FRASER RESEARCH BULLETIN

FRASER INSTITUTE

October 2022

# Measuring Progressivity in Canada's Tax System, 2022

by Jake Fuss and Nathaniel Li

## Summary

There is a common misperception in Canada that top income earners do not pay their share of taxes and that increasing taxes on this income group is an effective way to generate significant additional government revenue.

However, high-income families already pay a disproportionately large share of all Canadian taxes. Indeed, the evidence shows that the top 20 percent of income-earning families pay nearly two-thirds (61.4 percent) of the country's personal income taxes and more than half (53.0 percent) of total taxes.

In contrast, the bottom 20 percent of income-earning families are estimated to pay only 0.8 percent of all federal and provincial personal income taxes and 2.1 percent of total taxes in Canada. This is, in part, due to the progressivity of Canada's tax system, where the share of taxes paid typically increases as income rises.

Raising taxes on high income earners ignores the economic consequences of tax rate increases and the associated behavioural responses of taxpayers when faced with higher tax rates or new taxes. In response to a tax increase, many taxpayers will change their behaviour in ways that reduce their taxable income through tax planning, avoidance, or evasion that results in governments raising less revenue than anticipated.

Tax increases also reduce Canada's competitiveness with other industrialized countries, particularly the United States. Specifically, increasing taxes on top income earners makes Canada a less attractive place to live and to work for highly skilled people such as doctors, scientists, managers, and software engineers.

## Introduction

Raising taxes on upper-income earners is often proposed as a solution to generate additional tax revenue while ensuring all Canadians pay their share of taxes. The federal government used this focus on income distribution and taxes as part of its justification for a recent tax increase on upper income earners. Indeed, in 2016, the federal government added a new top federal income tax bracket, raising the top federal tax rate from 29 to 33 percent on income over roughly $200,000 (Blatchford, 2015). In recent years, some provinces have similarly boosted provincial income tax rates on upper-income earners.

However, this policy is largely based on misperceptions about the distribution of taxes paid by income groups in Canada. This short bulletin demonstrates that top income earners in Canada actually pay a disproportionate share of income taxes relative to other income groups, primarily due to the progressive nature of the country's tax system. Indeed, the current share of taxes paid by high-income earners greatly exceeds their collective share of income.

## Measuring the distribution of taxes

This bulletin calculates the share of taxes paid by different income groups using the Fraser Institute's Canadian Tax Simulator (2022), which incorporates data from Statistics Canada's SPSD/M program. Specifically, the simulator estimates the taxes that Canadians pay to federal, provincial, and municipal governments.

Although personal income taxes (PIT) are paid by individuals, the study examines data on families[1] because individual income is not the best indicator of each person's well-being. For instance, an individual may earn little or no income, while their spouse or partner is in the top 20 percent of income earners in Canada. Under these circumstances, the first person is considered to be a low-income earner if we only analyze individual income. In reality, that person's well-being is much higher than their individual income suggests because they are part of a family that is at the top end of the income distribution. For instance, someone with $30,000 in income that is married to another person with $200,000 in income would belong to a family that ranks among the top 20 percent of Canadian income earners. Put simply, family income is the best determinant of one's income group.

This bulletin reviews the current proportion of taxes that each income group pays. In other words, it compares total income earned to total taxes paid. Canadian families are divided into five groups (quintiles) based on their total income,[2] with each group containing 20 percent of all families in the country. The first quintile consists of the bottom 20 percent of

### Table 1: Family Income Range by Quintile

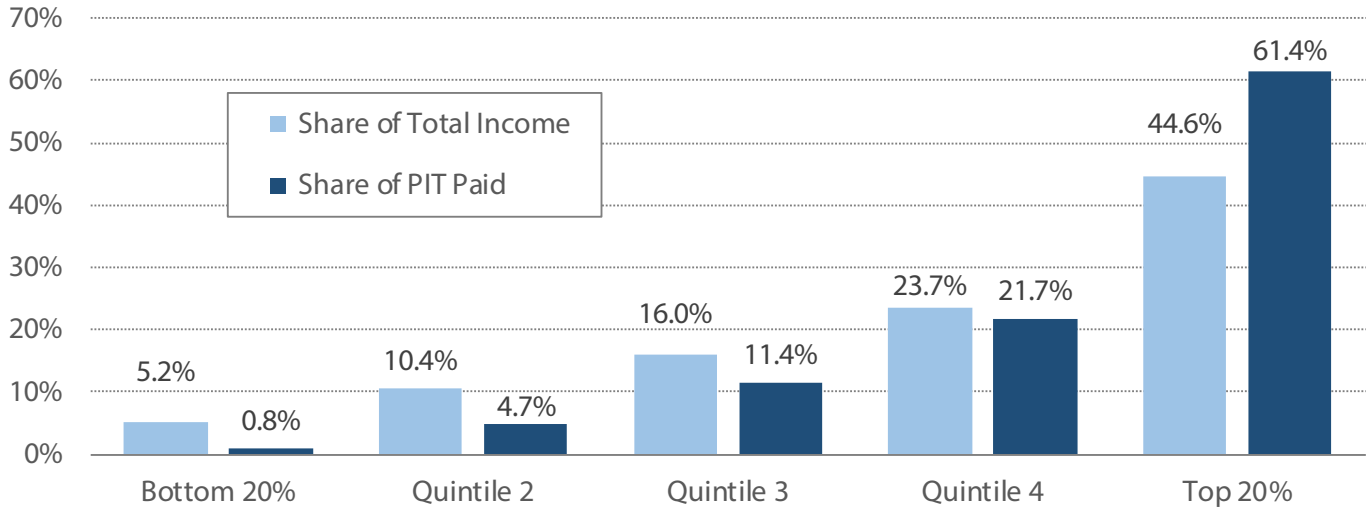
| Income Group | Income Range |
|---|---|
| Bottom 20% | $0 to $56,516 |
| Quintile 2 | $56,517 to $98,641 |
| Quintile 3 | $98,642 to $149,073 |
| Quintile 4 | $149,074 to $227,486 |
| Top 20% | Above $227,486 |

Source: The Fraser Institute's Canadian Tax Simulator, 2022.

[1] Unattached individuals are also considered to be families in this analysis.

[2] Total income includes wages and salaries, investment income, and government transfers.

### Figure 1: Share of Personal Income Taxes Paid and Total Income Earned by Quintile, 2022




Source: The Fraser Institute's Canadian Tax Simulator, 2022.

income earners and the fifth quintile comprises the top 20 percent. Table 1 shows the income range for each quintile. Quintile 1, for instance, ranges from a family income of $0 to $56,516, whereas the fifth quintile represents families earning more than $227,486.

## Personal income taxes

As figure 1 shows, the share of income earned and personal income taxes paid varies widely by quintile. The bottom 20 percent of families ranked by income pay only 0.8 percent of all federal and provincial income taxes while receiving 5.2 percent of the total family income in Canada. Put differently, the share of total income the first quintile receives is more than 6 times larger than the share of income taxes they pay. The next three quintiles have somewhat similar results. Families in quintiles two, three, and four pay a smaller share of personal income taxes than their share of income. Specifically, the second quintile pays 4.7 percent of all income taxes while receiving 10.4 percent of all income. Likewise, the share of income earned exceeds the share of PIT paid for the third and fourth quintiles by 4.6 percentage points and 2.0 percentage points, respectively.

In contrast, the top 20 percent of families is the only quintile that pays more in PIT compared to their share of total reported income. The fifth quintile pays just under two-thirds of all personal income taxes (61.4 percent) in Canada, while receiving less than half of the country's family income (44.6 percent). In other words, top income earners pay about 17 percentage points more than their share of total income. Put differently, although this income group earns a large portion of total family income, it is paying more than its share of income taxes when measured on a proportional basis.

Canada's system of progressive income taxation is the main reason why this occurs. Individuals are taxed at higher rates by both the provinces and federal government on income above certain thresholds. For example, the marginal federal tax rate is 15 percent on individual incomes up to $50,197, while income that exceeds

### Table 2: Average Tax Rates for PIT by Quintile, 2022

| Income Group | Average Tax Rate |
|---|---|
| Bottom 20% | 2.6% |
| Quintile 2 | 7.9% |
| Quintile 3 | 12.5% |
| Quintile 4 | 16.0% |
| Top 20% | 24.1% |

Source: The Fraser Institute's Canadian Tax Simulator, 2022.

$221,708 is taxed at more than double that rate (33 percent) (Department of Finance, 2022). Furthermore, some low-income families do not pay any personal income tax because their tax credits and deductions are greater than the amount of taxes owed.

Table 2 illustrates the differences in taxation rates–combining federal and provincial income taxes-- between income groups. Average tax rates represent the total amount of personal income taxes the quintile pays, divided by their total income. In particular, the table shows that average tax rates increase as family income rises, reflecting Canada's progressive PIT system. For instance, the bottom 20 percent of income-earning families pay a 2.6 percent average income tax rate while the top 20 percent pay an average tax rate of 24.1 percent. Simply put, high-income families pay comparatively higher rates of tax than low-income families.

## Total taxes

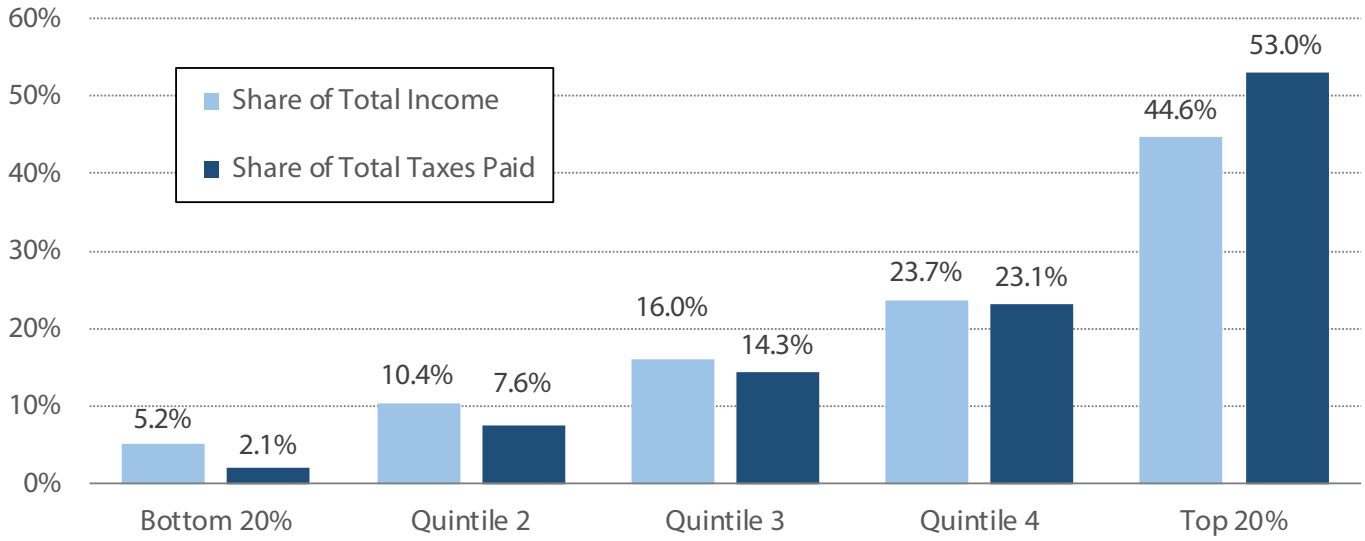
In addition to personal income taxes, Canadians also pay many other types of taxes including sales taxes, payroll taxes, profit taxes, property taxes, fuel taxes, import duties, tobacco taxes, liquor taxes, and so on. A broad assessment of the difference between taxes paid and income received between quintiles should therefore expand the analysis to include all types of taxes.

Similar to the distribution for personal income taxes, the shares of total income received and total taxes paid differ significantly among the various income groups (see figure 2). The bottom 20 percent of families pays 2.1 percent of total taxes in Canada, despite receiving 5.2 percent of total income. Quintiles two through four also pay a smaller share of total taxes relative to what they obtain in income. The second income group, in particular, pays 7.6 percent of all taxes, which is less than its 10.4 percent share of total income. The share of total taxes paid is also smaller than the share of total income for quintiles three and four, albeit to a lesser extent.

However, once again, the top quintile of income-earning families pays a substantially greater share of all Canadian taxes than their share of total income. This result is not surprising, as it was the only income group to pay disproportionately more in personal income taxes. The top 20 percent of families collectively pays 53.0 percent of total taxes and earns 44.6 percent of total income. The gap between the share of all taxes paid and income is approximately 8 percentage points for this group, which is about half the size of the gap observed for personal income taxes (16.8 percentage points). The primary reason for the smaller gap is because the PIT is far more progressive in design than other taxes in Canada.

Table 3 shows the average tax rates paid by income group, covering all Canadian taxes. This calculation demonstrates the total amount of

## Figure 2: Share of Total Taxes Paid and Total Income Earned by Quintile, 2022




Source: The Fraser Institute's Canadian Tax Simulator, 2022.

taxes paid by quintile, divided by their total income. Similar to personal income taxes, the table illustrates that average tax rates rise as family incomes increase. Consider that the bottom 20 percent of income-earning families pays an average tax rate of 18.6 percent while the top 20 percent pays 54.9 percent (over half their income).

In short, Canada's tax system disproportionately taxes the top 20 percent of families whether we are analyzing personal income taxes or all types of taxes.

## Behavioural responses to tax increases

Raising taxes on top income earners is often also thought of as a way to increase government revenue. This view, however, tends to ignore the economic consequences of tax rate increases and the associated behavioural responses of taxpayers when faced with higher tax rates (or new taxes).

First, a substantial body of evidence finds that high marginal income tax rates discourage productive economic activity. This is because high marginal income tax rates reduce the reward individuals receive from the next dollar earned. A higher tax rate can discourage individuals from engaging in desirable economic activities such as work, savings, and investment (Ferede, 2019). Economists generally agree on this point; the debate is about the magnitude of this effect.[3] As a result, tax increases can hinder economic growth and prosperity.

Tax increases also reduce Canada's competitiveness vis-à-vis other industrialized coun-

[3] For a review of the literature on the economic impact of taxes, see Gale and Samwick, 2014; Speer, Palacios, and Ren, 2014; Murphy, Clemens, and Veldhuis, 2013; and Palacios and Harischandra, 2008. For a textbook discussion of Canada's income tax system and its impact on labour supply, savings, and other economic decisions, see Rosen, Wen, and Snodden, 2012.

### Table 3: Average Tax Rates for Total Taxes Paid by Quintile, 2022

| Income Group | Average Tax Rate |
|---|---|
| Bottom 20% | 18.6% |
| Quintile 2 | 33.6% |
| Quintile 3 | 41.1% |
| Quintile 4 | 45.1% |
| Top 20% | 54.9% |

Source: The Fraser Institute's Canadian Tax Simulator, 2022.

tries. Specifically, increasing taxes on top income earners makes Canada a less attractive place to live and to work for highly skilled people such as doctors, scientists, managers, and software engineers. For instance, Moretti and Wilson (2017) found that the number of star scientists in a US state increases if the state reduces personal income tax rates, because scientists make decisions about where to work in part based on the level of taxation in a given jurisdiction. Agrawal and Feremny (2018) found that other high-skilled workers in fields like finance, real estate, and health care were also very sensitive to taxes and more likely to migrate than workers in other professions. Canada already has the seventh highest top combined personal income tax rate in the OECD (out of 36 countries). Further tax increases will only heighten the country's existing disadvantage in this area (Hill et al., 2020), particularly compared to its principal trading partner and competitor for top talent: The United States.

Migration from Canada to the United States by high-income and skilled STEM workers is a major potential source of foregone income tax revenue, especially over the life-cycle of these highly skilled workers. Canada's proximity to and economic integration with the United States amplifies the behavioural response of taxpayers when facing new or higher taxes, as Canadians have an attractive jurisdiction to relocate to as an alternative.

Some politicians and government officials frequently take the simplistic view that these economically harmful tax increases will lead to a proportional increase in tax revenue. In reality, the evidence suggests that there is a negative behavioural response to higher income tax rates, particularly among upper-income earners, which means that tax increases often do not generate the amount of revenue that governments expect.

Consider an illustrative example from the United Kingdom. In 2010 the UK government added a new top personal income tax bracket, increasing its top tax rate from 40.0 to 50.0 percent. The tax increase was expected to generate £2.5 billion in tax revenue, but according to a subsequent government report the tax increase on upper-income earners actually yielded £1 billion or less in additional revenue (HM Revenues and Customs, 2016). The report noted that due to uncertainty in how taxpayers would respond, and the effect on the economy, the original estimate was highly uncertain. The UK's top tax rate has since been lowered to 45.0 percent.

Put simply, tax revenue collected depends not just on tax rates, but on the total tax base. The amount of revenue generated reflects both tax rates *and* the total amount of income subject to the tax. In response to a tax increase, many taxpayers will change their behaviour in ways that reduce their taxable income (Department of Finance, 2010; Laurin, 2015), which

can shrink the tax base and thus affect the amount of tax revenue collected. The result is that governments commonly find they do not raise the amount of revenue they expect from a tax increase. In some instances, governments may collect less tax revenue than they would have had the tax rates had not been increased (Ferede, 2019).

There are a number of ways in which taxpayers alter their behaviour in response to a tax increase. For instance, they can reduce their total taxes by working less, or negotiate with their employer to shift some of their compensation from taxable income to other benefits. Such behaviour is referred to as tax avoidance. Taxpayers can also engage in tax planning to take advantage of lower taxes through other channels, such as shifting their income to a small business or even to other tax jurisdiction. Alternatively, they can report less income or not pay taxes that are owed, which is referred to as tax evasion.

How taxpayers respond to higher taxes is an important issue in the Canadian context, in part because of the federal government's move to create a higher top personal income tax bracket in 2016. The economic literature finds that top earners change their behaviour in response to higher tax rates.[4] Indeed, upper income earners tend to have both the means and the motivation to seek advice on tax minimization strategies. They are also more mobile than less well-paid workers, meaning they are better able to engage in tax avoidance and other means of reducing their overall tax burden (Laurin, 2015). Top income earners also face much higher marginal tax rates, so they have a stronger incentive to invest time and money in avoiding higher tax rates.

There was early evidence of such a behavioural response to the 2016 Canadian federal tax increase on upper-income earners, specifically greater use of tax planning. In this case, the higher personal income tax rate took effect in 2016, but it was announced in 2015. In anticipation of the tax change, individuals responded to the incentive to bring their income forward to the 2015 tax year (particularly income on capital gains and dividends) in order to avoid the new, higher income tax rate in 2016. This is precisely what the early evidence suggests happened; average total income for top income earners jumped in 2015 but then declined in 2016 (Laurin, 2018; and PBO, 2019). While this is a one-off effect, it is illustrative of the type of behavioural responses likely to occur when taxpayers face tax increases.

Moreover, a study by Ferede (2019) used historical Canadian data to investigate the behavioural response to the federal government's tax increase on upper-income earners.[5] It found that a one percentage-point increase in the top federal personal income tax rate is associated with a reduction of taxable income (the tax base) of 0.5 percent.[6] As a result, the analysis estimated that a four percentage-point

[4] Milligan and Smart (2015) analyze Canadian provincial data on tax rate changes to estimate the behavioural response of taxpayers and find that the top 1 percent and top 0.1 percent of income earners had a stronger behavioural response than other income earners. Similarly, a study from Canada's Department of Finance (2010) found a substantially stronger behavioural response from upper-income earners.

[5] Ferede (2019) uses 2014 as a base year to stimulate tax revenues, opposed to 2015 or 2016, to avoid misleading results from the one-off behavioural response to the pre-announced tax change discussed in this section.

[6] A study from Laurin (2012) found similar effects at the provincial level. Laurin demonstrated that On-

increase in the top personal income tax rate would yield only a limited amount of additional government revenue in the first 9 years. Beyond 9 years, the study found that the government would actually collect less tax revenue than if there had been no tax change at all.[7]

Another study from Eisen et al. (2022) estimated that a six percentage-point increase in the top federal personal income tax rate from 33 to 39 percent would only raise $805 million in annual revenue while reducing provincial government revenue due to behavioural changes. Furthermore, the losses in provincial revenues would outweigh the gains in federal revenue by approximately $1.3 billion (Eisen et al., 2022).

Any of the described behavioural responses—tax planning, evasion, and avoidance—can affect the tax base and ultimately lead to lower tax revenues than the government anticipates. For this reason, it is critical that policymakers factor in the behavioural responses of taxpayers when they are contemplating changes to the tax system, including changes that take the form of higher income tax rates.

## Conclusion

There are common misperceptions in Canada that top income earners do not pay much in taxes and that increasing taxes on this income group is an effective way to generate significant additional government revenue. However, top income earners already pay a disproportionately large share of all Canadian taxes–whether we look at income tax or all taxes. This is, in part, due to the progressivity of Canada's tax system, where the share of taxes paid typically increases as income rises. The evidence shows that the top 20 percent of income-earning families pays nearly two-thirds of the country's personal income taxes and more than half of total taxes. While there is room for reasonable debate over the appropriate design of Canada's tax system, including the role of progressivity, the notion that top income earners do not pay their share of taxes rests on a shaky foundation and reflects a limited analysis of how people respond to taxes. As noted, in contrast to the federal government's expectations, the tax increases that Ottawa imposed on top income earners in 2016 will likely yield less revenue than policymakers expected as affected taxpayers adjust their behaviour over time. A similar result is likely if the federal government or certain provinces decide to further increase current tax rates on the top income quintile in the coming years.

## References

Agrawal, David, and Dirk Foremny (2018). *Relocation of the Rich: Migration in Response to Top Tax Rate Changes from Spanish Reforms*. Working Paper 7027. Munich Society for the Promotion of Economic Research. <https://www.cesifo.org/DocDL/cesifo1_wp7027.pdf>, as of August 15, 2022.

Blatchford, Andy (2015). Liberals' Middle Class Income Tax Cut Passes House Vote. CTV *News*. <https://www.ctvnews.ca/politics/liberals-middle-class-income-tax-cut-passes-house-vote-1.2693674>, as of August 15, 2022.

Canada, Department of Finance (2010). The Response of Individuals to Changes in Marginal Income Tax Rates. *Tax Expenditures and Evaluations* 2010 (Government of Canada): 45-62. <https://www.canada.ca/content/dam/fin/migration/taxexp-depfisc/2010/TEE2010_eng.pdf>, as of August 15, 2022.

tario's personal income tax hikes in 2012 would bring in far less revenue than policymakers expected.

[7] There is a difference between the short-run and long-run response to a tax increase. Ferede shows that the tax avoidance response is larger in the long-run.

Canada, Department of Finance (2022). *Canadian Income Tax Rates for Individuals – Current and Previous Years*. Government of Canada. <https://www.canada.ca/en/revenue-agency/services/tax/individuals/frequently-asked-questions-individuals/canadian-income-tax-rates-individuals-current-previous-years.html>, as of August 15, 2022.

Eisen, Ben, Milagros Palacios, and Nathaniel Li (2022). *No Free Lunch for the 99 Percent: Estimating Revenue Effects from Taxes on Top Earners*. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/no-free-lunch-for-the-99-percent.pdf>, as of August 15, 2022.

Ferede, Ergete (2019). *The Revenue Effects of Tax Rate Increases on High-Income Earners*. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/revenue-effects-of-tax-rate-increases-on-high-income-earners.pdf>, as of August 15, 2022.

Gale, William G., and Andrew A. Samwick (2014). *Effects of Income Tax Changes on Economic Growth*. Economic Studies (September). Brookings Institution.<https://www.brookings.edu/wp-content/uploads/2016/06/09_Effects_Income_Tax_Changes_Economic_Growth_Gale_Samwick.pdf>, as of August 15, 2022.

Hill, Tegan, Nathaniel Li, and Milagros Palacios (2020). *Canada's Rising Personal Income Tax Rates and Falling Tax Competitiveness, 2020*. Fraser Institute. <https://www.fraserinstitute.org/studies/canadas-rising-personal-tax-rates-and-falling-tax-competitiveness-2020>, as of August 15, 2022.

HM Revenues and Customs (2012). *The Exchequer Effect of the 50 Per Cent Additional Rate of Income Tax*. Government of the United Kingdom. <https://webarchive.nationalarchives.gov.uk/20130127161217/http:/www.hmrc.gov.uk/budget2012/exchequ-income-tax-2042.pdf>, as of August 15, 2022.

Lammam, Charles, Hugh MacIntyre, and Milagros Palacios (2017). Measuring the Distribution of Taxes in Canada: Do the Rich Pay Their "Fair Share"? In Charles Lammam (ed.), *Towards a Better Understanding of Income Inequality in Canada* (Fraser Institute): 186-198. <https://www.fraserinstitute.org/sites/default/files/measuring-the-distribution-of-taxes-in-canada.pdf>, as of August 15, 2022.

Laurin, Alexandre (2012). *Ontario's Tax on the Rich: Grasping at Straw Men*. CD Howe Institute. <https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed//e-brief_135.pdf>, as of August 15, 2022.

Laurin, Alexandre (2015). *Shifting the Federal Tax Burden to the One-Percenters: A Losing Proposition*. CD Howe Institute. <https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/e-brief_222_0.pdf>, as of August 15, 2022.

Laurin, Alexandre (2018). *Unhappy Returns: A Preliminary Estimate of Taxpayer Responsiveness to the 2016 Top Tax Rate Hike*. C.D. Howe Institute. <https://www.cdhowe.org/public-policy-research/unhappy-returns-preliminary-estimate-taxpayers-responsiveness-2016-top-tax-rate-hike>, as of August 15, 2022.

Milligan, Kevin, and Michael Smart (2015). Provincial Taxation of High Incomes: The Effects on Progressivity and Tax Revenue. In David A. Green, W. Craig Riddell, and France St-Hilaire (eds.), *Income Inequality: The Canadian Story. The Art of the State*, vol. V. (Institute for Research and Public Policy): 479–507. <https://irpp.org/research-studies/provincial-taxation-of-high-incomes/>, as of August 15, 2022.

Moretti, Enrico, and Daniel Wilson (2017). The Effect of State Taxes on the Geographical Lo-

cation of Top Earners: Evidence from Star Scientists. *American Economic Review* 107, 7 (July): 1858-1903. <https://www.jstor.org/stable/44871748>, as of August 15, 2022.

Murphy, Robert P., Jason Clemens, and Niels Veldhuis (2013). *The Economic Costs of Increased Marginal Tax Rates in Canada*. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/economic-costs-of-increased-marginal-tax-rates-in-canada.pdf>, as of August 15, 2022.

Palacios, Milagros, and Kumi Harischandra (2008). Chapter 1: The Impact of Taxes on Economic Behavior. In Jason Clemens (ed.), *The Impact and Cost of Taxation in Canada: The Case for Flat Tax Reform* (Fraser Institute): 3–31.<https://www.fraserinstitute.org/sites/default/files/impact-and-cost-of-taxation-in-canada-2008.pdf>, as of August 15, 2022.

Parliamentary Budget Officer (PBO) (2019). *Revisiting the Middle Class Tax Cut*. Government of Canada. <https://www.pbo-dpb.gc.ca/web/default/files/Documents/Reports/2019/MCT/Revisiting__EN.pdf>, as of August 15, 2022.

Rosen, Harvey S., Jean-François Wen, and Tracy Snodden (2012). *Public Finance in Canada*, 4th edition. McGraw-Hill Ryerson.

Speer, Sean, Milagros Palacios, and Feixue Ren (2014). *Quebec's Tax Competitiveness: A Barrier to Prosperity*. Quebec Prosperity Initiative. Fraser Institute. <https://www.fraserinstitute.org/sites/default/files/quebecs-tax-competitiveness-a-barrier-to-prosperity.pdf>, as of August 15, 2022.

## Acknowledgments

The Fraser Institute would like to acknowledge the Lotte and John Hecht Memorial Foundation for their generous support for this project. Theywould also like to express their appreciation to the anonymous reviewers of this paper. Any remaining errors or omissions are the sole responsibility of the authors. As the researchers have worked independently, the views and conclusions expressed in this paper do not necessarily reflect those of the Board of Directors of the Fraser Institute, the staff, or supporters.

***Jake Fuss*** *is the Associate Director of Fiscal Studies at the Fraser Institute. He holds a Bachelor of Commerce and a Master's Degree in Public Policy from the University of Calgary.*

***Nathaniel Li*** *is an Economist at the Fraser Institute. He holds a B.A. from the Fudan University in China and a Ph.D. in Food, Agricultural and Resource Economics from the University of Guelph.*



**ISSN 2291-8620**

**Media queries:** For media enquiries, please contact our communications department via e-mail: communications@fraserinstitute.org; telephone: 604.714.4582.

**Support** the Institute: call 1.800.665.3558, ext. 574 or e-mail: development@fraserinstitute.org

Visit our **website**: www.fraserinstitute.org