST, CCTB, and other programs (i.e., starting July 1st, 2001). We consider this effect in the calculation of current year EMTRs.

³² As the extra dollar of income is considered “other income”, there would be no effect on payroll taxes (e.g., QPP, employment insurance).

Taxable income, federal (from LAD)	
Federal tax (calculated)	
Less: Non-refundable tax credits (from LAD)	
Less: federal dividend tax credit (using grossed-up dividend available in LAD)	
= Basic federal tax (calculated)	
Plus: Surtax (calculated)	
Less: Quebec abatement (calculated)	
= Net federal taxes payable (to calculate SMTR at federal level)	Fed_SMTR
Less: Spousal marital tax credit (calculated)	
Less: Medical tax credit (calculated)	
Less: GST credit (calculated)	
Less: Canada Child Tax Benefit (calculated)	
= Adjusted net federal taxes payable (to calculate EMTR at federal level)	Fed_EMTR

Panel B: Provincial level (Quebec)

Taxable income, provincial (= federal taxable income adjusted for differences in the tax treatment of union and professional dues and child care expenses)	
Provincial tax (calculated)	
Less: Adjusted non-refundable tax credits (=federal non-refundable tax credits adjusted for differences in types and amounts of personal tax credits, e.g., amount and rate used to calculate child tax credit)*	
Less: provincial dividend tax credit (calculated)	
Provincial taxes payable (to calculate SMTR at the provincial level)	Qc_SMTR
Less: Spousal dependent tax credit (calculated)	
Less: Non-refundable family tax reduction (calculated)	
Less: Tax credit for living alone (calculated)	
Less: Medical tax credit (calculated)	
Plus: Premium payable under the Québec prescription drug insurance plan (calculated)	
Less: TVQ credit (calculated)	
Provincial taxes payable (to calculate EMTR at the provincial level)	Qc_EMTR

*Provincial non-refundable tax credits are not available in the LAD. Thus, federal non-refundable tax credits are adjusted to reflect major differences in the amounts and calculation of certain credits at the provincial level. The following credits are adjusted: the personal, spousal (and equivalent to spousal) and dependent tax credits, the medical expense credit, and the credit for donations. Additionally, included at the provincial level are the union and professional dues credits (that are deductions at the federal level) as well as the credit for a person living alone. All credits are multiplied by the appropriate provincial rate (i.e., 22 percent in the fiscal year 2000). Contrary to the base rate used at the federal level to calculate tax credits, the provincial rate is different from the lowest statutory rate. Furthermore, we calculate the provincial tax reduction for

families that is based on its own measure of income. Consistent with Macnaughton et al. (1998), the effects on the spousal marital tax credit, the family tax reduction, the credit for living alone, the medical tax credit, and the premium payable under the Quebec prescription drug insurance plan are considered in the calculation of the EMTR instead of the SMTR.

To ensure maximum accuracy of the SAS in-house tax calculator, extensive simulations are performed, comparing MTRs computed using the SAS programs with simulated data to results obtained using tax preparation software. Furthermore, EMTRs, SMTRs, and divergence between the two rates calculated using the LAD are extensively analyzed by distribution, by quartile, by component (by credit or benefit program), by level of taxation, by income level and, when available, by minimum and maximum values for certain variables.

Among the elements not considered in our calculation of EMTRs at the federal level is the clawback of employment insurance repayment which we estimate at approximately 0.7 percent of benefits received in 2000 (from the LAD).³³ Furthermore, not considered are transfers of spousal unused credits (education, disability) due to unavailable data or incomplete data as this would add noise in the calculations. For similar reasons, we do not consider the impact of social assistance, alternative minimum tax, nor disability benefits under the child tax benefit program.³⁴ Taxpayers receiving social assistance would not normally be saving and would be more sensitive to increases in EMTRs on labour income than on investment income. Despite this, we exclude taxpayers who receive social assistance from our sample. Although EMTRs may be understated, we believe that our analysis captures the measures that potentially could have a significant impact.

At the provincial level, we add to net income the child care deduction claimed at the federal level because child care expenses give rise to a refundable tax credit. This credit varies with the level of family income and is available only to families that do not participate in the subsidized daycare program. We do not calculate this credit primarily because we cannot identify taxpayers in our sample that benefit from this program. Furthermore, the amount claimed as a deduction at the federal level is not necessarily equal to the actual expense because the calculation is based on factors such as the «earned income» (which excludes other revenue) of the lower income spouse and a limit based on the age of the child. Thus, increasing other income may not have any impact on the available credit.³⁵ Finally, we do not consider the “Contribution to the health services fund” because we lack information for determining the «income measure» used in calculating the amount of the contribution. Furthermore, as the rate is low (1 percent), the impact should not be significant.

³³ Although employment insurance repayments may understate EMTRs for a group of taxpayers, Macnaughton et al. 1998 show that this measure had a lower impact on EMTRs than other measures. Furthermore, while we recognize that this measure could contribute to higher EMTRs, re-doing the calculations including this item would significantly increase the cost of data manipulation with Statistics Canada.

³⁴ Taxpayers receiving social assistance are not expected to receive investment income and, thus, do not need to be considered in our analysis.

³⁵ Duclos et al. (2008, 2009) also exclude the child care credit in their calculations of EMTRs on labour income.