Provincial Taxation of High Incomes: What are the Impacts on Progressivity and Tax Revenue?

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Introduction

When considering taxation in a federation, the traditional advice offered by public finance economists is to locate the redistributive functions with the central government instead of the local governments. With factors that are mobile across local jurisdictions, local-level redistributive taxes may lead to competition for the mobile factors which puts a constraint on the ability of the local government to try to redistribute.\(^1\) The recent experience in Canada, however, contrasts with the traditional advice. Five provinces in the last four years have moved tax rates on high earners upward. At the federal level, the top tax rates have not changed since the surtaxes were removed in 2000. The federal tax rate freeze may just result from the idiosyncrasies of the particular parties in power over this period. However, there are no indications that any major federal party is inclined to change the status quo soon.\(^2\)

The contrast between the traditional public finance advice and recent trends in Canada provides the motivation for this paper. There has been a strong quarter-century trend toward higher concentration of incomes at the top of the Canadian income distribution.\(^3\) This high income concentration has created some degree of political pressure to use the income tax system to push

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\(^1\) The traditional case is stated and developed in, for example, Oates (1968) and Musgrave (1971).

\(^2\) In 2012, NDP Leadership candidate Brian Topp did propose a 6 percentage point increase in the top federal rate for those with incomes over $250,000. His candidacy, however, was not successful. NDP Leader Thomas Mulcair has explicitly ruled out higher tax rates. In The St. John’s Telegram on August 8\(^{th}\) 2013 Mr. Mulcair is quoted as saying “I am categorical on that,” he said. “Several provinces are now at the 50 per cent rate. Beyond that, you’re not talking taxation; you’re talking confiscation. And that is never going to be part of my policies, going after more individual taxes. Period. Full stop.”

\(^3\) Liberal leader Justin Trudeau is quoted by CBC on February 22, 2014 as saying “Canadians are struggling ... There is no reason to raise taxes on them now. We are not going to be raising taxes.”

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\(^3\) The Canadian trends are documented in Saez and Veall (2005, 2007), Veall (2012), Milligan (2013a), and Lemieux and Riddell (2014). The international context for the trend to high income concentration is presented in Atkinson, Piketty, and Saez (2010).
back against the growing income concentration. What are the consequences of this pressure expressing itself provincially instead of federally? We explore the impact of provincial taxation of high incomes on progressivity and on tax revenues.

Our tax revenue estimates depend critically on how taxfilers respond to higher taxes. A growing literature studies the responsiveness by estimating reported income elasticities. The more traditional focus for analysis of responses to taxes is on ‘real’ responses such as changes in labour supply. The reported income elasticity approach incorporates changes in earnings, but also allows for financial or timing adjustments of reported income through tax planning or other avoidance activities. If taxfilers respond to higher tax rates by stepping up their use of tax shelters or shifting income out of the jurisdiction, the reported income elasticity approach will pick that up.

To consider the impacts of provincial taxation of high incomes, we postulate a particular counterfactual tax policy for high incomes which we apply to all provinces separately. We do this not as advocates for higher tax rates, but to gauge the impact on progressivity and provincial revenues of such a tax. We imagine a new tax bracket that begins at each province’s income threshold for entry into the top one percent of earners. This new tax bracket has a rate five percentage points higher than the prevailing top income tax rate. We simulate the impact of such a tax bracket on the average tax rates of top earners from each province in order to assess the progressivity impact, and we also estimate the revenue each province might expect to gain.

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4 See Saez, Slemrod, and Giertz (2012) for a comprehensive recent review. The Canadian evidence is reviewed in Department of Finance (2010) and Milligan and Smart (2014).
We have several interesting results. First, in line with the findings of Milligan and Smart (2014), we find estimates for the reported income elasticity that are quite large. Our basic specification yields an estimate of 0.664 for provincial tax rate changes. This implies that a 10 percent increase in the tax rate would shrink the base of taxable income by 6.64 percent. The magnitude of the estimated elasticity suggests only a limited scope for provinces to raise taxes on high earners while still gaining revenue.

Second, the impact of the higher tax bracket on average tax rates is not large. Because higher earners only pay the new rate on incomes in excess of the bracket threshold, the average tax rate within the top one percent of earners does not adjust by the full five percent increase in the marginal tax rate. For example, someone earning one dollar more than the threshold to be in the top one percent only sees an infinitesimally small increase in his or her average tax rate, since most of his or her dollars are taxed at existing unchanged tax rates. Our findings suggest a limited ability to push back against the high income concentration trend.

Third, we document a very large disparity across provinces in the potential revenues per taxfiler from the new high income tax bracket. While the new tax bracket would only raise $2 per Prince Edward Island taxfiler (or equivalently $200 per member of the top one percent), the comparable number for British Columbia is $61 and for Alberta is $131. Importantly, this disparity is driven in large part by the varying shape of the income distributions across provinces. There are higher average incomes and higher top one percent income shares in some provinces compared to others, and this drives the potential revenue differences across provinces.
Finally, we show a potential negative impact on federal revenues of these new provincial tax
brackets. Higher provincial tax rates shrink the tax base that is used by the federal government as
well, with potential consequences for federal revenue. A federal revenue impact would not likely
factor into provincial government decisions, since it is a “vertical” fiscal externality that does not
affect the provinces directly.

The paper begins by describing the development of the current provincial income taxation
environment, with a particular focus on the tax rates facing high-earners. We then proceed to a
description of provincial high-income trends, and the estimation of how taxation has influenced
high incomes at the provincial level. Next, we turn to the simulations, showing the impact on
progressivity through the presentation of average tax rates and on provincial tax revenue using
our estimated responsiveness. We close with some thoughts on the federal implications of
provincial high income taxation, and some concluding comments.

**High Income Taxation in the Provinces**

In Canada, both the federal and provincial governments have the constitutional ability to tax
incomes. In the language of public finance, the income tax base is co-occupied. From 1962 to
2000, the federal government collected income taxes on behalf of the provinces (except Quebec)
under a system called ‘tax on tax’. Under this system, each province’s income tax rate was set
at some proportion of the Basic Federal Tax liability. This had two important consequences for

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5 See Library of Parliament (2004) for a summary of tax collection arrangements between the provinces and the
federal government through time.
6 Provinces also could add a surtax to their basic liability over some tax threshold, if they wished. They could also
offer low-income supplements and tax reductions.
the taxation of provincial incomes for those provinces working under this system (known as the ‘agreeing’ provinces). First, the agreeing provinces had limited ability to adjust the progressivity of the tax system beyond what occurred under the federal rate structure. Second, the agreeing provinces were obliged to use the federal definition of taxable income for their tax calculations.

Starting in 2000, changes to the tax collection agreements between the federal government and the provinces meant that agreeing provinces removed the first limitation listed above, while retaining the second. The new system became known as ‘tax on income’. Agreeing provinces could take the federally-defined taxable income and calculate the income tax liability based on the province’s own tax bracket and rate structure. This greatly enhanced the agreeing provinces’ ability to adjust the shape of progressivity in their tax systems.

We graph the provincial top marginal tax rates from 2000 to 2014 in Figure 1. Here and in the rest of the paper, we report Quebec rates as net of the federal tax abatement to make the rates comparable to other provinces.\(^7\) Alberta has the lowest rate in all years, with a flat rate of 10 percent for all income starting in 2001. From 2001 to 2010, tax rates were nearly constant in most provinces, although Newfoundland and Labrador and New Brunswick lowered rates in the second half of that decade. Since 2010, however, five provinces have moved their tax rates for top earners higher. Nova Scotia was first off the mark in 2010 when a new tax bracket of 21 percent was introduced for those with income higher than $150,000. In 2012, Ontario introduced a new bracket starting at $500,000, which was 1.56 percent higher than before. In 2013 this

\(^7\) Quebec taxpayers receive a 16.5 percent refundable federal tax abatement. For those in the top tax bracket, this is worth 4.8 percentage points (29 percent top federal rate times 16.5 percent abatement). We net this 4.8 percent against Quebec’s own marginal tax rates since the first 4.8 percent of Quebec income taxes just catch Quebec taxpayers up to those in the rest of Canada.
moved up to 3.12 percent higher.\(^8\) New Brunswick moved its top rates (along with their entire rate schedule across all incomes) up in two shifts during 2013 and 2014. Quebec’s new high income bracket began in 2013, with a 1.75 percentage point boost to its top rate. Finally, in 2014 BC joined in with a new tax bracket 2.1 percent higher for incomes over $150,000.

These changes in top rates are displayed in Figure 2. The bar graph shows the top rate in 2014 for each province. For the five provinces that have recently changed rates, the new part of the rate is coloured in light grey, and the year of the change is indicated to the right of the bar. The largest of the changes is in New Brunswick, with Quebec’s increase of 1.75 percentage points being the smallest.

**Taxes and the Incomes of the Top One Percent**

The most notable income distribution trend over the past twenty-five years is a concentration of income at the very top of the income distribution. In Figure 3, we graph the income share earned by those in the top one percent of the income distribution by province from 1982 to 2011. The data come from the CANSIM high income database. As noted by Veall (2012), three provinces stand out from the others. Income concentration is highest in Alberta, followed by British Columbia and Ontario. Growth in top shares in other provinces has been more muted. More detail on the patterns of high income concentration in Canada is provided in Lemieux and Riddell (2014).

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\(^8\) This change over 2012-13 was actually announced as a change of 3.12 percent as of July 1\(^{st}\), 2012. However, it was implemented as half the rate increase for 2012 and the full rate increase for 2013. This is normal for tax rate changes happening mid-year since the tax system does not report the timing of income within the year, so it is not easy to tax dollars arriving in different months within a calendar year at different rates.
It might be tempting to draw an early conclusion about the relationship between taxes and the rise of high income concentration by looking at Alberta, as the emergence of high income concentration coincided with the lowering of the tax rate in Alberta. For other provinces, however, the time series correspondence is less clear.

In a formal and more detailed empirical analysis, Milligan and Smart (2014) investigate the relationship between provincial top tax rates and provincial top incomes. That paper uncovers substantial responsiveness of top incomes to tax rates, with the responsiveness concentrated in the top one percent of the population (and especially the top 0.1 percent). Taxes in most provinces were going up in the 1980s and 1990s just when the trend to higher income concentration emerged. This is inconsistent with the idea that tax cuts were the main driving factor of the rising top one percent share—there were not tax cuts during this time period. These findings lead to the conclusion that even though incomes do show responsiveness to tax rates, taxes alone explain very little of the emergence of high income concentration in Canada.

Here in this paper, we present some summary results using the same data as Milligan and Smart (2014). To start, we plot in Figure 4 the top provincial marginal tax rate by province and year against the top one percent income share for the years 1988 to 2011. The cloud shows a negative relationship between the income shares and the marginal tax rates. The data points clustered along the y-axis are from Alberta in the 2000s, where the provincial marginal tax rate was 10 percent. Some provinces, such as Ontario and British Columbia, display a fairly consistent
negative within-province relationship. The regression analysis which forms the basis of our evidence extracts the systematic negative relationship that can be seen in this figure.

The empirical specification we employ explains the provincial top income share using the top tax rate in each province. For these regressions, we use the top combined federal and provincial tax rate. We implement the regression with a log specification, allowing the estimated coefficient on the tax rate to be interpreted as an elasticity. The exact estimation equation is below. The subscript $p$ indexes provinces and the subscript $t$ indexes years.

$$\ln \sigma_{pt} = \beta_0 + e \ln(1 - \tau_{pt}) + \beta_1 \ln TotIncome_{pt} + \delta_p + \lambda_t + \nu_{pt}$$

The natural logarithm of the top one percent share $\sigma_{pt}$ is on the left-hand side. On the right-hand side we have a constant term, the natural logarithm of the net-of-tax top tax rate $(1 - \tau_{pt})$, the natural logarithm of total provincial income, a set of provincial fixed effects $\delta_p$, and a set of time period fixed effects $\lambda_t$. The provincial income is included here to capture any province-specific income trends that affect everyone within a province. The provincial fixed effects control for any differences across provinces that don’t change over time. Finally, the time fixed effects pick up any national economic trends affecting the income share of the top one percent across the country.

This log-share specification is standard in the literature, and has been used previously in Canada as well.9 Because we are using provincial-level variation, the estimates apply most naturally to

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9 See Saez (2004), Saez and Veall (2007), Atkinson and Leigh (2010), and Department of Finance (2010).
provincial tax rate changes. If some taxpayers respond to higher provincial taxes by shifting income across provinces, this would be picked up by our estimation. However, for a federal marginal income tax rate change, inter-provincial income shifting would not occur since the same federal rate applies no matter the province of residence. This means that our estimates here are less relevant for federal income tax changes if inter-provincial shifting is important.

We implement this regression equation using data from the CANSIM high income database.\textsuperscript{10} These data are drawn from tax records, and are available between the years 1982 and 2011. We select a sample from 1988 to 2011 because there is a common tax base over this period following the tax reform of 1988. We use the total income (without capital gains) measure of income, as including capital gains may incorporate transitory responses which would bias upward the elasticity estimate. For weighting, we follow the advice of Solon et al. (forthcoming) to use weights to account for the precision of the provincial variables. We do so by weighting by the number of taxfilers. For the tax rate, we use the Canadian Tax and Credit Simulator (Milligan 2013b) to calculate the marginal tax rate for each province and year.\textsuperscript{11} Sensitivity analysis of all these choices is reported in Milligan and Smart (2014).

The regression results appear in Table 1. The first column shows the results for a regression on the 240 observations (10 provinces for 24 years), including just the province and year effects. The estimated elasticity is 0.942, significant at the 10 percent level. In the second column, we

\textsuperscript{10} We use CANSIM series 204-0002.

\textsuperscript{11} To calculate the marginal tax rate for a particular fractile, we use the average income of those in that fractile. To avoid endogeneity, we use a common income in the calculation of the marginal tax rate for all years and provinces. For this purpose, we use the national average Canadian income from the year 2000 for the fractile in question. Milligan and Smart (2014) provide an extensive discussion of the measurement of the marginal tax rate and implement a more complex instrumental variables approach.
add a control for total income in the province in order to capture any province-wide trends in income that are not specific to the top fractiles. Here, the elasticity estimate drops to 0.664, but is now significant at the 5 percent level. This elasticity means that a 10 percent change in the net-of-tax top rate is predicted to lower the income tax base by 6.64 percent. In the third and fourth columns, we try other fractiles of income to see if the elasticity changes. In column (3), we use the share of income between the 95th and 99th percentile. The measured elasticity here is very close to zero. Finally, in the fourth column we look at the share of income in the 99.9th percentile of income. Here, both Newfoundland and Labrador and Prince Edward Island fall out of the sample because the data were restricted for confidentiality reasons. In this sample, we estimate an elasticity of 1.414, significant at the 10 percent level.

These results point to a conclusion that the behavioural response to high tax rates is much stronger in the top one percent—and in the top tenth of the top one percent—than for the rest of the population. This response could occur through a real response (such as lowering labour supply) or through a financial response (such as tax planning, shifting, or avoidance). Those in the highest income fractiles have more ready access to skilled tax planning and financial advice that facilitates a response to higher tax rates. Given this pattern, it might seem optimal to increase taxes on those between the 95th and 99th percentile where response is lower and there is substantial income to be taxed. Of course, moving the target for high-income taxation lower would shift focus away from those in the top one percent who have seen the highest income gains and might bring stronger political resistance.

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12 This ‘internal’ elasticity for P95 to P99 is tricky to interpret. The regression compares the response to the tax rate on the P95-P99 group to those in the complement group—which includes both P0-P95 and P99-P100. This is a heterogeneous control group since we expect those in the top one percent to have a strong response and those below P95 to have a weak response. We include this specification here to help interpret the difference between the specifications on P99 and P99.9 in columns (2) and (4).
Our results here are consistent with the evidence in Milligan and Smart (2014), which uses the same sample and a slightly more involved estimation specification. In that paper, sensitivity of the results to different time periods, income measures, weighting schemes, and other issues is presented. As a whole, the results are quite robust. The estimated elasticity is also similar to those in Department of Finance (2010), which estimated a 0.62 elasticity for the top one percent using a similar approach, although with different years of data.

Our estimated elasticity is outside the 0.12 to 0.40 range suggested by Saez, Slemrod, and Giertz (2012, p. 42) as the range of the “best available estimates.” We offer three explanations for our higher estimates. First, our estimates are focused on the provincial rather than federal level. If individuals have the opportunity to shift income across provincial borders to avoid taxation, then we would expect a higher elasticity at the provincial level than at the federal level. Second, as argued in Milligan and Smart (2014), the province-year variation we exploit is arguably a better basis for inference than the variation used in much of the existing literature. Finally, reported income elasticities correspond only to a particular tax system, and are not necessarily comparable across jurisdictions. The ability of someone to avoid taxes depends on the array of tax measures in place in a particular time and jurisdiction, and the way those tax measures are enforced. An elasticity estimate therefore is valid only for the particular tax system in force for the time and places covered by the data. This caveat applies equally for comparisons across countries with different tax systems, and within Canada across time periods with material differences in the tax system.
Tax incidence is important to keep in mind as well. In response to higher tax rates it is possible that firms might begin paying higher pre-tax wages in order to keep employees from moving out of the jurisdiction. In this case, the incidence of a tax increase would be on the employer rather than the employee. Any response to pre-tax compensation by employers would bias our estimates downward, and also have important implications for considering the progressivity consequences of a high-income tax increase.

**Simulations**

We now proceed to simulations based on a counterfactual tax policy scenario. The scenario we consider is a situation where each province (considered separately) adds a new tax bracket aimed at the top one percent in the province. We engage in this exercise not to advocate for such a tax, but to explore the implications of such a tax on progressivity and revenues at the provincial level. The rate for the new bracket is five percentage points higher than the existing top rate in the province as of 2011, the last year of our data.\(^{13}\) The new bracket starts at the threshold for membership in the top one percent, and this varies by province. Since our data only give us the thresholds for total income rather than taxable income, we must use the top one percent total income thresholds to define the tax brackets. The motivation for this counterfactual comes from the observation that four provinces have moved to add a new tax bracket aimed at higher earners.

\(^{13}\) Using 2011 as the base means that our new tax bracket is implemented before the onset of the actual tax increases in New Brunswick, Quebec, Ontario, and British Columbia. For Nova Scotia, however, the new tax bracket is on top of the increase implemented in 2010.
in the past four years.\textsuperscript{14} For ease of reference, we will refer to the two tax systems as the ‘base’ and ‘+5’ tax systems.

The parameters of the base and +5 systems are reported in Table 2. We show the bracket threshold and rate for the top tax bracket in each province, along with the top federal bracket and rate. The left-side columns show the base system (from 2011) and the right-side columns show the counterfactual +5 system. While the tax system in the United States is different in many ways, it is still interesting to note that the 2011 tax system in the United States featured brackets (for single filing status) starting at $US 174,400 and $US379,150. These higher brackets allow for more progressivity over high income ranges of taxable income than is the case in Canada, where there is no further increase in marginal tax rates for any province over an income level of $150,000.

We examine two implications of our counterfactual tax policy for each province. First, we look at the impact on the progressivity of each province’s tax system. To do so, we calculate average tax rates for those in the top one percent before and after the implementation of the new tax bracket. Other potential measures, like a Gini coefficient, or log percentile ratios, are not as useful in assessing changes occurring in the top tail of the income distribution. The second implication we study is the impact on provincial revenues. In doing so, we show the impact of the behavioural response to the higher rates using our estimates from Table 1.

\textsuperscript{14} The provinces are Nova Scotia, Quebec, Ontario, and British Columbia. New Brunswick also raised income tax rates, but did so at all income levels.
Progressivity implications

To assess the progressivity implications of a hypothetical new top tax rate five percentage points higher, we calculate the average provincial tax rate at each income level from $0 to $1,000,000 in increments of $5,000. We make the calculations under the base and +5 tax policy using the Canadian Tax and Credit Simulator. For these progressivity simulations, we assume no change in reported incomes in response to the higher tax rates. The average tax rate is defined as total provincial income taxes divided by total income. Because our interest here is in the average tax burden, we include an additional simulation that imputes amounts for the most-used deduction and credit lines on the tax form in order to get a better measure of the actual tax liability. Higher earners may make heavier use of deduction items than lower earners, so estimates of average tax rates are improved by taking these tax items into account.

The results for three example provinces are presented in Figure 5. At the top are the average tax rates for Quebec, in the middle is New Brunswick, and at the bottom is Alberta. Because the new tax bracket does not apply to any income below the top one percent threshold in each province, the average tax rates at lower income levels are not affected. At $250,000, the average tax rate in Quebec has moved up only slightly from 18.2 percent in the base tax system to 19.3 percent in the +5 tax system. In New Brunswick, the gain is similarly small. In Alberta, there is no

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15 We make these imputations using information from Tax Statistics on Individuals published by the Canada Revenue Agency. We define cells by province, year, and narrow income groups. For each cell, we impute an amount and a probability of having any amount based on the CRA data. The tax items we consider in these imputations are for donations and gifts, RRSP contributions, RPP contributions, union dues, childcare expenses, other deductions, and additional deductions from net income. For the 2010 and 2011 cells, we use data from 2009 and update it using the Consumer Price Index.
difference at $250,000 because the threshold to be in the top one percent in Alberta in 2011 is $281,096.

For earners above $250,000, the new higher marginal tax rates in the +5 system begin to lift up the average tax rates. By the time an income level of $1,000,000 is reached, the gain in the average tax rate under the +5 system is 3.6 percentage points for Quebec, 3.8 percentage points for New Brunswick, and 3.1 percentage points for Alberta. Why does the new +5 system not have a stronger and more immediate impact on average tax rates? There are two reasons. First, because the new higher rate only applies to income over the new bracket threshold, a substantial portion of income is not affected by the new rate. In Alberta with a threshold of $281,096, it is more than a quarter of a millionaire’s income that is not affected by the new rate. In New Brunswick, with a threshold of $147,010 it is more like one-seventh of the same millionaire’s income that is unaffected. The second reason is that our imputation of tax deductions and credits leads to more of the millionaire’s total income being excluded from taxable income. Again, this means the new higher rate does not apply to each of the millionaire’s dollars of income.

How much impact would this make on observed top income shares? In Alberta, the average income in 2011 among those in the top one percent is $648,475. At this income level, the new tax system has boosted the average tax rate by only 2.3 percentage points. The 2011 pre-tax share of total income for the top one percent in Alberta was 12.3 percent, up from 7.6 percent in 1982. An extra 2.3 percentage points added to the average tax rate would take away only 0.28 percentage points (12.3 * 0.023) of this top income share. Given that the top income share grew

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16 In 2009, there was $104 billion of assessed income for those with $250,000 of total income or more. Of this, $94 billion (90 percent) was assessed as taxable income.
by 4.7 percentage points from 1982 to 2011, taking back 0.28 percentage points through extra taxation represents only 6 percent of the 4.7 percentage points of growth in the top share over this period. These calculations suggest that the tax system can be used to push back in a modest way against the income concentration trends, but also that it would be difficult to reverse these strong income concentration trends completely using the income tax system.

**Revenue implications**

Our second question about the +5 tax system is how much revenue it would raise for a province that implements such a reform. In doing this simulation, we make use of the elasticity estimate of 0.664 appearing in Table 1 and standard formulas for turning this elasticity into revenue estimates following Saez, Slemrod, and Giertz (2012). (See the Appendix for details.) The structure of the calculations comes from breaking the total response into a ‘mechanical effect’ and a ‘behavioural effect’. The mechanical effect represents the revenue that would be collected under the new tax regime if no one changed his or her behaviour. To obtain the mechanical effect, the new tax rate is simply multiplied by the original amount of income subject to that new tax rate. The behavioural effect accounts for the expected change in taxable income generated by the behavioural response (changes in labour supply or tax planning) to the new tax rate, given the estimated elasticity. The difference of these two effects yields the net gain in provincial revenue.

The results of our simulations appear in Table 3. The first row presents the 2011 top tax rate in each province. The next row reports the total income in each province that is above the new tax
bracket threshold. The amount of income over the top bracket threshold varies from $72 million in Prince Edward Island to $25.8 billion in Ontario.

When the new +5 tax system is applied to incomes, mechanically there is a potential increase in income of five percent multiplied by the total income above the bracket threshold. This mechanical effect is reported in the third row of the table. The mechanical effects are all a constant five percent proportion of the observed income over the thresholds, and so they vary by province in a way similar to the second row.

The behavioural effect, reflecting the estimated elasticity and the prevailing tax rate in the province, appears in the next row. The behavioural effects are based on a common elasticity, but the formula also depends on the current tax rate. If a dollar of taxable income disappears from the tax base, that province loses all the tax revenue that would have been applied to that dollar. In this way, the higher is the current rate in a given province, the stronger will be the dollar impact of the behavioural response. If we compare the size of the behavioural response to the mechanical effect, the proportion of the mechanical effect that disappears because of behavioural response is less than 40 percent in Alberta, but almost 80 percent in Nova Scotia.

The net of the mechanical and behavioural effect gives the net gain in provincial revenue, which we report in both absolute and per taxfiler forms. To form the per taxfiler measures, we use the total number of tax filers in the province, not just the number of taxfilers in the top one percent. The per taxfiler calculation allows easier comparison across provinces. It also conveys more clearly the magnitude of extra revenue available for extra spending or tax-based redistribution.
The overall net revenue gain expected by each province varies from $200,000 in Prince Edward Island to $637 million in Ontario. In per taxfiler terms, the disparity across provinces is very sharp--$2 per taxfiler in Prince Edward Island to $131 in Alberta.

To get a better grasp on what underlies this disparity across provinces, we present more information on each province in Table 4. The first row shows the average income of those in the top one percent in each province, and the second row has the threshold income level for being in the top one percent. There are great differences across provinces in both the average and threshold incomes of the top one percent. In Prince Edward Island, the average income is $203,948 and the threshold is $139,722. In British Columbia, the average is nearly twice as high at $406,730 and the threshold somewhat higher at $190,722.

The ratio of these two numbers appears in the third row. This ratio is a measure of the skew of the distribution, and can be used to back out the Pareto coefficient for the distribution as shown in the appendix. The Pareto coefficient is an important part of the calculation of the behavioural responses. The higher is the ratio in row three, the more fruitful will be revenue from a high-income tax rate since there will be more income to be taxed above the top one-percent threshold. The ratio varies substantially across provinces, ranging from 1.46 in Prince Edward Island to 2.31 in Alberta. These differences lead to large disparities in the available tax base to which a potential new higher tax rate would be applied.

We then show the mechanical revenue again, but this time on a per taxfiler basis. The additional tax of five percent on the top one percent income group only generates $32 dollars of extra
revenue per taxfiler in Prince Edward Island but $184 in Alberta. This is not a result of any assumptions about behavioural responses—this is purely a result of the more skewed income distribution in some provinces.

Next, we calculate the revenue maximizing tax rate in each province given our assumed elasticity and the prevailing tax rate in each province. Any rise in the tax rate generates more revenue holding the amount of taxable income constant (the mechanical effect), but potentially shrinks the income tax base which leads to a revenue loss (the behavioural effect). The revenue-maximizing tax rate is the tax rate at which these two effects are equal-sized and exactly offsetting. Any further increase in the tax rate past this point will generate a larger revenue loss through tax base shrinkage than revenue gain from the mechanical effect. The details of this calculation are provided in the appendix.

The next row displays the tax rate under the +5 counterfactual system. In most provinces, the new +5 tax rate gets close to the revenue maximizing tax rate. In Prince Edward Island the +5 tax rate of 23.4% actually exceeds the estimated revenue maximizing rate of 22.8 percent. This means that the new tax bracket with a rate of 23.4 percent is beyond the point of revenue maximization.

Finally, we show the marginal revenue as a share of the mechanical effect, which is a measure of how much of the potential revenue gain remains after accounting for the behavioural effect. In Prince Edward Island, the +5 system tax rate moves beyond the revenue maximizing tax rate, so the marginal revenue from moving to the +5 system as a share of the potential revenue is only 6
percent. Most of the potential new revenue in Prince Edward Island disappears because of behavioural response. In contrast, the revenue maximizing tax rate in Saskatchewan is far enough from the +5 system tax rate that only 50 percent of the potential mechanical effect revenue disappears because of behavioural response. In Alberta, only 29 percent disappears, leaving 71 percent of the mechanical effect revenues to remain.

We graph in Figure 6 the per taxfiler values of the mechanical effect and the net revenue in order to illustrate the size and source of the disparities across provinces. In Nova Scotia, the modest concentration of income only allows for a mechanical effect of $60 per taxfiler. Because of the high existing 2011 tax rate, most of this $60 disappears through behavioural response, leaving only $12 in revenue per taxfiler. In contrast, for Ontario, BC, and Alberta not only are the mechanical effects larger because of more skewed income distributions, but also less of the potential revenue disappears with behavioural response because of the lower 2011 existing tax rates. Quebec and Saskatchewan have comparable mechanical effects ($78 and $82), but Saskatchewan’s revenue per taxfiler is $41 compared to only $18 in Quebec because of the larger existing tax rate in Quebec.

To check on the sensitivity of our simulated revenues to our estimated elasticity, we present in Table 5 a test of our results comparing the estimated elasticity of 0.664 to a value half the size, 0.332. The results show that the net marginal revenue as a share of the potential revenue does get larger with a smaller elasticity, and revenues do grow with a smaller assumed elasticity. However, the large disparity across provinces remains. Even with the smaller elasticity, the net revenue per taxfiler is only 17 dollars in Prince Edward Island but 157 dollars in Alberta. Again,
this demonstrates that the difference in underlying income concentration is the major contributor to the differences in revenue estimates across provinces.

**Federalism and Policy Implications**

Engaging in high-income taxation at the federal and provincial levels of government has different implications. If high-income taxation is implemented federally (or if provinces co-ordinated their own actions), there may be less scope for behavioural response to the extent that inter-provincial income shifting is important. However, our work here has brought forward some potential advantages of provincial-level high-income taxation.

In the public finance literature (e.g. Pauly 1973), subnational redistributive taxation can be motivated by assuming differing tastes for redistribution across jurisdictions. Redistribution is like a local public good with citizens in some jurisdictions preferring more and some less. Our work here has added a novel explanation to that traditional story. We have shown that differing subnational income distributions contribute significantly to the effectiveness of subnational taxation in raising revenue. This represents an argument in favour of provincial level high-income taxation, as it simply pays more for some provinces to engage high-income taxation than it does for others, and provincial income taxation allows for these differences to be expressed.

There are other factors still to be considered, however. In a final simulation exercise, we look not only at the behavioural response at the provincial level but also the vertical externality this response could deliver to federal revenues. If taxpayers respond to higher provincial rates by
reporting lower income, this has impact not just on provincial revenues, but also on federal revenues which co-occupy the same tax base. If taxable income disappears in response to a provincial income tax rate increase, that taxable income also disappears from federal tax calculations. While the provincial government reaps the benefit of the higher tax rate on the taxable income that remains, the federal government does not. So, the federal government only sees revenue losses from such a provincial rate increase. As before, this calculation is limited by the extent to which the reaction to provincial taxation is a shift in taxable income to other provinces. If the income that disappears from one province reappears in another through this kind of interprovincial shifting, the vertical fiscal externality will not come into play since the federal government gets their tax revenue either way.

The simulation results exploring the federal implications appear in Table 6. The first three rows are the same as previous tables. The new information calculating the impact of the behavioural response on federal revenues appears in the fourth row. Here we assume that the income shifted through behavioural response does not show up in another province, which means that the impact on federal revenues is larger than would be the case if some of the shifted income appeared in other provinces. Comparing the third row to the fourth, there is only one province that raises more money than the federal government potentially loses—and that is Alberta. In the other nine provinces, the potential negative externality on federal revenues is larger than the province’s own gains. These calculations suggest that the vertical fiscal externality on federal revenues could be fairly large to the extent that shifted income does not reappear in other provinces.
It is important to emphasize that the analysis in Table 6 does not provide a complete picture of federal and provincial revenues, though. Some of the behavioural response might result in shifting of income to other forms that also yield tax revenue to governments. For example, shifting income from personal taxation into a corporation could lead to present or future corporate tax revenue increases. As well, if income is shifted from one province to another in search of a lower tax rate, the receiving province will see a revenue increase. We do not have estimates of these magnitudes to present here in this paper, but we continue to investigate these effects in ongoing research.

In addition, there could be interactions with other federal programs such as federal equalization payments. The calculations here account for the impact of behavioural responses on provincial income tax revenues, but not the impact on revenue from the federal equalization system. Under the current equalization formula, the decline in a province’s income tax base due to the behavioural response results in an increase in its equalization entitlements of comparable magnitude, three to five years later.\textsuperscript{17} This tends to insulate provincial governments from the revenue impacts of behavioural responses and, as noted by Smart (1998), may contribute to the relatively high levels of provincial taxation in Canada. Consistent with this story, four of the five provinces that have raised their top tax rates since 2010 are equalization recipients (the exception is British Columbia), compared to only two of the five provinces that have held their tax rates constant.

\textsuperscript{17} The smaller tax base will have some impact on the ‘national standard’ tax base used in the equalization formula, but this effect will be smaller than the shrinkage of a province’s own base in the equalization entitlement.
Taken together, this analysis suggests that the federal-provincial interactions are an important policy element, but the analysis here does not lead to clear conclusions about optimal assignment of taxing power to the provincial or federal level. In ongoing work, we are building a theoretical and empirical framework that incorporates not just the own-province revenue response and vertical impacts seen here, but also the horizontal impacts on other provinces that may be the recipient of shifted income. In that enriched environment, we hope to characterize more precisely the tradeoffs involved in the question of the assignment of redistributive taxation to federal and provincial levels.

Conclusions

We began the paper by observing that the social response to high income concentration in Canada appears to be manifesting itself in provincial rather than federal tax rates. By documenting the trends in both taxes and high incomes across provinces, we are able to begin building an understanding of the sources and consequences of these fiscal trends.

Our most striking finding is the large disparity across provinces in the potential revenue a new high income tax bracket would raise. The estimated net revenue gain from an additional five percent tax on the top one percent ranges from $2 per taxfiler in Prince Edward Island to $131 in Alberta. This variance is driven by the large differences in income concentration across provinces, with more skewed distributions permitting larger potential revenue gains from a new top income tax bracket. There are also differences in behavioural response across provinces,
depending largely on whether current high-income tax rates are already high (like in Nova Scotia) or low (like in Alberta).

Our simulations also uncover limitations on how much an increase in top tax rates could reverse the strong income concentration trends observed over the last thirty years. A new tax bracket with a five percent higher rate in Alberta, for example, would only reverse about 6 percent of the long-run increase in the top one-percent income share. As a tool to push back on the long-run trends in income concentration, provincial income taxation seems not to be highly promising.

Finally, we explore several federal-provincial issues ranging from vertical fiscal externalities to the impact of equalization payments that could arise from high-income taxation at the provincial level. In particular, our findings suggest that the role played by inter-provincial shifting is pivotal to understanding the extent of the fiscal impact of choices made in one province on other provinces and the federal government’s position. In ongoing work, we are developing a framework that incorporates these complex interactions with the goal of characterizing more completely the trade-offs that are involved in provincial taxation of higher incomes.
Appendix: Revenue Formulae

The development of these formulae follows Saez, Slemrod, and Giertz (2012, p. 6-9). The main difference between their formula and what we use is that we distinguish between the federal tax rate and the provincial tax rate.

The elasticity is defined as:

\[ e \equiv \frac{1 - \tau}{z} \cdot \frac{\partial z}{\partial (1 - \tau)} \]

where \( \tau \) is the combined federal and provincial marginal tax rate and \( z \) is taxable income. This same elasticity formula holds when calculated at the average income of those in the top one percent, \( z^m \). The threshold to be in the top one percent is \( \bar{z} \). The total number of taxfilers in the top one percent is \( N \). The provincial top tax rate is \( \tau^p \), and the federal top rate is \( \tau^f \), with \( \tau^p + \tau^f = \tau \).

The mechanical effect for each taxfiler is the change in tax rate multiplied by the amount of income over the top bracket threshold. This is then multiplied by \( N \) to get total revenue.

\[ dM \equiv N \cdot (z^m - \bar{z}) \cdot \partial \tau \]

The behavioural effect can be found by first rearranging the elasticity formula to solve for the change in reported income:

\[ dz^m = -e \cdot z^m \cdot \frac{d\tau}{(1 - \tau)} \]

The change in provincial revenues from the behavioural effect will be the change in the tax base multiplied by the provincial tax base, and multiplied again by the number of tax filers. For the federal change, it is the same but multiplied by the federal tax rate.

\[ dB^p \equiv -N \cdot e \cdot z^m \cdot \frac{\tau^p}{(1 - \tau)} \cdot \partial \tau \]

\[ dB^F \equiv -N \cdot e \cdot z^m \cdot \frac{\tau^F}{(1 - \tau)} \cdot \partial \tau \]

The provincial revenue maximizing rate \( \tau^p \) comes from setting the mechanical effect equal to the provincial behavioural effect, and solving for \( \tau^p \)

\[ \tau^p = \frac{(1 - \tau^F)}{1 + e \cdot \left( \frac{z^m}{z^m - \bar{z}} \right)} \]
This can be manipulated further by noticing that the ratio of the mean $z^m$ to the threshold $\bar{z}$ can be manipulated to recover the Pareto coefficient $\alpha$ in the following way. Define the ratio of the threshold to the mean as

$$\beta = \frac{z^m}{\bar{z}}.$$ 

This coefficient $\beta$ is called the inverted Pareto coefficient. It can be shown that the Pareto coefficient $\alpha$ can be expressed as

$$\alpha = \frac{\beta}{\beta - 1}.$$ 

It follows with some basic manipulation that

$$\alpha = \left(\frac{z^m}{z^m - \bar{z}}\right),$$

which implies that the provincial revenue maximizing tax rate can be rewritten as a function of the Pareto coefficient:

$$\tau^{P*} = \frac{(1 - \tau^F)}{1 + e \cdot \alpha}.$$
Notes: Shown are the highest personal marginal tax rate by province by year from 2000 to 2014. The source is the Canadian Tax and Credit Simulator. Quebec rates are reported net of the federal abatement.
Figure 2: New Top Rates in 2014

Notes: Shown are the highest personal marginal tax rate by province in 2014. The five provinces with recent increases in their top rates are shown, with the year of the increase indicated to the right of the bar. Quebec rates are reported net of the federal abatement.
Figure 3: Top One Percent Income Shares by Province, 1982-2011

Notes: The graph shows the percent of income earned by those in the top one percent of the individual income distribution, using total incomes (excluding capital gains). The source is CANSIM table 204-0002.
Figure 4: Provincial Top Income Shares vs. Top Tax Rates, 1988 to 2011

Notes: The graph plots the top one percent income share against the top provincial marginal tax rate by province for the years 1998-2011. The income shares use total incomes (excluding capital gains). The source is CANSIM table 204-0002. The tax rates are from the Canadian Tax and Credit Simulator.
Notes: Plotted are the average tax rates for Quebec, New Brunswick, and Alberta under the 2011 base tax system and under a new tax system featuring a high tax bracket with a rate 5 percent higher. The x-axis indicates the level of earned income and the y-axis the average tax rate. The tax rates are calculated using the Canadian Tax and Credit Simulator.
Figure 6: Per Tax Filer Mechanical Effect and Net Revenue

Notes: Plotted are the mechanical effect and net revenue (after behavioural effect) per-tax filer of a new five percent tax bracket on incomes over the top one percent threshold in each province.
Table 1: Regression Results

<table>
<thead>
<tr>
<th>Sample</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
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<tbody>
<tr>
<td>P99</td>
<td>P99</td>
<td>P95-P99</td>
<td>P99.9</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>240</td>
<td>240</td>
<td>240</td>
<td>190</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.942</td>
<td>0.970</td>
<td>0.926</td>
<td>0.952</td>
</tr>
<tr>
<td>Tax elasticity</td>
<td>0.942*</td>
<td>0.664**</td>
<td>-0.004</td>
<td>1.414*</td>
</tr>
<tr>
<td></td>
<td>[0.454]</td>
<td>[0.270]</td>
<td>[0.111]</td>
<td>[0.615]</td>
</tr>
<tr>
<td>Log Income</td>
<td>0.633***</td>
<td>0.0986**</td>
<td>0.843***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0.0785]</td>
<td>[0.0336]</td>
<td>[0.183]</td>
<td></td>
</tr>
</tbody>
</table>

Notes: Reported are coefficients from regressions of the log share of top percentile income on the net of tax rate and controls on provincial level data from 1988 to 2011. Each column contains the results of a different regression. All specifications include year and province fixed effects. The income fractile used for each column is listed in the ‘sample’ row. Other details can be found in the main text.
Table 2: Simulated Base and Counterfactual Tax Systems

<table>
<thead>
<tr>
<th></th>
<th>Base System</th>
<th></th>
<th>+5 System</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bracket</td>
<td>Threshold</td>
<td>Rate</td>
<td>Threshold</td>
</tr>
<tr>
<td>NL</td>
<td>$</td>
<td>$ 63,807</td>
<td>13.3%</td>
<td>$</td>
</tr>
<tr>
<td>PE</td>
<td>$</td>
<td>$ 98,145</td>
<td>18.4%</td>
<td>$</td>
</tr>
<tr>
<td>NS</td>
<td>$</td>
<td>$ 150,000</td>
<td>21.0%</td>
<td>$</td>
</tr>
<tr>
<td>NB</td>
<td>$</td>
<td>$ 120,796</td>
<td>14.3%</td>
<td>$</td>
</tr>
<tr>
<td>QC</td>
<td>$</td>
<td>$ 78,120</td>
<td>19.2%</td>
<td>$</td>
</tr>
<tr>
<td>ON</td>
<td>$</td>
<td>$ 78,361</td>
<td>17.4%</td>
<td>$</td>
</tr>
<tr>
<td>MB</td>
<td>$</td>
<td>$ 67,000</td>
<td>17.4%</td>
<td>$</td>
</tr>
<tr>
<td>SK</td>
<td>$</td>
<td>$ 116,911</td>
<td>15.0%</td>
<td>$</td>
</tr>
<tr>
<td>AB</td>
<td>$</td>
<td>-</td>
<td>10.0%</td>
<td>$</td>
</tr>
<tr>
<td>BC</td>
<td>$</td>
<td>$ 100,787</td>
<td>14.7%</td>
<td>$</td>
</tr>
<tr>
<td>Fed</td>
<td>$</td>
<td>$ 128,800</td>
<td>29.0%</td>
<td>$</td>
</tr>
</tbody>
</table>

Notes: shown are the bracket threshold for the ‘base’ and ‘+5’ tax systems used in our simulations. The base system is from 2011. The Quebec rate is shown net of the 16.5 percent federal abatement to make the Quebec rates comparable to the other provinces.
### Table 3: Estimated Revenue from new Tax Bracket

<table>
<thead>
<tr>
<th></th>
<th>NL</th>
<th>PE</th>
<th>NS</th>
<th>NB</th>
<th>QC</th>
<th>ON</th>
<th>MB</th>
<th>SK</th>
<th>AB</th>
<th>BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011 Provincial tax rate</td>
<td>13.3%</td>
<td>18.4%</td>
<td>21.0%</td>
<td>14.3%</td>
<td>19.2%</td>
<td>17.4%</td>
<td>17.4%</td>
<td>15.0%</td>
<td>10.0%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Total Over Threshold ($Millions)</td>
<td>482</td>
<td>72</td>
<td>862</td>
<td>606</td>
<td>9,802</td>
<td>25,754</td>
<td>1,274</td>
<td>1,287</td>
<td>10,114</td>
<td>7,405</td>
</tr>
<tr>
<td>Mechanical Effect ($Millions)</td>
<td>24.1</td>
<td>3.6</td>
<td>43.1</td>
<td>30.3</td>
<td>490.1</td>
<td>1,287.7</td>
<td>63.7</td>
<td>64.3</td>
<td>505.7</td>
<td>370.2</td>
</tr>
<tr>
<td>Behavioural Effect ($Millions)</td>
<td>-12.4</td>
<td>-3.4</td>
<td>-34.2</td>
<td>-16.8</td>
<td>-379.4</td>
<td>-650.7</td>
<td>-38.1</td>
<td>-32.0</td>
<td>-145.7</td>
<td>-161.5</td>
</tr>
<tr>
<td>Gain in Provincial Revenue ($Millions)</td>
<td>11.6</td>
<td>0.2</td>
<td>8.9</td>
<td>13.5</td>
<td>110.7</td>
<td>637.0</td>
<td>25.6</td>
<td>32.3</td>
<td>359.9</td>
<td>208.7</td>
</tr>
<tr>
<td>Number of taxfilers (thousands)</td>
<td>417</td>
<td>112</td>
<td>724</td>
<td>597</td>
<td>6251</td>
<td>9806</td>
<td>914</td>
<td>785</td>
<td>2753</td>
<td>3419</td>
</tr>
<tr>
<td>Gain in Provincial Revenue Per taxfiler ($)</td>
<td>27.9</td>
<td>2.0</td>
<td>12.3</td>
<td>22.7</td>
<td>17.7</td>
<td>65.0</td>
<td>28.0</td>
<td>41.2</td>
<td>130.7</td>
<td>61.0</td>
</tr>
</tbody>
</table>

Notes: Reported are results for each province of the simulated revenue impact of a new tax bracket starting at each province’s top one percent income threshold with a tax rate 5 percent higher than the existing top rate. The number of taxfilers is derived by multiplying the number in the top one percent by 100. The simulations are based on 2011 data. The Quebec tax rate is shown net of the 16.5 percent federal abatement to make the Quebec rates comparable to the other provinces. However, the simulations properly account for the behavioural and mechanical effect of the full Quebec provincial tax rates.
Table 4: Explaining Differences in Revenue Across Provinces

<table>
<thead>
<tr>
<th></th>
<th>NL</th>
<th>PE</th>
<th>NS</th>
<th>NB</th>
<th>QC</th>
<th>ON</th>
<th>MB</th>
<th>SK</th>
<th>AB</th>
<th>BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average income of top 1%</td>
<td>283,720</td>
<td>203,948</td>
<td>273,712</td>
<td>248,546</td>
<td>326,472</td>
<td>477,951</td>
<td>300,529</td>
<td>344,253</td>
<td>648,475</td>
<td>406,730</td>
</tr>
<tr>
<td>Threshold to be in top 1%</td>
<td>168,094</td>
<td>139,722</td>
<td>154,588</td>
<td>147,010</td>
<td>169,649</td>
<td>215,316</td>
<td>161,098</td>
<td>180,240</td>
<td>281,096</td>
<td>190,151</td>
</tr>
<tr>
<td>Ratio (inverted Pareto)</td>
<td>1.69</td>
<td>1.46</td>
<td>1.77</td>
<td>1.69</td>
<td>1.92</td>
<td>2.22</td>
<td>1.87</td>
<td>1.91</td>
<td>2.31</td>
<td>2.14</td>
</tr>
<tr>
<td>Mechanical revenue per taxfiler</td>
<td>57.8</td>
<td>32.1</td>
<td>59.6</td>
<td>50.8</td>
<td>78.4</td>
<td>131.3</td>
<td>69.7</td>
<td>82.0</td>
<td>183.7</td>
<td>108.3</td>
</tr>
<tr>
<td>Provincial revenue max'ing tax rate</td>
<td>27.0%</td>
<td>22.8%</td>
<td>28.1%</td>
<td>27.0%</td>
<td>27.0%</td>
<td>32.2%</td>
<td>29.2%</td>
<td>29.7%</td>
<td>32.7%</td>
<td>31.6%</td>
</tr>
<tr>
<td>‘+5’ system top tax rate</td>
<td>18.3%</td>
<td>23.4%</td>
<td>26.0%</td>
<td>19.3%</td>
<td>24.2%</td>
<td>22.4%</td>
<td>22.4%</td>
<td>20.0%</td>
<td>15.0%</td>
<td>19.7%</td>
</tr>
<tr>
<td>Net revenue as share of mechanical effect</td>
<td>48.3%</td>
<td>6.4%</td>
<td>20.7%</td>
<td>44.7%</td>
<td>22.6%</td>
<td>49.5%</td>
<td>40.2%</td>
<td>50.2%</td>
<td>71.2%</td>
<td>56.4%</td>
</tr>
</tbody>
</table>

Notes: Reported are results for each province of the simulated revenue impact of a new tax bracket starting at each province’s top one percent income threshold with a tax rate 5 percent higher than the existing top rate. The simulations are based on 2011 data. The Quebec tax rates are shown net of the 16.5 percent federal abatement to make the Quebec rates comparable to the other provinces. However, the simulations properly account for the behavioural and mechanical effect of the full Quebec provincial tax rates.
Table 5: Assessing Sensitivity of Revenue Estimates to Elasticity

<table>
<thead>
<tr>
<th>Elasticity</th>
<th>NL</th>
<th>PE</th>
<th>NS</th>
<th>NB</th>
<th>QC</th>
<th>ON</th>
<th>MB</th>
<th>SK</th>
<th>AB</th>
<th>BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.664</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marginal Revenue / mechanical effect</td>
<td>48.3%</td>
<td>6.4%</td>
<td>20.7%</td>
<td>44.7%</td>
<td>22.6%</td>
<td>49.5%</td>
<td>40.2%</td>
<td>50.2%</td>
<td>71.2%</td>
<td>56.4%</td>
</tr>
<tr>
<td>Net Revenue per taxfiler</td>
<td>27.9</td>
<td>2.0</td>
<td>12.3</td>
<td>22.7</td>
<td>17.7</td>
<td>65.0</td>
<td>28.0</td>
<td>41.2</td>
<td>130.7</td>
<td>61.0</td>
</tr>
<tr>
<td>Elasticity</td>
<td>0.332</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marginal Revenue / mechanical effect</td>
<td>74.2%</td>
<td>53.2%</td>
<td>60.3%</td>
<td>72.3%</td>
<td>61.3%</td>
<td>74.7%</td>
<td>70.1%</td>
<td>75.1%</td>
<td>85.6%</td>
<td>78.2%</td>
</tr>
<tr>
<td>Net Revenue per taxfiler</td>
<td>42.9</td>
<td>17.1</td>
<td>35.9</td>
<td>36.7</td>
<td>48.1</td>
<td>98.1</td>
<td>48.9</td>
<td>61.6</td>
<td>157.2</td>
<td>84.7</td>
</tr>
</tbody>
</table>

Notes: Reported are results for each province of the simulated revenue impact of a new tax bracket starting at each province’s top one percent income threshold with a tax rate 5 percent higher than the existing top rate. The simulations are based on 2011 data.
<table>
<thead>
<tr>
<th></th>
<th>NL</th>
<th>PE</th>
<th>NS</th>
<th>NB</th>
<th>QC</th>
<th>ON</th>
<th>MB</th>
<th>SK</th>
<th>AB</th>
<th>BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical revenue</td>
<td>24.1</td>
<td>3.6</td>
<td>43.1</td>
<td>30.3</td>
<td>490.1</td>
<td>1287.7</td>
<td>63.7</td>
<td>64.3</td>
<td>505.7</td>
<td>370.2</td>
</tr>
<tr>
<td>Behavioural revenue</td>
<td>-12.4</td>
<td>-3.4</td>
<td>-34.2</td>
<td>-16.8</td>
<td>-379.4</td>
<td>-650.7</td>
<td>-38.1</td>
<td>-32.0</td>
<td>-145.7</td>
<td>-161.5</td>
</tr>
<tr>
<td>Net own-province revenue</td>
<td>11.6</td>
<td>0.2</td>
<td>8.9</td>
<td>13.5</td>
<td>110.7</td>
<td>637.0</td>
<td>25.6</td>
<td>32.3</td>
<td>359.9</td>
<td>208.7</td>
</tr>
<tr>
<td>Change in federal revenue</td>
<td>-19.7</td>
<td>-4.2</td>
<td>-38.2</td>
<td>-25.2</td>
<td>-316.8</td>
<td>-842.0</td>
<td>-49.3</td>
<td>-46.4</td>
<td>-281.8</td>
<td>-237.8</td>
</tr>
</tbody>
</table>

Notes: Reported are results for each province of the simulated revenue impact of a new tax bracket starting at each province’s top one percent income threshold with a tax rate 5 percent higher than the existing top rate. The simulations are based on 2011 data.
References


Milligan, K., and M. Smart. 2014. “Taxation and Top Incomes in Canada,” manuscript, University of Toronto and University of British Columbia.


