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# The High Cost of Raising Provincial Tax Revenues Has Gotten Even Higher

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# The High Cost of Raising Provincial Tax Revenues Has Gotten Even Higher

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## EXECUTIVE SUMMARY

Households and firms' responses to higher tax rates alter the volume and the allocation of land, labour and capital in the economy, reducing our income and consumption opportunities. These economic losses from raising tax revenues have increased for provincial governments across Canada in the last decade with the problem being especially acute in Newfoundland and Labrador, Ontario and British Columbia. However, by lowering personal and corporate income tax rates and shifting more of the tax burden to a sales tax harmonized with the federal GST, the provinces could lower the economic cost of raising tax revenues.

Taxpayers' responses to higher tax rates adversely affect the economy. When rates go up, people are less inclined to save for the future because they must pay higher taxes on interest and dividends, and workers react by avoiding overtime and retiring early. When returns on investment generate higher taxes for corporations, they respond by cutting back their capital expenditures. Also, when people and companies can avoid paying a tax by shifting income or consumption to another jurisdiction with lower tax rates, the tax base will shrink as the tax rate goes up, reducing both income and consumption opportunities — an effect known as the deadweight loss from taxation. The larger the tax base, measured as a share of tax revenues, the greater the deadweight loss from a tax-induced decline in the tax base.

All of these reactions to higher tax rates change the volume and allocation of land, capital and labour in the economy. The societal cost from raising extra revenue through a small tax rate increase is called the marginal cost of public funds (MCPF). It can be used to determine which taxes are causing the greatest welfare losses and to measure the gains from shifting the tax burden from the high-cost sources of tax revenues to those that impose a lower deadweight loss. Public projects should use the MCPF in doing a cost-benefit analysis, comparing the project's benefits with the welfare loss from financing the project through higher taxes. The more reactive household and business decisions are to tax rates, the greater the MCPF.

When sales taxes are applied to a wide range of goods and services, people are limited by how much they can change their spending patterns to avoid paying those taxes. Thus, revenue is generated with lower detrimental economic effects than those created by increased personal and corporate income tax rates.

Provinces could reduce the problems created by the public's incentive to avoid paying taxes by both lowering their personal and corporate income tax rates and moving the tax burden over to a general sales tax.

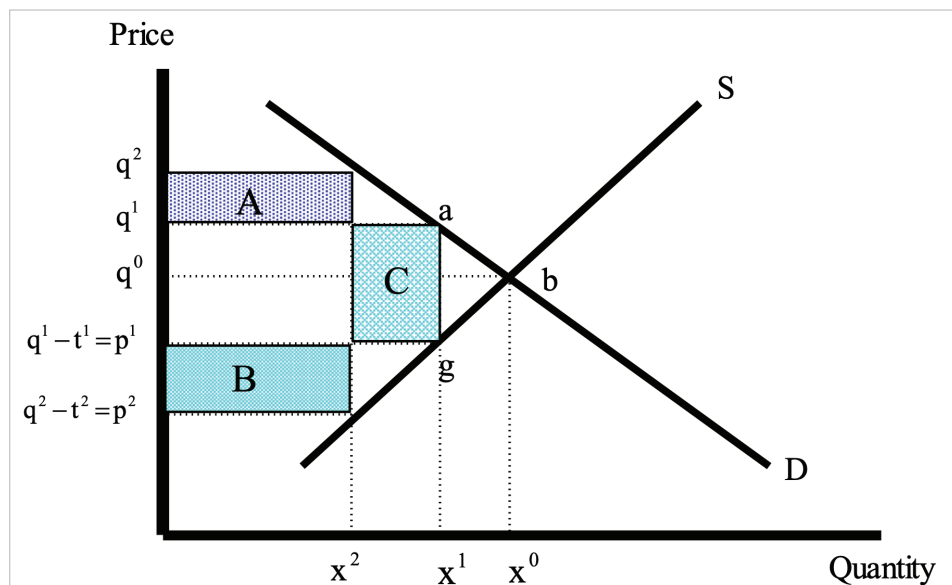
Taxes change our incentives to work, save, spend and invest. Households reduce purchases of taxed goods and services and switch to cheaper alternatives. Higher taxes on interest and dividends reduce incentives to save for the future. Firms lower their capital expenditures with higher taxes on returns on investment. Workers avoid overtime and decide on early retirement when faced with higher marginal income tax rates. These responses by households and firms change the volume and the allocation of land, labour and capital in the economy, reducing our income and consumption opportunities. Economists refer to this as the excess burden and deadweight loss from taxation.

From this perspective, the cost of raising tax revenues is not just the money that is collected by the government, but also the loss from the distortion in resource allocation from a wide range of household and business decisions. The marginal cost of public funds (MCPF) is a measure of the cost to society in raising additional tax revenue through a small tax rate increase. It is equal to one plus the additional excess burden or deadweight loss from raising an additional dollar of revenue. See Dahlby (2008, 2020) on the concept and applications of the MCPF in setting fiscal policies.

The MCPF provides a guide for tax reform by indicating which taxes impose the greatest welfare losses in generating additional revenues. It can be used to measure the gains from shifting the tax burden from the high-cost sources of tax revenues to those that impose a lower deadweight loss. The MCPF also plays a crucial role in the cost-benefit analysis of public projects, by comparing the welfare loss from financing the project with the benefits of the project. If the MCPF is high, only projects with very high returns, or those that benefit low-income groups, should be funded.

The MCPF is greater the more responsive household and business decisions are to tax rates. General sales taxes that are levied on a wide range of goods and services limit households' ability to avoid paying those taxes by changing their spending patterns. On the other hand, when taxpayers can avoid paying a tax by shifting income or consumption to another jurisdiction with lower tax rates, the tax base will shrink as the tax rate is increased.

**Figure 1. The MCPF for an Excise Tax**



The intuition behind the MCPF can be explained using the familiar demand-and-supply model (Dahlby 2020, 109–110). Figure 1 shows the market demand curve,  $D$ , and the market supply curve,  $S$ , for a commodity  $x$ . In the absence of taxation,  $x^0$  units of the good would be produced and consumed, and the price of the good would be  $q^0$ . If a tax of  $t^1$  dollars per unit of  $x$  is imposed on the producers of this commodity, the consumer price would increase to  $q^1$ ; the price that producers receive would decline to  $p^1 = q^1 - t^1$ . The quantity of  $x$  produced would decline to  $x^1$ . The total tax revenue collected by the government would be  $R^1 = t^1 x^1$  or area  $q^1 a g p^1$ . The increase in the price paid by consumers would cause a reduction in consumer surplus equal to the area  $q^1 a b q^0$ , and the decline in the producer price would cause a loss of producer surplus equal to area  $q^0 b g p^1$ . The loss of consumer and producer surplus exceeds the revenue raised by the tax by the area of the triangle  $a b g$ , which is a measure of the excess burden of the tax.

Now consider the cost of raising additional tax revenue by increasing the tax rate to  $t^2$ . The consumer price increases to  $q^2$ , the producer price declines to  $p^2$  and output declines to  $x^2$ . The change in total tax revenue,  $\Delta R = t^2 x^2 - t^1 x^1$ , would be equal to shaded areas  $A + B - C$ . The reduction in the net output of the economy (the value of the lost output to consumers less the opportunity cost of the resources to producers) is given by the area between the demand and supply curves over the output range  $x^1 - x^2$ . This net output loss can be approximated by the area  $C$ .

The MCPF is equal to one plus the reduction in the value of the net output of the economy per dollar of additional tax revenue, which is called the marginal excess burden from the tax increase:

$$MCPF = 1 + \frac{C}{A + B - C} = \frac{A + B}{A + B - C}$$

Since  $A + B$  is the loss of consumer and producer surplus for a very small tax rate increase, the MCPF can also be interpreted as loss of consumer and producer surplus per dollar of additional tax revenue. This formula indicates that the MCPF is greater than one if the output of  $x$  declines. As Figure 1 indicates, area  $C$  will be larger (and therefore the MCPF will tend to be larger) when the reduction in output is larger or when the size of the initial tax distortion is larger.

The tax sensitivity of a tax base can be measured by the ratio of the percentage change in the tax base to the percentage change in the tax rate. This is referred to as the elasticity of the tax base. For example, if a 10 per cent increase in a tax rate causes the tax base to shrink, because of tax avoidance and/or tax evasion, by four per cent, the elasticity of the tax base is -0.4 (the negative sign indicates that a higher tax rate erodes the tax base).

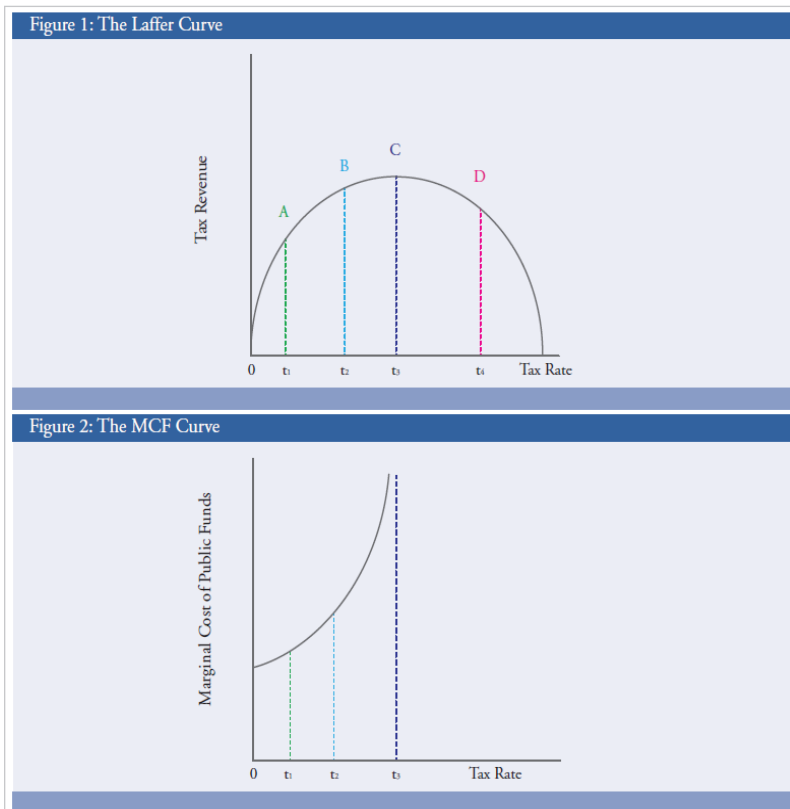
An alternative and closely related measure of tax sensitivity is the elasticity of tax revenue with respect to a tax rate. For example, if tax revenues only increase by six per cent when rates are raised by 10 per cent because the tax base shrinks by four per cent, then the elasticity of tax revenue is 0.6. A lower revenue elasticity means greater disincentive effects and a higher marginal cost of public funds. In fact, the MCPF is inversely related to the elasticity of tax revenue. For example, if the elasticity of tax revenue is 0.6, the MCPF is 1.67. That is, raising an additional dollar of tax revenue costs society \$1.67.

The MCPF depends not only on the elasticities of the tax base and tax revenues, but also on the tax rate because a higher tax rate means a larger wedge between the value of a good or service to the consumer and the cost of supplying it and therefore a large distortion in the allocation of resources. This relationship is illustrated by the so-called Laffer curve which indicates how tax revenue varies with a tax rate.

Figure 2 shows a conventional Laffer curve as an inverted U shape. Starting from zero, revenues increase as the tax rate increases, but at a slower rate because of tax avoidance and evasion. As the tax rate is increased, and revenue increases from *A* to *B*, the slope of a tangent line to the Laffer curve goes down, the elasticity of revenue declines and the MCPF increases. At the peak of the Laffer curve at *C*, with a tax rate that maximizes tax revenues, the tangent line is flat. This means a zero elasticity of revenue and the MCPF is infinite. Setting a tax rate that maximizes tax revenues means that raising the last dollar of revenue is prohibitively costly.

Furthermore, raising tax rates even further to *D* would reduce tax revenues. A tax cut would generate more revenues because the increase in the tax base would more than offset the lower tax rate. This means that governments should set the tax rate well below the revenue-maximizing tax rate, i.e., on the positively sloped section of the Laffer curve. Figure 2 shows how the MCPF increases with the tax rate and its relation to the Laffer curve.

**Figure 2. The MCPF and the Laffer Curve**



Source: Dahlby and Ferede (2011, 5)

A third factor that affects the MCPF is the size of the tax base because the larger the tax base, measured as a share of tax revenues, the greater the deadweight loss from a tax-induced decline in the base.

Table 1 shows calculations of the MCPFs for three main sources of provincial governments' tax revenues — corporate income tax (CIT), personal income tax (PIT) and provincial sales tax (PST). These calculations are based on estimates of the tax sensitivities of these tax bases in Dahlby and Ferede (2018) and tax rates and revenue shares from the Finances of the Nation (n.d.) database.

**Table 1. The Marginal Cost of Public Funds for Major Provincial Income Taxes in 2014 and 2024**

	2014			2024		
	Corporate Income Tax	Personal Income Tax	Provincial Sales Tax	Corporate Income Tax	Personal Income Tax	Provincial Sales Tax
NL	***	2.16	1.56	***	<b>8.23</b>	<b>1.82</b>
PE	***	2.80	2.13	***	2.80	<b>2.44</b>
NS	***	---	1.62	***	---	1.62
NB	***	2.12	1.42	***	<b>2.37</b>	<b>1.59</b>
QC	3.62	3.06	1.92	<b>3.32</b>	3.06	1.92
ON	2.89	2.20	---	<b>3.59</b>	<b>6.76</b>	---
MB	6.25	2.42	1.41	***	2.42	<b>1.34</b>
SK	***	2.38	1.41	***	2.27	<b>1.53</b>
AB	2.86	1.41	###	<b>1.74</b>	<b>1.77</b>	###
BC	2.36	3.88	---	***	<b>10.86</b>	---

Notes: Calculations based on 2014 tax rates and average revenue shares 2004 to 2013, 2024 tax rates and average revenue shares 2014 to 2023 and estimates of the tax sensitivity of the provincial tax bases in Dahlby and Ferede (2018).

\*\*\* Indicates that a tax rate increase would reduce long-run total tax revenues.

--- Indicates that the MCPF could not be computed because the tax rates were stationary and the tax base elasticities could not be estimated.

### The MCPF for Alberta was not calculated because the province does not levy a sales tax.

We begin by taking a closer look at the provinces' MCPFs in 2014. First, note that we cannot compute the MCPFs for the CIT in the four Atlantic Provinces and Saskatchewan because these provinces are on the downward-sloping sections of their Laffer curves. In other words, if these provinces lowered their CIT rates, their total tax revenues would increase in the long run. The main reason why these provinces are on the wrong side of the Laffer curve is that the CIT tax bases of the smaller provinces are more tax sensitive than in those of the larger provinces such as Ontario, Quebec and Alberta. (See Dahlby and Ferede 2018, 188, Figure 1 for a plot of tax sensitivity parameters versus the provinces' populations). This finding is consistent with the predictions of the tax competition literature that the elasticities of mobile tax bases are higher in smaller jurisdictions because it is easier to shift investments or profits to other jurisdictions.

Second, note that for the provinces where we can calculate the MCPF for the CIT, it is higher than the MCPF for the PIT. The exception is B.C. Its MCPF for the CIT is lower than in Ontario and Quebec because it had a lower tax rate in 2014 but also because the CIT represented a smaller share of B.C.'s tax revenues. Note as well, that in all provinces, the MCPFs for the PIT are higher than the MCPFs for the PSTs (in the provinces where they could be calculated). This is consistent with a large body of economic studies that indicates that broad sales taxes are less distortionary than corporate or personal income taxes. This is one of the reasons why many economists favour greater reliance on general sales taxes such as the HST.

Turning now to the MCPFs in 2024, we have colour-coded cells in green where the MCPFs have fallen since 2014 and in red where they have gone up. The reduction in the MCPF for the CIT in Alberta is largely due to the reduction in the CIT rate to eight per cent as well as a small reduction in its revenue share. The reduction in the MCPF for the CIT in Quebec is due to a 0.4-percentage-point reduction in its CIT rate. For Manitoba, the decline in the MCPF for the PST was due to a one-percentage-point reduction in its sales tax rate.

The MCPFs are higher in 2024 than in 2014 in 12 cells in Table 1. There have been increases in the MCPFs for the PITs in five provinces and these are especially large increases for Newfoundland and Labrador, Ontario and British Columbia, where there were significant increases in the top marginal tax rates. Finally, note that Manitoba and British Columbia have been added to the list of provinces on the wrong side of the CIT Laffer curve.

To conclude, there are three important takeaways from this review of the MCPFs for the provincial governments in 2024:

- With only a few exceptions, the provincial governments' costs of raising revenues from taxes have increased over the last 10 years. This deterioration is especially acute in Newfoundland and Labrador, Ontario and British Columbia;
- Many provinces would probably generate more tax revenues in the long run if they lowered their corporate income tax rates; and
- The cost of raising tax revenues could be reduced if provincial governments shifted more of the tax burden from corporate and personal income taxes to a general sales tax that is harmonized with the federal GST.



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## About the Author

**Bev Dahlby** attended St. Peter's College, the University of Saskatchewan, Queen's University, and the London School of Economics. He was Professor of Economics at the University of Alberta from 1978 to 2012 and Distinguished Fellow in Tax and Economic Growth at the School of Public Policy at the University of Calgary from 2012 to 2020. Dr. Dahlby has published extensively on tax policy and fiscal federalism and has served as a policy advisor to the federal and provincial governments, the World Bank, and the IMF.

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