

## ALTERING THE TAX MIX IN ALBERTA

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### SUMMARY

Stepping off the resource royalty roller-coaster and adopting a more equitable and efficient tax system has an important role to play in addressing Alberta's fiscal problems and promoting prosperity. Such a system would have several components. One would be a reduction in the corporate tax rate from 12 to eight per cent, which the UCP government has already announced. Another would be to maintain the full provincial carbon tax imposed by the previous NDP government, but ensure that it is revenue neutral. The progressive rate structure in personal income tax should be also be maintained, with a tax cut for the middle class. Finally, a harmonized provincial sales tax should be adopted.

Changes to current provincial fiscal policies are crucial; without them, Alberta could run a deficit of nearly \$40 billion by 2040. No longer can the province rely on the boom part of its traditional boom-and-bust economy to bail it out of the bad times. With global policies focused on decarbonization and technological innovations around shale oil and gas and fracking, the growth in the demand for oil from traditional oilsands projects is expected to decline. Nor can Alberta continue to rely on the United States to buy its oil; the U.S. has gone from being Canada's biggest customer to being its biggest rival in the industry.

In addition, Alberta will face different kinds of expenditures than it did in the past - health care, for example, will eat up a bigger chunk of the provincial budget in the coming years with the aging of the population. A return to the fiscal policies of the 1990s simply isn't feasible.

Corporate tax cuts are a logical place to start because these cuts will have a positive effect on both investment and on wage earners. When corporate taxes increase, investment declines and wages drop as the effects spread out into the larger economy. Research has shown that for every \$1 increase in corporate

income tax revenue due to a rate increase, aggregate wages in Alberta decline by about 95 cents. Therefore, cutting corporate income taxes would have a beneficial effect on wages and stimulate the economy.

Recent research suggests that in a choice between a flat-tax system, such as Alberta had under previous Progressive Conservative governments, and a system of progressive tax brackets, from the perspective of an equity-efficiency trade-off maintaining a progressive rate structure has some merit.

The UCP recently eliminated part of the provincial carbon tax, maintaining the levy on high emitters. As a result the federal backstop will apply. It would be better to maintain the full Alberta carbon tax, keep the revenue in Alberta and use it to further lower personal and corporate income taxes.

A provincial sales tax should be anathema no longer. A harmonized provincial sales tax in Alberta would provide an efficient, stable and non-volatile revenue source. To mitigate the burden of a sales tax and prevent it from being a deterrent to economic stimulus, there could be a refundable tax credit for lower-income Albertans and a cut in personal income tax rates for the middle class. A provincial sales tax would enable the Alberta government to get off the royalty roller-coaster. The dizzying ride that roller-coaster provided, and its concomitant blithe fiscal philosophy of “don’t worry, be happy”, has to come to an end. Lower growth in the demand for fossil fuels is the 21st century reality and Alberta must adapt its fiscal structures accordingly.

The purpose of this paper is to examine alternative ways of raising government revenue in Alberta. There are several ways to approach this question. One would be to adopt a revenue-neutral perspective, which would focus on the design and configuration of the tax system without a view to raising more revenue. Another would be to evaluate various options from the perspective of raising sufficient revenue to eliminate or reduce the deficit going forward, or more generally to close the fiscal gap, in order to put the government on a sustainable fiscal path. Neither of these approaches is followed here.

While the first approach is in some ways more pure from a tax policy perspective, it is possible that at least a modest increase in revenues will be required to put the government on a sustainable fiscal path. Moreover, there are several moving parts to the revenue system, and it is very difficult in this context to accurately take account of the various interactions. In terms of the second approach, it is not clear precisely how much higher revenues should be relied upon versus lower spending to restore fiscal sustainability. As Trevor Tombe (2018) puts it in a recent analysis of the sustainability of Alberta's fiscal policy, "the province has neither a revenue problem nor a spending problem; it has a budget problem." This problem can be addressed from the revenue side, the expenditure side or a combination of both. I don't take a strong position on this.

Rather, I examine some of the key sources of government revenue and evaluate various policy options that would alter the tax mix without imposing a hard constraint of revenue neutrality or the need to generate a given amount of revenue to close the fiscal gap. In some cases, I argue for tax reductions and in others for tax increases. The focus is on first principles, drawing on what economic research on tax policy has to say about implementing an efficient and equitable tax system within an Alberta context. Of course, as will be discussed, this inevitably involves trade-offs and, also inevitably, some disagreement on the nature of those trade-offs. The net impact on total revenue from the type of changes I discuss in what follows may be positive or negative, but the magnitude of the revenue gains can be scaled up or down by adjusting rates appropriately; the first principles laid out here provide guidance on how best to go about that.

Based on my analysis, and as a preview of my conclusions, I argue the following:

1. Cut the corporate income tax rate as planned.
2. Keep the *full* provincial carbon tax.
3. Maintain the progressive rate structure in the personal income tax (no flat tax), but consider a middle class personal income tax cut.
4. Impose a harmonized provincial sales tax.

While it is not the focus of the paper, I also argue for reintroducing systematic contributions of resource revenue to a stabilization fund, and eventually, the Heritage Savings Trust Fund.

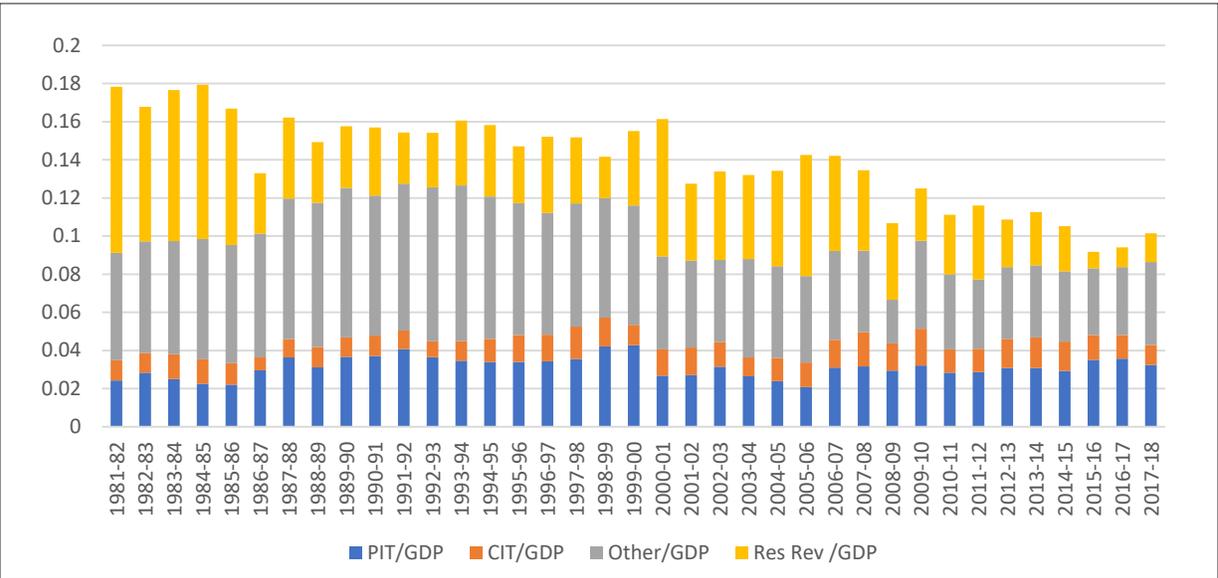
# THE BIG PICTURE: WHERE HAVE WE BEEN, WHERE ARE WE NOW AND WHERE ARE WE GOING?

## WHERE HAVE WE BEEN?

In the early 2000s, the province was regularly in a surplus position and boasted of having the lowest taxes in the country on several fronts (and all without a sales tax!). This changed in 2015 in conjunction with, of course, a significant slump in oil prices. The spring budget of that year, tabled by the sitting Progressive Conservative government, projected a significant deficit. Running on that budget, the PCs were defeated by the NDP in the subsequent election. In its inaugural first quarter fiscal update, the new NDP government projected even more sizable deficits going forward. The rest, as they say, is history.

Figure 1 provides a big-picture perspective of Alberta’s own revenue sources (not including federal transfers) over the last four decades. The big three own-revenue sources – personal income tax (PIT), corporate income tax (CIT) and resource revenues – along with an aggregate of the rest of own-source revenues are plotted relative to GDP. It is evident that aggregate own-source revenue relative to GDP has actually fallen rather significantly over the almost 40-year period, peaking at about 18 per cent in the mid-1980s and falling to about 10 per cent in 2017/18. This is largely because of the reduction in other and resource revenue relative to the size of the economy; PIT and CIT revenues relative to GDP have been relatively stable.

**FIGURE 1 OWN-SOURCE REVENUE AS A SHARE OF GDP: ALBERTA, 1981/82-2017/18**



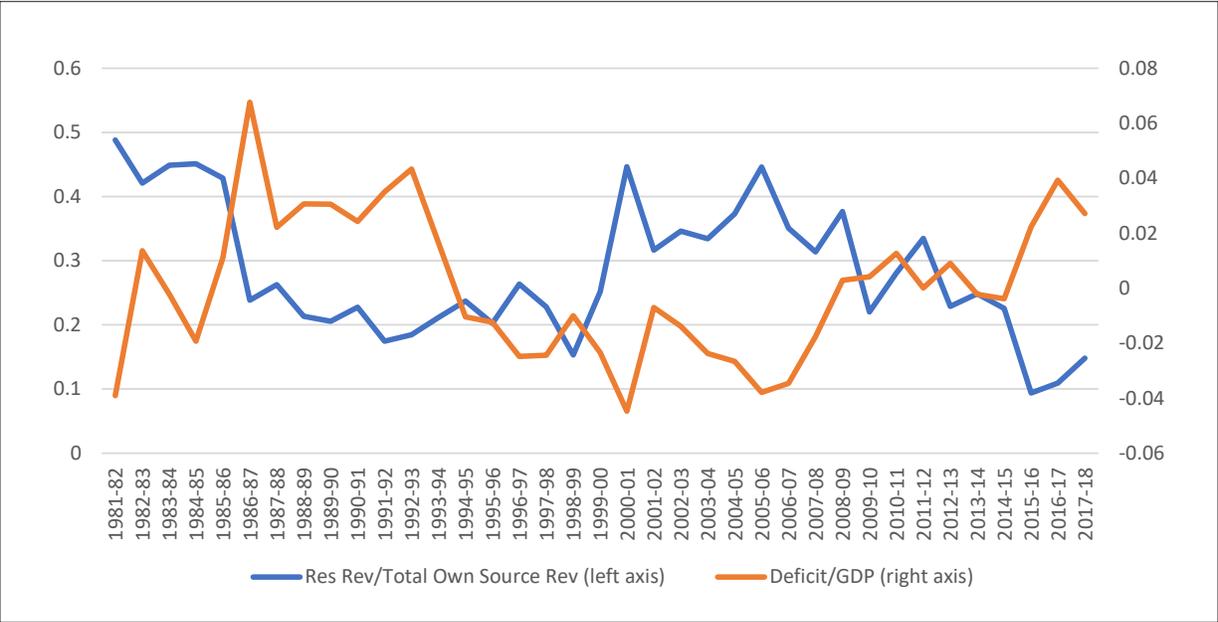
Source: Author calculations based on Kneebone and Wilkins (2016).

To be clear, these are own-source revenues and do not include federal transfers, which have also grown over this period, nor deficit financing. So this is not to say that the size of government in Alberta (as would be measured, for example, by government spending relative to GDP) has declined over this period. Rather, non-transfer, non-deficit financing has.

In particular, over the recent three-year period from 2015-2018, resource revenue relative to GDP ranged from 0.8 per cent in 2015/16 to 1.5 per cent in 2017/18. Compare this to the average over the pre-2015 period, which was almost 4.5 per cent. However, it is also evident from the figure that resource revenue is very volatile. As a share of GDP, it has ranged from a low of 0.8 per cent in 2015/16, to seven per cent in 2000/01, to as high as 8.7 per cent in 1981/82. If resource revenues were currently at their historical average relative to the size of the economy, own-source revenue would be 13 per cent of GDP; if resource revenues were at their peak relative to the size of the economy, as in the early '80s and '00s, total own-source revenue relative to GDP would be in the order of 17 or 18 per cent.

The implications of the volatility of resource revenue for Alberta's public finances can be examined in various ways. One approach is illustrated in Figure 2, which plots resource revenue as a share of total own-source revenue (left axis) and the provincial budget deficit relative to GDP (right axis). The wide variation in the share of provincial own-source revenue accounted for by resource revenues is evident: ranging from almost 50 per cent in the early '80s, falling to 15 per cent over the '90s, rising again to between 30 and 45 per cent in the '00s, and falling again to between nine and a little under 15 per cent over the last three years.

**FIGURE 2 RESOURCE REVENUE/GDP AND DEFICIT/GDP: ALBERTA 1981/82-2017/18**



Source: Author calculations based on Kneebone and Wilkins (2016).

Also evident from Figure 2 is the inverse relationship between the share of resource revenue and the provincial deficit. When resource revenue as a share of total own-source revenue is high, the province tends to run surpluses; when the share is low, it tends to run deficits (the raw correlation coefficient is just under -0.60).

Of course, this is not at all surprising – “it’s not rocket surgery”, as former treasurer and Finance minister Jim Dinning was fond of saying – and is indeed sensible as the deficit

can act as an absorber for economic shocks, muting the need to drastically adjust revenues and expenditures over business cycles. Running deficits in bad times is fine so long as we run surpluses (or at least lower deficits) in good times.<sup>1</sup>

However, as first documented by Kneebone and McKenzie (1999a), the province has displayed a marked tendency to treat positive and negative fiscal shocks arising from volatile energy prices asymmetrically, following what they call the “don’t worry, be happy” approach to fiscal policy: negative shocks are treated as temporary (so don’t worry, be happy), while positive shocks are treated as permanent (be even happier).

More recent evidence backs this up. Ferede (2018) estimates impulse response functions for key fiscal variables in Alberta in response to positive and negative shocks to resource revenues. He finds a similar asymmetric pattern in response to positive and negative shocks. More specifically, he estimates that a \$1 increase in real per capita resource revenue is associated with a 56-cent increase in real per capita program spending one year later (which is statistically different from zero). By contrast, he estimates that a \$1 decrease in resource revenue is associated with only a 1.3-cent decrease in program spending one year later (which is actually statistically indistinguishable from zero).

This asymmetry means that expenditures tend to notch up over time in response to cycles of positive and negative shocks to resource revenue. This eventually leads to the emergence of structural deficits, a fiscal gap and unsustainable fiscal policy, not to mention catchy bumper sticker slogans: “Please God, give us another oil boom; we promise not to piss it away this time.”

As a result, the tendency in Alberta has been to punctuate the “don’t worry, be happy” approach with periodic fiscal retrenchments when a fiscal crisis is perceived. An obvious example is the “Klein Revolution” in the mid-1990s. As documented by Bruce, Kneebone and McKenzie (1997), in response to a string of deficits arising largely from low oil prices and years of “don’t worry, be happy” budgeting, the Klein government cut real per capita expenditures by more than 20 per cent. In just two years, a \$3.4-billion deficit became an almost \$1-billion surplus (helped, of course, by an increase in oil prices!). Perhaps arguably, we have reached a similar perceived crisis state today.

It bears pointing out that the introduction of capital and stabilization funds in 2002 and 2003 respectively provided a temporary departure from the “don’t worry, be happy” pattern, and provided a cushion during the 2009-10 recession. However, true to form, the government continued to deplete those funds despite the return of a boom – reversion back to the “don’t worry, be happy” approach (MacMillan 2019, sec. 7).

Thus we see that a key aspect, and vulnerability, of Alberta’s government finances lies in the important role played by resource revenues. On the one hand, resource revenues have allowed the province to keep other taxes lower and/or expenditures higher than other provinces without high debt levels. On the other hand, it subjects aggregate

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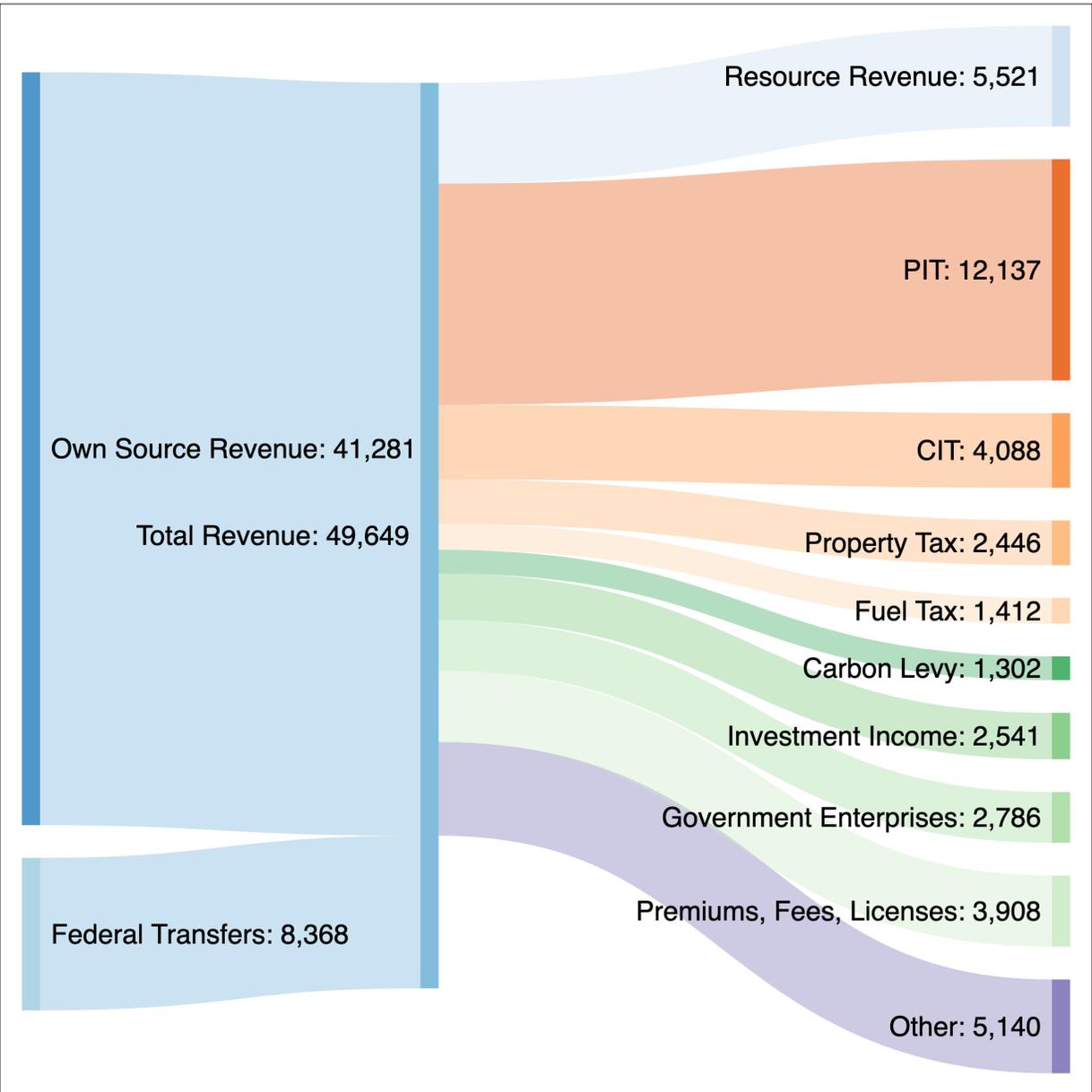
<sup>1</sup> Deficits can be run indefinitely on a sustainable basis, without increasing the debt/GDP ratio, if the growth rate in the economy exceeds the rate of interest on government debt. In this regard, as shown in Kneebone and McKenzie (1999b), the more volatile the growth rate, the higher the sustainable tax rate required to maintain a given debt/GDP ratio.

revenues to significant fluctuations with implications for long-run fiscal sustainability. I will return to the role of resource revenues in Alberta later in the paper.

**WHERE ARE WE NOW?**

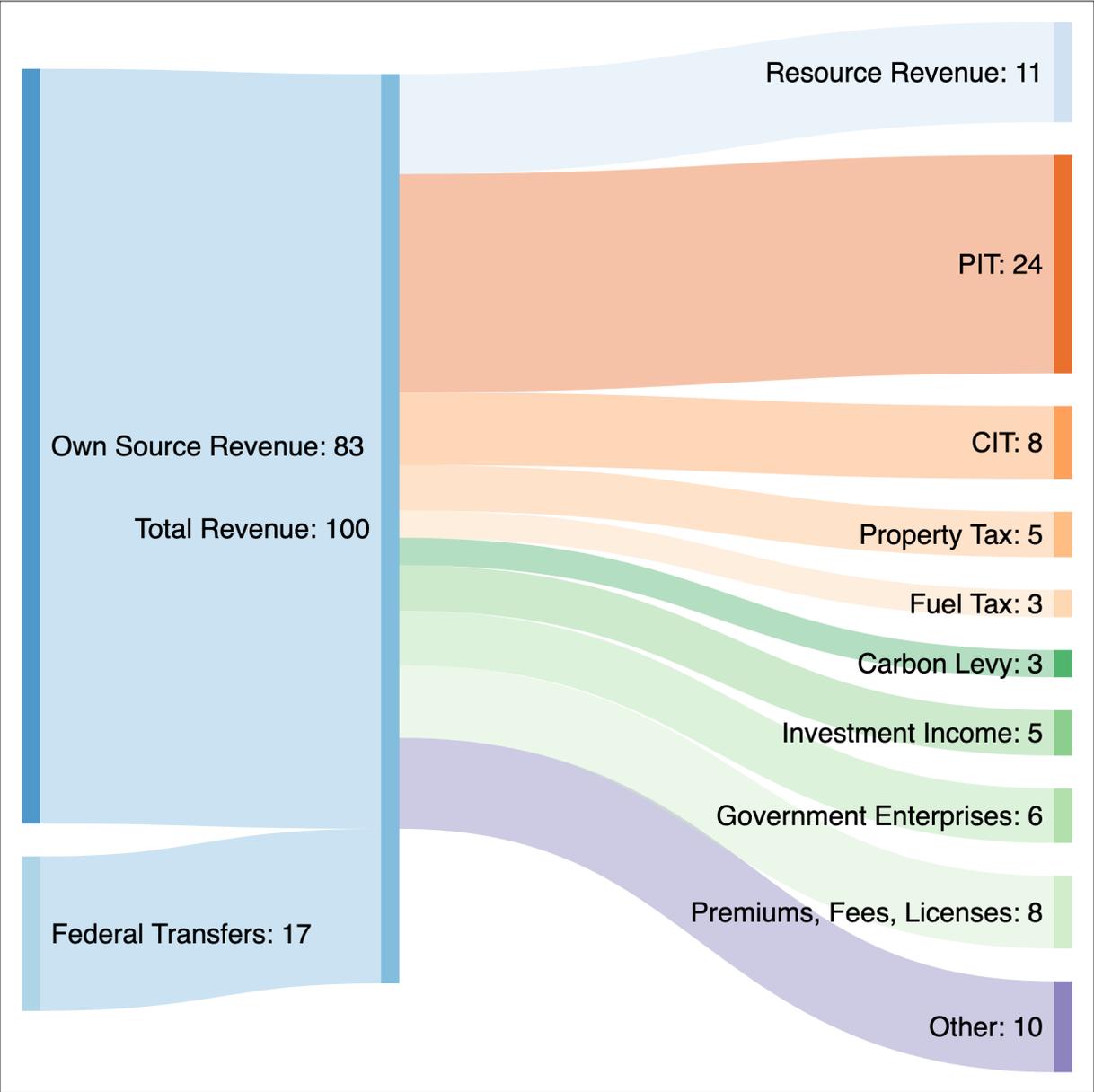
Figures 3 and 4 provide a more detailed breakdown of current Alberta government revenues. The data are based on the forecast for 2018/19 as reported in the third quarter Fiscal Update and Economic Statement. Figure 3 presents dollar figures (millions), and Figure 4 as a percentage of total revenue (including federal transfers).

**FIGURE 3 ALBERTA GOVERNMENT REVENUE (\$MILLIONS), 2018/19**



Source: Government of Alberta, Third Quarter Fiscal Update

**FIGURE 4 ALBERTA GOVERNMENT REVENUE (PER CENT OF TOTAL REVENUE), 2018/19**



Source: Government of Alberta, Third Quarter Fiscal Update

Of the \$49.7 billion in total revenue forecast for 2018/19, \$41.3 billion (83 per cent) is own-source revenue, the remainder coming from federal transfers, primarily the Canada Health Transfer and the Canada Social Transfer (\$4.4 billion and \$1.6 billion respectively, not reported in the figures).

We see that the personal income tax (PIT) is the single biggest source of revenue at \$12.1 billion, accounting for 24 per cent of total revenue (and almost 30 per cent of own source revenue). This is followed by resource revenue at \$5.5 billion (11 per cent), the corporate income tax at \$4.1 billion (eight per cent), and education property taxes at \$2.4 billion (five per cent). The fuel tax and the carbon levy collectively are projected to generate \$2.7 billion (six per cent).

The third quarter statement forecast a deficit for 2018/19 of \$6.9 billion.

Of course, with the election of the new United Conservative Party government, things are likely to change.

## **WHERE ARE WE GOING? THIS TIME IS DIFFERENT**

But none of this is new. Surely, we can weather the storm, much as we have in the past (“Please God ...”)? Perhaps. However, there are compelling reasons to expect that this time is different.

Tombe (2018) undertakes the very dicey and heroic task of examining Alberta’s long-term fiscal prospects. If there are no fundamental changes in government fiscal policies, he projects a deficit of almost \$40 billion by 2040, the equivalent of more than \$14 billion today. He calculates that, coupled with capital investments that also add to debt, this could raise the ratio of net debt to GDP to almost 50 per cent by 2040 – higher than at any point in Alberta’s history (and higher than for any province today).

Juxtaposed on all of this are three important underlying forces which are not cyclical in nature. The first is an emerging secular trend to lower growth in oil demand due to decarbonization. Most high-income countries are embarking on a low-carbon energy transition to increased reliance on low carbon and renewable energy. To some extent, this will be offset by higher growth in fossil fuel demand from lower-income countries, but overall the trend seems to be toward lower growth. There is, of course, considerable uncertainty regarding the pace of this transition. Predictions of peak demand should be taken with the same grain of salt as past predictions of peak supply. And indeed, the peak is more likely to resemble a plateau, perhaps emerging slowly over 20 years or more, followed by a long tail. While the rate of growth is anticipated to decline, oil isn’t going away any time soon. In its *World Energy Outlook*, for example, the International Energy Agency (IEA) (2018) base scenario forecast of world oil demand for 2040 is about 105 million barrels a day, slightly higher than the current demand of just under 100 million. However, it emphasizes that an acceleration of government policies worldwide toward decarbonization and the acceleration of technological innovations could lead to lower demand.

The second force is also technological: the emergence of shale oil and gas and new drilling technologies (fracking) in the U.S. Shale oil is a short-cycle resource that can be brought on line relatively quickly in response to oil price increases. This is in contrast to oilsands projects, which tend to be long-cycle with substantial upfront capital costs and longer payback periods. Oil production from the southern U.S. Permian basin has doubled in the last three years and is projected to surpass Canadian production in the next five years (and with considerably easier and cheaper access to refineries and export hubs on the Gulf coast). Once our biggest customer for oil, the U.S. has become our biggest competitor. The emergence of relatively inexpensive short-cycle oil in the U.S. has changed the game, and can be expected to put a (perhaps soft) cap on oil prices as supply can be ramped up relatively quickly in response to price increases.

No less important is the shale gas boom in the U.S. Hausman and Kellogg (2015) estimate that natural gas prices in the U.S. were 47 per cent lower compared to what the price

would have been prior to the fracking revolution in 2013. This has obvious implications for Alberta's natural gas sector, which relies largely on exports to the U.S.

Of course, it is a mug's game to predict energy demand and prices, especially 20 or 30 years into the future, and that is emphatically not my intent. It is entirely possible that the underlying energy market dynamics discussed above are either over- or understated; or even that we experience another oil price supercycle where oil demand and supply fall out of sync (in which case "please God ...). Rather, my point is that energy markets are changing in a fundamental and non-cyclical manner, albeit with considerable uncertainty regarding the nature and pace of change.

The third general force is demographic. The population is aging, with significant implications for health-care costs. Over the last 20 years, the share of Alberta's population 65+ has increased from 9.8 per cent to 12.7 per cent, and the share is projected to increase significantly going forward. Tombe (2018) conservatively forecasts that this trend, coupled with technological changes in health care and other factors, will increase health-care spending as a percentage of provincial GDP from 6.2 per cent today to 7.7 per cent in the long run.

And so Alberta must adapt. On the fiscal front, this means putting in place a revenue and expenditure framework appropriate for a future that is very unlikely to look like the past. This fiscal framework must be less vulnerable to the inevitable fluctuations and uncertainties along the way. It must dampen the traditional "don't worry, be happy" approach to fiscal policy, which has tended to culminate in periodic fiscal crises and retrenchments and it must get the province off of the royalty roller-coaster.

The focus here is on the revenue side of the equation. In broad strokes, I argue that this will require less reliance on resource revenues and corporate income taxes and more reliance on other revenue sources. And yes, this means both a sales tax and a carbon tax, and maintaining some degree of progressivity in the rate structure of the personal income tax.

## **SOME IMPORTANT CONCEPTS: THE TERMS OF ENGAGEMENT**

In order to engage in a discussion of alternative revenue sources for the government of Alberta, it is first necessary to establish the criteria that will be used to compare and evaluate one source of tax revenue to another – in other words, we need to define the terms of engagement for the discussion.

The evaluative criteria employed follow the traditional welfare economics approach, which involves assessing the efficiency and equity implications of various taxes. Efficiency is a term widely used by economists, and widely misunderstood by everyone else. Economists employ a very precise notion of efficiency from a tax policy perspective: it is the cost to the economy over and above the amount of revenue raised from a tax. This excess cost is referred to as the excess burden of the tax. Most taxes entail excess burdens, whereby the cost to the economy exceeds the amount of tax revenue raised. Moreover, and importantly, these excess burdens differ from one source of tax revenue to another.

Why is this the case? Taxes change prices (and costs) in the economy. In response to these price changes, people alter their behaviour – buying and selling fewer goods, working fewer hours, undertaking less capital investment, hiring fewer workers, etc. To the extent that people respond to a tax by altering their behaviour, this results in forgone transactions – transactions that otherwise would have occurred in the absence of a tax no longer take place in the presence of the tax. There is a loss to the economy from these forgone transactions; that loss is the forgone gains from trade which would have otherwise occurred in the absence of a tax.

Consider a simple example. Say you engage in a mutually beneficial transaction for landscaping services. Both you and the landscaping company must be better off engaging in this transaction, or else you wouldn't engage in it – you both experience gains from trade. Now say the government imposes a tax on landscaping services, to be paid by the landscaping company. Say that because of the tax the company increases the price of the service. And, as a result, you decide not to engage the landscaping company because it is no longer beneficial for you to undertake the transaction – there is a behavioural change in response to the tax. But because you decide not to proceed, the government collects no tax from this transaction – tax revenue from the forgone transaction is zero. But both you and the landscaping company are clearly worse off – you both received gains from trade from engaging in the transaction without the tax which you now no longer enjoy. The loss to the economy (the lost gains from trade) exceeds the tax revenue raised (in this case zero); this loss is the excess burden of the tax.

Of course, this is an extreme and overly simplified case, whereby the tax results in the complete elimination of the gains from trade from this transaction. More generally, we might see a reduction in the gains from trade, not the complete elimination (i.e., you decide to get just one tree planted instead of two), and the government raises some revenue from the tax rather than no revenue. Thus, we might expect a new tax (or an increase in an existing tax) to cause the tax base to shrink due to behavioural responses, not disappear altogether. However, the essence of the argument remains the same: taxes impose costs on the economy, measured by the excess burden, which exceed the tax revenue raised.

The fact that when a government increases (decreases) a tax, the activity being taxed (and the size of the tax base) tends to shrink (grow) as people respond to the tax change also has important implications for the revenue effects of a tax change. We can distinguish between two types of effects of a tax change on government revenues: the mechanical effect and the behavioural effect. The mechanical effect of a tax change on revenues is a relatively straightforward accounting exercise, which assumes no behavioural response on the part of those being taxed. This is often the effect highlighted in government fiscal documents which cost tax cuts or increases. The behavioural effect of a tax change on revenues takes explicit account of the impact on the underlying tax base, accounting for the resulting shrinkage (or growth in the case of a tax cut). The total impact on government revenues of a change in a tax rate is the sum of the mechanical and behavioural effects. A key metric in this regard is the elasticity (or sensitivity) of the underlying tax base with respect to changes in the tax rate. The elasticity of the tax base measures the percentage change in the size of the tax base in response to a one-per-

cent change in the tax rate. Thus, if the tax rate increases by one per cent (i.e., from 10 per cent to 10.1 per cent), and the tax base shrinks by 0.7 per cent due to the behavioural effects, the elasticity is 0.7. If the tax base is very elastic (responsive) to tax changes, the behavioural effect is large; if it is inelastic (unresponsive), it is small. The elasticity of the underlying tax base with respect to the tax rate thus bears directly upon the excess burden discussed above and on the change in revenue associated with a tax change.

All of this comes together in the concept of the marginal cost of public funds (MCF), which is a metric widely used by economists to measure the efficiency costs of raising more revenue by increasing an existing tax rate. The MCF is the total cost of raising one more dollar in tax revenue by increasing a tax by a small amount. It is equal to the \$1 in additional tax revenue raised plus the increase in the excess burden associated with the tax due to the behavioural responses discussed above. For example, say an existing tax is levied at the rate of 10 per cent. The government decides to increase the tax rate by 10 per cent, to 11 per cent. The mechanical effect of this tax increase, if there was no behavioural effect, would be to increase revenue from the tax by 10 per cent. However, if because of behavioural responses the size of the tax base shrinks by two per cent, tax revenue would increase by just eight per cent. The MCF in this case is (approximately) \$1.25 (10/8).<sup>2</sup> This means that the cost to the economy of generating one more dollar in tax revenue by increasing the tax rate is \$1.25, which consists of the \$1 in incremental tax revenue raised plus 25 cents in incremental excess burden.

This is important in what follows because different taxes give rise to different behavioural effects and therefore to different excess burdens and MCFs. A tax which entails a large behavioural response and therefore has a high MCF is less efficient, and more costly to the economy, than a tax which involves a low behavioural response and MCF. A tax that has a low MCF, and therefore impinges less on economic activity, is said to be more efficient than a tax which has a high MCF. All else equal, a tax system that is more efficient is preferred to a tax system which is less efficient.

But of course, all else is not equal, and efficiency is not the only relevant criterion for evaluating alternative sources of tax revenue. The government, and the society that it represents, is also concerned about the equity, or the distributional, implications of the tax system. While economists are relatively adept at assessing the excess burden of a tax (more or less objectively), comparing the equity implications of one tax versus another is more subjective, and involves a stronger value judgment. This is emphatically not to say that it is any less important. Indeed, most public discussion of taxes focuses largely on equity. Moreover, in some cases, tax systems that are very efficient (have a low MCF) result in a distribution of the burden of taxes which may be considered inequitable. Thus, tax policy decisions inevitably involve an equity-efficiency trade-off. An evaluation of this trade-off is the very essence of policy-making, and it is therefore important to understand both the efficiency and equity implications of any change to the tax system.

In this regard, it is important to be precise about who bears the economic burden of a tax. This involves a study of tax incidence. The economic incidence of a tax may differ

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The calculation is approximate because a one-percentage-point change will obviously raise more than \$1 in revenue.

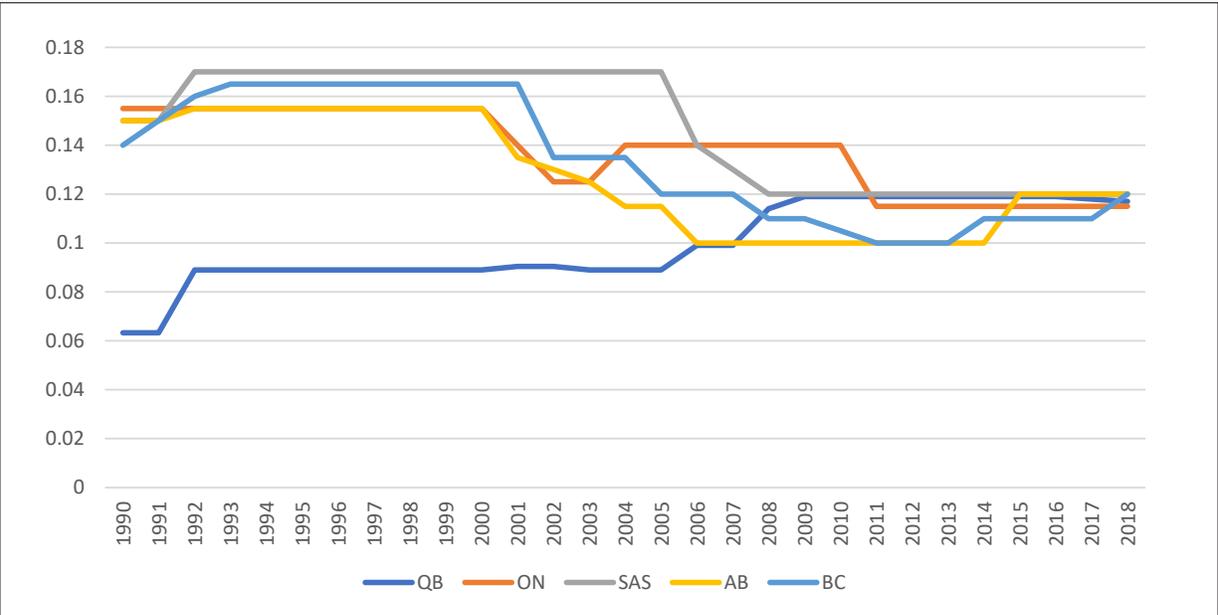
from the statutory (legal) incidence. That is, the party that is legally required to pay a tax may be very different from the parties that are economically burdened by a tax. This is the case because, as discussed above, taxes change prices in the economy, and therefore affect behaviour. In terms of the landscaping example, while the tax is legally paid by the owner of the landscaping company, the burden of the tax may not fall entirely on the owner. We saw that you (the demander of landscaping services) bear some of the burden of the tax by virtue of the forgone gains from trade due to the higher price. It could also be that the remaining burden of the tax actually doesn't fall on the owner of the landscaping company at all, but rather on employees who may be laid off, work fewer hours or suffer a reduction in wages. Thus, the economic incidence of a tax – who bears the ultimate burden of the tax – can differ significantly from the legal liability. The economic incidence of a tax bears directly on the distributional implications of a tax, and therefore on the issue of equity.

With the terms of engagement in hand, we are ready to address the question of alternative revenue sources for Alberta.

**CORPORATE INCOME TAX: THE COSTLIEST TAX OF ALL!**

Figure 5 shows the general provincial CIT rates in Alberta, B.C., Saskatchewan, Ontario and Quebec from 1990 to 2018. A few things are noteworthy. First, with the exception of Quebec, provincial CIT rates were generally quite high throughout the 1990s; the provincial CIT rate in 2000 in Alberta was 15.5 per cent. In 2001, CIT rates began to fall quite dramatically, led by Alberta. By 2006, the general CIT rate in Alberta was 10 per cent, the lowest in the country (essentially tied with Quebec); it was matched later by B.C. in 2011. In 2015, Alberta increased the CIT rate to 12 per cent, identical to Saskatchewan and B.C., and just slightly higher than Quebec (11.6 per cent) and Ontario (11.5 per cent).

**FIGURE 5 SELECTED PROVINCIAL CORPORATE INCOME TAX RATES, 1990-2019**



Notably, referring back to Figure 1, the substantial Alberta CIT tax cuts starting in 2001 had little discernible impact on provincial CIT revenue relative to the size of the economy. From 1990 to 2000, the CIT rate averaged just under 15.5 per cent and CIT revenues as a percentage of GDP averaged 1.23 per cent; from 2001 to 2018, the CIT rate averaged 11.1 per cent and the CIT to GDP ratio averaged 1.38 per cent.

As discussed above, a key metric in assessing both the efficiency implications and the revenue effects of a change in a tax rate is the size of the behavioural effect, as measured by the elasticity of the tax base. Table 1 presents some recent estimates of the long-run semi-elasticity of the three most important tax bases for Canadian provinces, (corporate income tax (CIT), personal income tax (PIT) and provincial sales tax (PST)) for Alberta from Dahlby and Ferede in their 2016 paper entitled “The Costliest Tax of All: Raising Revenue Through Corporate Tax Hikes Can be Counter-Productive for Provinces”.<sup>3</sup> The semi-elasticity is related to the elasticity and measures the percentage decline in the tax base associated with a one-percentage-point increase in the tax rate. They estimate a semi-elasticity of -13.10 for the CIT base in Alberta, which means that a one-percentage-point increase in the provincial CIT rate (e.g., from 12 per cent to 13 per cent), is associated with a 13.10-per-cent reduction in the CIT base.

**TABLE 1 LONG-RUN TAX BASE SEMI-ELASTICITY ESTIMATES AND MARGINAL COST OF PUBLIC FUNDS (MCF), ALBERTA**

|                 | CIT Base |          | PIT Base |          | Sales Tax Base |
|-----------------|----------|----------|----------|----------|----------------|
|                 | CIT Rate | PIT Rate | CIT Rate | PIT Rate | N/A            |
| Semi-elasticity | -13.10   | -0.28*   | 3.19     | -2.89    | N/A            |
| MCF             | 2.91     |          | 1.41     |          | 1.00           |

Source: Dahlby and Ferede (2016).

\* Not statistically different from zero.

It is important to emphasize two points in this regard. The first is that these are long-run estimates. We would not expect to see changes in the tax base of this magnitude immediately, but over several years. In the short run, mechanical changes in tax revenues will dominate; behavioural effects will manifest over time. For example, in previous research, Dahlby and Ferede (2012) estimate a short-run semi-elasticity for the corporate tax across all provinces of -3.67, which is significantly lower. Second, it is also important to emphasize that these are point estimates from just one study. While there is virtual unanimity among economists regarding the existence and sign of these behavioural effects, in general there is some uncertainty, and indeed by my reading of the research no clear consensus regarding their magnitude. Unfortunately, there is no other work that focuses specifically on Canadian provinces in this regard.

Why does the CIT base shrink in response to an increase in the corporate tax rate? There are two general reasons for this. One is that investment declines. This is because an increase in the CIT rate increases the before-tax hurdle rate of return required by

<sup>3</sup> As discussed below, in the case of the PIT they consider an increase in the tax rate on the top income bracket.

the owners of firms. As a result, and over time, firms will invest less in response to an increase in the tax rate, which will lower the CIT base. This is a real effect, which has been documented quite extensively in many studies. For example, in a review of the academic research in this area, Hassett and Hubbard (2002) conclude that the consensus estimate of the impact of a one-per-cent increase in the after-tax hurdle rate of return is a reduction in the capital stock of between 0.5 and 1.0 per cent. A Canadian study by Parsons (2008) puts it at 0.7 per cent. Another more recent, but preliminary, Canadian study by Wen and Yilmaz (2019), which focuses on investment in machinery and equipment only, provides an estimate of between 1.1 to 1.3 per cent. So the real effects of the CIT in terms of decreased investment exist, and are not insignificant.

In this regard, consider the impact of the reduction in the provincial CIT rate from 12 percent to 8 percent, as announced by the new UCP government. The rate will go from 12 percent to 11 percent on July 1 2019, dropping another point each year until it hits 8 percent in 2022. Table 1 shows calculations of the aggregate marginal effective tax rate (METR) on capital in Alberta and other provinces for various scenarios.<sup>4</sup> The METR measures the extent to which the corporate tax system distorts the hurdle rate of return on capital investment. The hurdle rate of return is the minimum rate of return required by the firm in order to undertake an investment. The METR measures the share of the before-tax hurdle rate of return required to pay the associated taxes. For example, if the after-tax hurdle rate of return required by the firm is 10 percent, and the before-tax rate of return required to generate that 10 percent after-tax rate of return is 12 percent, then the METR is 16.67 percent.<sup>5</sup>

**TABLE 1 AGGREGATE MARGINAL EFFECTIVE TAX RATES (METR) IN CANADIAN PROVINCES**

|                  | 2018 Pre-Fiscal Update | 2019 Post-Fiscal Update | Alberta Tax Cut Fully Implemented |
|------------------|------------------------|-------------------------|-----------------------------------|
| Newfoundland     | 12.8                   | 7.4                     | 7.4                               |
| PEI              | 15.4                   | 10.3                    | 10.3                              |
| Nova Scotia      | 17.8                   | 12.7                    | 12.7                              |
| New Brunswick    | 14.8                   | 9.8                     | 9.8                               |
| Quebec           | 14.3                   | 10.6                    | 10.6                              |
| Ontario          | 18.3                   | 13.9                    | 13.9                              |
| Manitoba         | 27.0                   | 23.7                    | 23.7                              |
| Saskatchewan     | 23.9                   | 20.5                    | 20.5                              |
| Alberta          | 18.5                   | 14.5                    | 11.9                              |
| British Columbia | 27.6                   | 24.3                    | 24.3                              |
| Canada Average   | 19.2                   | 15.3                    | 14.9                              |

Source: Calculations provided by Phil Bazel, School of Public Policy.

<sup>4</sup> The METR calculations were kindly provided by Phil Bazel of the School of Public Policy.

<sup>5</sup> Calculated as  $(12-10)/12=16.67$  percent.

As seen in the first column of the table, prior to the introduction of accelerated depreciation by the federal government in the 2018 fall economic update,<sup>6</sup> at 18.5 percent the METR in Alberta was lower than the Canadian average of 19.2 percent, about on par with Ontario, significantly lower than B.C., Saskatchewan and Manitoba, but higher than Quebec and the Atlantic provinces.<sup>7</sup> Column 2 shows METRs after the implementation of accelerated tax depreciation by the federal government announced in the 2018 fall economic update in response to the 2018 U.S. tax reform. The update implemented accelerated tax depreciation for most capital assets, including immediate full expensing for manufacturing and processing assets along with clean energy and storage assets. Accelerated depreciation is slated to end on December 31 2023. Accelerated tax depreciation lowers the aggregate METR in Canada to 15.3 percent, and in Alberta to 14.5 percent. Notable in this regard is the fact that all of the provinces, including Alberta, adopted the federal accelerated depreciation deductions for provincial CIT purposes.<sup>8</sup> The final column in Table 1 shows the METRs assuming no changes in the CIT at the federal level or in the other provinces, after the four percentage point CIT rate cut is fully implemented in Alberta by 2022. The rate cut lowers the METR in Alberta from 14.5 percent currently to 11.9 percent, one of the lowest in the country. Relative to the pre-economic update METR in the fall of 2018, by 2022 the METR on capital investment in Alberta will have declined significantly, by 6.6 percentage points (from 18.5 percent to 11.9 percent). Using an elasticity of the capital stock with respect to the hurdle rate of return of 0.7, as discussed above, relative to the post-economic update, the Alberta provincial rate cut would be expected to increase the size of the capital stock in Alberta in the long run by about 3 percent.

The other reason that the CIT base shrinks in response to an increase in the corporate tax rate is income shifting. This is a tax planning effect which can take place along several dimensions. For example, through various (legal) tax planning techniques, companies can shift income between jurisdictions in response to differences in tax rates in order to lower their overall tax bill. Canadian firms can shift income either internationally or interprovincially. Studies of international income shifting suggest that tax differentials between jurisdictions can result in quite a bit of income shifting. A recent study by Dowd et al. (2017) of tax planning by U.S. multinational enterprises (MNEs) is of particular relevance to Canada. They estimate a semi-elasticity for high-tax (non-tax haven) affiliates of -0.7 (that is, a one-percentage-point increase in the tax differential causes affiliate income to decline by 0.7 per cent).

Interprovincial income shifting is also thought to be important. For example, Mintz and Smart (2004) analyze data from administrative tax records to compare the behaviour of Canadian corporate subsidiaries that may engage in income shifting across provinces,

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<sup>6</sup> See McKenzie and Smart (2019) for a discussion within the context of the U.S. tax reform.

<sup>7</sup> The high METRs in B.C., Saskatchewan and Manitoba partly reflects the fact that the provincial sales tax in these provinces is not harmonized with the federal GST and therefore falls to some extent on business investment. The low METRs in the Atlantic provinces is due in large part to the federal Atlantic Investment Tax Credit, a 10 percent tax credit provided to investments in farming, forestry, fishing and manufacturing and processing in the Atlantic provinces and the Gaspé Peninsula region of Quebec.

<sup>8</sup> This is discussed in more detail below.

due to having multi-province enterprises, to comparable single-province firms that cannot. They conclude that interprovincial income shifting has pronounced effects on provincial tax bases. According to their preferred estimate, the elasticity of taxable income with respect to tax rates for income-shifting Canadian firms is 4.9, compared with 2.3 for other comparable firms.

Yet another tax planning effect relates to the type of income earned. For example, corporate income can be turned into capital gains taxed at the personal level through various tax planning strategies. This means that an increase in the tax on one tax base may cause that base to shrink, but another tax base may increase as income is converted into a now (relatively) lower-taxed type of income. This is reflected in Table 2, where we see that the *cross* semi-elasticity of the PIT base with respect to the CIT rate is 3.19. This means that a one-percentage-point increase in the CIT rate is associated with a 3.19-percentage increase in the PIT base.

And so, changes in the CIT rate have both real and income-shifting effects which can affect the size of the tax base. All of this has important implications for both the efficiency and revenue effects of a change in the provincial CIT rate.

Table 2 also presents Dahlby's and Ferede's corresponding estimates of the long-run MCF for the three taxes in Alberta based on their semi-elasticity estimates. Their estimate of the MCF for the CIT in Alberta is \$2.91. Thus, raising one more dollar in revenue by increasing the CIT rate incrementally imposes an additional cost on the economy (an increase in the excess burden) of \$1.91. This is substantially higher than for other revenue sources like the PIT and PST, where their estimate of the MCF is substantially lower (\$1.41 and \$1 respectively).<sup>9</sup> While Dahlby's and Ferede's MCF estimates are at the upper end of the spectrum, this ranking is consistent with other studies.<sup>10</sup> From an efficiency perspective, there is broad agreement that the CIT is indeed the costliest tax of all.

But efficiency isn't the only thing that matters. We should also be concerned about the distribution of the burden of the corporate tax across different groups of individuals. In this regard, the popular perception of the incidence of the corporate income tax is that since the legal liability for paying it lies with corporations, the burden of the CIT must fall largely on the owners of corporations (shareholders) through lower profits. In this case, as shareholders tend to be higher income, from a distributional perspective the CIT may be considered by some to be more attractive in terms of the equity-efficiency trade-off than other sources of revenue.

As discussed above, this can be misleading – the economic incidence of a tax can be very different from the legal incidence. While the economic incidence of the CIT is a matter of some controversy, there is considerable evidence that some, and perhaps

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<sup>9</sup> The MCF for a PST in Alberta is \$1 because we currently have no PST. This is discussed in more detail below.

<sup>10</sup> For example, a general equilibrium model implemented by the Department of Finance (Baylor and Beauséjour 2004) calculates the MCF for the federal CIT in Canada at about 1.40. Note, however, that this is a simulation exercise, based on assumptions regarding underlying elasticities. Moreover, the study is for the federal CIT; we would expect the MCF to be higher at the provincial level because capital mobility is higher. Also, the study explicitly does not account for income shifting, which is thought to be an important source of inefficiency.

most, of the economic burden of a CIT levied at the provincial level falls on employees, through lower wages, rather than on owners. One way that this can occur is through lower real investment, as discussed above. If firms lower investment in response to an increase in the CIT rate, this lowers the capital/labour ratio, which lowers the productivity of workers, which leads to lower wages. This is thought to be particularly important in small open economies like Canada, and even more so for provinces within a small open economy, like Alberta.

A nascent, but growing, empirical literature supports this view. While there remains some disagreement on the magnitude of the effects, it is now generally accepted that at least some of the burden of the CIT falls on labour through lower wages. Indeed, in the past in its allocation of the burden of various taxes, the Congressional Budget Office (CBO) in the U.S. typically assumed that the entire burden of the federal CIT was borne by those who received income from capital investments (i.e., owners). However, since 2012, the CBO has assumed that wage earners bear 25 per cent of the U.S. CIT. And this may well be on the low side. In an assessment of computable general equilibrium models in a U.S. context, Gravelle (2013) puts the share closer to 40 per cent. Moreover, and very importantly for our discussion, this share is likely to be even higher for small open economies like Canada, and even more for smaller open economies like Alberta. In a recent paper commenting on the U.S. corporate tax cuts, respected U.S. economist Alan Auerbach (2018, 100) argues that “a large recent literature on corporate tax incidence looks within countries, considering differences across industries and across states or regions ... the findings are typically that a large share of the corporate tax falls on labor – quite plausible for changes adopted in a small part of a country in which there is considerable capital mobility.”

A recent Canadian study in this vein by McKenzie and Ferde (2017) backs this up. They estimate that a one-per-cent increase in the CIT rate by a Canadian province is associated in the long run with a reduction in the capital/labour ratio of about 0.23 per cent. In turn, a one-per-cent reduction in the capital/labour ratio is associated with a reduction in real hourly wages of about 0.46 per cent. Together, these suggest that a one-per-cent increase in the CIT rate is associated with about a 0.10-per-cent decrease in the real wage rate in the long run. This is consistent with much of the research in this area. Because this reduction in the real wage rate is spread over many workers, and the size of the aggregate wages dwarfs corporate income tax revenue, McKenzie and Ferde calculate that for every \$1 increase in CIT revenue due to an increase in the CIT rate, aggregate wages in Alberta decline by about 95 cents. This suggests that much of the economic burden of the CIT levied by Canadian provinces actually falls on wage earners. This renders it perhaps less attractive from a distributional perspective than the popular perception.

It is important to emphasize again that the elasticities discussed here, which bear critically upon the size of the behavioural responses and therefore on both the efficiency and incidence of the corporate tax, are long-run estimates. Moreover, as indicated, there is some uncertainty regarding the magnitude of the effects.

Based on their estimates, Dahlby and Ferde (2016) calculate that the Alberta CIT rate that would maximize government revenues is 15.2 per cent. Combined with the 15 per cent federal tax rate, this suggests a revenue-maximizing combined CIT rate of a little

over 30 per cent, which is in fact at the lower range of other estimates of the revenue-maximizing rate based on international data. For example, Clausing (2007) estimates a revenue-maximizing tax rate for OECD countries of about 33 per cent. Brill and Hassett (2007) provide estimates that range from about 30 per cent to 37 per cent, again using OECD data. At 27 per cent, the current combined federal Alberta rate is thus less than what might be considered a reasonable lower bound estimate of the revenue-maximizing rate. This suggests that any CIT rate cut in Alberta would not be expected to be self-financing in terms of generating more revenue due to behavioural responses than is lost due to the mechanical effect.

In this regard, consider again the reduction in the Alberta CIT rate from 12 per cent to eight per cent, a 33.33-per-cent reduction as announced by the new UCP government. To determine the impact of such a tax cut on government revenues in the long run, as discussed above, we must account for both mechanical and behavioural effects. Mechanically, accounting for no change in the tax base, a four-percentage-point CIT cut would lower CIT revenues by 33.33 per cent and total own-source revenue by about 3.3 per cent, equivalent to about \$1.36 billion in terms of the 2019 CIT revenue forecast.

Note that the size of the mechanical reduction in tax revenues is quite precise, as it is not based on a statistical estimate of the sensitivity of the underlying tax base, but on the real thing. Relatedly, the mechanical revenue costs occur up front, in the immediate and short run. However, from the discussion above we know that there will be two types of behavioural effects that will manifest over time. The first will be an increase in the CIT base due to an increase in real investment and income shifting. The second will be a reduction in the PIT base. Using the long-run semi-elasticity estimates of Dahlby and Ferde (2016), the behavioural offset to the 3.3 per cent mechanical revenue loss in total own-source revenue is about 1.4 per cent, giving a net total reduction in total own-source revenue after accounting for long-run behavioural effects of about 1.9 per cent, equivalent to about \$770 million annually in terms of the 2019 CIT revenue forecast.<sup>11</sup>

Some caveats are in order. First, I emphasize again that these are long-run effects, and will take place over time. Second, the calculations depend critically on the semi-elasticity estimates. As indicated, Dahlby and Ferde (2016) is but one study; however, it is the only rigorous study at the provincial level in Canada. In this regard, there are several empirical issues associated with estimating the sensitivity of the corporate income tax base which suggest caution. Kawano and Slemrod (2015), for example, examine the research in this area and identify several empirical problems. One, for example, is failure to control for statutory changes in the CIT base over time, which may or may not accompany any rate changes. They argue that the failure to account for these changes biases estimates of the elasticity of the CIT base upwards.

While the revenue implications of a corporate tax cut are important, there is therefore some uncertainty about what they might be, given our state-of-the-art understanding of

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<sup>11</sup> The percentage change in own-source revenue is given by the following equation:  $\Delta R/R = s_c (\Delta t_c / t_c) + s_c e_{cc} \Delta t_c + s_p e_{pc} \Delta t_c$ , where  $\Delta R/R$  is the percentage change in own-source revenue,  $s_c$  is the share of total own-source revenue accounted for by CIT,  $t_c$  is the current CIT rate,  $\Delta t_c$  is the change in the CIT rate,  $e_{cc}$  is the own semi-elasticity of the CIT base with respect to the CIT rate,  $e_{pc}$  is the cross semi-elasticity of the PIT base with respect to the CIT rate, and  $s_p$  is share of total own-source revenue accounted for by PIT.

the behavioural effects. However, and very importantly, the case for a corporate tax rate cut does not in my view hinge critically on this. Regardless of the revenue implications, there is little doubt that the provincial CIT is a costly source of revenue in terms of economic efficiency relative to other types of taxes. Moreover, given that much of the burden of the tax is thought to fall on wage earners, it is debatable as to whether this is offset by a more equitable distribution of the tax burden. And so, a compelling argument can be made for reducing the corporate tax rate and relying less on corporate income taxes as a revenue source.

I conclude with some comments on undertaking a more fundamental change in the way that we tax corporations in Alberta. Many economists have argued for a move towards a so-called rent-based approach to corporate taxation.<sup>12</sup> The current structure of the corporate income tax in Canada results in the taxation of both the normal and above-normal returns to equity-financed investment.<sup>13</sup> As discussed above, this distorts investment and lowers the capital stock in the economy. A rent-based tax would tax the above-normal return to capital only, and would therefore be significantly less distortionary. An example of a rent tax is a simple cash flow tax, though other approaches are possible (Boadway and Tremblay 2014, 2016). In previous work (McKenzie and Smart 2019a, 2019b), I have argued that such an approach should be seriously considered in Canada, particularly in response to the recent corporate tax reforms and significant tax cuts in the U.S. A key consideration in comparing a CIT rate cut to a more fundamental reform such as a cash flow tax is that with a CIT rate cut, most of the immediate mechanical benefit of the rate cut accrues to income generated by investments made in the past (so-called sunk capital). In this regard, a CIT rate cut is not well targeted and results in a windfall gain to sunk capital. A move to a rent tax would be better targeted, and less expensive in the short run, as it applies to new investments only.<sup>14</sup> However, implementing a rent-based tax in a single province within the federation raises some challenges.

The adoption of a rent-based tax at the federal level would naturally facilitate a similar move by the provinces. Most of the other provinces do not administer their own corporate income tax, but rather rely on the administration of the Canada Revenue Agency (CRA) under the Tax Collection Agreement. This requires the provinces to employ the federal tax base and other structural features of the federal corporate income tax. The two exceptions to this are Quebec and Alberta. Alberta administers its own corporate tax system under the provincial Tax and Revenue Administration (TRA). While in principle this suggests the possibility that Alberta could adopt its own tax base, including a rent-based tax, in practice departures from the structure of the federal tax have been very limited. According to Dolson (2016), the Alberta corporate income tax very closely mirrors the federal tax. Indeed, as discussed above, Alberta automatically adopted the accelerated depreciation introduced by the federal

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<sup>12</sup> See for example Boadway and Tremblay (2014, 2016).

<sup>13</sup> The “normal” rate of return is the minimum rate of return (sometimes called the hurdle rate of return) required by shareholders in the firm.

<sup>14</sup> There are transition issues concerning the treatment of sunk capital that would need to be addressed.

government in the 2018 fall economic update.<sup>15</sup> Moreover, as per Dolson (2016): “The TRA seldom audits or engages with most corporate taxpayers, owing to its reliance on the CRA to assure the correct computation of taxable income. Further, Alberta’s corporate income tax assessments and reassessments typically follow the federal assessments and reassessments.” A “go it alone” move to a rent tax in Alberta, in the absence of a similar move at the federal level, would also open up many tax planning margins across provinces and other complications within the federation. Thus, while in principle Alberta could adopt a completely different corporate base, such as a rent tax, in practice this seems unlikely from a practical perspective at this time.

## **PERSONAL INCOME TAX: BACK TO THE FLAT TAX?**

I now turn to personal income taxes (PIT). Table 3 gives the marginal rate structure of the PIT for the federal government and Alberta. Table 4 provides some comparative information on the PIT system across provinces, focusing on the tax rates applied to the lowest and highest brackets. Alberta stands out relative to other provinces in three general ways.

First, the basic personal amount is the amount of income that can be earned without paying taxes. Alberta stands out from the other provinces as having a very high basic personal amount, just under \$20,000. The next highest province is Saskatchewan at about \$16,000. The other provinces have basic personal amounts in the neighbourhood of the federal amount of about \$12,000. Thus, Albertans are able to earn more income free of provincial PIT than people in the other provinces.

Second, at 10 per cent Alberta imposes a slightly higher marginal tax rate on the lowest bracket than some of the other provinces. However, the upper threshold of the first bracket is very high, with the 10-per-cent rate applied to incomes up to about \$131,000, about three times higher than most of the other provinces.

Third, at 15 per cent the marginal tax rate on the top bracket in Alberta is lower than most other provinces (with the minor exception of Saskatchewan at 14.5 per cent), sometimes substantially so (e.g., Ontario and Quebec). Moreover, the income threshold at which the top rate applies in Alberta is about \$315,000, which is substantially higher than the other provinces (and the federal government).

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<sup>15</sup> See <https://open.alberta.ca/publications/corporate-income-tax-special-notice-vol-5-no-53-application-federal-expensing-investment-measures#summary>

**TABLE 3 FEDERAL AND ALBERTA MARGINAL PERSONAL INCOME TAX RATES, 2019****Federal**

- 15 per cent on the first \$47,630 of taxable income, plus
- 20.5 per cent on the next \$47,629 of taxable income (on the portion of taxable income over \$47,629 up to \$95,259), plus
- 26 per cent on the next \$52,408 of taxable income (on the portion of taxable income over \$95,259 up to \$147,667), plus
- 29 per cent on the next \$62,704 of taxable income (on the portion of taxable income over \$147,667 up to \$210,371), plus
- 33 per cent on taxable income over \$210,371

**Alberta**

- 10 per cent on the first \$131,220 of taxable income, plus
- 12 per cent on the next \$26,244 of taxable income (on the portion of taxable income over \$131,220 up to \$157,464), plus
- 13 per cent on the next \$52,488 of taxable income (on the portion of taxable income over \$157,464 up to \$209,952), plus
- 14 per cent on the next \$104,976 of taxable income (on the portion of taxable income over \$209,952 up to \$314,928), plus
- 15 per cent on taxable income over \$314,928

**TABLE 4 SELECTED PROVINCIAL TAX BRACKETS AND RATES: 2019**

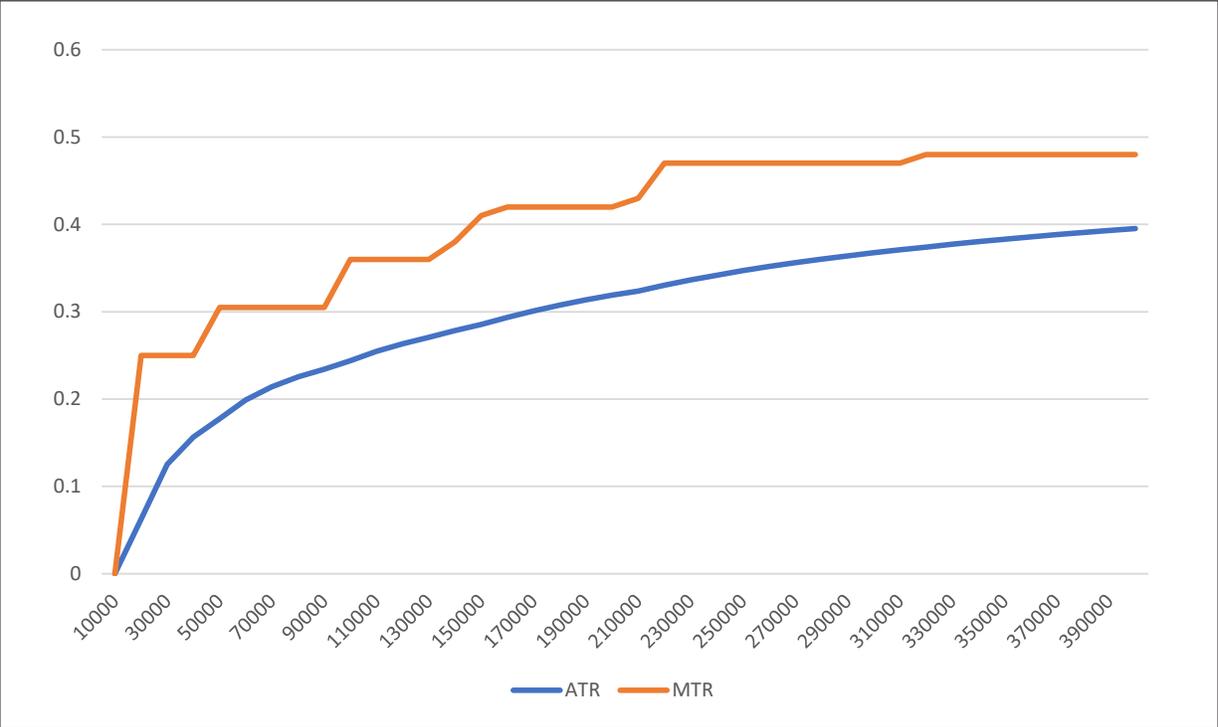
|                     | Basic Personal Amount (\$) | Lowest Bracket Tax Rate (%) | Upper Threshold of Lowest Bracket (\$) | Top Bracket Threshold (\$) | Top Bracket Tax Rate (%) |
|---------------------|----------------------------|-----------------------------|--|----------------------------|--------------------------|
| Alberta             | 19,369                     | 10.0                        | 131,220                                | 314,928                    | 15.0                     |
| British Columbia    | 12,069                     | 5.06                        | 40,707                                 | 153,900                    | 16.8                     |
| Saskatchewan        | 16,065                     | 10.5                        | 45,225                                 | 129,214                    | 14.5                     |
| Manitoba            | 9,926                      | 10.8                        | 32,670                                 | 70,610                     | 17.4                     |
| Ontario             | 10,582                     | 5.05                        | 43,906                                 | 220,000                    | 20.53*                   |
| Quebec              | 15,269                     | 15.0                        | 43,970                                 | 104,765                    | 25.75                    |
| New Brunswick       | 10,264                     | 9.68                        | 42,592                                 | 157,773                    | 20.3                     |
| Nova Scotia         | 8,481                      | 8.79                        | 29,590                                 | 150,000                    | 21.0                     |
| Prince Edward Isle. | 9,160                      | 9.8                         | 31,984                                 | 63,969                     | 16.7                     |
| Newfoundland & Lab. | 9,414                      | 8.7                         | 37,591                                 | 187,9'3                    | 18.3                     |
| Federal             | 12,069                     | 15.0                        | 47,630                                 | 210,371                    | 33.0                     |

\* Includes surtax

Figure 6 shows the combined (federal plus provincial) average tax rate (ATR) for different taxable income levels in Alberta, as well as the associated marginal tax rate (MTR) on an incremental dollar of income earned. The figure takes account only of the statutory rate schedules and brackets and the basic personal amounts, and does not include various

deductions and credits that depend on individual circumstances. We see that the MTR schedule is step-wise progressive, and that the ATR increases with income, reflective of an overall progressive rate structure. For example, an individual with taxable income of \$20,000 (approximately the average income of the bottom 50 per cent of tax filers in Alberta) has an ATR of about six per cent; at an income of \$40,000 (approximately equal to the median income of tax filers), the ATR is about 16 per cent. At an income of \$90,000 (approximately equal to the average income of the top 50 per cent of tax filers), the ATR is about 23 per cent. For an individual earning \$220,000 (approximately equal to the threshold to be in the top one per cent of tax filers in Alberta, the so-called one-percenters), the ATR is about 32 per cent. For an individual earning \$400,000 (approximately equal to the average income of the one-percenters), the ATR is about 40 per cent (Statistics Canada 2016).

**FIGURE 6 COMBINED FEDERAL AND PROVINCIAL MARGINAL TAX RATES (MTR) AND AVERAGE TAX RATES (ATR): ALBERTA 2019**

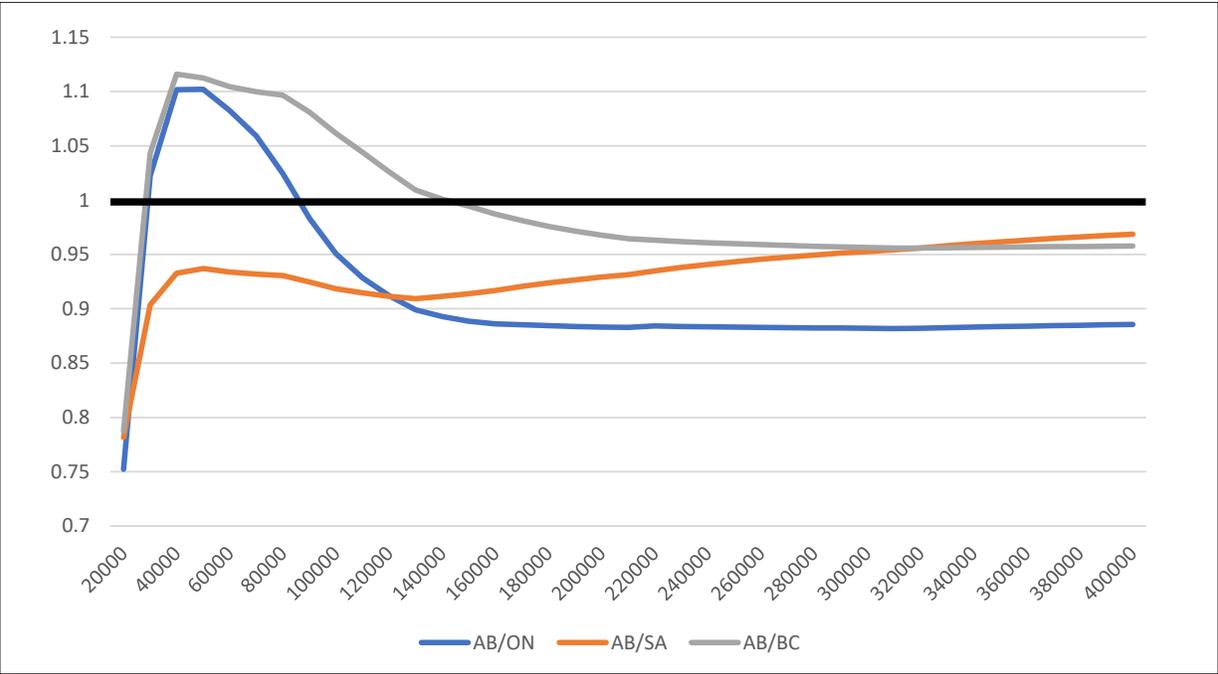


How does this compare with other provinces? Figure 7 shows the ratio of the ATR in Alberta to three other provinces at various income levels. If that ratio is less than one, the ATR in Alberta is less than the other province, and Alberta taxes at that income level are lower; if the ratio is greater than one, the ATR and provincial taxes are higher in Alberta. A key characteristic of the Alberta PIT is evident in the figure. While the ATR in Alberta is lower than in Saskatchewan for all income levels, and is lower than Ontario and B.C. for low- and high-income earners, for middle-income earners the Alberta ATR is higher. The reason for this is twofold: as discussed, the low Alberta ATR at lower incomes is due to the very high basic personal amount relative to other provinces, while the lower ATR at higher incomes is due to relatively lower MTRs at the high end. More specifically, for

incomes above about \$20,000 up to about \$90,000 in Ontario and \$150,000 in B.C. the ATR in Alberta is higher. The Alberta advantage on the PIT front is thus concentrated at the low and high ends of the income distribution; there is no Alberta advantage on the PIT for a wide range of middle-income earners. I will return to this in a discussion of a provincial sales tax below.

As discussed, in assessing the PIT as a source of government revenue we must consider both the efficiency and equity implications. And, as always, this relates to the magnitude of behavioural effects. It is not a drastic overstatement, though perhaps a bit reductive, to claim that while most of the economic action associated with tax policy happens at the top and bottom of the income distribution, most of the political action happens in the middle. By this, I mean that for the most part, the behavioural effects of middle-income earners are quite small. It is at the bottom and top of the distribution where behavioural changes are thought to be larger and of more concern.

**FIGURE 7 RATIO OF COMBINED FEDERAL AND ALBERTA ATR TO SELECTED OTHER PROVINCES: 2019**



In terms of the bottom of the distribution, the key issue is what economists call the extensive margin, which is the impact of the tax and transfer system on the incentive to enter or leave the workforce. It is beyond the scope of this paper to analyze various Alberta programs in this regard. Suffice it to say that the high basic personal exemption is viewed as a positive feature of the Alberta PIT.

Of more relevance for the topic at hand is the Alberta PIT as it relates to the top of the distribution, which addresses the overall progressivity of the tax system over the middle-to-higher-income range. This leads to a discussion of the flat tax.

Prior to 2001, provincial PIT was calculated using the tax-on-tax approach, as a percentage of federal PIT payable. This meant that provinces were locked into the configuration of federal tax brackets, with the associated implications for the progressivity of the PIT.<sup>16</sup> In 2001, as a part of the Tax Collection Agreement, the provinces were able to impose a tax on income directly. The provinces quickly moved to adopt their own tax rates and brackets. In short order, a relatively wide variance of tax rates and brackets emerged across the provinces, presumably in keeping with differences in the economic environment and the political and social values of the electorate. Alberta was unique in this regard in that beginning in 2001, it imposed a simple flat tax rate of 10 per cent on income over the (relatively high) basic personal amount. This ended in 2015, when the Progressive Conservative government tabled a budget introducing two new tax brackets for incomes over \$100,000. The PCs called an early election, in large part to obtain a mandate for their budget. They were defeated by the NDP, which subsequently introduced the current five-bracket regime, fully effective in 2016.

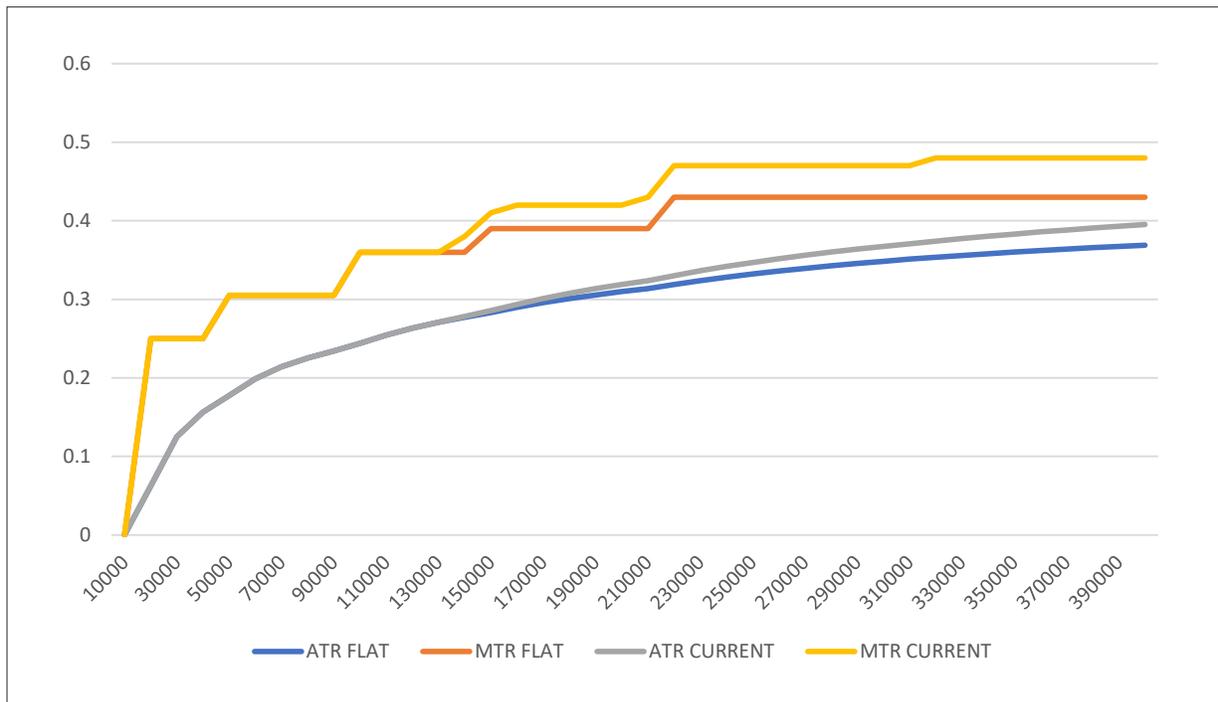
For many, the Alberta flat tax was, and perhaps aspirationally still is, the very embodiment of the so-called Alberta Advantage. It is therefore natural to examine some of the issues that arise in the context of returning to the flat tax, and in cutting top marginal income rates in general.

Figure 8 shows the combined (provincial plus federal) MTR and ATR under the current system and the implementation of a 10 per cent flat tax in Alberta. As above, this reflects only the statutory rate schedule and the basic personal exemption (which is presumed to remain the same), and not various credits and deductions that may be available depending on individual circumstances. As shown, there is no difference between the two regimes for incomes up to the top of the existing first bracket of about \$130,000. As indicated above, Alberta is unique in that it has a very large first bracket at which the 10-per-cent rate applies. Canada Revenue Agency data suggest that the existing 10-per-cent rate applies to about 90 per cent of Alberta taxpayers (Statistics Canada 2016). Thus, the vast majority of taxpayers in Alberta already face a flat tax! It of course follows that only 10 per cent of Alberta tax filers would benefit from a return to the flat tax, and that they would be at the upper end of the income distribution, with average incomes over \$200,000. And of course, the benefits would be concentrated largely on those at the upper end of the upper end of the income distribution (the one-percenters).

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<sup>16</sup> Many provinces imposed surtaxes on high incomes under the tax-on-tax system.

**FIGURE 8 COMBINED FEDERAL AND PROVINCIAL MARGINAL TAX RATES (MTR) AND AVERAGE TAX RATES (ATR): ALBERTA 2019 AND FLAT TAX**



What about the revenue implications? Media announcements made by the government suggest that a return to the flat tax would result in a reduction in government revenue of about \$700 million per year (Mertz 2019). I have not been able to obtain an explanation for how this figure was determined. And so I undertake my own analysis using Statistics Canada’s Social Policy Simulation Database and Model (SPSD/M), adjusted for provincial government forecasts of PIT revenues for 2019/20.<sup>17</sup>

As emphasized throughout, it is important to understand the distinction between mechanical and behavioural effects in assessing the revenue implications of a tax cut. The mechanical calculation is straightforward accounting, presuming no behavioural changes in the underlying tax base. The behavioural calculation takes account of changes in the tax base (in the case of a tax cut, the growth in the tax base) as people respond to the change in the tax rate. As with the corporate tax, there are two basic behavioural margins thought to be important on the personal tax front. The first concerns the real effects of a tax cut, such as an increase in labour supply and/or in-migration as people potentially move to Alberta in response to the lower tax rate. The second behavioural margin involves income shifting, or tax planning. One aspect of this is the use of various tax planning techniques to shift income between jurisdictions in response to differences in tax rates between provinces and/or countries. Another aspect is converting income into tax-sheltered income that is taxed at a lower rate. Of course, there is also scope for outright tax evasion, which is illegal. As discussed above, all of this is captured in the metric of the elasticity of taxable income.

<sup>17</sup> This, and subsequent analysis in this paper, is based on Statistics Canada’s Social Policy Simulation Database and Model (SPSD/M). The assumptions and calculations underlying the simulation results were prepared by me and the responsibility for the use and interpretation of these data is entirely mine.

The consensus among economists is that the elasticity of taxable income for most of the income distribution (the 99 per cent) is quite low, and indeed is not statistically indistinguishable from zero in most studies.<sup>18</sup> However, at the top of the distribution (the one per cent), the elasticity of taxable income is higher. This is thought to be largely due to tax planning opportunities at higher incomes rather than real effects. Thus, the allusion above to much of the economic action in response to tax changes happening at the top of the distribution.

The range of estimates of the elasticity of taxable income in the economic research is quite wide, varying across jurisdictions and income levels, and by the statistical methodologies employed (Saez, Slemrod and Giertz 2012). Milligan and Smart (2015, 2016) undertake a recent Canadian study, using data on the changes in top income shares and top marginal tax rates in the provinces during the 1988-2011 period. They estimate an elasticity of taxable income for high-income earners (the one per cent) of about 0.70. Other studies of high-income taxpayers have found tax responses of similar magnitude.<sup>19</sup> Milligan's and Smart's (2015) estimate is based on differences in tax rates among provinces, and so may reflect taxpayers' ability to shift income interprovincially in Canada. In subsequent research, Milligan and Smart (2019) investigate this directly. And indeed, they find that much of the responsiveness of the tax base of high-income earners in Canada is due to interprovincial income shifting.

With this in hand, I undertake some rough calculations of the mechanical and behavioural revenue effects of a return to the flat tax. I make the following admittedly rough assumptions which are reflective of my reading of the research in this area. I assume that there are no behavioural effects on the part of middle-income taxpayers in the 12- and 13-per-cent brackets; all of the behavioural action happens for taxpayers in the 14- and 15-per-cent brackets, which requires income over about \$210,000; this roughly coincides with the threshold for the top one per cent of taxpayers in Alberta (Statistics Canada 2016). I assume an elasticity of taxable income for the top brackets of 0.70, as per Milligan and Smart (2015).

In terms of a straightforward mechanical calculation, SPSD/M simulations suggest that the imposition of a 10 per cent flat tax would lead to a reduction in provincial PIT revenues of about 10 per cent. The government forecast of provincial PIT revenue for 2018/19 from the February fiscal update is \$12.14 billion. A 10-per-cent reduction therefore amounts to a mechanical reduction in revenue of \$1.214 billion annually. But, of course, this ignores the offsetting behavioural effects, which suggest that there will be an expansion of the tax base due to the tax cut on high-income earners. Using Milligan's and Smart's elasticity of taxable income of 0.70, I calculate that the 10 per cent mechanical reduction in revenue is offset by a behavioural increase of about 3.9 per cent,<sup>20</sup> or about

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<sup>18</sup> See for example Milligan and Smart 2015, 2016.

<sup>19</sup> For example, 0.84 is the average of top income elasticities in research surveyed in Chetty 2012.

<sup>20</sup> Adjusting Milligan and Smart (2015) to express things in percentage terms, the formula for the behavioural offset as a percentage of current PIT revenue is  $mea(t^p/(1-t^p-t^f))$ , where  $m$  is the mechanical percentage change in revenue,  $e$  is the elasticity of taxable income,  $t^p$  is the top provincial tax rate,  $t^f$  is the top federal tax rate, and  $a=z/(z-b)$ , where  $z$  is the average income of individuals in the top tax bracket and  $b$  is the threshold to be in the top bracket. I use data from Statistics Canada High Income Filers database to determine  $a$ .

\$474 million, for a total reduction in revenue of about \$740 million per year, which is very close to the \$700-million figure reported in the media.

As indicated, a return to the flat tax disproportionately benefits high-income earners. Some might consider this to be an equity loss on the distributional front. There are, of course, efficiency gains. Return again to Table 2 from Dahlby and Ferde (2016). Their MCF calculation for the PIT of \$1.40 for Alberta is in fact for the top bracket. This means that a \$1 decrease in PIT from top-bracket taxpayers yields additional economic benefits, over and above the dollar reduction in tax revenue, of 40 cents. This reflects the behavioural effects of a tax cut discussed above.

How can we evaluate the trade-off between the efficiency gain and the equity loss of such a tax cut? Economists have studied this issue extensively, with substantial advancements both methodologically and empirically over the last decade or so, under the heading of optimal labour income taxation.<sup>21</sup>

Modern optimal tax research addresses the equity-efficiency trade-off head on. The research emphasizes three metrics. These three metrics are sufficient to determine the optimal labour income tax rate on any tax bracket in a way that reflects the equity-efficiency trade-off. The research has focused in particular on the optimal marginal tax rate on the top income bracket, and that will be my focus here.

The first metric is the elasticity of taxable income, discussed above throughout. This metric captures the behavioural effects of taxpayers, and therefore reflects efficiency considerations. The higher the elasticity of taxable income, the greater the efficiency costs associated with taxing high-income earners (the excess burden), and therefore (all else equal) the lower the optimal top marginal tax rate.

The second metric reflects the distribution of income within the top tax bracket itself, and measures the extent to which the distribution of income among high-income earners is skewed. In a nutshell, the less skewed the distribution of income among high-income earners, the more top-bracket earners are clustered or concentrated close to the top-bracket threshold, and the lower (all else equal) the optimal top marginal tax rate.

These first two metrics can be estimated using existing data, although as discussed above, it is important to understand that there will be variation across different studies and it is important to consider a range of estimates. The final metric is the tricky one, and explicitly incorporates equity considerations. It is the *social welfare weight* that society places on a small increase in the well-being of top-bracket earners relative to everyone else. This metric encapsulates a value judgment on the part of the government regarding the weight it places on the incremental well-being of high-income earners relative to the rest of the population.

We can shed some light on the factors that go into this social welfare weight. It can be thought of as the product of two things. The first is the value that top-bracket earners themselves place on an extra dollar of income, based on their own preferences. It is

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<sup>21</sup> For an overview of the literature, see Piketty and Saez (2013).

typically thought that the value that an individual places on a small increase in income declines with income. Thus, for example, if your income is \$5,000, you would place a relatively high value on an extra \$100 in income, and would be willing to put some effort into earning it. If your income is \$315,000, which would put you in the very top tax bracket in Alberta, and well above the threshold of the one per cent, you would place a relatively low value on an extra \$100 in income. Indeed, it could be argued that at that income level, you place a value very close to zero on an extra \$100 in income – i.e., it wouldn't be worth the effort to earn it. This is referred to in economics as the declining marginal utility of income – the impact of a small increase in income on well-being declines as income increases.

For example, a study by Layard, Nickell and Mayraz (2008) estimates that a one percent increase in income is associated with a 1.26 percent decline in the marginal utility of income. The median tax filer in Alberta earns approximately \$40,000, while the average income of a tax filer in the top 1 percent is 10 times higher, at about \$400,000. The Layard, Nickell and Mayraz estimate suggests that the marginal utility of income for a median tax filer is therefore about 18 times higher than for an average tax filer in the top 1 percent.<sup>22</sup>

The second thing that goes into the social welfare weight is the valuation that society, as a collective represented by its government, places on the incremental well-being of high-income earners relative to everyone else. This is clearly highly subjective, and is manifested in the policy choices made by the government, reflecting in some way society's preferences for redistribution. As a general rule, economists think that society is, at least to some extent, inequality averse; that is, society values some degree of redistribution. While it is difficult to measure the degree of inequality aversion in any objective sense, it seems reasonable as a general statement to presume that society places a lower weight on an incremental (this word is important!) increase in the well-being of one-percenters relative to the rest of the population.

Some argue that these two factors – the declining marginal utility of income and inequality aversion on the part of society – together suggest that the social welfare weight placed on an incremental increase in income earned by high-income taxpayers in the top tax bracket is very small, and indeed might reasonably be approximated by zero! In this instance, a case can be made for choosing a top marginal tax rate that maximizes the revenue raised from the top tax bracket. This is the point Diamond and Saez (2011) make and is the academic justification behind recent calls for fairly substantial increases in the top marginal tax rate that are resonating to various degrees around the world.

What does all of this suggest for how we should think about a move back to a flat tax of 10 per cent in Alberta? I answer this question in two parts. First, using standard techniques from the optimal income tax literature, I undertake a rough calculation of

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The authors assume a constant elasticity functional form for the indirect utility function. The ratio of marginal utilities of income is then calculated as  $(I_M/I_H)^u$ , where  $I_M$  is median income,  $I_H$  is the average income of the 1 percent, and  $u$  is the elasticity of the marginal utility of income. Their estimate of  $u$  is 1.26 with a 95 percent confidence interval between 1.16-1.37. This gives  $(40000/400000)^{1.26}=18.2$ .

the revenue-maximizing top marginal tax rate in Alberta.<sup>23</sup> Using the elasticity of taxable income from Milligan and Smart (2015), by my calculation, the revenue-maximizing provincial top bracket marginal tax rate in Alberta is about 28 per cent. This is clearly much higher than the current top rate of 15 per cent; coupled with the top federal rate of 33 per cent, this would substantially increase the top marginal tax rate on Alberta taxpayers from 48 per cent to 61 per cent!

Another way of thinking about this is as follows. The revenue-maximizing top marginal tax rate places a zero social welfare weight on an incremental increase in income accruing to top-bracket taxpayers. By my calculations, the existing Alberta tax system does not do this, as the current top tax rate of 15 per cent is well below the theoretical revenue-maximizing rate of 28 per cent. So consider the following exercise: presuming that the tax rate is chosen optimally from a social welfare point of view, what value of the social welfare weight on top-bracket earners is implied by the current tax system, and what would the change in the implied weight be if we moved to a flat tax? I calculate that a movement to a flat tax would reflect an increase in the implied social welfare weight on high-income earners of 23 per cent relative to the current implied weight. This means that the social values embodied in a move to a flat tax, which reflect the implied equity-efficiency trade-off, would be consistent with increasing the social welfare weight on high-income earners relative to the rest of the population by 23 per cent.<sup>24</sup>

To be clear, I am not arguing for an increase in the top marginal tax rate in Alberta to the revenue-maximizing rate; the theoretical revenue maximizing rate is sensitive to the elasticity of taxable income, which is somewhat uncertain. Having said that, the analysis does suggest that an increase in the top rates may be defensible; at the very least, it suggests that maintaining some degree of marginal rate progressivity may be considered desirable from an equity-efficiency trade-off perspective. Rather, my point is that any increase or decrease in the top bracket marginal tax rate should be analyzed from this perspective. In particular, those who argue for a reduction in the top marginal tax rate, as in a return to a flat tax, should do so with a full recognition of the nature of the equity-efficiency trade-off such a move implies.

## A PROVINCIAL SALES TAX: THE LEAST COSTLY TAX OF ALL!

And so a sales tax.

Alberta is, of course, the only province in the country without a provincial sales tax (PST). Perhaps arguably, the simple reason for this is that the province has not needed one; resource revenues from royalties have allowed the province to avoid levying a sales tax.

<sup>23</sup>

Adapting Piketty and Saez (2013) (see also Milligan and Smart 2015) to account for given federal taxes, the formula for the optimal top provincial marginal tax rate on labour income is  $t^p = (1-g)(1-t^f)/(1-g+ea)$ , where  $g$  is the marginal social welfare weight placed on top-bracket earners relative to the average of the rest of the population and the other variables are defined in footnote 24. The revenue maximizing provincial tax rate is determined by setting  $g=0$ .

<sup>24</sup>

The formula for the marginal social welfare weight implied by the current tax system is determined by setting the optimal tax rate in the formula in the previous footnote equal to the actual tax rate and solving for  $g$ , which gives  $g = 1 - eat^p / (1 - t^p - t^f)$ .

For example, from 1993 to 2018, PST revenue accounted for about 23 per cent of own-source revenues in the other provinces. Over the same period, natural resource revenues accounted for about 27 per cent of own-source revenues for Alberta.

The PST is colloquially referred to by some in an Alberta context as the “political suicide tax”.<sup>25</sup> Why would any government commit political suicide unless it has to? As suggested above, and borrowing from Nobel Prize-winning poet Bob Dylan, “the times they are a-changin’.”

To be clear, by PST I mean a value-added tax harmonized with the federal GST; i.e., a harmonized sales tax (HST). As has been discussed elsewhere, non-value-added taxes, like the retail sales taxes in B.C., Saskatchewan and Manitoba, end up inevitably imposing taxes on business inputs and taxing investment with the associated high-efficiency costs (Bazel and Mintz 2013).

Many economists, including myself, have argued for the introduction of a PST in Alberta for some time. Much of the formal analysis has focused on the introduction of a PST in a revenue-neutral context, with an offsetting reduction in personal or corporate income taxes. For example, almost 20 years ago, I analyzed a nine per cent Alberta PST that would completely replace the provincial PIT at that time (McKenzie 2000). More recently, Bazel and Mintz (2013) examined an eight per cent Alberta PST. They show that the revenue from the PST could be used to triple the basic personal amount, which would remove the majority of families in Alberta from the provincial PIT roll altogether, and still generate enough revenue to lower PIT rates by one percentage point and the CIT rate by 3.5 percentage points.

The arguments in favour of a sales tax as part of the tax mix in Alberta are compelling from both an efficiency and equity perspective. Return again to Table 2, where we see that in terms of the marginal cost of public funds (MCF) estimated by Dahlby and Ferde (2016), from an efficiency perspective a PST is the least costly tax of all, generating the lowest efficiency costs. This is because it is levied at a uniform rate across a broad spectrum of goods and services, and is therefore relatively non-distortionary, with low associated behavioural effects. This view of sales taxes (again, of the HST type) as the least costly tax of all in terms of efficiency is almost universally held by economists.

It is often argued that a sales tax is regressive, and therefore not attractive from an equity perspective, because lower-income households pay a greater percentage of their annual income in sales taxes than higher-income households. While this is true, one way of dealing with this would be to introduce a refundable PST tax credit at the provincial level, similar to the federal GST credit, which would provide relief for lower-income households. Moreover, economists argue that consumption is actually a better measure of an individual’s standard of living than current income. For example, consumption out of inherited wealth, or offshore income not reported to tax authorities, is subject to sales tax but not income tax. Finally, as Tombe (2018) emphasizes, an aging population will put

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<sup>25</sup> See for example “It’s Time for Alberta to Bite the Bullet and Impose a Sales Tax,” Editorial, *The Globe and Mail*, April 30, 2018. Available at <https://www.theglobeandmail.com/opinion/editorials/article-globe-editorial-its-time-for-alberta-to-bite-the-bullet-and-impose-a/>

substantial pressure on health-care expenditures going forward. Sales taxes as a share of total income tend to increase with age (Crisan, McKenzie and Mintz 2015). Financing more of these rising expenditures by way of a sales tax could thus be viewed as being intergenerationally equitable.

Finally, much has been made about the volatility of resource revenues in Alberta. Landon and Smith (2010) examine the volatility of own-source tax revenues in Alberta from 1981-2007. They use a common measure of volatility called the coefficient of variation.<sup>26</sup> In terms of real per capita revenue, they calculate a total coefficient of variation for own-source revenues of 15.4. For resource revenue, the coefficient is 46.6, for the PIT 10.2 and for the CIT 24.2. If Alberta had a PST, the coefficient of variation would be 12.0. As such, the introduction of a PST would do much to reduce the volatility of government revenue in Alberta.

While there is much to be said for a pure revenue-neutral shift toward a PST in Alberta, as discussed previously, I do not take a strong stand on this. As McKenzie (2000) and Bazel and Mintz (2013) argue, introducing a PST in Alberta would certainly generate revenue that could be used to reduce other taxes in a revenue-neutral manner. Expanding further on this, consider a two-percentage-point reduction in the marginal tax rates on the first three tax brackets in Alberta (see Table 3), maintaining the top two tax rates on income earners above the one-per-cent threshold (approximately \$210,000) at the current levels. As discussed above (see Figure 7) middle-income Albertans are not currently in an advantageous position relative to some other provinces (B.C. and Ontario) in terms of the PIT. It might be argued that this in part reflects the absence of a sales tax in Alberta. As such, it might further be argued that some of the revenue raised from a sales tax should be used to lower personal income taxes on middle-income earners.<sup>27</sup> SPSPD/M simulations suggest a mechanical cost of such a cut of about \$3 billion. As discussed above, there is not likely to be a significant behavioural offset in this income group. As also discussed above, a four-percentage-point cut in the CIT rate, accounting for long-run behavioural effects, may cost about \$740 million per annum in forgone revenue. Thus, a very rough estimate of the forgone revenue from cutting personal and corporate tax rates in this way would be a little under \$4 billion. Based on Bazel and Mintz (2013), a rough calculation suggests that a five per cent Alberta PST would generate about \$5 billion in revenue, enough to cut both PIT and CIT rates and still generate revenue to address the deficit and/or spending priorities.

Of course, many other configurations are possible. My point is that the introduction of a PST in Alberta would give the province access to a very efficient and non-volatile source of tax revenue, vastly improving the tax mix regardless of how the revenue is deployed. Distributional concerns could be allayed by coupling the introduction of a PST with a refundable tax credit aimed at lower-income Albertans and a middle-class PIT rate cut.

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<sup>26</sup> The coefficient of variation is the ratio (multiplied by 100) of the standard deviation of the differences from an exponential trend to the average value of the series.

<sup>27</sup> Of course a reduction in the middle income tax rates would also benefit high income earners in higher tax brackets.

What about the political suicide thing? In a forthcoming essay in a volume devoted to a discussion of a sales tax in Alberta, I recall an encounter I had with former premier Ralph Klein in the late 1990s (McKenzie, forthcoming 2019). He indicated that he wasn't actually philosophically opposed to such a tax, and indeed understood the economic arguments. He recognized, however, that there was considerable opposition to the idea in Alberta, and could not envision a scenario whereby it could be implemented in the near future. He did indicate, however, that if a "parade" were to begin in support of such a tax, he would be willing to "get out in front of it." For the reasons discussed throughout, there is, in my view, reason to believe that such a parade may be starting.

## **OTHER SOURCES OF REVENUE: KEEP ALL OF THE CARBON TAX (BUT MAKE IT REVENUE NEUTRAL)**

There are, of course, other sources of revenue aside from the PIT, the CIT and a PST. From Figure 3, we see that the provincial property tax is projected to generate \$2.5 billion in 2019, the fuel tax \$1.4 billion and the carbon tax \$1.3 billion. It is evident from Figure 1 that as a totality, other revenue as a share of GDP in Alberta has in fact declined over the last two decades. This suggests scope for adjustments to a myriad of other revenue sources. It is beyond the scope of this paper to analyze each of these revenue sources in detail. However, given its prominence, it is perhaps useful to discuss some issues associated with the carbon tax.

It is important to distinguish between two ways of looking at a carbon tax. The first is as a source of government revenue alone, the second is as a corrective tax intended to encourage a reduction in carbon emissions and reduce the costs associated with climate change.

When viewed as a source of revenue alone, ignoring the environmental impact, a carbon tax is not an attractive tax relative to alternatives. The carbon tax is sometimes referred to as a "tax on everything", but this is misleading. To the extent that "everything" employs fossil fuel inputs, to some extent it is a tax on everything, but the tax clearly falls most heavily on carbon-intensive goods; indeed, that is the whole idea. As such, it changes relative prices between goods based on their implicit carbon content. From a pure revenue-raising/tax-design perspective, ignoring environmental considerations, this is not a good thing. By changing relative prices between goods based on their carbon content alone, a carbon tax distorts economic behaviour and generates excess burdens with the associated efficiency costs. A true "tax on everything", like a sales tax, would be a much more efficient way to raise revenue than a carbon tax, because it is imposed at a uniform rate on all (or most) goods and services. This is more efficient from a revenue-raising perspective as it does not alter relative prices to the same extent. Thus, if the government simply wants to raise a given amount of revenue via either a carbon tax or a sales tax - and again, ignoring the implications for climate change - a sales tax wins hands down!

But of course, that is not why we impose a carbon tax. The whole point is precisely to distort economic behaviour away from carbon-intensive activities because these activities generate negative externalities. Negative externalities exist when the

consumption (and/or production) of a good imposes costs on the economy over and above the private costs borne by individuals and businesses. Thus the social cost of consumption (or production) is greater than the private cost. As a result, individuals over-consume (and firms over-produce) goods that generate negative externalities. The consumption and production of carbon-intensive goods result in a negative externality in the form of the costs associated with climate change. A carbon tax internalizes these costs. The whole idea is to in fact change economic behaviour by lowering the consumption and production of carbon-intensive goods. From the perspective of the environment – this time ignoring the efficiency implications from a revenue-raising perspective – a carbon tax wins hands down!

So carbon taxes are attractive as an instrument to address climate change, but not as a way to raise government revenue. But of course, they do generate revenue, and the question is what to do with it.

One view is that since we collect it, we may as well spend it. According to this view, the revenue from a carbon tax is in a sense “free”, an added bonus over and above the beneficial impact on the environment. This is a fallacy. As economists never tire of pointing out, there is no such thing as a free lunch. There is an extensive literature which shows carbon tax revenue is not free in any sense (Bovenberg and Goulder 1998).<sup>28</sup> Rather, it imposes costs on the economy along with the beneficial impact on the environment; as indicated above, from a pure revenue-raising perspective, a sales tax wins hands down over a carbon tax. One reason for this is that a carbon tax interacts with other distortionary taxes, like taxes on labour income, capital, etc. This exacerbates the distortions and excess burdens associated with these other taxes; this is called the tax interaction effect.

It is beyond the scope of this paper to explore this issue in more depth;<sup>29</sup> however, to reiterate, as a pure revenue generator the carbon tax is not a good tax. But it is a good tax from an environmental perspective. And so what to do? Don't make it a revenue generator of course! By this, I simply mean offset any revenue generated by the carbon tax with reductions in revenues from other taxes – make the carbon tax revenue neutral by lowering personal income taxes and/or corporate income taxes appropriately.

Some people argue that this is nonsensical, that if the government needs the revenue from the carbon tax to spend on some program or to lower the deficit, they may as well just use it. This misses the point, and is in fact logically incorrect from an economic perspective. The government always has the option, the opportunity, to raise the required revenue in some other way that is more efficient (for example, a sales tax). Recall the above discussion regarding the marginal cost of public funds (MCF) – the full economic cost of raising one more dollar in tax revenue. If the marginal benefit of spending another dollar of revenue on some activity is greater than the MCF of raising that dollar, then from a cost-benefit perspective the expenditure should take place. But, as we have seen, the MCF varies between taxes. So what MCF should we use when

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<sup>28</sup> In an Alberta context, see McKenzie (2016).

<sup>29</sup> Ibid.

making this assessment? I would argue that it should be the MCF associated with the most expensive source of revenue, and we have seen that the CIT is the costliest tax of all. This is because the government always has the option, the opportunity, of lowering the CIT rather than spending the money – the opportunity cost of one more dollar spent on some government program, or on lowering the deficit, or on any government activity, is the forgone gain from lowering the costliest tax of all. Thus, the best use of carbon tax revenue from an efficiency perspective is to lower the CIT rate in a revenue-neutral manner. Then, if the government wants to spend money on some new program, or lower the deficit, or whatever, it should raise the money in the most efficient and equitable way possible (raising less costly taxes, cutting other spending or some combination of both). There is no logical economic argument that justifies increasing (or decreasing) the size of government just because there is (or isn't) a carbon tax.

The UCP government eliminated the carbon tax in Alberta on June 1, 2019. Well, sort of. In point of fact, the government eliminated only part of the carbon tax, not the whole thing. The part of the carbon tax imposed on fuel and natural gas consumed by individuals and many businesses has been eliminated; however, the government has maintained the carbon tax on large emitters, though it has indicated that it will lower the rate from the current \$30 a tonne to \$20. The part of the carbon tax that will remain in place – they now call it a compliance levy – applies to about half of Alberta emissions and will generate about \$600 million in net revenue, compared to \$1.4 billion under the previous tax.

The government has earmarked the funds from the compliance levy to subsidize green technology initiatives. From a political point of view this may be attractive, but from an economic perspective it is a mistake. It may (or may not) be sensible to subsidize such technology. But tying the level of such funding to the amount generated by the carbon tax/compliance levy makes little economic sense because it is unlikely that the proper amount to spend on subsidizing these technologies is in any way related to the amount of money raised by the compliance levy; it may be too high or too low. Earmarking taxes in this manner is not generally considered to be best practice from an economic perspective.

Perhaps more importantly, because of the (partial) elimination of the Alberta carbon tax, the so-called federal backstop carbon tax will now be applied to Alberta (though at this point not on large emitters). And so the province will simply forgo the revenue, transferring it to the federal government. While under the federal government program the revenue will be returned to Albertans on an equal per capita lump sum basis, this does not eliminate the distortions associated with the carbon tax discussed above. There are better things that can be done with the money than funnelling it through the federal government to be handed back as lump sum payments. A better option would be to keep the money in Alberta in the first place. The first best choice would then be to use the money to fund reductions in more distortionary taxes, but barring that, lowering the deficit or even financing priority expenditures would be better than simply giving the money to the federal government to be recycled back to Albertans in a lump sum manner.

## WHAT ABOUT RESOURCE REVENUES?

Given the prominence of resource revenue in the Alberta revenue structure (in the 2018/19 forecast to account for 11 per cent of total revenue), what can we say about potential changes to the structure of resource royalties? In a word, nothing.

A disclosure – I was a member of the royalty review panel appointed by former premier Ed Stelmach in 2007. Premier Rachel Notley appointed another panel in 2016. As a result of these two panels, the royalty structure in Alberta has been reviewed in some detail over the last 12 years and it is well beyond the scope of this paper to revisit the issues that arise in this regard.

I will, however, make a few additional observations on the general role of resource revenue in Alberta's big fiscal picture, building upon some points made previously. A recent paper by Kneebone and Wilkins (2018) examines 50 years of resource-based government budgeting in Alberta. They show that there has been a marked positive relationship between the non-resource revenue primary deficit and resource revenues. As discussed earlier, this reflects the tendency for governments to notch up spending (and the primary deficit) in response to higher resource revenues. Kneebone and Wilkins pin this on what they call the "fiscal illusion" associated with resource royalties. Fiscal illusion is the tendency for governments and citizens/taxpayers to systematically underestimate the true cost of publicly provided goods and services. In Alberta, fiscal illusion arises because resource revenues allow taxpayers to avoid, at least temporarily, the true cost of funding government expenditures. As Kneebone and Wilkins (2018, 10) state, the Alberta approach to fiscal policy "is consistent with the fiscal-illusion hypothesis: As the availability of resource revenues grows, governments in Alberta have found it easier to find political support for financing increases in program spending." This is reflective of the "don't worry, be happy" approach to budgeting discussed previously.

I have argued that one way for the government to get off the royalty roller-coaster is to introduce a PST, which is a much more stable source of revenue. Another would be to implement a systematic plan to save at least a portion of resource revenue. The economic research on the appropriate budgetary treatment of non-renewable resource revenues is conclusive in this regard: non-renewable resource revenues should be saved and converted into an enduring monetary asset. This is the well-known Hartwick rule, which argues that intergenerational equity considerations argue strongly for "monetizing" non-renewable resource wealth in a savings fund as it is extracted.<sup>30</sup>

To the extent that actions on the revenue front such as introducing a PST and maintaining the full carbon tax give rise to additional revenue, and actions on the expenditure front slow down spending growth, hopefully putting the province on a sustainable fiscal path, consideration should be given to saving some of the resource revenue. A first step would be to reinstitute the stabilization funds of the early 2000s, and then eventually to restore contributions to the Heritage Fund in some manner, even if just modestly.<sup>31</sup> This

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<sup>30</sup> Hartwick (1977).

<sup>31</sup> Equivalently resource revenue could be used to pay down provincial debt.

argument is all the more compelling given the uncertainty regarding the province's ability to extract all of its resource wealth in the future, which would essentially leave a valuable asset stranded.

## CONCLUDING REMARKS

In this paper, I have examined various revenue sources for the government of Alberta. I take a first-principles approach, viewing the question through the standard welfare economics lens of efficiency and equity.

In sum, I argue for the following:

1. Cut the corporate income tax rate as planned.
2. Keep the *full* provincial carbon tax.
3. Maintain the progressive rate structure in the personal income tax (no flat tax), but consider a middle class personal income tax cut.
4. Impose a harmonized provincial sales tax.

To the extent that these changes, coupled with reforms on the expenditure front, place the province on a sustainable fiscal path, consideration should be given to reintroducing systematic contributions to a stabilization fund and then, eventually, the Heritage Fund.

The economic environment going forward will, in my view, be very different than what the province has faced historically – the Alberta of the future is very unlikely to look like the Alberta of the past. Returning to fiscal sustainability will require some choices on both the revenue and expenditure fronts. The types of changes to the revenue regime discussed above would, in my view, go some way to implementing a tax system that appropriately balances efficiency and equity considerations.

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