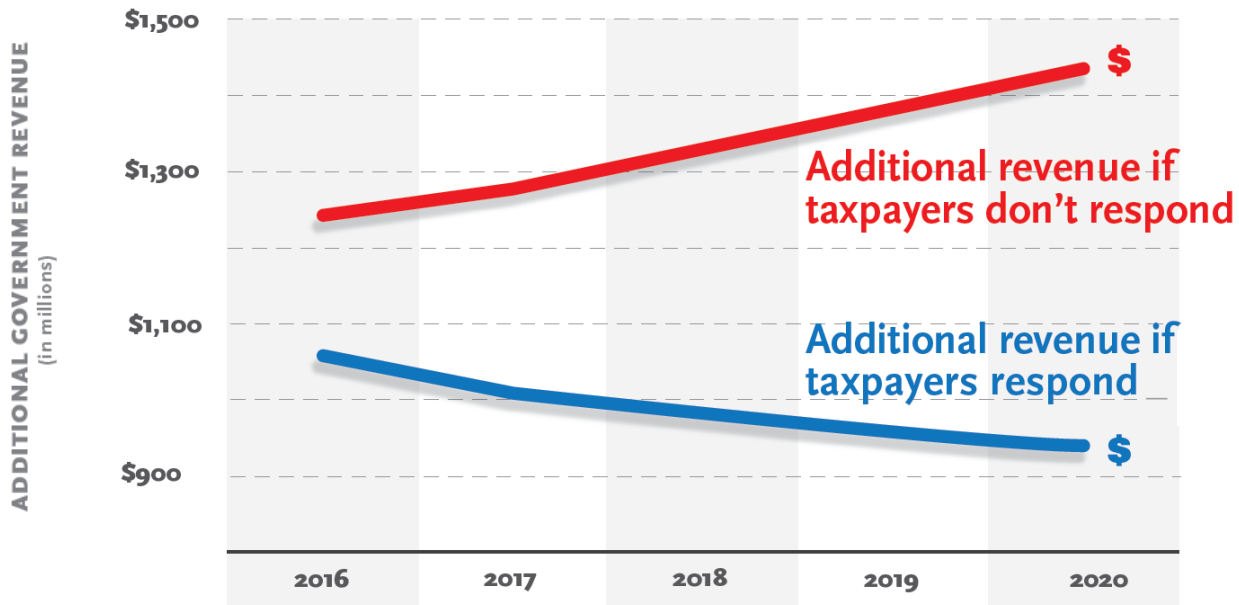


# Alberta's Personal Income Tax Increases Likely to Yield Less Revenue than Expected



by Steve Lafleur, Milagros Palacios, and Joel Emes

## SUMMARY

- On October 1, 2015, the government of Alberta abandoned its single 10% personal income tax rate in favour of a 5-bracket personal income tax system with a top marginal tax rate of 15%.

- Changing tax rates prompts people to alter their behaviour, which can lead to less additional revenue than governments might expect. This study estimates how much revenue the government will likely generate from its tax increases under a static model (with no behavioural response) and a dynamic model (that accounts for changes in behavior).

- The tax increases would raise \$1.242 billion assuming no behavioural changes and \$1.058 billion assuming changes in 2016, a gap of 14.8% (\$184 million).

- The dynamic model predicts that the additional revenue from the tax increases cumulatively between 2016 and 2020 will be 25.8% less than under a static model. The difference over the 2016-2025 period is predicted to be 34.9%.

- When taxpayers' behavioural responses are accounted for, the government of Alberta is likely to receive \$1.7 billion less than expected between 2016 and 2020. Between 2016 and 2025, the difference between the static and dynamic model will increase to \$5.1 billion.

## Introduction

Too often politicians and governments more generally take a simplistic view of tax rates and tax revenues. Their belief seems to be that you can change tax rates without affecting behaviour, which means that tax revenues will increase in exact proportion to tax rate increases. The reality is that tax rate increases change the marginal benefits (i.e., returns) to individuals and firms from undertaking activities like working, investing, and starting or expanding a business. The change in behaviour means that the underlying base upon which a tax rate is applied changes. It is this change in the underlying tax base that explains why governments often fail to raise the amount of revenue they expect from tax rate increases. This bulletin examines the likely revenue that the Government of Alberta will receive based on their recently implemented increase in provincial personal income tax (PIT) rates.

## Background

The government of Alberta increased the general corporate income tax (CIT) rate from 10% to 12% effective July 1, 2015. The government has abandoned the single 10% personal income tax rate in place since 2001 in favour of a 5-bracket system ranging from the previous 10% to 15% for high-income earners.<sup>1</sup> Anyone in Alberta earning more than \$125,000 experienced a tax rate increase on October 1<sup>st</sup>, 2015. As table 1 shows, the minimum statutory tax rate increase was 20% for those earning between \$125,000 and \$150,000. For those with earnings above \$300,000, the statutory tax rate increase was 50%. People earning above

<sup>1</sup> The increased provincial marginal tax rates are on top of federal tax rates, so the combined federal and provincial top marginal rate will be 44%.

**Table 1: Statutory Personal Income Tax Rates, as of October 1, 2015**

Tax Bracket	2015	2016*
Up to \$125,000	10.0	10.0
\$125,001-\$150,000	10.0	12.0
\$150,001-\$200,000	10.0	13.0
\$200,001-\$300,000	10.0	14.0
Above \$300,000	10.0	15.0

Source: Alberta, 2015b.

\*These rates are effective as of October 1, 2015.

\$300,000 annually will face a pronounced increase in their statutory personal income tax rates. Such increases motivate people to alter their behaviour in order to mitigate the full effect of the higher rates.

## Behavioural responses to taxation

Tax revenue depends on the base, which is the income derived from the activity being taxed, and the rate. Multiplying the two together gives us the “tax take” or the revenue the government receives from a specific tax. While it is tempting to simply multiply the current tax base by the proposed rate increases to calculate the new additional revenue, changes in the rate lead to changes in the base.

Changing tax rates prompts people to alter their behaviour in many ways, which affects the underlying tax base. This makes it difficult to forecast how much revenue will actually be raised by tax increases. The challenge of predicting behavioural responses to tax rate increases is one of the reasons that many politicians and governments generally rely on the simple, but unrealistic, static approach to fore-

casting revenues. Such an approach purposely ignores any behavioural responses by individuals or businesses. Ignoring behavioural changes fails both the common sense test and the weight of empirical evidence, which suggests that increasing income tax rates results in real behavioural changes that influence the underlying base.

In terms of personal income tax rate increases, there are several ways that individuals can reduce their taxable income, which erodes the income tax base and lowers the amount of revenue actually raised.<sup>2</sup>

First, people can work less. Individuals make decisions based on the marginal tax rate—the rate at which their next dollar of income will be taxed. If the marginal tax rate becomes too high, they might simply choose to take more leisure time.

Second, increased income taxes can lead to a substitution away from taxable income to more tax-favourable forms of compensation, such as fringe benefits. The total compensation package is what matters to people so higher tax rates on income might encourage some employees to accept more perks (i.e., fringe benefits such as extra vacation time or extended health benefits) rather than more taxable income when negotiating a contract (Feldstein, 2011).

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<sup>2</sup> In addition to people's behavioural changes, corporations can respond indirectly in a way that compounds the problem. For instance, it might become more difficult for a higher tax jurisdiction to attract corporate offices since companies may anticipate that it will become more difficult to attract workers from elsewhere with the higher tax rates. Additionally, higher personal income taxes could reduce entrepreneurial activity by making it more difficult for individuals to accumulate savings that could be used to start a business or invest in an existing enterprise.

Third, people can reduce their tax liability by channeling income through small businesses that are subject to a comparably lower income tax rate. For example, a physician might choose to incorporate her practice and issue dividends, which will lower her effective tax rate.

Fourth, individuals can take advantage of a variety of legal tax planning mechanisms available in the tax code to reduce their taxable income. Such activities impose costs on individuals, including accounting and legal costs, but can provide net benefits to the taxpayer.

Finally, some individuals—primarily the very wealthy—can shift revenue to other jurisdictions with lower tax rates. Milligan and Smart (2013) estimate this phenomenon is responsible for two thirds of tax avoidance<sup>3</sup> that is motivated by provincial rate increases.

Recent tax changes in the United Kingdom provide an instructive example of how behavioural responses can reduce the anticipated tax take from a rate increase. The top marginal personal income tax rate was increased to 50% in 2010. This was expected to generate £2.5 billion in new revenue. A 2012 government report found that the actual increase was £1 billion or less, prompting the government to reduce the top rate (HM Revenues and Customs, 2012).

## Estimating the revenue impact of the provincial PIT increases

This paper focuses on personal income tax rates rather than corporate tax rates.<sup>4</sup> While

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<sup>3</sup> Tax avoidance is the practice of using provisions in the tax code to reduce one's tax burden.

<sup>4</sup> In 2014/15, personal income tax represented 22.3% of the revenue mix for the Alberta provincial government. Other important sources of revenue were

many of the principles in this paper could be applied to an analysis of corporate tax increases, the specifics of how corporations react to taxation is different from how individuals react.

The core issue in estimating the revenue generated by a tax rate increase is to determine how individuals will change their behaviour as a result of the increase. Put more technically, the main approach to estimating additional revenues raised is to test the elasticity of taxable income (the tax base) to tax rate changes. Elasticity is defined as the responsiveness of one variable to a change in another variable.

Arriving at a precise estimate of the elasticity of personal taxable income (the personal income tax base) is fraught with difficulties. People from different income groups vary in their responses to income tax rate increases, and the sensitivity of tax filers at different times or places can differ. We address these difficulties as well as possible but acknowledge there is a range of reasonable estimates. All of them, however, yield lower revenue than those that fail to account for people's reactions to rate increases.

In a 2010 paper, Canada's department of finance examined the impact of changes in combined federal and provincial tax rates on individual taxable income in the late 1990s and early 2000s. The report found that the responsiveness of individuals to changes in their marginal tax rate differed by income groups. For instance, the top 1% of income earners would lower their taxable income by 0.72% when there was a 1 percentage point decrease in their

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non-renewable resource revenues (18.1%), transfers from the federal government (12.1%), and corporate income tax (11.2%). For further details, see Alberta, 2015c: 51.

“net-of-tax”<sup>5</sup> rate. Comparatively, the top 10% of income earners would lower their taxable income by only 0.19%.

Dahlby and Ferede (2011) investigated the dynamic responsiveness of tax bases to changes in tax rates using aggregated data from the 10 provinces from 1972 to 2006. The authors focused on three major sources of tax revenue: personal income tax, corporate income tax, and provincial sales tax. Their results show that, for Canada, a 1 percentage point increase in personal income tax rates is associated with a reduction of 0.76% in personal taxable income in the short run and 3.65% in the long run.<sup>6</sup>

Ferede and Dahlby (forthcoming) updated this previous work estimating the long-term effects of tax rate changes on tax bases for specific provinces using annual provincial data from 1972 to 2010. The authors found that the long-term tax sensitivity of personal taxable income is lower in Alberta (2.89%) relative to other provinces. Although one would expect higher elasticities (all else equal) in provinces than for the country as a whole because it is easier to move within Canada than between Canada and other countries, Alberta's long-term rate is actually lower than Canada's. The authors note that the smaller impact in Alberta relative to other provinces could be explained by the fact that Alberta has had the lowest top personal in-

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<sup>5</sup> The net-of-tax rate is equal to 1 minus the marginal tax rate, and serves to approximate changes in personal disposable income. The net-of-tax rate drops when the marginal tax rate increases.

<sup>6</sup> The authors also found that a 1 percentage point increase in corporate income and sales tax rates was associated with a reduction of 2.3% and 0.63%, respectively, in their tax bases in the short run. The corresponding long-run percentage reductions were higher: 15.50% and 1.82%, respectively.

come tax rate in Canada since 2001 (Ferede and Dahlby, forthcoming: 23).

## Methodology

This study relies on the Social Policy Simulation Database and Model (SPSD/M) to estimate the total taxable income and provincial personal income tax revenues for two scenarios<sup>7</sup>: (i) assuming a single tax rate of 10% (“base scenario”) for all income earners; and, (ii) applying the new tax structure of five income tax brackets (“variant scenario”).<sup>8</sup> Since SPSD/M is a static model, we adjust the results to include behavioural responses to the tax increases. The paper specifically uses the responsiveness coefficients for the short-term and long-term from Dahlby and Ferede (2011 and forthcoming).<sup>9</sup> Depending on the tax bracket, we estimate people will reduce their taxable income in the short-run between 1.52% (for those with income be-

tween \$125,000 and \$150,000) and 3.81% (for those with incomes above \$300,000). In the long-run, taxable income will be reduced by between 5.78% and 14.45% depending on the income bracket.<sup>10</sup>

Under the base scenario of a 10% rate for all income groups, the government would expect to raise \$10.9 billion in personal income tax in 2016.<sup>11</sup> With the new tax structure of five income brackets, the government would expect personal income tax revenues of \$12.1 billion under the static model (no behavioural response).<sup>12</sup> Adjusting this result to include be-

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<sup>7</sup> The model used in this paper is somewhat based on Laurin (2012), which looked at the impact of increasing taxes on high-income earners in Ontario. The relative revenue losses in this paper are lower than in Laurin's in part for two reasons. First, Alberta's elasticities are lower than those in the rest of the country because the income tax rate has historically been lower. Second, Laurin's work focused only on top income earners.

<sup>8</sup> For simplicity, the calculation is done for 2016, the first year that the tax changes will be fully implemented.

<sup>9</sup> A short-term elasticity of taxable personal income of 0.762% was assumed, which corresponds to the Canadian average (Dahlby and Ferede, 2011), since none of the papers detailed above provided a short-term responsiveness for Alberta. The long-term responsiveness used in the calculation was 2.89% and was calculated for Alberta. The long-term impact is 100 years in the applicable papers, but we assume a larger response in the years immediately following the change and negligible response in later years.

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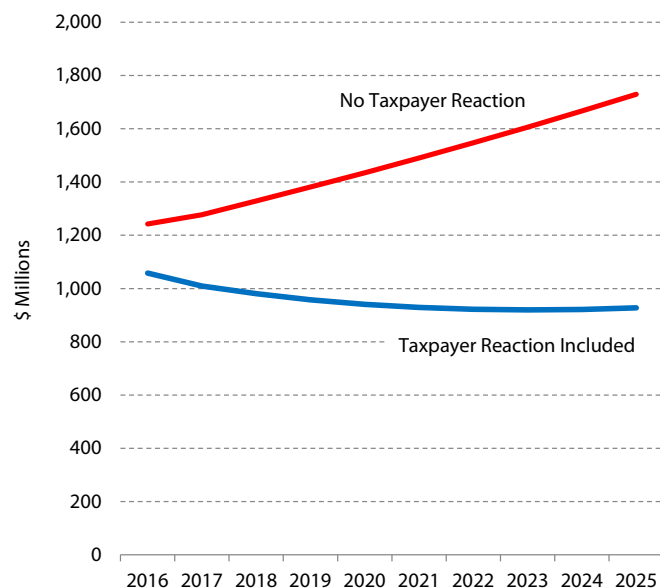
<sup>10</sup> The relative elasticity of taxable income to changes in tax rates is different by income level. We have chosen to use the same elasticities for different income groups, however, because detailed estimates are unavailable for Alberta and the tax changes proposed for Alberta start at \$125,000, which is roughly the threshold for the top 5 percent of all income earners.

<sup>11</sup> The results in this paper do not take into account cyclical economic fluctuations.

<sup>12</sup> The results from SPSD/M show that under a static model (no behavioural response), the Alberta government would collect \$1.242 billion more in revenues due to the PIT increase for 2016 (calendar year). According to the March 2015 budget (before the NDP government was elected), it was forecasted that the incremental revenue from the tax changes would be \$420 million for 2016/17 (the tax structure proposed was different with three new income tax brackets instead of the current five) (Alberta, 2015d: 28). The NDP platform forecasted that an additional \$730 million would be collected due to additional changes in the PIT structure in 2016/17 (this estimation takes the March 2015 budgets as a base) (Alberta NDP, 2015: 24). Adding up both estimates, the total PIT revenues from changing the single tax rate to five income brackets is \$1.150 billion for 2016/17. The discrepancy between our static estimate and the sum of the budget and NDP platform estimates may be due to different assumptions in the models



**Figure 1: Personal Income Tax Revenue with and without Taxpayer Response**



Source: Calculation by authors.

havioural responses, PIT revenues would be \$11.9 billion (dynamic model). The difference between the net proceeds from the tax increases in the static model (\$1.242 billion) and the dynamic one (\$1.058 billion) is \$184 million in 2016, a 14.8% gap (figure 1). As Figure 1 illustrates, the difference in revenue forecast under a dynamic model rather than a static model increases to \$494 million by 2020, a 34.5% difference. By 2025, ten years after the implementation of the tax rate increases, the gap between revenue predicted under a dynamic and static model is a little over \$800 million, a difference of 46.4%.

Under the static model, the provincial government might expect an additional \$6.7 billion

used to generate the static estimates, time lapses between estimates, and the fact that SPSPD/M results are for calendar years compared to fiscal years as reported in government documents.

to be raised by the PIT increases cumulatively from 2016 to 2020. The dynamic model (including taxpayer reactions) suggests that the sum would be \$5 billion, or 25.8% lower than the static model. That adds up to \$1.7 billion less than under a static model over the period. Over the 2016-2025 period, the dynamic model predicts \$5.1 billion, or 34.9% less than the static model.

## Conclusion

People react to tax rate increases in such a way as to lower the tax they pay. When governments rely upon revenue estimates that ignore this simple fact, they will receive less revenue from the tax increases than expected. When taxpayer responses are considered in Alberta's recent personal income tax rate increases, the additional revenue will be \$5.1 billion lower between 2016 and 2025 than expected when the calculations are made without factoring in people's responses.

## References

Alberta (2015a). *2015-16 First Quarter Fiscal Update and Economic Statement*. Alberta Finance. <<http://finance.alberta.ca/publications/budget/quarterly/2015/2015-16-1st-Quarter-Fiscal-Update.pdf>>, as of September 1, 2015.

Alberta (2015b). *Changes to Personal Income Tax—Questions and Answers*. Alberta Finance. <[http://finance.alberta.ca/business/tax\\_rebates/personal-income-tax/personal-income-tax-questions-and-answers.html](http://finance.alberta.ca/business/tax_rebates/personal-income-tax/personal-income-tax-questions-and-answers.html)>, as of September 2, 2015.

Alberta (2015c). *Consolidated Financial Statements of the Government of Alberta: 2014-15 Annual Report*. Alberta Finance. <<http://www.finance.alberta.ca/publications/annual-repts/govt/ganrep15/goa-2014-15-annual->

# Alberta's Personal Income Tax Increases May Yield Less Revenue

- [report-financial-statements.pdf](#)>, as of September 2, 2015.
- Alberta (2015d). *Budget 2015. Fiscal Plan*. Alberta Finance. <<http://finance.alberta.ca/publications/budget/budget2015/fiscal-plan-complete.pdf>>, as of September 2, 2015.
- Alberta New Democratic Party (2015). *Election Platform 2015*. Alberta New Democratic Party. <[http://d3n8a8pro7vhmx.cloudfront.net/themes/5538f80701925b5033000001/attachments/original/1431112969/Alberta\\_NDP\\_Platform\\_2015.pdf?1431112969](http://d3n8a8pro7vhmx.cloudfront.net/themes/5538f80701925b5033000001/attachments/original/1431112969/Alberta_NDP_Platform_2015.pdf?1431112969)>, as of September 2, 2015.
- Feldstein, Martin (2011). *The Tax Reform Act of 1986: Comment on the 25th Anniversary*. National Bureau of Economic Research. <[http://dash.harvard.edu/bitstream/handle/1/8747960/Feldstein\\_TaxReform.pdf?sequence=3](http://dash.harvard.edu/bitstream/handle/1/8747960/Feldstein_TaxReform.pdf?sequence=3)>, as of September 18, 2015.
- Dahlby, Ben, and Ergete Ferede (2011). *The Effects of Tax Rate Changes on Tax Bases and the Marginal Cost of Public Funds for Provincial Governments*. Working Paper. CD Howe Institute.
- Ferede, Ergete and Bev Dahlby (forthcoming). *Estimating the Tax Base Elasticities and the Marginal Cost of Public Funds for Canadian Provinces*. University of Calgary School of Public Policy.
- Canada, Department of Finance (2010). *The Response of Individuals to Changes in Marginal Income Tax Rates. Tax Expenditures and Evaluations 2010*. Finance Canada. <<http://www.fin.gc.ca/taxexp-depfisc/2010/taxexp1003-eng.asp>>, as of September 2, 2015.
- HM Revenues and Customs (2012, March). *The Exchequer Effect of the 50 Per Cent Additional Rate of Income Tax*. Government of the United Kingdom. <<http://webarchive.nationalarchives.gov.uk/20130129110402/http://www.hmrc.gov.uk/budget2012/excheq-income-tax-2042.pdf>>, as of September 2, 2015.
- Laurin, Alexandre (2012). *Ontario's Tax on the Rich: Grasping at Straw Men*. CD Howe Institute. <[https://www.cdhowe.org/pdf/e-brief\\_135.pdf](https://www.cdhowe.org/pdf/e-brief_135.pdf)>, as of September 11, 2015.
- Milligan, Kevin (2014). *Tax Policy for a New Era: Promoting Economic Growth and Fairness*. CD Howe Institute Benefactors Lecture, 2014. <<https://www.cdhowe.org/tax-policy-for-a-new-era-promoting-economic-growth-and-fairness/28070>>, as of September 2, 2015.
- Milligan, Kevin and Michael Smart (2013). *The Devolution of the Revolution: Taxation of High Incomes in a Federation*. <<http://carleton.ca/economics/wp-content/uploads/seminar-paper-131108.pdf>>, as of September 18, 2015.

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