CT-2022-002

THE COMPETITION TRIBUNAL

IN THE MATTER OF the *Competition Act*, R.S.C. 1985, c. C-34;

AND IN THE MATTER OF the proposed acquisition by Rogers Communications Inc. of Shaw Communications Inc.;

AND IN THE MATTER OF an application by the Commissioner of Competition for one or more orders pursuant to section 92 of the *Competition Act*.

B E T W E E N :

COMMISSIONER OF COMPETITION

Applicant

- and -

ROGERS COMMUNICATIONS INC. AND SHAW COMMUNICATIONS INC.

Respondents

- and -

ATTORNEY GENERAL OF ALBERTA AND VIDEOTRON LTD.

Intervenors

WITNESS STATEMENT OF KATHERINE CUFF, PhD

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1. My name is Katherine Cuff. I am a Full Professor in the Department of Economics at McMaster University in Hamilton, Ontario. I earned my PhD in Economics from Queen’s University in Kingston, Ontario in 2000. I have held a Tier II Canada Research Chair in Public Economic Theory for two consecutive five year terms and was a recipient of the inaugural University Scholar award at McMaster University.

2. I was the Managing Editor, *Canadian Journal of Economics*, in the period 2018 – 2022, an Editor, *FinanzArchiv/Public Finance Analysis*, 2014 – 2018, an Associate Editor, *Canadian Public Policy*, 2011 – 2015 and had an editorial role with other refereed journals in the area of public finance and policy. I have been a Visiting Professor at the Melbourne Institute at the University of Melbourne, the Tax Administration Research Centre at the University of Exeter and the Department of Economics at Vanderbilt University. I am a research network member of CESifo, Munich, Germany in the Public Economics Area.

3. My expertise is public economics. Public economics is a research area of economics that examines the effects of government activities on both the allocation of resources and the distribution of income in the economy as well as how government spending and tax policies should be designed to achieve particular outcomes. Within that field, I have specialized in taxation with an emphasis on the design of tax systems. My research in this area has been published in the leading field journals, including the *Journal of Public Economics*, *International Tax and Public Finance*, and the *Journal of Public Economic Theory*. I have also written about Canadian tax policy in edited book volumes and was a researcher for the British Columbia Basic Income Panel. I teach graduate level courses in Public Economics and Microeconomics for Public Policy as well as undergraduate courses in Taxation.

4. Additional information on my qualifications is contained in my curriculum vitae, attached.

5. I was asked by counsel for the Commissioner of Competition to prepare a report describing approaches, principles or policies underlying the Canadian income tax system which might be relevant to how the Competition Tribunal considers or weighs the income distribution impacts on consumers of a potential post-merger price increase in wireless services against any efficiencies brought forward by the merging parties herein in the balancing test found in section 96 of the Competition Act, as further specified in the report.

6. I attach as Exhibit “A” my report.

7. I attach as Exhibit “B” my curriculum vitae.

8. I attach as Exhibit “C” an Acknowledgement of Expert Witness.

9. I attach as Exhibit “D” a list of the sources and documents relied upon in preparing my report.

Signed, this 21 day of September, 2022 ______________________

Katherine Cuff

Exhibit “A”: Expert Report of Katherine Cuff, PhD

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I. Introduction

1. I was asked by counsel for the Commissioner of Competition to address the following questions related to how the Competition Tribunal could or should weight the impact of income transfers against efficiencies brought forward by the merging parties in the balancing test found in section 96 of the Competition Act:

    a. A description of the approach taken in the income tax structure and other aspects (such as tax credits or deductions) in the income tax system in determining how the tax burden is allocated among different groups in society, such as in determining marginal tax rates, and in criteria used to qualify for tax benefits, tax credits, etc; and

    b. The public policy or social welfare rationale(s) for such approaches and where possible the information or data it is based upon (including references to authoritative studies, government or Commission reports or learned articles).

2. To address these questions, I first define the measure used to characterize the allocation of income tax burdens, called the average tax rate, and explain what is meant by a progressive income tax system (Section II.A). I then review the key principles that have served as the foundations for determining the allocation of income tax burdens in the Canadian income tax system (Section II.B).

3. Next I provide a detailed overview of the Canadian personal income tax system, including the legal and regulatory framework (Section III.A), the statutory tax brackets and rates and definition of taxable income (Section III.B), the key features of non-refundable and refundable tax credits (Sections III.C-III.D) as well as other government policy objectives that interact with the income tax system (Sections III.E). I highlight how the different features of the income tax structure can affect average tax rates and therefore the allocation of income tax burdens, particularly across the income distribution.

4. I then review the evidence on the actual allocation of the income tax burdens in Canada using both publicly available and confidential tax data (Sections IV.A-IV.B).

5. Finally, I summarize the following about the allocation of income tax burdens in the Canadian personal income tax system (Section V):

    a. The allocation reflects policy choices and their implicit social value judgements about individuals and households with different incomes and characteristics.

    b. The allocation determines the available resources an individual or household has for their own use.

c. The allocation is guided by the equity principle that those with a greater ability to pay should pay a greater share of their income in taxes. That is, the income tax system should be progressive.

d. The allocation is affected by an individual's characteristics or circumstances through allowable deductions, non-refundable tax credits and refundable tax credits.

e. The allocation is affected by other policy objectives, such as poverty reduction.

f. The allocation is progressive. The Canadian personal income tax system treats different income groups differently and this differentially treatment can inform the Competition Tribunal about how it could weight the impact of income transfers against efficiencies brought forward by the merging parties in the balancing test found in section 96 of the Competition Act.

6. I have relied upon the materials and information cited in the footnotes throughout the report and which are also listed and attached as Appendix "D" to this report.

II. Allocation of Income Tax Burdens

A. Measuring Income Tax Burdens

7. All income tax systems involve the choice of both tax bases and tax rates. The tax base is what the tax rate is levied on. The base and tax rate determine the amount of tax owed.[1]

8. The average tax rate expresses the individual's total tax burden as a percentage of their income and is distinct from a marginal tax rate.[2]

9. The marginal tax rate is how much additional tax would have to be paid if the individual had an additional dollar of income. Marginal tax rates are important for an individual's decision about whether to earn an additional dollar.

10. For determining the allocation of income tax burdens across individuals, the relevant measure is the average tax rate (ATR) which is the ratio of income tax to income.

[1] There are three economic rationales for taxation. First, taxes raise revenue. Second, taxes affect individuals' decisions to purchase particular goods or undertake certain activities (often as way to correct an externality). Third, taxes redistribute income between different individuals. A single tax could do all three things.

[2] Appendix I contains formal definitions of a tax liability, average and marginal tax rates, progressivity and refundable and nonrefundable tax credits as well as demonstrates the effect of the different types of credits for the progressivity of the tax system.

a. *"…, what really matters to taxpayers is their total tax burden, not the marginal tax rate paid on the last dollar of taxable income reported."* (Smart 2019, p 353)[3]

b. *"[T]he ATR is the right measure for understanding income tax burden. The ATR directly measures the impact of the loss of consumption incurred by the requirement to pay income taxes."* (Milligan 2022, p 212)[4]

11. How the income tax burden is allocated across individuals with different incomes depends on how average tax rates vary across the income distribution.

12. If average tax rates do not change with income, the tax system is called proportional. The proportion of income paid in the form of income taxes is the same for all individuals, regardless of income.

    a. As a simple example of a proportional tax system, suppose there was a single tax rate that applied to all income. The amount of tax an individual would have to pay would be given by the tax rate times the individual's income. For example, with a tax rate of 20%, someone with an income of $40,000 would pay $8,000 in income taxes and someone with an income of $100,000 would pay $20,000 in income taxes. Both individuals pay 20% of their income in taxes and keep 80% of their income for their own consumption.

13. An income tax system is progressive if average tax rates increase over the income distribution meaning higher income individuals pay a greater share of their income in income taxes.[5]

14. The progressivity of the income tax system determines how the income tax burden is allocated across individuals with different incomes.

15. The Canadian personal income tax system has various features that interact to determine the actual allocation of income tax burdens across individuals and households or the actual progressivity of the tax system.

    a. First, different income tax rates apply to different types of income and to different amounts of income. For example, some types of income, such as lottery winnings or the income from selling your primary residence, are exempted from taxation (or equivalently have a zero tax rate). Other forms of income receive

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[3] Michael Smart (2019) `Finances of the Nation: Taxation of Top Incomes in Canada – Recent Developments in Rates and Redistribution,' Canadian Tax Journal 67(2), p 349-361.

[4] Kevin Milligan (2022) `How Progressive is the Canadian Personal Income Tax? A Buffett Curve Analysis' Canadian Public Policy, 48(2), p 211-224.

[5] A regressive tax system would be one in which the ratio of total taxes to income declines with income. Sales taxes are often deemed to be regressive. For the same purchase, a lower income person would pay a greater share of their income in sales taxes than a higher income person. For example, see the `Evaluation of the Goods and Services Tax Credit' in the Department of Finance (2017) Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations, p 321.

preferential tax treatment, such as eligible dividend income from a Canadian corporation or income from selling shares or property (capital gains income).

b. Second, the income tax an individual has to pay also depends on characteristics of the individual such as age, marital status, and number of dependents as well as personal decisions that qualify them for available deductions and non-refundable tax credits.

c. Third, some income benefits are administered through the tax system in the form of refundable tax credits whereby some individuals receive money from the government rather than having to pay money.

d. Each of these aspects of the Canadian income tax system can affect the income tax burden of an individual and therefore the overall progressivity of the income tax system.

B. Foundations for Allocating Income Tax Burdens in the Canadian Income Tax System

16. The foundations for the existing structure of the Canadian income tax system are rooted in the Royal Commission on Taxation chaired by Kenneth Carter.[6] This six volume report argued that the principle of ability to pay should be used as the basis for income taxation.[7]

    a. *"In our judgment taxes should be allocated among tax units in proportion to their ability to pay. We believe this would be achieved when taxes were allocated in proportion to the discretionary economic power of tax units."*[8]

17. The measure for ability to pay proposed by the Carter Report was a comprehensive income base which captures all of the resources a person has available to them that could be consumed.

    a. Comprehensive income was *"defined as the sum of the market value of goods and services consumed or given away in the taxation year by the tax unit, plus the annual change in the market value of the assets held by the unit."*[9]

[6] Canada, Report of the Royal Commission on Taxation (Ottawa: Queen's Printer, 1966-67).
[7] The ability to pay as the principle basis for taxation was first presented by Adam Smith in the Wealth of Nations. *"The subjects of every state ought to contribute towards the support of the government, as nearly as possible, in proportion to their respective abilities…".* Adam Smith (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*, Book V, Chapter II, Section I, p 825. This is in contrast to the benefit principle which states taxation should be based on the benefits received.
[8] Canada, Report of the Royal Commission on Taxation (Ottawa: Queen's Printer, 1966-67), Vol 3, p 5.
[9] Canada, Report of the Royal Commission on Taxation (Ottawa: Queen's Printer, 1966-67), Vol 3, p 39.

b. All capital gains both realized and unrealized as well as any gifts and bequests increase the potential to consume and thus with comprehensive income as the basis for taxation should be subject to taxation.

c. *"It ultimately does not matter whether capital gain, gifts and bequests are or are not called `income'. What does matter is that these things increase the economic power of those who are fortunate enough to received them, and therefore should be taxed like wages, salaries, rent, dividends, interest and so on."*[10]

18. The Carter Report advocated for an exemption of non-discretionary expenses from the individual's comprehensive income base.

a. Non-discretionary expenses are the costs of the goods and services *"necessary to maintain the appropriate standard of living of the family or unattached individual."*[11]

b. The income tax burden should then be proportional to the *"fraction of total economic power available for discretionary uses."*[12,13]

19. The Carter Report also recognized that particular individual or family circumstances could give rise to specific non-discretionary personal expenses, such as *"extraordinary medical expenses, gifts to close relatives to provide them with support, the special expenses of working mothers with young children",*[14] and thereby affect the individual's ability to pay.

20. The principle of ability to pay as the basis for taxation with an emphasis on both horizontal and vertical equity in allocating the income tax burdens from the Carter Report made it into the stated goals of the 1969 `Proposal for Tax Reform' White Paper.

a. "*Fairness in taxation implies two principles. First it means that people in similar circumstances should carry similar shares of the tax load..."*. [15] This is a goal of horizontal equity – individuals who are similar should be treated the same by the tax system.

b. *"Fairness also requires that higher incomes, people who are better off, should be expected to pay in taxes a larger share of their incomes than persons with lower incomes. This concept of "ability to pay" is embodied mainly in the personal income tax as a progressive graduated tax having increasingly higher rates as*

[10] Canada, Report of the Royal Commission on Taxation (Ottawa: Queen's Printer, 1966-67), Vol 3, p 25.
[11] Canada, Report of the Royal Commission on Taxation (Ottawa: Queen's Printer, 1966-67), Vol 3, p 5.
[12] Canada, Report of the Royal Commission on Taxation (Ottawa: Queen's Printer, 1966-67), Vol 3, p 5.
[13] The Carter Report argued that the fraction of income available for discretionary uses was increasing in income. Therefore an income tax burden proportional to this fraction would also be increasing in income.
[14] Canada, Report of the Royal Commission on Taxation (Ottawa: Queen's Printer, 1966-67), Vol 3, p 19.
[15] Canada, Department of Finance, *Proposals for Tax Reform*, Ottawa: Department of Finance, 1969, p 6.

income increases."[16] This is a goal of vertical equity – individuals with different abilities to pay should be treated differently by the tax system.

21. Several of the proposed tax reforms in the 1969 White Paper that came from the Carter Report were later implemented in 1972.[17]

    a. For example, a significant increase in the amount of income excluded from taxation was implemented.[18]

    b. Some proposals, however, were only partially implemented. For example, while a tax on capital gains was implemented in 1972, only one half of capital gains were subject to taxation.[19]

22. The key equity principles established in the Carter report were re-affirmed in the 1987 White Paper.[20]

    a. The 1987 White Paper Tax Reform supported the use of individual income as the appropriate measure of ability to pay, that those with higher income should pay a greater fraction of their income in taxes and that tax rates on individuals in similar economic circumstances should be the same.[21]

23. The 1987 White Paper also proposed substantial reforms to improve the fairness of the allocation of the income tax burden which underpinned the Canadian tax reforms implemented in 1988 and which continue to serve as the basis for the current system we have today.[22]

[16] Canada, Department of Finance, *Proposals for Tax Reform*, Ottawa: Department of Finance, 1969, p 6-7.
[17] Canada, Department of Finance, *Summary of 1971 Tax Reform Legislation,* Ottawa: Department of Finance, 1971.
[18] This was called a personal exemption at the time.
[19] Another exception was to eliminate the estate tax, but not tax gifts and inheritances as the Carter Report proposed.
[20] Canada, Department of Finance, *The White Paper: Tax Reform* 1987, Ottawa: Department of Finance, June 18, 1987.
[21] The 1987 White Paper also endorsed the use of deductions for costs associated with working, separate taxation for corporate and individual income with integration between them, and the use of family net income for determining credits associated with children or sales taxes.
[22]The major reforms to the income tax system included reducing the number of income tax brackets from ten to three (with tax rates of 17%, 26% and 29%), converting many personal exemptions (which have greater value to those with higher marginal tax rates) to non-refundable tax credits, and broadened the income tax base by eliminating other deductions. The reforms also led to the introduction of the Goods and Service Tax and associated refundable tax credit in 1991. Since then personal income tax reforms have been fairly incremental. See Robin Boadway (2019) `Rationalizing the Canadian Income System,' Canadian Tax Journal 67(3), p 643-666.

III. Personal Income Tax System in Canada

A. Legal and Regulatory Framework

24. The tax legislation for the federal Canadian personal income tax system is contained in the Income Tax Act RSC 1985, c. 1 (5th Supp.).[23]

25. Policies enacted in the Income Tax Act reflect the choices of an elected federal government. There is an established process by which proposed federal policies are approved and made into law.[24]

26. The Canada Revenue Agency is responsible for administering the Income Tax Act and also *"administers various social and economic benefit and incentive programs delivered through the tax system."*[25]

27. Provincial and territorial governments also levy personal income taxes. Quebec administers and collects its own personal income taxes. For the other provinces and territories, coordination of tax collection and administration between the federal and provincial/territorial governments are governed by tax collection agreements.

28. Provinces and territories with a tax collection agreement *"are required to use the federal definition of taxable income, thus ensuring a common tax base."* [26] They do, however, have discretion over their own provincial/territorial tax structure. They can choose the number of income brackets, the tax rate applied to each bracket, any surtaxes (taxes levied on tax liabilities), tax reductions for low income individuals, non-refundable tax credits (calculated at the lowest non-zero provincial/territorial tax rate) and refundable tax credits.

29. Changes in the provincial personal income tax systems occur in a similar way to changes in the federal income tax system. Policies are proposed in provincial/territorial budgets and then passed into provincial law, subject to any tax collection agreements.

30. Individuals are legally obligated to file an income tax and benefit return annually if they owe any income taxes. Individuals must also file if they want to claim any income tax refunds or specific government income benefits. Normally, individual returns are due April 30th for the previous calendar year. Individuals are responsible for reporting their income and other information, and for calculating and paying any income taxes owned.

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[23] Income Tax Act, RSC 1985, c. 1 (5th Supp.)
[24] Canada, Privy Council Office, *Guide to Making Federal Acts and Regulations 2nd edition*. Ottawa: Department of Justice Canada, 2001.
[25] See About the Canada Revenue Agency, https://www.canada.ca/en/revenue-agency/corporate/about-canada-revenue-agency-cra.html.
[26] Canada, Department of Finance Canada and Canada Customs and Revenue Agency, Federal Administration of Provincial Taxes: New Directions, January 2000, p 3.

Based on the information provided, the CRA processes and assesses the individual's tax and benefit return and issues a notice of assessment to the individual.

B. Taxable Income, Tax Brackets and Tax Rates

31. Individuals are required to pay taxes based on their taxable income, as stated in the Income Tax Act, Part I division A `***2 (1)*** *An income tax shall be paid, as required by this Act, on the taxable income for each taxation year of every person resident in Canada at any time in the year.'*[27]

32. Taxable income is calculated from the individual's total income for the calendar year less allowable deductions as described in detail in Appendix II.

    a. Most deductions are for employment or work-related costs incurred by the individual reflecting non-discretionary expenses. That is, money that must be spent in order to earn income. For example, deductions for union dues which must be paid in order to work at a given place of employment, deductions for childcare so the individual can leave the home to work or deductions for office expenses paid by a self-employed individual or employees working from home.

    b. The other main type of deduction exists for encouraging savings. Individuals can put money into a registered retirement savings or registered retirement plan and deduct this amount from their total income. Therefore, they do not pay income tax on the money put into such an account. They do, however, pay income tax on the money when it is taken out of these registered retirement savings accounts.

    c. Eligible individuals receiving private pension income can also split their pension income with a spouse and deduct any amount of pension income given to their spouse.[28]

    d. Eligible individuals can also deduct any repayments they have to make on taxable government income benefits.[29]

33. After these allowable deductions from total income, net income is obtained. This is the income measure used to determine eligibility for income-tested benefits in the tax and benefit system, including refundable tax credits, such as the GST/HST tax credit and the Canada Child Benefit, and some non-refundable tax credits, such as the age amount and

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[27] Income Tax Act, RSC 1985, c. 1 (5th Supp.).
[28] This measure was introduced in the 2006 Federal Tax Fairness Plan on October 30, 2016. See https://www.canada.ca/en/news/archive/2006/10/canada-new-government-announces-tax-fairness-plan.html.
[29] These taxable income benefits are delivered outside of the tax system and depend on individual circumstances which can change over the year. Consequently, individuals may receive more benefits than they are actually eligible to receive and therefore, they must pay back these additional benefits or overpayments.

medical expense tax credit. From net income, further allowable deductions are made to obtain taxable income.

34. The federal taxable income tax schedule is progressive and is shown in Exhibit 1.

Exhibit 1
Federal taxable income brackets and income tax rates for 2021 tax year

2021 Federal Taxable Income Brackets*	2021 Federal Income Tax Rates
$49,020 or less	15%
More than $49,020 to $98,040	20.5%
More than $98,040 to $151,978	26%
More than $151,978 to $216,511	29%
More than $216,511	33%

*These taxable income amounts are adjusted for inflation.

Source: Financial Consumer Agency of Canada (2020), Your financial toolkit, Module 8.2.4: Tax brackets and rates, https://www.canada.ca/en/financial-consumer-agency/services/financial-toolkit/taxes/taxes-2/5.html.

35. The federal income tax rates determine the additional income tax an individual would have to pay if the individual had one more dollar in taxable income given their taxable income bracket.

36. Only for someone in the lowest taxable income bracket, is their average tax rate the same as their marginal tax rate.

   a. Consider an individual with a taxable income of $40,000. This individual would have to pay 15% of their total taxable income in taxes, that is $6000 in income taxes. This is their average tax rate and it is equal to 15%. If this individual earned one more dollar in taxable income, then they would have to pay an additional 15 cents in income taxes. The federal income tax rate of 15% is the marginal tax rate for an individual in the lowest bracket. It says how much of an additional dollar of taxable income an individual in that bracket would have to pay. Similarly the federal income tax rates in the other brackets are marginal tax rates.[30]

[30] There is a distinction between statutory marginal tax rates (i.e., the combined tax rates specified in the federal and provincial taxable income tax schedules) and effective marginal tax rates (i.e., the actual change in the individual's income tax burden if they earn an additional dollar of income). These rates differ due to the availability of income-tested tax credits and benefits. In determining how taxes affect individual decisions, such as labour supply or saving decisions, the relevant measure is the effective marginal tax rates. Effective marginal tax rates can vary substantial in the bottom of the income distribution and also depend on family composition reflecting some features of the income tax system described in Section III. See, for example, Figure 1 in Kevin Milligan (2019) `The Future of the Progressive Personal Income Tax: How High Can it Go?' Canadian Tax Journal 67(3), p 693-710.

37. The fact that the marginal tax rates increase over the five taxable income brackets ensures that the income tax burden or average tax rate will be increasing in taxable income.

a. To see this, suppose another individual had a taxable income of $100,000 so their income is in the third bracket. Their marginal tax rate is 26%. To determine their average tax rate we first need to calculate their total taxes. They would owe 15% on the first $49,020 of their taxable income, 20.5% on their taxable income above $49,020 up to $98,040 and then 26% on their taxable income above $98,040 up to $100,000. Doing this calculation, their total income taxes would be $17,911.70. Their average tax rate is total income taxes divided by income or $17,911.70/100,000 which is equal 17.91% and is lower than their marginal tax rate, and higher than the 15% average tax rate of the individual who has $40,000 in taxable income. The average tax rate is increasing in taxable income.

38. The current federal taxable income tax schedule has been in place since 2016.[31] Prior to 2016, there had only been four income brackets with a highest income tax rate of 29%.[32]

a. On December 7, 2015, the Federal Minister of Finance Bill Morneau tabled a Notice of Ways and Means Motion to amend the Income Tax Act that delivered on the Liberal election promise of introducing a new top federal income tax bracket with a higher income tax rate of 33% and to reduce the income tax rate in the second income bracket from 22% to 20.5%.[33]

b. *"This change is about giving the middle class a fairer deal. To that end, we are also asking that Canadians who have the most contribute a little bit more. For those in that privileged group, a new proposed tax bracket of 33 per cent will apply to individual taxable income beyond $200,000. These measures will result in greater fairness across the tax brackets."*[34]

c. The new top income bracket was expected to affect about 1% of Canadian tax filers,[35] about 262,000 Canadians.[36]

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31 Canada Revenue Agency, Tax packages for all years https://www.canada.ca/en/revenue-agency/services/forms-publications/tax-packages-years.html.

32 The four income bracket structure with the highest federal income tax rate of 29% had been in place since 2001.

33 Canada, Department of Finance, Backgrounder: Middle Class Tax Cut, December 7, 2015. See https://www.canada.ca/en/department-finance/news/2015/12/backgrounder-middle-class-tax-cut.html.

34 Canada, Department of Finance, Speech on Measures to Strengthen the Middle Class, December 7, 2015. See https://www.canada.ca/en/department-finance/news/2015/12/speech-on-measures-to-strengthen-the-middle-class.html.

35 Canada, Department of Finance, Backgrounder: Middle Class Tax Cut, December 7, 2015.

36 Number of tax filers in 2015 taken from Statistics Canada, Table 11-10-0047-01 Summary characteristics of Canadian tax filers (preliminary T1 Family File), https://doi.org/10.25318/1110004701-eng.

39. All provincial/territorial taxable income tax schedules are also progressive.[37]

a. While there is variation in the choice of brackets/rates, all of the provincial/territorial income tax structures have the same structure as the federal one with higher marginal tax rates applying to higher taxable income brackets. Consequently, the provincial/territorial income tax burdens (or average tax rates) are increasing in taxable income.

40. In the past several years, some provincial governments have also introduced new top income brackets and higher top income tax rates.[38] This increases the progressivity of the tax structure at the top end of the taxable income distribution.

a. Starting in 2020 British Columbia added a new top personal income tax bracket with a provincial tax at 20.5 percent on income over $220,000. Previously, the top personal income tax rate in British Columbia was 16.8 percent on income more than $153,900.[39]

b. After introducing four income brackets for income above $125,000 with rates 10.5%, 10.75%, 11%, 11.25% in 2015, Alberta increased the rates to 12%, 13%, 14%, 15% in 2016.[40]

c. In 2014, Ontario reduced the threshold for its third income bracket from $509,000 to $150,000 and kept the income tax rate at 11.16%, it changed its fourth income bracket to be more than $150,000 up to $220,000 at a rate of 12.15% and created a new fifth top income tax bracket for income over $220,000 with an income tax rate of 13.16%.[41]

41. The combined federal and provincial/territorial tax on taxable income schedule in all provinces/territories is progressive as shown in Appendix II for the 2021 tax year.

42. In the Canadian personal income tax system, individuals with higher taxable income have to pay a greater share of their taxable income in taxes.

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[37] The 2021 provincial tax brackets and rates for Alberta, British Columbia and Ontario are given in Appendix II.
[38] For a summary of recent provincial tax changes see David Lin (2022) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2021-2022' Canadian Tax Journal 70(1), 125-185, David Lin (2021) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2020-2021' Canadian Tax Journal 69(1), 145-215, and David Lin (2020) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2019-2020' Canadian Tax Journal 68(1), 185-250.
[39] See British Columbia, Ministry of Finance, Tax Information Sheet 2022-001, Personal Income Tax Rates: 2012-2020, January 2022.
[40] Canada Revenue Agency, Tax packages for all years, https://www.canada.ca/en/revenue-agency/services/forms-publications/tax-packages-years.html. The income thresholds were $125-$150K, $150-200K, $200-300K and above $300K.
[41] See Ontario, Ministry of Finance, News Bulletin: New Ontario Personal Tax Rates and Thresholds for 2014, August 26, 2014. Ontario also imposes surtaxes on individuals with high taxable income. A surtax is a tax on the income tax owing so it increases the amount an individual has to pay in income taxes. The Ontario surtaxes increase the average tax rate of individuals with high taxable income.

C. Non-refundable Tax Credits

43. The personal income tax schedule determines for a given taxable income how much the individual owes in taxes. Individuals can then claim non-refundable tax credits which reduces how much they actually have to pay in taxes and therefore, reduces their average tax rate.

44. A non-refundable tax credit can only reduce an individual's tax bill down to zero. If, for example, the value of the non-refundable tax credit is greater than what the individual owes in taxes, the individual does not receive the difference.

45. The value of most non-refundable tax credits are calculated using the lowest federal marginal tax rate of 15%.

    a. Suppose the amount of the tax credit is $1000 then the value of the tax credit which could be applied against any income taxes owing would be (.15)*1000 or $150.[42]

46. There are several non-refundable tax credits in the federal income tax system.[43]

47. The largest non-refundable tax credit is the basic personal amount which until 2020 was a single amount available to all individuals, but is now income-tested.[44,45]

    a. As noted in the Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations published annually by the Department of Finance, the objective of the credit for the basic personal amount is to "*promote the fairness of the tax system*" and it *"contributes to tax fairness by ensuring that no tax is paid on a basic amount of income (Report of the Royal Commission on Taxation vol. 3, 1966; Budget 1998)."* [46]

    b. In his December 13, 2019 mandate letter to the Minister of Finance Bill Morneau, the re-elected Prime Minister Justin Trudeau wrote: *"You will develop a new Basic Personal Amount (BPA) of $15,000. Higher income individuals should not benefit from this tax cut but will still receive the existing BPA tax credit."*[47]

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[42] This is true for all of the non-refundable tax credits listed in Exhibit 2.
[43] Provincial governments also offer non-refundable tax credits, but these tend to be smaller relative to the federal credit.
[44] `Largest' in terms of value of the non-refundable tax credit, i.e. the maximum credit amount times the lowest federal tax rate, and the fact that is available to all tax filers.
[45] Further details are provided in Appendix II.C.
[46] Department of Finance (2022) Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations p 108. Similar statements can be found in previous reports. See, for example, the Reports from 2016-2021 available at https://publications.gc.ca/site/eng/9.815488/publication.html.
[47] Canada, Office of the Prime Minister, Minister of Finance Mandate Letter, December 13, 2019. Available at https://pm.gc.ca/en/mandate-letters/2019/12/13/archived-minister-finance-mandate-letter.

c. A Notice of Ways and Means Motion that proposed to amend the Income Tax Act to increase the basic personal amount to $15,000 by 2023 was tabled in the House of Commons four days prior.[48] As stated in the Economic and Fiscal Update 2019, *"To ensure that this tax relief goes to the people who need help most, the Government would phase out the benefits of the increased BPA for wealthy individuals."*[49]

48. There are also a number of non-refundable tax credits that are available to individuals depending on their characteristics and circumstances such as age, marital status, and number of dependents.

a. With the introduction of the income-tested supplement to the basic personal amount, *"the Government also proposes to increase two related amounts, the Spouse or Common-Law Partner Amount and the Eligible Dependant Credit, to $15,000 by 2023. The proposed increase in the BPA and related amounts is expected to save Canadians about $25.2 billion in taxes over 2019–20 to 2024–25."*[50]

b. These two credits are available to individuals who are supporting spouse or eligible dependent and are now similarly income-tested as the BPA.[51]

49. Finally there is a set of non-refundable tax credits for certain types of expenditures, such as medical expenses, educational expenses and charitable donations.

a. The objective of some of these tax credits is to encourage certain activities deemed socially desirable. The Charitable Donation Credit is the largest example of such a non-refundable tax credit. Its objective is *"to support the important work of the charitable sector in meeting the needs of Canadians (Report of the Royal Commission on Taxation, vol. 3, 1966; 1987 Tax Reform)."*[52]

50. Some non-refundable tax credits can be transferred to a spouse or family member if the individual does not have sufficient tax owing to claim the full value of the non-refundable tax credit.

[48] Department of Finance, Economic and Fiscal Update 2019, https://www.budget.gc.ca/efu-meb/2019/docs/statement-enonce/efu-meb-2019-eng.pdf.
[49] Department of Finance, Economic and Fiscal Update 2019, https://www.budget.gc.ca/efu-meb/2019/docs/statement-enonce/efu-meb-2019-eng.pdf, p. 6.
[50] Department of Finance, Economic and Fiscal Update 2019, https://www.budget.gc.ca/efu-meb/2019/docs/statement-enonce/efu-meb-2019-eng.pdf at p 6.
[51] Further details of these two non-refundable tax credits are provided in Appendix II.
[52] Canada, Department of Finance, Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations, 2022. p 100.

51. Exhibit 2 outlines the key features of some of the main non-refundable tax credits in the federal income tax system recognizing differences in ability to pay or providing tax relief.[53]

  a. The total cost of a non-refundable tax credit reflects both the number of individuals who claim the tax credit and the value of the credit claimed by each individual. It is deemed a cost or `tax expenditure' in the sense that it is foregone government revenue relative to a tax system that did not have that particular non-refundable tax credit.[54,55]

  b. The policy objectives of these non-refundable tax credits are documented in the Department of Finance annual report on tax expenditures.[56]

Exhibit 2
Federal non-refundable tax credits, 2021 tax year

Tax Credit	Maximum Credit Amount	Projected Total Cost, Billions	Eligibility	Income-tested	Transfer Allowed	Policy Objective
Basic Personal Amount	$13,808	$46.01B	All tax filers	Supplement reduced starting at net income of $151,978.	No	*"To promote the fairness of the tax system."*
Age Amount	$7,713	$4.01B	Tax filers aged 65 and older	Amount reduced by 15% of net income in excess of $38,893 and fully clawed back at net income of $90,313.	Yes	*"This measure was introduced to reduce the tax burden borne by elderly Canadians (Budget 1972; Budget 2009)."*

[53] There are also a number of other smaller non-refundable tax credits that are typically claimed by only a small number of individuals, e.g. Search and Rescue Volunteers Tax Credit (claimed by 5.7K people in 2019) or have a very small credit amount, e.g., the Subscriptions to Canadian Digital News Media Credit which has a maximum amount of $500 for a maximum credit value of $75. Some of these smaller non-refundable tax credits also tend to end up being temporary, for example, the children's arts tax credits and the public transit tax credit.
[54] Further explanation of the assumptions on the benchmark tax system and the estimation of the total costs can be found in Department of Finance (2022) `Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations'.
[55] There is also the long-standing non-refundable dividend tax credit which is considered part of the benchmark system and therefore, not included in Exhibit 2. This tax credit is described in detail in Appendix II.
[56] Department of Finance, Report on Federal Tax Expenditures Current and Archived, https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures.html.

Canada Employment Amount	$1,257	$2.79B	Tax filers with employment income	No	No	*"This measure provides general tax recognition of work-related expenses (Budget, 2006)."*
Spousal or Common Law Partner Amount	$13,808	$1.81B	Tax filers with spouse/ common law partner	Amount reduced dollar-for-dollar by the net income of dependent spouse/common-law partner. Supplement reduced starting at net income of $151,978.	n/a	*"This measure recognizes that a taxpayer whose spouse or common-law partner has little or no income has a reduced ability to pay tax relative to a single taxpayer with the same income (Report of the Royal Commission on Taxation, vol. 3, 1966)."*
Eligible Dependent Amount	$13,808	$1.21B	Tax filers without spouse/ common law partner and an eligible dependent.	Amount is reduced dollar-for-dollar by the net income of the dependent. Supplement amount reduced starting at net income of $151,978.	n/a	*"This measure recognizes that a taxpayer without a spouse or common-law partner who is supporting a dependent relative due to mental or physical infirmity has a reduced ability to pay tax relative to a taxpayer with the same income and no such dependent (Report of the Royal Commission on Taxation, vol. 3, 1966)."*
Pension Income Credit	$2,000	$1.29B	Tax filers with eligible pension income	No	Yes	*"To provide income support or tax relief."*
Disability Tax Credit	$8,662	$1.30B	Tax filers who have been certified as having a disability.	No	Yes	*"This measure improves tax fairness by recognizing the effect of a severe and prolonged disability on an individual's ability to pay tax (Budget 1997; Budget 2005)."*
Medical Expense Tax Credit	No maximum amount (except on some	$1.80B	Tax filers with qualifying medical expenses	Can claim eligible medical expenses in excess of the	Yes	*"This measure recognizes the effect of above-average medical and disability-related expenses on the ability of*

	specific expenses)		own (or dependent)	lesser of 3% of own (or dependent) net income and $2,421.		*an individual to pay income tax (Budget 1942; Budget 1997; Budget 2005)."*
Canada Caregiver Credit	$7,348 for infirm dependent (not a spouse) Or $2,295 if taxfiler claimed another tax credit for dependent	$0.23B	Tax filers with infirm dependent	The credit is reduced dollar-for-dollar by the dependant's net income above $17,256 (in 2021) and is fully phased out when the dependant's income reaches $24,604 (in 2021).	No	*"This measure recognizes that individuals providing care for infirm family members have reduced ability to pay tax compared to other taxpayers with similar income (Budget 2017)."*
Tuition Tax Credit	No maximum amount	$2.05B	Tax filers who have paid tuition fees to designated educational institutions in excess of $100	No	Yes or carry forward	*"This measure provides students with tax relief by recognizing the costs of enrolling in qualifying programs or courses (Budget 1960)."*

Source: Information compiled from the Department of Finance (2022) Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations, available at https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures/2022.html, for each non-refundable tax credit.

D. Refundable Tax Credits

52. In addition to non-refundable tax credits, there are also refundable tax credits in the Canadian personal income tax system.

53. The key distinction between a non-refundable and refundable tax credit is that if the value of a refundable tax credit is greater than what an individual owes in taxes, the government refunds the difference to the individual. The individual then has a negative tax liability and therefore, their average tax rate is negative. They end up with more money than they had in income.

54. Refundability of tax credits increases the progressivity of the income tax system at the bottom of the income distribution. It provides a means of transferring income to those

with smaller tax burdens which are those with lower incomes given the progressive federal tax structure.

55. The progressivity achieved from a refundable tax credit can be further increased by income-testing refundable tax credits. Income-testing means reducing or claw-backing the benefits of the non-refundable tax credit with income and ensuring those with income above some threshold do not receive any benefits from the refundable tax credit.[57]

56. Some refundable tax credits are part of the annual federal tax and benefit return whereas other refundable tax credits are calculated based on annual returns but paid on a quarterly or monthly basis.

57. The three largest refundable tax credits, the Canada Worker's Benefit, the GST/HST tax credit, and the Canada Child Benefit, each target a different group of individuals.[58]

58. The Canada Worker Benefit targets low-income working individuals.

    a. *"The Canada Workers Benefit was designed to reduce barriers to employment for low-income workers by providing them with a sizable tax refund "* (Budget 2021, p 118)[59]

    b. *"Increasing support through the Canada Workers Benefit will provide incentives for more workers to rejoin the workforce, and ensure that they have more disposable income to spend, stimulating the broader economy...No Canadian working full time should live in poverty."* (Budget 2021, p 120)[60]

59. The GST/HST tax credit targets low-income individuals and families to offset the costs of the sales tax.

    a. The 1987 White Paper on Tax Reform noted that *"[t]he personal income tax and the sales tax, taken together, should become more progressive than they now are. To help achieve greater fairness, the two systems will be better integrated through a substantially enhanced refundable sales tax credit"*[61]

60. The Canada Child Benefit targets families with children.

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[57] As discussed in Appendix I, income-testing refundable tax credits increases the effective marginal tax rates.
[58] Further details of these refundable tax credits are provided in Appendix II.
[59] Department of Finance Canada, Budget 2021: A Recovery Plan for Jobs, Growth and Resilience, April 19, 2021. Available at https://www.budget.gc.ca/2021/home-accueil-en.html.
[60] Department of Finance Canada, Budget 2021: A Recovery Plan for Jobs, Growth and Resilience, April 19, 2021. Available at https://www.budget.gc.ca/2021/home-accueil-en.html.
[61] Canada, Department of Finance, *The White Paper: Tax Reform* 1987, Ottawa: Department of Finance, June 18, 1987, p 3.

a. *"Mr. Speaker, I am proud to announce the introduction of the new Canada Child Benefit—a plan to help families more than any other social program since universal health care... The size of each cheque will depend on your family, but 9 out of 10 families will get more help than they do under existing programs…It will lift hundreds of thousands of kids up from poverty."*[62]

61. Exhibit 3 lists the key characteristics of the main federal non-refundable tax credits.[63]

Exhibit 3
Federal refundable tax credits, 2021 tax year

Tax Credit	Maximum Credit Amount	Projected Total Cost (billions)	Eligibility	Income-tested	How is payment made?	Policy Objective
Canada Workers Benefit	Receive 27 cents for each dollar of earning in excess of $3000. Up to a maximum benefit of $1,395 for singles and $2,403 for families (couples or single parent).	$3.05B	Tax filers 19 years or age and older not attending school full-time	Benefit amount is claw-backed based on single or family adjusted net income.	Part of the income tax return. Can apply for advance payments.	*"This measure, like the Working Income Tax Benefit before it, makes work more rewarding and attractive for low income-earning Canadians already in the workforce, and encourages other Canadians to enter the workforce. The CWB also provides important income support to low-income working Canadians. (Budget 2007; Budget 2009; Budget 2018; Budget 2021)"*
GST/HST Credit	Depends on family composition. Amount specified per adult and per child.	$5.05B	All tax filers	Benefit amount is reduced for individuals and families with net incomes	Paid quarterly based on last year's tax return.	*"To promote the fairness of the tax system and provide income support or tax relief. This measure alleviates the regressive features of*

[62] Department of Finance, Budget 2016: Restoring Hope for the Middle Class, Speech by the Honorable Bill Morneau, P.C., M.P. March 22, 2016, https://www.budget.gc.ca/2016/docs/speech-discours/2016-03-22-en.html.
[63] Again, there are also refundable tax credits at the provincial level which tend to be much smaller relative to the federal refundable tax credits.

				greater than $38,892.		*consumption taxation."*
Canada Child Benefit	Maximum benefit depends on the age and number of children.	$24.8B	Tax filers with children	Rate at which the benefit is claw-backed depends on family adjusted net income and number of children.	Payments are made monthly based on last year's tax return.	*"This measure gives families more money to help with the high cost of raising their children."*
Medical Expense Supplement	$1,285	$0.15B	Tax filers with at least $3,751 in earnings and eligible medical expenses	Benefit is reduced by 5% of family net income above $28,446. Maximum benefit would be fully clawed-back at a family net income of $54,156.	Part of the income tax return.	*"This measure improves work incentives for Canadians with disabilities by helping to offset the loss of coverage for medical and disability-related expenses when individuals move from social assistance to the paid labour force (Budget 2006)."*
Canada Training Benefit	$250 per year up to lifetime maximum of $5000. Can use to refund up to half of qualifying course/training program.	$1.25B	Tax filers between the ages of 25 and 64	Must have earnings of at least $10,342 and net income below $151,978.	Payments made when claimed.	*"This measure was introduced to address barriers to professional development for working Canadians (Budget 2019)."*
Teacher and Early Childhood Educator School Supply Tax Credit	Claim up to $1000. Refunded at a rate of 25%.	$0.01B	Tax filers who are educators with eligible supply expenses	No	Part of the income tax return.	*"This measure provides tax recognition for costs that educators often incur at their own expense for supplies that enrich the learning environment (Budget 2016)."*

Source: Information compiled from the Department of Finance (2022) Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations, available at https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures/2022.html, for each refundable tax credit.

E. Related Policy Objectives

i. Poverty reduction

62. In 2018, the Minister of Families, Children and Social Development, Jean-Yves Duclos announced the adoption of Canada's First Poverty Reduction Strategy.

    a. *"…for the first time ever, an official poverty line for Canada, as well as targets to reduce poverty by 20 percent by 2020 and 50 percent by 2030 based on the official measure of poverty"*.[64]

63. The official poverty measure adopted was the market basket measure (MBM) which calculates the cost of a certain basket of goods in a given region in Canada for a reference family of two adults and two children and then compares it to the income a family with two adults and two children living in that region has available to spend. If the family has less than the MBM, then they are deemed to be in poverty.[65]

    a. The family income measured used is disposable income which is the family's total income (including all government income benefits) less any income taxes paid and less any non-discretionary expenses.[66]

    b. In 2020, the 2018-base MBM for a reference family ranged from $38,622 and $50,569 over the different regions with a median of $43,517 and average of $44,141.[67] For an individual, the MBM ranged from $19,311 to $25,284.[68]

64. Statistic Canada undertook a comprehensive review of the MBM in 2018 to determine whether the 2008-base MBM reflects the cost of a basket of goods and services that ensures a *"modest, basic standard of living in the Canadian context of 2018"* and includes components for shelter, clothing, food, transportation and other necessities.[69]

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[64] Employment and Social Development. Opportunity for All: Canada's First Poverty Reduction Strategy, 2018, p 3.

[65] For the most recent data on individuals living below the poverty line in Canada from 2016 to 2020, see Statistic Canada, Canadian Income Survey, 2020 Table 3 https://www150.statcan.gc.ca/n1/en/daily-quotidien/220323/dq220323a-eng.pdf?st=SxwmmYE7.

[66] Samir Dijidel, Burton Gustajtis, Andrew Heisz, Keith Lam and Sarah McDermott (2019) `Defining disposable income in the Market Basket Measure' Statistic Canada, Income Research Paper Cat. No. 75F0002M.

[67] Statistics Canada. Table 11-10-0066-01 "Market Basket Measure (MBM) thresholds for the reference family by Market Basket Measure region, component and base year" https://doi.org/10.25318/1110006601-eng.

[68] To adjust the MBM for families of differing sizes, an equivalence scale is used which reflects costs savings from living with more than one person. While there are different forms of equivalence scales which put different weight on the number and age of the members of the household (see the discussion in Chapter 8 on p 173-175 of OECD (2013), OECD *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*. Paris: OECD Publishing), the one currently being applied to calculate the MBM for different sized families in Canada is the square root rule. Whether or not this is the `best' method to use is on the future research agenda of Statistics Canada (see Andrew Heisz (2019) `An update on the Market Basket Measure comprehensive review' Statistic Canada, Income Research Paper Cat. No. 75F0002M, p 12).

[69] Samir Dijidel, Burton Gustajtis, Andrew Heisz, Keith Lam and Sarah McDermott (2019) `Towards and update of the Market Basket' Statistic Canada, Income Research Paper Cat. No. 75F0002M, p 5.

a. Based on Statistic Canada's Survey of Household Spending, the review noted that *"more than 85% of households have cellular services in all provinces, indicating that they have become a necessity since the 2008-base MBM was developed"* and therefore concluded that an amount be added to the necessities expenses component of the 2018-base MBM *"to reflect the widespread need for cellular telephone services*". [70]

65. Increases in the value of refundable tax credits increase disposable income and therefore, can reduce poverty.

a. As an example, in response to the global pandemic, the federal government utilized the CRA's tax and benefit infrastructure to provide financial support through the existing non-refundable tax credits (the GST/HST credit and the Canada Child Benefit), existing income benefit programs,[71] as well as to administer new temporary, taxable income support programs, such as the Canada Emergency Response Benefits and the Canada Recovery Benefits.[72]

b. Using the official poverty measure, the percentage of Canadians living in poverty went down from 10.3% in 2019 to 6.4% in 2020.[73,74]

ii. Addressing wealth inequality

66. The Parliamentary Budget Officer estimated that in Canada in 2019 close to 25% of total net wealth was held by Canadian families in the top 1% of net wealth distribution whereas Canadian families in the bottom 40% of the net wealth distribution owned only 1.1% of total net wealth. Net wealth of the approximately 160,600 families in the top 1% was at least $6.3 million and close to half of these families had a net wealth of more than $10 million.[75]

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[70] Samir Dijidel, Burton Gustajtis, Andrew Heisz, Keith Lam and Sarah McDermott (2019) `Towards and update of the Market Basket' Statistic Canada, Income Research Paper Cat. No. 75F0002M, p 13.
[71] See Appendix II for further details of these other government income benefit programs.
[72] The CRA delivers benefits either by cheque or direct deposit. Individuals must enroll to receive tax refunds or benefits via direct deposit. Of those tax files assessed between February 2022 and July 2022, 78% of those with a refund received their refund via direct deposit. See https://www.canada.ca/en/revenue-agency/corporate/about-canada-revenue-agency-cra/individual-income-tax-return-statistics.html.
[73] Statistic Canada (2022), Canadian Income Survey 2020 https://www150.statcan.gc.ca/n1/en/daily-quotidien/220323/dq220323a-eng.pdf?st=SxwmmYE7 p 4.
[74] Department of Finance, Chapter 1: Overview of Canada's COVID-19 Economic Response Plan in Economic and Fiscal Snapshot 2020, https://www.canada.ca/en/department-finance/services/publications/economic-fiscal-snapshot/overview-economic-response-plan.html.
[75] PBO (2021), `Estimating the top tail of the family wealth distribution in Canada: updates and trends,' https://www.pbo-dpb.ca/en/publications/RP-2122-023-M--estimating-top-tail-family-wealth-distribution-in-canada-updates-trends--estimation-extremite-superieure-distribution-patrimoine-familial-canada-mises-jour-tendances.

67. This concentration of wealth holdings prompted a public call to address wealth inequality in Canada. [76, 77] A call to which the differential impact of the pandemic across the income distribution has arguably served to heighten.[78]

68. In the 2020 Speech from the Throne it was stated that *"The Government will also identify additional ways to tax extreme wealth inequality, including by concluding work to limit the stock option deduction for wealthy individuals at large, established corporations."*[79]

    a. The government's intention to introduce a limit to the stock option deduction was announced prior to the pandemic in the 2019 Federal Budget.[80]

    b. *"Employee stock options, which allow employees to purchase shares of their employer at a designated price, are an alternative form of compensation used by businesses to attract and engage employees. For instance, many smaller, growing companies that cannot yet afford competitive salaries use employee stock options as a tool for attracting and retaining talent. The employee stock option deduction supports this objective by effectively taxing stock option benefits at a rate equal to one-half of the normal rate of personal taxation, the same rate as capital gains. However, evidence shows that the employee stock option deduction is regressive, with high-income individuals disproportionately*

[76] The NDP party's platforms in both the 2019 and 2021 federal elections contained a proposal for a wealth tax. In order to cost the impact of the NDP's proposed wealth taxes, the Office of the Parliamentary Budget Officer (PBO) developed a new database of high net-worth individuals in Canada (see, PBO (2020) `Estimating the Top Tail of the Family Wealth Distribution,' available at https://www.pbo-dpb.ca/en/publications/RP-2021-007-S--estimating-top-tail-family-wealth-distribution-in-canada--estimation-queue-superieure-distribution-patrimoine-familial-au-canada). The revenue from a 1% net annual wealth tax on net wealth over $10 million was estimated to generate $60 billion over five years with degree of uncertainty over administrative costs and family behavioural responses. See PBO (2021) `Implement annual net wealth tax' Cost Estimate of Election Campaign Proposal, https://www.pbo-dpb.ca/en/epc-estimates--estimations-cpe/44/466892. The PBO has also estimated the revenue impacts of other wealth tax proposals, see, for example, a 1% of net wealth about $20 million (PBO (2020) ` Net wealth tax on Canadian resident families,' https://www.pbo-dpb.ca/en/publications/RP-2021-017-M--net-wealth-tax-canadian-resident-economic-families--impot-patrimoine-net-familles-economiques-residant-au-canada) and a one-time tax on extreme wealth (PBO (2021) `Revenue Estimates of M-68: One-time Tax on Extreme Wealth', https://www.pbo-dpb.ca/en/publications/RP-2122-012-M--revenue-estimates-m-68-one-time-tax-extreme-wealth--estimation-recettes-mesures-prevues-dans-motion-m-68-impot-unique-richesse-extreme.

[77] The need for, and design of, wealth taxation in Canada is an active area of policy debate. See, for example, Robin Boadway and Pierre Pestieau (2019) `Over the Top: Why an Annual Wealth Tax for Canada is Unnecessary,' C.D. Howe Institute Commentary No. 546 and Andrew Jackson and Toby Sanger (2020), `Policy Forum: The Case for an Annual Net Wealth Tax,' Canadian Tax Journal 68(3), 835-850.

[78] Several public opinion polls have surveyed Canadians about their support for a wealth tax. See, for example, the 2021 survey results from Abacus Data for the Broadbent Institute and the Professional Institute of the Public Service of Canada. Tax Fairness, Public Policy & Politics in Canada, available at https://d3n8a8pro7vhmx.cloudfront.net/broadbent/pages/8116/attachments/original/1628012166/Broadbent_Institute_-_July_2021_Tax_Fairness_Report_EN.pdf?1628012166.

[79] Canada. Governor General. A stronger and more resilient Canada: Speech from the Throne to Open the Second Session of the Forty-third Parliament of Canada, September 23, 2020, p 15. Available at https://www.canada.ca/en/privy-council/campaigns/speech-throne/2020/speech-from-the-throne.html.

[80] Department of Finance Canada, Budget 2019: Investing in the Middle Class, March 19, 2019. Available at https://www.budget.gc.ca/2019/home-accueil-en.html.

benefitting from this preferential tax treatment." (Fall Economic Statement 2020, p. 113)[81]

69. Federal Budget 2021 also focused on aspects of the tax system (both at the individual and corporate level) that could be used to increase the amount of taxes paid by the very wealthy.

    a. For example, providing additional resources to the CRA to *"identify tax evasion involving trusts"* (p 307) and to Innovation, Science and Economic Development Canada to create a public database of individuals who own and control corporations (p 309), as well as an amendment to the Income Tax Act so that the *"small number of high net-worth taxpayers"* are not able to avoid paying tax debts (p 310).[82]

    b. More newsworthy was the introduction of a tax on specific luxury goods as announced on April 19, 2021 by the Federal Minister of Finance Chrystia Freeland. *"It's also fair to ask those who have prospered in this bleak year to do a little more to help those who still need help. That is why we are introducing a luxury tax on new cars and private aircraft worth more than $100,000 and pleasure boats worth more than $250,000."*[83]

70. Policy concern with the amount of taxes paid by the very wealthy is also reflected in the most recent federal budget.

    a. *"Budget 2022 announces the government's commitment to examine a new minimum tax regime, which will go further towards ensuring that all wealthy Canadians pay their fair share of tax. The government will release details on a proposed approach in the 2022 fall economic and fiscal update."* (Budget 2022 p 207).[84]

IV. Progressivity in the Canadian Personal Income Tax System

71. The average tax rate is the share of income paid in taxes and represents the resources no longer available for consumption. The average tax rate measures the income tax burden.

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81 Department of Finance, Supporting Canadians and Fighting COVID-19: Fall Economic Statement 2020, November 30, 2020, p. 113. Available at https://www.budget.gc.ca/fes-eea/2020/report-rapport/FES-EEA-eng.pdf .

82 Department of Finance Canada, Budget 2021: A Recovery Plan for Jobs, Growth and Resilience, April 19, 2021. Available at https://www.budget.gc.ca/2021/pdf/budget-2021-en.pdf.

83 Department of Finance, Budget 2021, Address by the Deputy Prime Minister and Minister of Finance, April 19, 2021. See https://www.canada.ca/en/department-finance/news/2021/04/budget-2021-address-by-the-deputy-prime-mie tister-and-minister-of-finance.html.

84 Department of Finance Canada, Budget 2022: A Plan to Grow Our Economy and Make Life More Affordable, April 7, 2022. See https://budget.gc.ca/2022/home-accueil-en.html.

72. The combined federal and provincial statutory tax schedule is progressive. Average tax rates based on statutory federal and provincial tax brackets and tax rates are increasing in taxable income.

73. As described in Section III, the Canadian personal income tax system has numerous deductions and both non-refundable and refundable tax credits which ultimately determine the income taxes an individual pays.

74. The eligibility to claim deductions and tax credits depends on the individual's characteristics and circumstances. Therefore, to determine an individual's actual (or effective) average tax rate the actual deductions and tax credits claimed must be accounted for.[85]

75. With the availability of both publicly available and confidential tax data based on individual tax returns, these individual effective average tax rate have been or can be calculated and used to determine the distribution of effective average tax rates across the income distribution.

76. The Canadian personal income tax system is progressive when accounting for all of the allowable deductions and tax credits.

A. Using Publicly Available Tax Data

77. Newly released and publicly available Statistic Canada data provides measures of the effective average tax rate over the individual income distribution.[86] The data is based on the Longitudinal Administrative Database (LAD) which is a 20% sample of Canadian annual tax filings for the entire Canadian population.

78. For each individual, an effective average tax rate is calculated as the ratio of a measure of the individual's tax liability to their total income.

    a. The measure of individual tax liability includes both federal and provincial income taxes and both federal and provincial non-refundable income tax credits.

    b. The individual tax liability does not include non-refundable tax credits and therefore, by definition cannot be negative.

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[85] The Department of Finance releases aggregate statistics from the universe of tax returns by income (grouped in income bins), major source of income, age, and gender at the national and provincial level. See, T1 Final Statistics https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/income-statistics-gst-hst-statistics/t1-final-statistics.html. Individual tax data is, however, needed to generate measures of individual income tax burdens as measured by the average tax rate defined as the ratio of income tax liability (which could be negative) to total income.

[86] Statistic Canada, Table 11-10-0054-01 "Federal and provincial individual effective tax rates" https://doi.org/10.25318/1110005401-eng.

c. Federal payroll taxes can also be included into the individual tax liability measure although arguably these are used to fund the contributory social insurance programs.

d. The individual income measure includes total income as reported for tax purposes, all realized capital gains and actual dividend income, all other federal and provincial income benefits which are not already included in total income for tax purposes and there is also an adjustment for pension income splitting.[87]

79. The mean or average effective average tax rates for individuals within a given income group, e.g., vingtile (5% of the income distribution ordered by income) is then calculated and reported.

80. Exhibit 4 shows the mean effective average tax rate for each income decile (10% of the income distribution ordered by income) and for both the top 5% and top 1% of the income distribution for the 2019 tax year.

a. Mean effective average tax rates are close to zero for the bottom two income deciles and below 3.5% for the 3rd and 4th income decile. The mean effective average tax rate then increases fairly linearly from 3.5% up to about 18% in the 9th income decile and then increases up to 23% in the top 10%. The mean effective average tax rate is even higher in the top 5% (about 26%) and much higher in the top 1% (about 31%).

b. A similar pattern in mean effective average tax rates is obtained over the income distribution when including payroll taxes in the individual tax liability as shown by the last column in Exhibit 4.

[87] The measure of federal income benefits include all refundable tax credits (GST/HST credit, CWB, CCB), employment insurance and CPP/QPP benefits, and OAS/GIS benefits, and the measure of provincial income benefits includes all provincial refundable tax credits, social assistance and workers compensation benefits. The income measure is similar to the one used by Statistic Canada except for the inclusion of capital gains and RRSP withdrawals and the pension income splitting adjustment. See Nell Hamalainen and Tahsin Mehdi (2019) `Effective Income Tax and Transfer Rates: Technical Reference Note,' Income Research Paper Series, Statistic Canada. https://www150.statcan.gc.ca/n1/pub/75f0002m/75f0002m2019006-eng.htm

Exhibit 4
Mean Effective Average Tax Rates, 2019 Tax Year

Income Decile	Lower Threshold of Total Income	Mean Effective Average Tax Rate	Mean Effective Average Tax Rate (with payroll taxes)
P0-10	0	0.1	0.8
P11-20	10,000	0.2	1.95
P21-30	17,500	1.05	2.8
P31-40	23,400	3.5	5.9
P41-50	30,700	7.15	10.20
P51-60	38,900	10.05	13.60
P61-70	47,700	12.35	16.55
P71-80	59,000	15.25	19.35
P81-90	75,400	18.0	21.45
P91-100	102,200	23.23	25.35
Top 5%	134,200	25.9	27.4
Top 1%	273,400	31.1	31.7

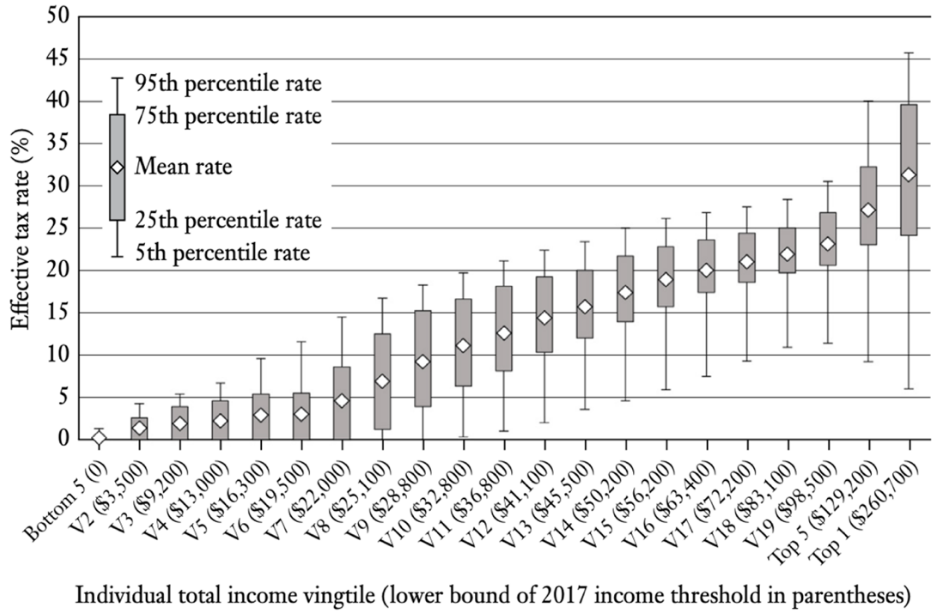
Source: Calculated from Statistic Canada, Table 11-10-0054-01 "Federal and provincial individual effective tax rates" https://doi.org/10.25318/1110005401-eng using the 2019 tax year for all taxpayers 18 and older in Canada. The minimum lower threshold of total income indicates the minimum income of individuals in the specific income decile or of individuals in the top 5% or top 1% of the income distribution.

81. Individuals with the same total income might claim different deductions and tax credits given eligibility can depend on individual characteristics, personal choices and type of income. Therefore, individuals with the same total income can have different tax liabilities and therefore different average tax rates.

82. Medhi and Murphy (2021) use the same publicly available Statistic Canada data to characterize both the mean and distribution of effective average tax rates by income vingtile for the 2017 tax year as shown in Exhibit 5.[88]

[88] Tashin Mehdi and Brian Murphy (2021) `Finances of the Nation: Net Income Tax Rates and the Changing Progressivity of the Cash Tax/Transfer System,' Canadian Tax Journal 69(2), p 575-593.

Exhibit 5
Mean and Distribution of Average Tax Rates, 2017 Tax Year



Source: Statistics Canada table 11-10-0054-01, "Federal and Provincial Individual Effective Tax Rates."

Source: Tashin Mehdi and Brian Murphy (2021) `Finances of the Nation: Net Income Tax Rates and the Changing Progressivity of the Cash Tax/Transfer System,' Canadian Tax Journal 69(2), at p 580.

a. Payroll taxes are included in the measure for total tax liability, so the mean effective average rates are similar to those in the last column of Exhibit 4 as is their pattern over the income distribution.

b. Mean effective average tax rates are close to zero for the bottom 10% of the income distribution and below 5% for the bottom third of the income distribution. The mean effective average tax rate then increases fairly linearly from a mean rate of 5% up to about 23% in the 19th vingtile and then sharply increases up to 27% in the top 5% of the income distribution and is over 30% in the top 1% of the income distribution.

c. There is variation in individual effective average tax rates within a given income vingtile across the income distribution.[89] The largest difference between the 25th

[89] Within a given income vingtile, one can order the individual effective average tax rates from lowest to highest. This has been done for each income vingtile in Exhibit 6. The bottom end of the solid bar for each income vingtile indicates that 25% of the individual effective average tax rates in that income vingtile lie below that rate and the top end of the solid bar indicates that

and 75th percentile of average tax rates occurs in the middle of the income distribution, likely reflecting the eligibility for different tax credits and the payment of payroll taxes, and at the very top of the distribution, likely reflecting the amount of capital income and charitable donations within the top 1% of the income distribution.[90,91]

83. Medhi and Murphy (2021) also calculate a net of transfer effective tax rate by subtracting all federal and provincial income benefits which include refundable tax credits, social insurance benefits, public pension benefits, old age benefits, and social assistance from the measure of individual tax liability used above.

    a. These net of transfer effective tax rates at the bottom of the income distribution are all very negative, averaging around minus 50% for those in the bottom third of the income distribution. Starting from the 7th vingtile the net of transfer effective tax rate begins to increases linearly, reaching zero around the 13th vingtile (more than halfway up the income distribution) and then up to a rate of 30% at the top of the income distribution.[92]

    b. Most recipients of other government income benefit programs are in the bottom half of the income distribution.

84. Smart (2019) uses the same Statistic Canada data as Medhi and Murphy (2021) and also uses additional Statistic Canada data on the top income tax filers to calculate the effective average tax rates (excluding payroll taxes) by income deciles for the 2016 tax year.[93,94]

    a. He finds that *"average income tax rates increase with income across deciles. Tax filers in the bottom 30 percent of the distribution pay average tax rates of less than 1 percent, reflecting the impact of the income exemption through the [basic] personal amount and of non-refundable tax credits that bring basic federal tax to zero in most cases. Average tax rates rise through middle incomes,*

25% of the effective average tax rates for individuals in that income vingtile lie above that rate. Similarly the bottom(top) dash indicates 5% of individual effective average tax rates lie below(above) that rate.

[90] Tax expenditures (as described in Section III) related to capital income (in particular the exclusion of 50% of realized capital gains) and stock options as well as for charitable donations were found to be top-end regressive. That is, the share of the benefits from the tax expenditure going to the top 1% is greater than their income share. See, Brian Murphy, Mike Veall and Michael Wolfson (2015) `Top-End Progressivity and Federal Tax Preferences in Canada: Estimates from Personal Income Tax Data,' Canadian Tax Journal 63(3), 661-688.

[91] In 2020, taxfilers with incomes of $150,000 were less than 10% of total donors, but made more than 40% of total donations. See Table 3 of Statistic Canada, Charitable donors, 2020 https://www150.statcan.gc.ca/n1/en/daily-quotidien/220412/dq220412d-eng.pdf?st=hM-nRt8g.

[92] See Figure 9 in Tashin Mehdi and Brian Murphy (2021) `Finances of the Nation: Net Income Tax Rates and the Changing Progressivity of the Cash Tax/Transfer System,' Canadian Tax Journal 69(2), at p 587.

[93] Michael Smart (2019) `Finances of the Nation: Taxation of Top Incomes in Canada – Recent Developments in Rates and Redistribution,' Canadian Tax Journal 67(2), p 349-361.

[94] Statistic Canada. Table 11-10-0055-01 "High income tax filers in Canada" https://doi.org/10.25318/1110005501-eng.

reaching 24 percent on average in the top decile and 31 percent on average in the top 1 percent." (Smart 2019, p 355)

b. He also notes that *"Under the federal government's current accounting conventions, payments received under the Canada child tax benefit and its successor programs are treated as government spending rather than tax reductions. If these payments were instead netted from tax payments as in past practice, average tax rates reported for the bottom half of the income distribution would be substantially lower."* (Smart 2019, p 355)

B. Using Confidential Tax Data

85. Milligan (2022) uses 2018 individual income tax returns to calculate the individual average tax rates. The tax data comes directly from the Longitudinal Administrative Database (LAD) which can only be accessed in secured Statistic Canada research data centres.[95]

a. *"First, no matter the definition of taxes and no matter what the year, the Canadian personal income tax is progressive, with higher-income earners paying a higher [average tax rate] ATR than lower-income earners along the whole income spectrum from P0 to P99. Second, the degree of progressivity varies sharply across different definitions in the bottom half of the income distribution. Whether the ATR at the bottom of the income distribution is −50 percent or +1 percent hinges on whether refundable tax credits, on and off the tax form, are included..."* (Milligan 2022, p 217)[96]

86. He uses total income reported on the individual's income tax return including all of the individual's capital gains income and their actual dividend income as the individual's total income measure.

87. He calculates four different individual tax liability measures.

a. The first is calculated directly from the income tax form using only the tax rate and bracket structure and any non-refundable tax credits.

b. The second includes other items on the tax form, including refundable tax credits such as the Canada Worker Benefit.

[95] Statistic Canada, Longitudinal Administrative Database (LAD), https://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=4107

[96] Kevin Milligan (2022), `How Progressive is the Canadian Personal Income Tax? A Buffett Curve Analysis' Canadian Public Policy 48(2), 211-224.

c. The third measure of tax liability includes other refundable tax credits not delivered on the tax form, such as the GST/HST tax credit and the Canada Child Benefit.

d. The fourth measure adds the payroll taxes paid by individuals to the third measure.

88. For each definitions of tax liability, individual effective average tax rates are calculated and the mean of the individual average tax rates for each income percentile (1% of the income distribution ordered by income) is then calculated and presented in the four panels of Exhibit 6.[97]

a. Effective average tax rates calculated using only the tax rate and bracket structure and any non-refundable tax credits cannot be negative. The mean effective average tax rate is zero in the bottom quartile of the income distribution and then it increases linearly from zero up to about 20% at the 90th percentile before increasing more sharply up to over 28% in the top percentile (top 1%) of the income distribution as shown in Panel 1 of Exhibit 6.[98]

b. Including the tax-form refundable tax credits reduces the mean effective average tax rates for the bottom quartile and they become negative but these additional tax form items do not affect the mean effective average tax rates for individuals with income above the 25th percentile as shown in Panel 2 in Exhibit 6.

c. Including the refundable credits delivered off the tax form significantly reduces the mean average tax rates for those in the bottom quartile of the income distribution as shown in Panel 3 in Exhibit 6. These refundable credits also reduce the mean effective average tax rates above the 25th percentile. The mean effective average tax rates are negative up to about the 40th percentile. In fact, the mean effective average tax rates are reduced for all income percentiles except the top 1% which reflects the fact that the Canada Child Benefit is not fully reduced until fairly far up the income distribution.[99]

d. Including payroll taxes increases the mean effective average tax rates across the income distribution as expected as shown in Panel 4 in Exhibit 6.

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[97] Except the bottom 20 percentiles which were aggregated into four groups, that is, four vingtiles. (Milligan 2022, p 214)

[98] This pattern of the mean effective average tax rate across the income distribution in Panel 1 of Exhibit 7 is similar to the pattern in Exhibit 6, but at slightly different rates due to the difference in both the numerator (excluding payroll taxes) and the denominator (not including all government income benefits).

[99] The average income of those in the bottom half of the income distribution is $19,900, those between the 50-89th percentile $62,700, those in the top 10% $139,000 and those in the top 1% $664,000. (Milligan 2022, Table 1, p 214).

Exhibit 6
Mean Average Tax Rates, 2018 Tax Year

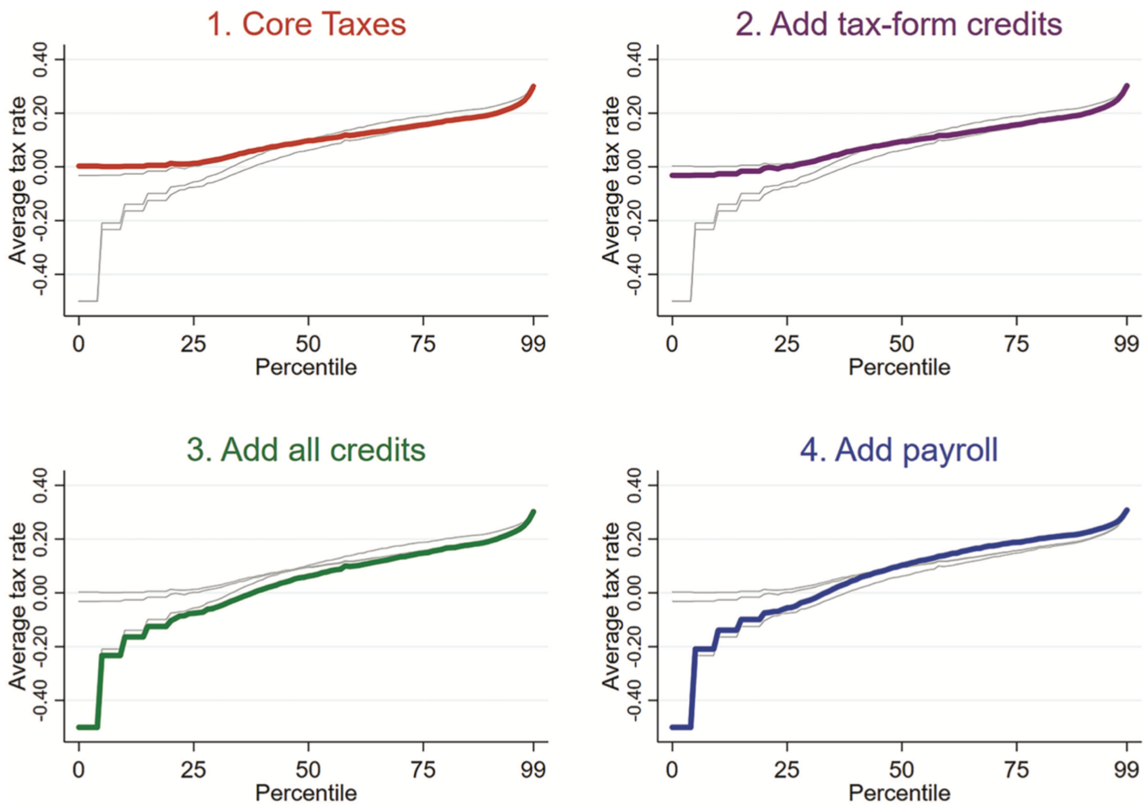

Figure 1: Average Tax Rates for 2018 with Alternative Measures

Note: Each panel highlights a different average tax rate measure, with the other three measures in the background in grey.

Source: Author's calculations using the Longitudinal Administrative Database for 2018.

Source: Kevin Milligan (2022), `How Progressive is the Canadian Personal Income Tax? A Buffett Curve Analysis' Canadian Public Policy 48(2), at p 214.

89. Calculating Panel 2 in Exhibit 6 for each year between 1982-2018, Milligan (2022, p 214-15) notes that

    a. *"At the bottom, the expansion of the Canada Workers Benefit (first called the Working Income Tax Benefit) lowered ATRs below zero for many working low-income earners."*

    b. *"At the top, new high-income tax brackets and tax rates in several provinces and at the federal level pushed up the ATR, specifically in P99."*

90. The highest mean average tax rate is in the top 1% of the income distribution across all measures of tax liability used.

a. A greater share of total income comes from dividend and capital gains income in the top 1% of the income distribution relative to the rest of bottom 99% of the income distribution. There is, however, variation in the composition of total income even within the top 1%. For the top 0.1% income group, the majority of income comes from dividend and capital gains income and this share increases even further up the income distribution with capital gains becoming the dominant source of income in the top .005% of the income distribution.[100]

b. Milligan (2022) calculates the mean average tax rates within smaller defined income groups within the top 1% and finds that the mean average tax rates increase over these smaller defined income groups except for at the very top (top .005%).

c. *"The lighter personal tax treatment of capital gains and dividends would lower the measured tax burden for capital income recipients, who are concentrated among high earners. An analysis that attributes those corporate taxes to the individual might show higher tax burdens for high earners."*[101,102] The mean average tax rate of those in the top 1% over these smaller defined income groups goes up when accounting for corporate taxes that are borne in part by shareholders.[103]

91. Kurnaz and Yip (2022) do a similar exercise as Milligan (2022), but use the 2016 tax year data and calculate effective average tax rates of households rather than of individuals.[104]

a. A household is a single individual with or without any children under the age of 18 or a couple (married/common-law) with or with any children under the age of 18.

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100 See Figure 4 in Kevin Milligan (2022), `How Progressive is the Canadian Personal Income Tax? A Buffett Curve Analysis' Canadian Public Policy 48(2), 211-224.
101 Kevin Milligan (2021) `Average Tax Rates in the Canadian Personal Income Tax,' National Tax Journal 74(2) p 513-527 at p 519-520.
102 Corporations would have paid tax on income that flows to shareholders in the form of dividends or capital gains. Therefore, the preferential tax treatment of capital income in the personal income tax system is arguably related to the integration of the corporate and personal income tax systems. See Kenneth J. McKenzie (2021) `The Taxation of Capital Income in Canada: Analysis and Directions for Reform,' National Tax Journal 74(2) p 529-551.
103 Ownership of Canadian-controlled private corporations (CCPC) could also affect individual average tax rates. Using linked income tax returns of Canadian-controlled private corporations (CCPC) and the CCPC owner's personal income tax return (as well as their families), authors have shown that the income share going to those in the top 1% increases when including the CCPC income they (indirectly) benefit from. See Michael Wolfson, Mike Veall, Neil Brooks and Brian Murphy (2016) `Piercing the Veil: Private Corporations and the Income of the Affluent,' Canadian Tax Journal 64(1), p 1-30. In another paper, authors look specifically at the impact of being able to split income as an owner of a CCPC. See Michael Wolfson and Scott Legree (2015) `Policy Forum: Private Companies, Professionals, and Income Splitting – Recent Canadian Experience,' Canadian Tax Journal 63(3), p 717-737.
104 Musab Kurnaz and Terry A. Yip (2022) `The Canadian Income Taxation: Statistical Analysis and Parametric Estimates,' Canadian Journal of Economics 55(1), 272-311.

92. They use before-tax family or household income rather than individual income as the denominator for their calculated average tax rate.

93. They consider two different measures of household tax liability.

   a. The first includes only federal and provincial household income taxes.

   b. The second includes all federal and provincial household income taxes net of all federal and provincial non-refundable and refundable tax credits received by the household.

94. They calculate the mean average tax rate for a given quintile (20% of the household income distribution ordered by income).

   a. The mean average tax rates are *“substantially increasing in the [household] income distribution”* and the *“federal and provincial tax credits dramatically reduced the average tax rates of households at the left tail of [household] income distribution.”* (Kurnaz and Yip 2022, p 286)

   b. Without accounting for federal and provincial tax credits, the mean average tax rates in the bottom quintile was close to zero, 6% in the second quintile, 11.4% in the third, 15.1% in the fourth and 19.7% in the top quintile and a mean average tax rate of 28.8% in the top 1% of the household income distribution.[105]

   c. Including federal and provincial tax credits in the numerator resulted in negative mean average tax rates in the bottom two quintiles and very negative mean average tax rate in the bottom quintile.

   d. The mean average tax rate over the top three quintiles was lower relative to not including any tax credits in the measure of household tax liability, but the mean average tax rate in the top 1% of the household income distribution remained unchanged.

95. Overall, the pattern in the distribution of the income tax burden is remarkably similar whether looking at individual or household average tax rates across the relevant income distribution.

96. Refundable tax credits significantly reduces the average tax rates for individuals and households in the bottom of the income distributions. Average tax rates can be quite negative at the very bottom of the distributions. On average, they are negative over the

[105] The mean household income in each of the five quintiles was $10,800, $33,100, $59,400, $96,400 and $216,00 (Kurnaz and Yip, 2022 Table 5(d) p 291).

bottom 40% of the income distributions, then increase linearly over the top half of the distribution with a relatively sharp increase in the top 1% of the income distributions.

97. This pattern of average tax rates is also similar to numerically simulated optimal tax schedules based on a social welfare approach to taxation in which priority is given to those with low well-being.

    a. *"The discussion of tax structures in the optimal income tax literature has been almost entirely about marginal tax rates. Notably, almost all analytical results focus on the structure of marginal tax rates to the neglect of average tax rates, the latter of which are arguably more important indicators of income tax progressivity. After all, high marginal tax rates as such perform no direct distributional function; their purpose is to increase average tax rates higher up the income scale. In fact, in all cases shown in our Tables and Figures, average tax rates are increasing in income. Analytically it is difficult to establish this, but computational techniques can demonstrate these patterns."*[106]

V. Summary

98. I have been asked to consider the approach taken in the Canadian personal income tax system for determining the allocation of income tax burdens and the implications for how the Competition Tribunal could or should weight the impact of income transfers against efficiencies brought forward by the merging parties in the balancing test found in section 96 of the Competition Act.

99. The allocation of income tax burdens in the Canadian personal income tax system determines the available resources an individual or household has for their own use given the individual or household's income and other characteristics.

    a. Having to pay taxes means less resources. Receiving a refund means more resources. In the former case, the individual or household's average tax rate is positive and in the latter case, the average tax rate is negative.

    b. A lower average tax rate means more available resources as a share of income.

[106] Matti Tuomala and Matthew Weinzierl Chapter 4 `Prioritarianism and Optimal Taxation' in *Prioritarianism in Practice*, Matthew Adler and Ole Norheim (editors), (Cambridge: Cambridge University Press) 2022, p 7. The approach taken in the optimal income tax literature is to use an index of an individual's well-being (or utility) that depends on both leisure time and goods consumed as the basis for taxation. The choice of tax system comes from maximizing a social welfare function that is assumed to be increasing in each individual's index of well-being. Much of the focus of this literature has been on identifying the trade-offs in designing an income tax system between achieving equity objectives (i.e., redistributing income/well-being between different individuals) and efficiency (i.e., accounting for how taxes affect individual work decisions on the margin and therefore the potential income tax base). Thus, its focus on marginal tax rates. For further information, see Robin Boadway and Katherine Cuff (2022), `Tax Policy: Principles and Lessons' in Robin Boadway, Frank A. Cowell, Massimo Florio (eds.) Cambridge Elements: Elements in Public Economics (Cambridge University Press: Cambridge) 2022.

i. Consider again an individual with an income of $40,000 who faces an average tax rate of 15% and another individual with an income of $100,000 who faces an average tax rate of 17.91%. After paying taxes, the low income individual has 85% of their income available to spend and the high income individuals has 82.09% of their income.

ii. Consider next an individual with an income of $10,000 who receives a tax refund of $1,000. Their average tax rate is -1,000/10,000 = -10%. The resources they have available to spend is $11,000 or 110% of their income.

100. The allocation of income tax burdens in the Canadian personal income tax system reflects policy choices and their implicit social value judgements about individuals and households with different incomes and characteristics.

101. A guiding equity principle of the Canadian income tax system is that those with a greater ability to pay should pay a greater share of their incomes in taxes than those with lower incomes. That is, the income tax system should be progressive.

102. Ability to pay can be affected by an individual's characteristics or circumstances and these factors are explicated recognized in the Canadian personal income tax system through allowable deductions and non-refundable tax credits.

103. The Canadian personal income tax system also has refundable tax credits that are targeted to particular groups, such as low-income individuals, low-income workers, and families with children. Refundable tax credits increase the resources available to eligible individuals.

104. Aspects of the Canadian income tax system are also used to achieve specific policy objectives beyond ensuring that the share of income paid in taxes is greater for those with a greater ability to pay. For example, refundable tax credits have been used to achieve the policy objective of reducing poverty and other tax-related policies are currently being used or being considered to address wealth inequality.

105. The Canadian personal income tax system is progressive. The mean effective average tax rates of those within the same income group, i.e. percentile, vingtile, decile or quintile, increases as one moves into higher income groups with the mean average tax rate increasing sharply in the top 1% of the income distribution.

a. The mean average tax rate in the bottom third of the income distribution is close to zero, then becomes positive and increases linearly over the remainder of the distribution with a relatively sharp increase in the top 1% of the income distribution when average tax rates are calculated using only tax rates and non-refundable tax credits.

b. The mean average tax rates in the bottom quarter of the income distribution are quite negative (and very negative in the bottom of the income distribution), then increase linearly, only becoming positive around the 40^{th} percentile and then sharply increasing at the top 1% of the distribution when refundable tax credits are included in calculating the average tax rates.

106. The Canadian personal income tax system treats higher income individuals/households differently than lower income individuals/households reflecting an underlying equity principle and specific policy objectives.

107. This differential treatment of different income groups by the Canadian personal income tax system suggests a potential differential weighting of the resource losses and/or gains to those with different incomes as a result of a price increase of a necessity good. The Competition Tribunal should consider this in determining how to weight the impact of income transfers against efficiencies brought forward by the merging parties in the balancing test found in section 96 of the Competition Act.

Appendix I: Technical Definitions

108. Define Y to be total income. The **total tax liability** of an individual with income Y is given by the function $T(Y)$. If the total tax liability is positive, then the individual needs to pay money to the government, known as tax owing and $T(Y)>0$. If the total tax liability is negative, then the individuals receives money from the government, known as a tax refund and $T(Y)<0$.

109. The resources available to the individual after income taxation is given by $Y – T(Y)$ and is often called **disposable income**.

110. The **average tax rate** is defined as the share of income the individual pays in taxes, that is, total tax liability divided by total income, $ATR(Y)=T(Y)/Y$ where the average tax can be a function of income.

111. Using the definition of the average tax rate, the individual's disposable income can be rewritten as $Y(1-T(Y)/Y)$ or $Y(1-ATR(Y))$.

112. The **marginal tax rate** is the change in total tax liability with a small change in income or how much additional income tax the individual has to pay if they have one more dollar of income, that is, the derivative of the total tax liability function with respect to income $dT(Y)/dY=T'(Y)=MTR(Y)$. Similarly the marginal tax rate is a function of income.

113. How the individual's disposable income changes with an additional dollar on income is given by $d(Y-T(Y))/dY = 1 -MTR(Y)$.

114. The **progressivity** of an income tax system refers to what happens to the share of income paid in taxes (i.e., the average tax rate) as income goes up. If the average tax rate is higher when income is higher, then the income tax system is **progressive**. If the average tax rate is lower when income is higher, then the income tax system is regressive. If $dATR(Y)/dY > 0$, then the tax system is progressive and if $dATR(Y)/dY < 0$, then the tax system is regressive.

115. A marginal tax rate schedule is also called progressive if the marginal tax rate is increasing in income, that is, the derivative of the marginal tax rate function with respect to income is positive, $dMTR(Y)/dY=MTR'(Y)>0$.

116. A **proportional income tax system** has both an average tax rate and a marginal tax rate that does not change with income. All individuals, regardless of income, pay the same share of their income in taxes and pay the same amount on an additional dollar of income. The income tax liability function for a proportional income tax system would be given by $T(Y) = tY$ where t is a positive constant, such as, .1 which would say all individuals pay 10% of their income in taxes.

117. Suppose individuals only had to pay income taxes on income above a certain income level. Define this **income exemption** threshold as E where E would take on a certain dollar amount. For example, suppose the income exemption amount is $1000 so the individual would only have to pay taxes on any income over $1000. This type of income tax exemption introduces progressivity into the income tax system. How much progressivity depends on whether the income tax exemption is designed as a refundable tax credit or as a non-refundable tax credit.

118. Consider first the design of the income tax exemption as a **refundable tax credit**. In this case, income taxes are payable only on income earned above some income threshold E and any negative tax liability is refunded to the individual. The tax liability function can be expressed as $T(Y)=t(Y-E)$ which will result in tax owing if $Y>E$ and a tax refund if $Y<E$. Individuals with zero income will receive an amount of tE in a tax refund. The average tax rate is now $T(Y)/Y=t-tE/Y$ which is higher for individuals with higher incomes. The refundable tax credit makes the income tax system progressive. The higher the income threshold the more progressive the income tax system will be, that is, the average tax rate will go up by more for a given increase in income. A higher income tax exemption threshold also means both that the low income individuals receiving a refund will now receive a larger refund and that more individuals will receive a tax refund.

119. Consider next the design of the income tax exemption as a **non-refundable tax credit**. In this case, if income is below the income tax exemption threshold, no tax refund is given. The tax liability function can be expressed as $T(Y)=t(Y-E)$ which is positive if $Y>E$ and zero otherwise. The average tax rate of those with incomes below the income threshold E is now zero. For those with incomes above the income tax exemption, the average tax rate is positive and given by $T(Y)/Y= t-tE/Y$, for $Y>E$, and will be greater the higher income is.

120. For a given income tax exemption E, the income tax system will be more progressive if it is designed as a refundable tax credit than as a non-refundable tax credit.

121. Another way to introduce progressivity into an income tax system is to give a direct income transfer.

122. Consider an **income benefit** B that is given to everyone regardless of income through the income tax system. This income transfer reduces the total tax owning of the individual and the income tax liability function can now be written as $T(Y)=tY-B$. This is a form of negative income tax system. The average tax rate is $t-B/Y$ which is increasing in Y. This system is progressive and the rate of progressivity depends on the income benefit level. A higher benefit increases the progressivity of the system.

123. Suppose the income benefit depends on income, often called an **income-tested benefit**. Let c be the claw-back rate, that is for every dollar of income, the income benefit is reduced by c. The tax liability function can be written as $T(Y)=tY-B+cY$ for $Y<B/c$ and

T(Y)=tY otherwise. The income benefit is completely claw-backed when income is B/c. For those receiving the income benefit (those with income less than B/c), the marginal tax rate is now c+t and the average tax rate is t+c -B/Y which is increasing in income. The system is more progressive the greater the income benefit is. For those not receiving the income benefit, the marginal tax rate and average tax rate are both equal to t.

124. Greater targeting of income benefits to those with lower income can be achieved by increasing the claw-back rate. Having a claw-back of the benefit reduces the cost of the income benefit program. With these cost savings, the benefit could be increased and thereby increase the progressivity of the tax system (for those receiving the benefit). The flipside of this is that each additional dollar of income is now taxed at rate t and for those receiving the income benefit their benefit is clawed back by c. Therefore, the effective marginal tax rate is now c+t for those receiving the income benefit which could create disincentives to work.

Appendix II: Details of the Canadian Personal Income Tax System

A. Determining taxable income

125. **Total individual income** is given by the sum of all the individual's income from working either for an employer or for themselves, from financial or property investments, from a private pension or registered retirement savings plan, from receiving scholarships or withdrawals from a registered education savings plan, and from receiving taxable government benefits such as employment insurance benefits (EI), Old Age Security (OAS) and public pension benefits (CPP/QPP). Non-taxable government benefits are also included in total income. These include provincial social assistance and workers' compensation benefits and the federal Guaranteed Income Supplement (GIS) and Allowances.

126. Subtracting allowable deductions from total income determines the individual's **net income before adjustments**.[107]

    a. Most deductions are for employment or work-related costs incurred by the individual reflecting non-discretionary expenses. That is, money that must be spent in order to earn income. For example, deductions for union dues which must be paid in order to work at a given place of employment, deductions for childcare so the individual can leave the home to work or deductions for office expenses paid by a self-employed individual or employees working from home.

    b. The other main type of deduction exists for encouraging savings. Individuals can put money into a registered retirement savings or registered retirement plan and deduct this amount from their total income. Therefore, they do not pay income tax on the money put into such an account. They do, however, pay income tax on the money when it is taken out of these registered retirement savings accounts.

    c. Finally, eligible individuals receiving private pension income can split their pension income with a spouse.[108] Any amount of pension income given to their spouse can be deducted from the individual's total income. The receiving spouse must claim the pension income received as part of their total income. Given the income bracket and tax rate structure of the tax system (described in Section

[107] The benefit of deducting a dollar of income is the income tax that is saved on that dollar. For the last dollar deducted, that tax savings would be equal to the marginal tax rate.
[108] This measure was introduced in the 2006 Federal Tax Fairness Plan on October 30, 2016. See https://www.canada.ca/en/news/archive/2006/10/canada-new-government-announces-tax-fairness-plan.html.

III.B.i), couples can potentially reduce their total tax burden by splitting pension income.[109]

127. From net income before adjustments, the individual can then deduct any repayments they have to make on taxable government income benefits, such as Old Age Security or Employment Insurance benefits to determine **net income**. This deduction is given to recognize the fact that the individual would otherwise have to pay tax on a benefit amount that they will not actually receive.[110]

128. From net income, further allowable deductions are made to obtain **taxable income**.

a. As part of net income, any non-taxable government benefits, such as social assistance and the Guaranteed Income Supplement affects eligibility for other income-tested benefits, but must be deducted from net income to obtain taxable income.

b. The last set of deductions from net income are related to either being in a particular geographic area or having particular forms of income, including security options and capital gains and losses.[111] After this final set of deduction, the individual's taxable income is obtained.

129. As mentioned, some forms of income are not taxed. Some non-taxable income such as provincial social assistance payments are reported on the income tax form whereas other forms of non-taxable income are not reported at all, such as lottery winnings or income earned in tax-free savings accounts.

130. Income from capital gains also receives special income tax provisions. Any capital gain income from selling your primary residence is exempt from income taxation and only 50% of realized capital gain income for other sources is included in the total income and subject to income taxation.[112,113] Individuals can also apply any capital losses to previous

[109] Recent work shows that couples did shift pension income to the lower income spouse with the introduction of pension splitting. See Derek Messacar (2022) `Labor Supply Responses to Income Taxation among Older Couples: Evidence from a Canadian Reform,' mimeo. Available at https://drive.google.com/file/d/1xdomb1tZOilzo1H1FZbvBVs_kBgtNHRs/edit.
[110] These taxable income benefits are delivered outside of the tax system and depend on individual circumstances which can change over the year. Consequently, individuals may receive more benefits than they are actually eligible to receive and therefore, they must pay back these additional benefits or overpayments.
[111] The stock option deduction allows an employee who exercises a stock option to claim a 50% deduction on the taxable benefit of the option. The federal government's 2020 Fall Economic Statement introduced new rules to limit this deduction. See section 4.8.2.1 Employee Stock Options in Supporting Canadians and Fighting COVID-19: Fall Economic Statement 2020, https://www.budget.gc.ca/fes-eea/2020/report-rapport/toc-tdm-en.html.
[112] Tax treatment of capital gains income is an active area of policy debate as a result of public concern with wealth inequality in Canada and the suggestion that this preferential tax treatment is disproportionally benefitting very wealthy Canadians. See, for example, the Editor's Introduction to the 2021 'Policy Forum: The Rate of Taxation on Capital Gains' in the Canadian Tax Journal 69(4) p 1151-5 and the papers therein.
[113] As noted in the Department of Finance (2022) Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations on p 251, the partial inclusion of capital gains income was first introduced in Budget 1971, the 1987 Tax Reform increased the inclusion rate from 50% to 75% over a three year period and it was then reduced back down to 50% in 2000 where it has

years' capital gains or carry-forward the losses to be used against future capital gains. These losses are not included in net income so as not to affect an individual's eligibility for income-tested tax credits. There is also a lifetime capital gains exemption for individuals who sell a qualified business or property which is similarly not included in net income.[114]

B. Statutory income tax schedules

Exhibit 7
Select Provincial income tax schedules, 2021 tax year

2021 Alberta Taxable Income Brackets*	2021 Alberta Marginal Income Tax Rates
$131,200 or less	10%
More than $131,200 to $157,464	12%
More than $157,464 to $209,952	13%
More than $209,952 to $314,928	14%
More than $314,928	15%

*Starting In 2020, Alberta stopped indexing taxable income for inflation.

2021 British Columbia Taxable Income Brackets*	2021 British Columbia Marginal Income Tax Rates
$42,184 or less	5.06%
More than $42,184 to $84,369	7.7%
More than $84,369 to $96,866	10.5%
More than $96,866 to $117,623	12.29%
More than $117,623 to $159,483	14.7%
More than $159,483 to $222,420	16.8%
More than $222,420	20.5%

*These taxable income amounts are adjusted for inflation.

2021 Ontario Taxable Income Brackets*	2021 Ontario Marginal Income Tax Rates^
$45,142 or less	5.05%
More than $45,142 to $90,287	9.15%
More than $90,287 to $150,000	11.16%
More than $150,000 to $220,000	12.16%
More than $220,000	13.16%

*These taxable income amounts are adjusted for inflation. ^Ontario also has a surtax of 20% of basic provincial tax greater than $4,874, and an additional surtax of 36% of basic provincial tax greater than $6,182.

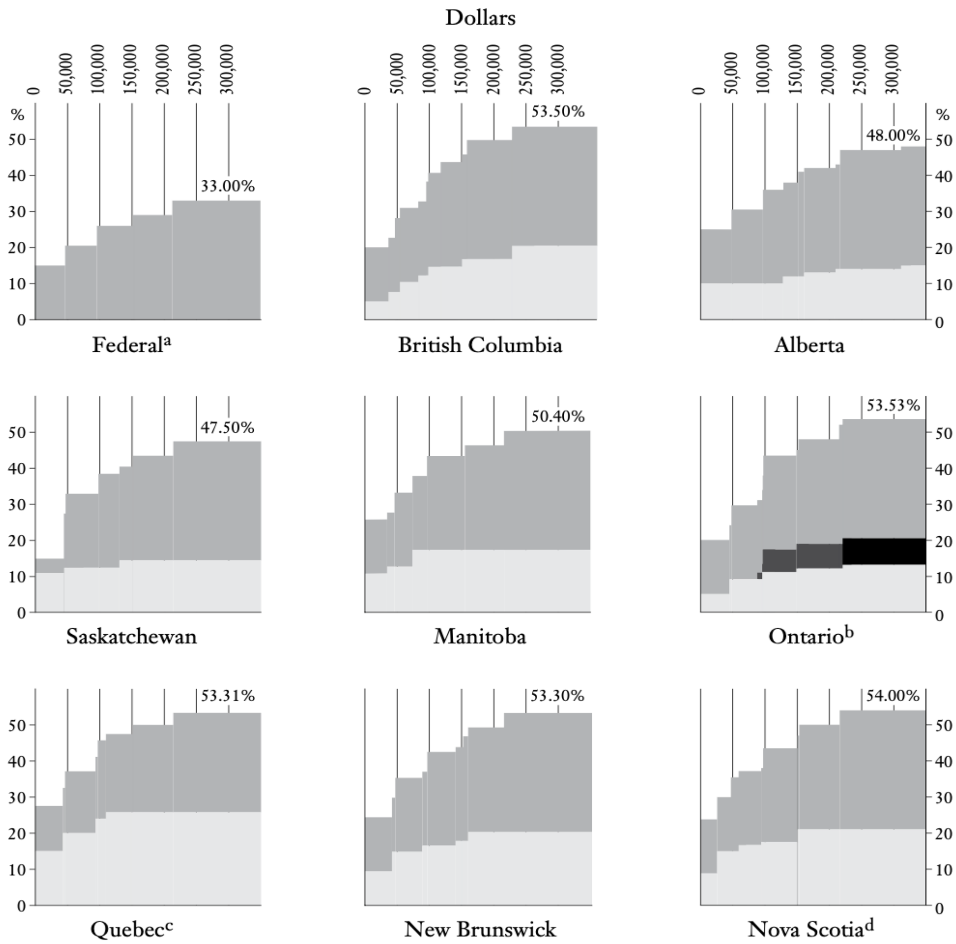
Information in the tables is from CRA T1 income tax packages for 2021, https://www.canada.ca/en/revenue-agency/services/forms-publications/tax-packages-years/general-income-tax-benefit-package.html and information about indexing is from David Lin (2020) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2019-2020,' Canadian Tax Journal 68(1), 185-250.

remained. The rationale given for the partial inclusion is to encourage savings, investment and keep the treatment of capital gains comparable to other countries.

[114] Canada Revenue Agency, Capital Gains 2021, https://www.canada.ca/content/dam/cra-arc/formspubs/pub/t4037/t4037-21e.pdf.

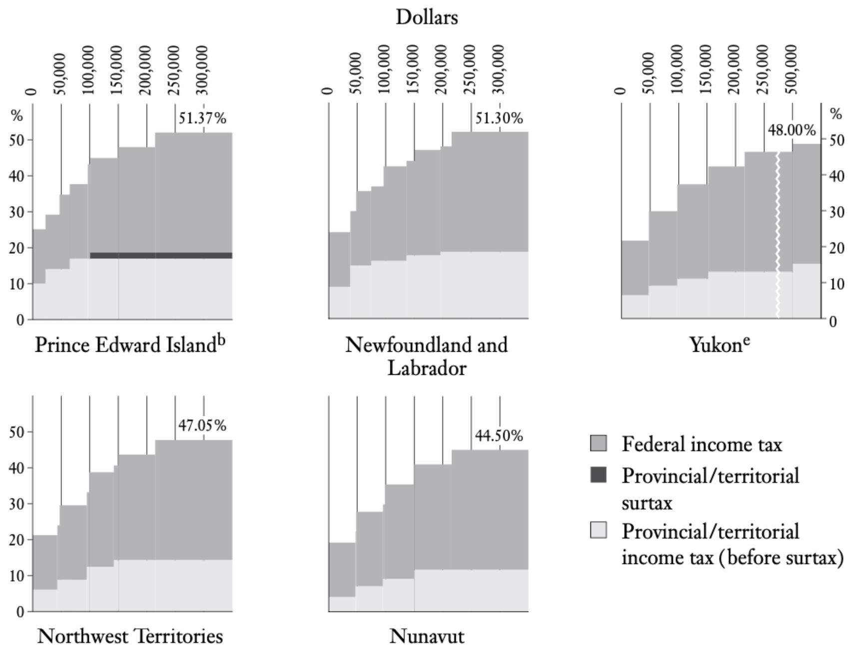
Exhibit 8
Combined Federal and Provincial/territorial marginal income tax rates for 2021 tax year

FIGURE 4 Personal Income Tax Marginal Rates Applicable to Taxable Income, 2021



(Figure 4 is concluded on the next page.)

FIGURE 4 Concluded



a The federal basic personal amount is reduced when a taxpayer's net income is $151,978 or more. The federal rates presented do not reflect this clawback of the basic personal amount.

b Surtax calculations assume that the only credit claimed by the taxpayer is the basic personal amount.

c Federal income tax has been reduced by 16.5 percentage points to reflect the provincial abatement.

d Nova Scotia's basic personal amount is increased by up to $3,000 if taxable income is under $75,000. The provincial rates do not reflect the tax savings from an increased basic personal amount.

e Yukon's basic personal amount is reduced when a taxpayer's net income is $151,978 or more. The territorial tax rates presented do not reflect this clawback of the basic personal amount.

Source: Data compiled by the author.

Source: David Lin (2022) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2021-2022' Canadian Tax Journal 70(1) at p 144-145.

C. Non-refundable tax credits

131. The non-refundable **charitable donation tax credit** uses both the lowest and two highest federal tax rates to calculate the value of the non-refundable tax credit. The first $200 of an individual's charitable donations multiplied by the lowest federal rate of 15% and any donations above $200 at the second highest federal tax rate of 29% except for those individuals in the highest income tax bracket who receive a credit for donations above $200 at the highest federal tax rate of 33%. Charitable donations can be claimed by either spouse and in general, the maximum amount that can be claimed is 75% of the

individual's net income. Claims can also be made for any (unclaimed donations) made in the previous five years.[115]

132. There is also a non-refundable **dividend tax credit** for dividend income from Canadian corporations. This is part of a longstanding feature of the Canadian income tax system called the dividend gross-up and tax credit mechanism. It is considered part of the benchmark tax system and not a tax expenditure. The mechanism is designed to ensure what is called integration between the personal and corporate income tax systems, so that no matter how income flows through a corporation to an individual the tax rate will be the same.[116]

133. Individual can claim a non-refundable tax credit for any **social security contributions** that they have made on their earnings, for example, employment insurance (EI) and public pension (CPP/QPP) contributions. These social security contributions fund the employment insurance and public pension programs, both of which are forms of social insurance programs.

a. Both employees and employers (on behalf of their employees) are legally required to make these EI and CPP/QPP contributions up to a maximum annual amount. [117,118] Consequently, they are also known as payroll taxes. Generally employees' contributions are withheld from employees' earnings by the employer and remitted directly to the government by the employer.

b. The employee contribution rates are not linked to earnings, so the share of earnings paid in contributions is proportional to earnings until the maximum annual amount is reached. Almost all individuals with earnings above the

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115 See Canada Revenue Agency, `Claiming charitable tax credits', https://www.canada.ca/en/revenue-agency/services/charities-giving/giving-charity-information-donors/claiming-charitable-tax-credits.html.

116 Dividends are paid out of after-tax profits of corporations to its shareholders and therefore have already been taxed at the corporate level. The system requires that individuals report a gross-up amount of their dividend income as part of their total income where the gross-up rate depends on whether the dividend income is deemed eligible or ineligible then the individuals can claim a non-refundable tax credit where again the rate depends on whether the dividend income is deemed eligible or ineligible. Eligible dividend income has not benefited from any preferential tax treatment at the corporate level. The gross-up rate and credit rate for eligible(ineligible) dividend income is 38%(15%) and 15.0198%(9.0301%), respectively. See, Canada, Department of Finance, Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations, 2022. p 147.

117 In 2021, the maximum annual insurable earnings was $56,300 and the federal premium EI rate for employees was 1.58%. Any earnings about the maximum annual insurable amount is not subject to the EI rate. The maximum annual employee premium was $889.54. The employer's maximum annual premium was $1,245.36. See EI premium rates and maximums at https://www.canada.ca/en/revenue-agency/services/tax/businesses/topics/payroll/payroll-deductions-contributions/employment-insurance-ei/ei-premium-rates-maximums.html.

118 In 2021, the maximum annual pensionable earnings was $61,600, but with a basic exemption of $3,500. Any earnings below the exemption and above the maximum annual pensionable earnings is not subject to CPP contributions. The employee contribution rate was 5.45% for a maximum annual employee contribution of $3,166.45. The employer's CPP contribution rates are the same as the employee. See CPP contribution rates, maximums and exemptions at https://www.canada.ca/en/revenue-agency/services/tax/businesses/topics/payroll/payroll-deductions-contributions/canada-pension-plan-cpp/cpp-contribution-rates-maximums-exemptions.html. In Quebec, the 2021 contribution rate was 5.9% for a maximum annual contribution of $3,427.90. See Pensionable earnings and contributions, QPP at https://www.retraitequebec.gouv.qc.ca/en/publications/nos-programmes/regime-de-rentes-du-quebec/retraite/Pages/revenus-de-travail-admissibles-et-cotisations.aspx).

threshold for the maximum contribution amounts would be paying these payroll taxes.[119]

c. For those individuals paying the maximum annual amount, the share of earnings paid in contributions will be decreasing. Therefore, the average tax rate for these payroll taxes (defined by employee contributions/earnings) is constant up to a certain level of earnings and then it is decreasing in earnings.

134. The **basic personal amount** ensures that individuals do not have to pay any income taxes if their income is below a certain amount.[120]

a. Prior to tax year 2020, there was a single basic personal amount (BPA) for all individuals indexed annually for inflation. For tax year 2019, this amount was $12,069. The value of tax credit is calculated as the BPA ($12,069) times the lowest federal marginal tax rate (15%) which in 2019 would have been $1,810. Any individual whose calculated tax bill using the federal income tax schedule was $1,810 or less would owe zero taxes. The tax burden of these individuals goes from being positive to zero and therefore the credit for the BPA increases the progressivity of the tax system at the bottom end of the taxable income distribution.

b. The credit for the BPA also reduces the tax bill for an individual who owes more than $1,810 in taxes, that is, has a taxable income greater than the basic personal amount of $12,069. As the value of the basic personal amount is fixed the reduction in income taxes as a share of taxable income will be smaller for individuals with higher taxable income.

c. The basic personal amount is legislated to increase from 2020 until 2023 after which the basic personal amount will be indexed annually for inflation. These annual legislated amounts are $13,229, $13,808, $14,398, and $15,000, respectively. Starting in 2020, only those individuals with net income of $150,473 (roughly those individuals in the first three taxable income brackets) receive the full value of the increased in the basic personal amount. Individuals with net incomes greater than $214,368 in 2020 (roughly those in the top income bracket) do not receive any of the increases in the basic personal amount. They will only receive the inflation indexed basic personal amount (which was $12,298 in 2020). Individuals with net income between $150,473 and $214,368 face a claw-back on the increase in the basic personal amount. In this income range, the more net income an individual has the less they benefit from the additional

[119] See Table 1 in Tashin Mehdi and Brian Murphy (2021) Finances of the Nation: Net Income Tax Rates and the Changing Progressivity of the Cash Tax/Transfer System,' Canadian Tax Journal 69(2), 575-593 which shows the percentage of tax filers across the total income distribution that pays payroll taxes.

[120] The reported details on the Basic Personal Amount are taken from https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/federal-government-budgets/basic-personal-amount.html.

increases in the basic personal amount. For every dollar of net income above the lower income threshold ($150,472 in 2020), the additional amount of basic personal amount ($931 in 2020) is claw-backed at a rate of one over the difference between the income thresholds (1/63,895 in 2020).[121] The net income thresholds are indexed for inflation each year.

135. The **Spouse/Common Law Partner Credit** and the **Eligible Dependent Credit** are available to an individual if they are supporting their spouse/common law partner or if they do not have a spouse/common law partner, but are supporting an eligible dependent.

a. The amounts of both of these credits have (since 2007) been set at the basic personal amount and the value of the non-refundable credit calculated by the credit amount times the lowest federal marginal tax rate (15%). The amounts for both credits are reduced dollar-for-dollar with the net income of the spouse/common law partner or eligible dependent.

b. The supplement to both the Spouse/Common Law Partner and Eligible Dependent Amounts are similarly income-tested as the increase in the Basic Personal Amount. Only those in the first three federal tax brackets can benefit from the full increase, those in the highest tax bracket (net income greater than $217K in 2021) do not benefit at all from the increase and those in the fourth highest tax bracket (net income greater than $151K in 2021) have the increase reduce with their net incomes.

D. Refundable tax credits

136. The **Canada Workers Benefit** was introduced in the 2018 Federal Budget and replaced the previous Working Income Tax Benefit (WITB) in the 2019 tax year. It increased both the maximum benefit that could be received by single individuals and families (couples and single parents) and the maximum individual and family net income thresholds to be eligible to receive the maximum benefit relative to the Working Income Tax Benefit (as shown in Exhibit 5).

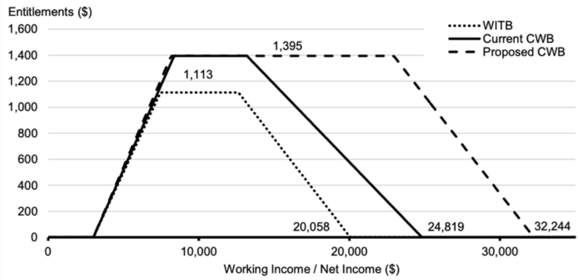
137. Budget 2021 significantly increased the net income thresholds for single individuals and families at which point the maximum benefit is claw-backed meaning more low income single individuals and families will receive the maximum CWB. Further, the family net income threshold can now exclude up to $14,000 of income of the secondary earner in the family meaning the CWB will be received by families higher up the income distribution. Finally, the claw-back rate on each dollar of net income above the thresholds was increased from 12% to 15%. The CWB is completely clawed-back at a net income of

[121] Calculated using the 2020 and 2021 Federal Worksheet for Line 3000 Basic Personal Amount, https://www.canada.ca/en/revenue-agency/services/forms-publications/tax-packages-years/general-income-tax-benefit-package/5000-d1.html.

$32,444 for single individuals and $42,197 for families (excluding up to $14,000 of income of the secondary earner).

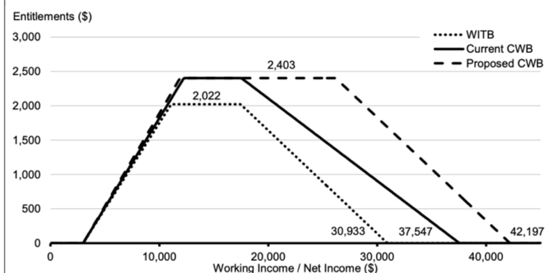
Exhibit 9
Canada Workers Benefit for Single Individuals and Families, 2019 and 2021 Tax Years

Chart 3.5
Entitlements for Single Individuals Without Children Under the Former Working Income Tax Benefit, the Current Canada Workers Benefit, and the Proposed Canada Workers Benefit, 2021



Note: Budget 2018 introduced the Canada Workers Benefit, a strengthened and more accessible benefit that replaced the Working Income Tax Benefit starting in 2019.

Chart 3.6
Entitlements for Families Under the Former Working Income Tax Benefit, the Current Canada Workers Benefit, and the Proposed Canada Workers Benefit, 2021



Note: Budget 2018 introduced the Canada Workers Benefit, a strengthened and more accessible benefit that replaced the Working Income Tax Benefit starting in 2019. Under the proposed CWB, family net income excludes up to $14,000 of a secondary earner's working income.

Source: Department of Finance Canada, Budget 2021: A Recovery Plan for Jobs, Growth and Resilience, April 19, 2021. Available at https://www.budget.gc.ca/2021/home-accueil-en.html.

138. There is also a **Canada Workers Benefit Disability Supplement** of $720 for any individual receiving the CWB who is also eligible for the Disability Tax Credit. This supplementary amount is only claw-backed (at a rate of 15%) once the maximum CWB has been completely claw-backed. Therefore, the CWB disability supplement is completed claw-backed at $37,044 for singles, at $46,997 for families with one eligible spouse and at $51,707 if both spouses are eligible.[122]

139. The refundable **GST/HST tax credit** was introduced in 1991 with the adoption of the Goods and Service Tax by the Federal government. The rationale for the credit was to offset the costs of the GST/HST for low income individuals.

   a. The amount of the GST/HST credit depends on the composition of the family. [123]

   b. In 2021, the annual basic credit amount for an adult was $299. This is the same amount for a spouse or the first child of a single parent. The annual basic credit for the first child of a couple or the second child of a single parent was $157. The total amount of GST/HST credit then depends on the number of adults and children in the family.

[122] For further details of the CWB, see https://www.canada.ca/en/revenue-agency/services/child-family-benefits/canada-workers-benefit.html.
[123] For further details of the GST/HST credit, see https://www.canada.ca/en/revenue-agency/services/child-family-benefits/goods-services-tax-harmonized-sales-tax-gst-hst-credit.html.

c. How much a family receives depends on the family's net income as reported in the previous tax year.[124] For net incomes of less than $38,892, the total credit amount is received and for single individuals with net income above $9,868 they receive an additional 2% for every dollar of net income up to a maximum of $157. For every dollar of net income above this threshold, the credit amount is claw-backed at a rate of 5%. The GST/HST tax credit payments are typically completely claw-backed at family net incomes between $50-64K depending on family composition.[125]

140. The **Canada Child Benefit** was introduced in the 2016 Federal Budget to replace the existing system of child benefits.

a. The total maximum annual benefit a family receives depends on the number and ages of children in the family. The maximum annual benefit for a child under 6 was $6,833 and for a child aged 6-17 was $5,765 in 2021.

b. Families receive the total maximum amount provided family net income as reported in the previous tax year is less than a given income threshold ($32,038 in 2021).[126] For each additional dollar of family net income about this threshold, the total maximum amount is claw-backed. By how much depends both on the number of children in the family and the family net income.

c. For one child, the claw-back rate is 7%, for two children it is 13.5%, for three children it is 19% and for four or more children it is 23%. The claw-back rates decrease once the family net income exceeds $69,395 in which case they go down to 3.2% for one child, 5.75% for two, 8% for three and 9.5% for four or more. Canada Child Benefits are calculated every July based on the previous year's family net income and then paid monthly. [127]

d. At what family income level the Canada Child Benefit is completely claw-backed will depend both on family income and the ages and number of children.

i. Of those families receiving income from the Canada Child Benefit in the 2018-2019 benefit year, 40% had a family net income below $50K, 54% had incomes between $50K and $150K and 6% had incomes of $150K and above.[128]

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[124] Net income is adjusted so as to exclude any income from registered disability savings plan.
[125] See Canada Revenue Agency, Family income level where the recipient will no longer receive the GST/HST credit, https://www.canada.ca/en/revenue-agency/services/child-family-benefits/goods-services-tax-harmonized-sales-tax-gst-hst-credit/family-income-level-where-recipient-will-no-longer-receive-gst-hst-credit.html.
[126] Net income is adjusted so as to exclude any income from registered disability savings plan.
[127] See Canada Revenue Agency, Canada child benefit https://www.canada.ca/en/revenue-agency/services/child-family-benefits/canada-child-benefit-overview/canada-child-benefit-we-calculate-your-ccb.html.
[128] Calculated from CCB Benefit Year 2018-2019 Statistics, Table 1: CCB Recipients and Payments by Province or Territory and Net Family Income, https://www.canada.ca/content/dam/cra-arc/prog-policy/stats/ccb-stats/2017-tax-year/ccb1-eng.pdf.

ii. As the amount of the benefit is reduced with family net income, of the total amount of benefits distributed, 59% went to families with net incomes less than $50K, 40% to families with net incomes between $50-150K and 1% to families with income of $150K and above.[129]

141. Initially, a refundable tax credit when introduced in 2018, the **Climate Action Incentive Payment** (CAIP) is a non-taxable amount that is paid to families to offset the cost of the federal carbon pricing system.

   a. The CAIP is only available in those provinces that have not adopted their own pollution pricing system (Alberta, Manitoba, Ontario and Saskatchewan) and represents about 90% of the revenue generated from the federal pollution pricing.

   b. Payments depend on the composition of the family and are not income-tested. There is a 10% rural supplement that an individual must apply for when filing their income taxes.

   c. As of July 2022, payments are being made on a quarterly basis by the CRA benefit system. While the payment is meant to compensate households for the increase in the cost of consuming goods subject to pollution pricing it name suggests it also being used as an incentive for individuals and households to reduce their consumption of these goods.[130]

E. Government income benefit programs

142. **Employment Insurance (EI)** is a contributory social insurance program that provides temporary income supply to eligible individuals who are unemployed and benefits to individuals who stop working temporarily for family care-giving reasons or pregnancy.[131] These benefits are included in an individual's total income and subject to personal income taxation.

143. The **Canada/Quebec Pension Plans (CPP/QPP)** is a contributory social insurance program that provides partial replacement of earnings to contributors and their families during retirement and in case of disability or death.[132] CPP/QPP benefits are taxable.

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[129] Calculated from CCB Benefit Year 2018-2019 Statistics, Table 1: CCB Recipients and Payments by Province or Territory and Net Family Income, https://www.canada.ca/content/dam/cra-arc/prog-policy/stats/ccb-stats/2017-tax-year/ccb1-eng.pdf.

[130]For further details, see Canada Revenue Agency, Climate action incentive payment at https://www.canada.ca/en/revenue-agency/services/child-family-benefits/cai-payment.html and Department of Finance Canada, Climate Action Incentive payment amounts for 2022-23 at https://www.canada.ca/en/department-finance/news/2022/03/climate-action-incentive-payment-amounts-for-2022-23.html.

[131] The Employment Insurance Program is governed by the Employment Insurance Act (S.C. 1996, c.23) and the Employment Insurance Regulations (SOR/96-332). Details of the Employment Insurance program can be found at https://www.canada.ca/en/employment-social-development/programs/ei.html.

[132] The Canada Pension Plan program is governed by the Canada Pension Plan (R.S.C., 1985, c. C-8), and the Canada Pension Plan Regulations (C.R.C., c 385). The Canada Pension Plan applies to all Canadians working or worked in all provinces/territories except Quebec. The Quebec Pension Plan offers a similar program as the Canada Pension Plan.

144. The **Old Age Security (OAS)** pension is a taxable benefit that is paid monthly to individuals 65 and older.

a. Payment amounts are based on how long the individual has lived in Canada after the age of 18. The maximum monthly payment amount ($666.83 in 2022) can be received only if the individual has lived in Canada for 40 years.

b. The maximum OAS payments are clawed-back at a rate of 15% for every dollar of net income above a given income threshold ($79,845) and are completely claw-backed at a net annual income of $129,757.[133]

c. In 2021, there was a one-time payment of $500 to OAS recipients aged 75 and older and as of July 2022, the maximum monthly OAS payments to this group of seniors increased by 10%.[134]

145. The **Guaranteed Income Supplement** is a non-taxable monthly payment based on income for those receiving Old Age Security. The **Allowance** is a supplementary non-taxable monthly benefit available to low-income individuals who are the spouse or common-law partner of someone who is receiving the GIS and are between the ages of 60-64. The Allowance for the Survivor is a supplementary non-taxable monthly benefit available to low-income individuals between the ages of 60-64 whose spouse has died. The maximum monthly GIS depends on marital status and whether the spouse receives the full OAS pension or the Allowance. The maximum GIS and two Allowance payments are reduced based on family net income.[135]

[133] For program details, see Old Age Security: Overview https://www.canada.ca/en/services/benefits/publicpensions/cpp/old-age-security.html.
[134] Section 7 of the Old Age Security Act (R.S.C., 1985, c. O-9).
[135] For program details, see Guaranteed Income Supplement Overview https://www.canada.ca/en/services/benefits/publicpensions/cpp/old-age-security/guaranteed-income-supplement.html.

Exhibit "B": Curriculum Vitae, Katherine Cuff

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Updated August 2022

Academic Positions

McMaster University, Hamilton, Ontario, Canada
- Full Professor, Department of Economics, since 2016.
- Canada Research Chair in Public Economic Theory Tier II, 2009 – 2019.
- University Scholar, 2015 – 2019.
- Associate Professor, Department of Economics, 2006 – 2016.
- Assistant Professor, Department of Economics, 2000 – 2006.

University of Melbourne, Melbourne, Australia
- Visiting Professor, Melbourne Institute of Applied Economic and Social Research, 2017.

University of Exeter, Exeter, United Kingdom
- Visiting Professor, Tax Administration Research Centre, 2016.

Vanderbilt University, Nashville, Tennessee, United States of America
- Visiting Scholar, Department of Economics, 2008 – 2009.

CESifo, Munich, Germany
- Research Network Member, Public Economics Area, since April 2021.

Degrees

Ph.D. Economics, Queen's University, Kingston, Ontario, Canada	2000
Awarded the C.A. Curtis Award for Best Doctoral Thesis in Economics	
M.A. Economics, York University, Toronto, Ontario, Canada	1995
B.A. (Honours) Economics, Queen's University, Kingston, Ontario, Canada	1994

Editorial Positions

Managing Editor, *Canadian Journal of Economics*, 2018 – 2022.
Editorial Advisory Board, *International Tax and Public Finance*, since 2016.
Editor, *FinanzArchiv/Public Finance Analysis*, 2014 – 2018.
Guest Co-Editor for the IIPF Special Issue of *International Tax and Public Finance,* 2016 – 2017.
Associate Editor, *Canadian Public Policy*, 2011 – 2015.

Executive Positions in Professional Organizations

Officer, Canadian Economics Association, 2018 – 2022.
Vice-President, Board of Management, International Institute of Public Finance, 2018 –2021.
Member, Board of Management, International Institute of Public Finance, 2011 – 2017.
President, Canadian Women Economist Network/Réseau de Femmes Économistes, 2010 – 2011.
Executive Council Member, Canadian Economics Association, 2007 – 2010.

Research Publications

Book Chapters in Edited Volumes

Boadway, R. and K. Cuff, "Tax Policy: Principles and Lessons,' in Robin Boadway, Frank A. Cowell, Massimo Florio (eds.) Cambridge Elements: Elements in Public Economics (Cambridge University Press: Cambridge) 2022.

Boadway, R., K. Cuff, and K. Koebel, "Designing a Basic Income Guarantee for Canada," in Elizabeth Goodyear-Grant, Richard Johnston, Will Kymlicka and John Myles (eds.) Federalism and the Welfare State in a Multicultural World (Queen's School of Policy Studies and McGill-Queen's University Press: Kingston) 2019.

Boadway, R. and K. Cuff, "The Recent Evolution of Redistribution in Canada," in Keith Banting and John Myles, eds., *The Fading of Redistributive Politics: Inequality and the Politics of Social Policy* (UBC Press: Vancouver), 2013.

Burbidge, J. and K. Cuff, "Mandatory Retirement and Incentives in University Defined Benefit Pension Plans," in Michael G. Abbott, Charles M. Beach, Robin W. Boadway, and James G. MacKinnon (eds.) *Retirement Policy Issues in Canada* (McGill-Queen's University Press: Kingston) 2009.

Boadway, R., K. Cuff, and N. Marceau, "Design of Assistance Programs to Address Real Income Volatility," in Dean Jolliffe and James Ziliak (eds.) *Income Volatility and Food Assistance in the United States* (W.E. Upjohn Institute: Michigan) 2008.

Peer-Reviewed Articles

Boadway, R. and K. Cuff, "A Generalization of the Deaton-Hellwig Results on Uniform Commodity Taxation," *Journal of Public Economics*, forthcoming.

Cuff, K., S. Mongrain, and J. Roberts, "Evasion of Fiscal and Labour Regulations: Firm Behaviour and Optimal Tax Policy," *Journal of Public Economic Theory* 22(1) (February 2020), 69–97.

Buckley, N., D. Cameron, K. Cuff, J. Hurley, S. Mestelman, and S. Thomas, "A Behavioral Economic Study of Tax Rate Selection by the Median Voter: Can the Tax Rate be Influenced by the Name of the Publicly Provided Private Good?" *Theoretical Economics Letters* 8(3) (February 2018), 485–501.

Boadway R. and K. Cuff, "Optimal Unemployment Insurance and Redistribution," *Journal of Public Economic Theory* 20(3) (June 2018), 303–324.

Boadway, R. and K. Cuff "The Impressive Contribution of Canadian Economists to Fiscal Federalism Theory and Policy," *Canadian Journal of Economics* 50(5) (December 2017), 1348–1380.

Buckley, N. K. Cuff, J. Hurley, S. Mestelman, S. Thomas, and D. Cameron, "Should I Stay or Should I Go? Public Provision of a Private Good with an Exit Option," *Journal of Economic Behavior & Organization* 131B (November 2016), 62–77.

Boadway, R. and K. Cuff, "Tax Treatment of Bequests when Donor Benefits are Discounted," *International Tax and Public Finance* 22 (August 2015), 604–634.

Buckley, N., K. Cuff, J. Hurley, S. Mestelman, S. Thomas, and D. Cameron, "Support for Public Provision of a Private Good with Top-Up and Opt-Out: A Controlled Laboratory Experiment," *Journal of Economic Behavior & Organization* 111 (March 2015), 177–196.

Boadway, R. and K. Cuff, "Monitoring and Optimal Income Taxation with Involuntary Unemployment," *Annals of Economics and Statistics* 113/114 (June 2014) 121–157.

Buckley, N., K. Cuff, J. Hurley, L. McLeod, S. Mestelman, and D. Cameron, "An Experimental Investigation of the Demand for Private Insurance and of Health Systems Outcomes under a Mixed System of Public and Private Finance," *Journal of Economic Behavior & Organization* 84 (December 2012), 713–729.

Cuff, K., J. Hurley, S. Mestelman, A. Muller, and R. Nuscheler, "Public and Private Health Care Financing with Alternate Public Rationing Rules," *Health Economics* 21 (February 2012), 83–100.

Buckley, N., K. Cuff, J. Hurley, L. McLeod, R. Nuscheler, and D. Cameron, "Willingness-to-Pay for Parallel Private Health Insurance: Evidence from a Laboratory Experiment," *Canadian Journal of Economics* 45 (February 2012), 137–166.

Cuff, K., S. Hong, J. Schwartz, Q. Wen, and J. Weymark, "Dominant Strategy Implementation with a Convex Product Space of Valuations," *Social Choice and Welfare* 39 (July 2012), 567–597.

Cuff, K., N. Marceau, S. Mongrain, and J. Roberts, "Optimal Policies and the Informal Sector," *Journal of Public Economics* 95 (December 2011), 1280–1291.

Hurley, J., N. Buckley, K. Cuff, M. Giacomini, and D. Cameron, "Judgments Regarding the Fair Division of Goods: The Impact of Verbal versus Quantitative Descriptions of Alternative Divisions," *Social Choice and Welfare* 39 (July 2011), 341–372.

Burbidge J., K. Cuff and J. Leach, "Tax Competition with Heterogeneous Firms," *Journal of Public Economics* 90 (February 2006), 533–549.

Burbidge, J. and K. Cuff, "Capital Tax Competition and Returns to Scale," *Regional Science and Urban Economics* 35 (July 2005), 353–373.

Boadway, R., K. Cuff, and N. Marceau, "Agglomeration Effects and the Competition for Firms," *International Tax and Public Finance* 11 (September 2004), 623–645.

Boadway, R., K. Cuff, and N. Marceau, "Redistribution and Employment Policies with Endogenous Unemployment," *Journal of Public Economics* 87 (October 2003), 2407–2430.

Boadway, R., K. Cuff, and M. Marchand, "Equalization and the Decentralization of Revenue-Raising in a Federation," *Journal of Public Economic Theory* 5 (April 2003), 201–228.

Boadway, R., K. Cuff, and N. Marceau, "Inter-Jurisdictional Competition for Firms," *International Economic Review* 43 (August 2002), 761–782.

Boadway, R. and K. Cuff, "A Minimum Wage Can Be Welfare-Improving and Employment-Enhancing," *European Economic Review* 45 (March 2001), 553–576.

Boadway R., K. Cuff, and M. Marchand, "Optimal Income Taxation with Quasi-Linear Preferences Revisited," *Journal of Public Economic Theory* 2 (October 2000), 435–460.

Cuff, K., "Optimality of Workfare with Heterogeneous Preferences," *Canadian Journal of Economics* 33 (February 2000), 149–174.

Boadway, R. and K. Cuff, "Monitoring as an Instrument for Targeting Transfers," *International Tax and Public Finance* 6 (August 1999), 317–337.

Non-Peer Reviewed Articles

Boadway, R. and K. Cuff (2020) "Designing a Basic Income: Lessons from the Optimal Tax Literature," Research paper written for the British Columbia Basic Income Panel.

Boadway, R., K. Cuff, and K. Koebel (2018) "Can Self-Financing Redeem the Basic Income Guarantee? Disincentives, Efficiency Costs, Tax Burdens, and Attitudes: A Rejoinder," *Canadian Public Policy* 44(4), 447-457.

Cuff, K. and A. Weichenrieder (2017) "Introduction to the special issue on entrepreneurship, innovation and public policy" *International Tax and Public Finance* 24(4), 547–549.

Invited Presentations and Seminars

University of British Columbia Okanagan, Melbourne Institute, Monash University, University of Adelaide and Curtin University, University of Exeter, New York State University at Buffalo, University of Oslo, University of Victoria, University of Regina, Mount Allison University, University of Windsor, University of Florida, Vanderbilt University, University of Calgary, University of Guelph, John Deutsch Institute Queen's University, University of Waterloo, Brock University, Wilfrid Laurier University, York University, Ryerson University, Canada-Japan Conference on Fiscal Federalism and Local Public Finance, Warwick/IFS/ESRC Public Economics Weekend, University of Alberta, University of Western Ontario, Dalhousie University, McMaster University and Simon Fraser University.

Peer-Reviewed Conference Presentations

CESifo Area Conference on Public Economics, Annual Congress of the International Institute of Public Finance (various years), International Conference on Public Economic Theory (twice), Conference of the Italian Public Economics Society, Annual Conference of the Canadian Economics Association (various years), Annual Meetings of the Southern Economic Association (twice), World Congress on Health Economics (twice), Journées Louis-André Gérard-Varet Conference, CES/NBER Trans-Atlantic Public Economics Seminar, and Canadian Public Economics Group Annual Meeting (various years).

External Research Funding (Principal Applicant's Name is Underlined)

Social Sciences and Humanities Research Council of Canada Connection Grant, $17,990, "Canadian Public Economics Group and Public Economics United Kingdom Workshop", Katherine Cuff and Kimberley Scharf, April 2018 – March 2019.

Social Sciences and Humanities Research Council of Canada, Insight Grant, $118,000, “Tax Competition with Heterogeneous Capital”, Katherine Cuff, Steeve Mongrain and Joanne Roberts, April 2014 – March 2018.

Canadian Foundation for Innovation, Leaders Opportunity Fund, $100,000, “McMaster Decision Science Laboratory (McDSL)”, Neil Buckley, Katherine Cuff, and Jeremiah Hurley, April 2014.

Canadian Institute for Health Research, Operating Grant, $138,087, “Judgments of Equity in Health Care Resource Allocation”, Neil Buckley, Katherine Cuff, Mita Giacomini, Jeremiah Hurley, and Stuart Mestelman, January 2012 – June 2013.

Social Sciences and Humanities Research Council of Canada, Research Grant, $136,651, “Experiments on Majority–Rule Voting over the Public Provision of Private Goods”, Neil Buckley, Katherine Cuff, Jeremiah Hurley, and Stuart Mestelman, April 2011 – March 2014.

Social Sciences and Humanities Research Council of Canada, Research Grant, $62,000, “Political Economy and Social Policy”, Katherine Cuff, Steeve Mongrain, and Joanne Roberts, April 2011 – March 2014.

Social Sciences and Humanities Research Council of Canada, Research Grant, $43,162, “Public Expenditure Policy and Private Goods”, Katherine Cuff, April 2006 – March 2009.

New Emerging Teams (NET) Grant, Canadian Institute for Health Research, $932,065, “Financing and Funding Health Care: Exploring Equity and Efficiency Using Experimental Economics Methods”, Katherine Cuff, Jeffrey Carr, Mita Giacomini, and Jeremiah Hurley, Stuart Mestelman, Andrew Muller, Mirna Rahal and Gavin Wardle, May 2005 – April 2010.

Social Sciences and Humanities Research Council of Canada, Research Grant, $48,358, “Redistributive Policy and the Labour Market”, Katherine Cuff, April 2001 – March 2006.

External Program, Personnel and Granting Review Committees

Member, Jarislowsky-Deutsch Chair Advisory Committee, Queen’s University, 2017 – 2020.
Member, Scientific Council, Fiscal & Economic Policy Research Division, The School of Public Policy, University of Calgary, 2018 – 2020.
Member, Steering Committee on Chair in Public Economics, Faculty of Management, University of Tampere, Finland, 2018.
Chair, External Committee Review of the Department of Economics, Simon Fraser University, 2018.
Member. Senate Subcommittee on Program Review Graduate, Department of Economics, University of Western Ontario, 2015.
Member, Ontario Ministry of Research and Innovation Early Researcher Awards Program Round 11, Social Sciences Adjudication Panel, 2015.
Member, Social Sciences and Humanities Research Council, Insight Grant Economics Peer-Review Panel, 2014 – 2015.

Granting Agency Reviews

European Science Foundation, French National Research Agency (ANR), Social Sciences and Humanities Research Council of Canada, and Swiss National Science Foundation

External Reviews for Tenure and/or Promotion

University of Alberta, University of Ottawa, Carleton University, Royal Military College of Canada, University of Toronto, University of Cergy-Pontoise, University of Saskatchewan, University of Victoria, and University of Guelph.

Journal Refereeing

American Economic Journal: Economic Policy, *American Economic Journal: Microeconomics*, *American Economic Review*, *B.E. Journal of Economic Analysis & Policy, Contemporary Economic Policy, Canadian Public Policy, Canadian Journal of Economics*, *Econometrica*, *Economic Inquiry, Economic Journal, Economic Modelling, Economica, Éconpremie Internationale, Economics Letters*, *Employment and Social Development Canada, European Economic Review*, *FinanzArchiv*, *German Economic Review, International Economic Review, International Journal of Public Policy, International Tax and Public Finance*, *Journal of Applied Economics*, *Journal of Economics*, *Journal of Economics & Management, Journal of Health Economics, Journal of International Economics*, *Journal of Public Economics*, *Journal of Public Economic Theory*, *Oxford Economic Papers, Public Finance Review, Regional Science and Urban Economics*, *Review of Economic Design*, *Scandinavian Journal of Economics*, *Southern Economic Journal,* and *University of Calgary School of Public Policy Urban Policy and Research Paper Series*.

Undergraduate Teaching

Public Sector Economics: Taxation, Methods of Inquiry in Economics

Graduate Teaching

Microeconomic Theory for Public Policy, Public Finance, Topics in Public Economics, and PhD Workshop in Economics I and II

Doctoral Supervisions and Committees

Ph.D. Candidate, Supervisor, in progress.
Ph.D. Candidate, Co-Supervisor, in progress.
Ph.D. Candidate, Committee Member, in progress (x3).
Ph.D. Candidate, Committee Member, completed 2019.
Ph.D. Candidate, Committee Member, completed 2018.
Ph.D. Candidate, Committee Member, completed 2017.
Ph.D. Candidate, Committee Member, completed 2016.
Ph.D. Candidate, Co- Supervisor, completed 2013.

External PhD Thesis Examiner

Department of Economics, University of Calgary, 2019.
Department of Economics, York University, 2018.
Department of Economics, University of Oslo, Norway, 2017.
Department of Philosophy, McMaster University, 2012.
Department of Economics, University of Western Ontario, 2010.

Administrative Responsibilities (at McMaster University)

Department of Economics Service

Tenure and Promotion Committee Member, 2007 – 2008 , 2017 – 2019, 2021 – present.
Recruitment Committee Member, 2001 – 2005, 2015 – 2016, 2017 – 2020, 2022 – present.
Chair of the Graduate Studies Committee, 2014 – 2016 and 2018.
Graduate Admissions Committee Member, 2007 – 2008, 2012 – 2014, 2018 – 2019.
Peer Mentor and Peer Teaching Assessor since 2014.
Chair of the Research Committee, 2009 – 2011.

Faculty of Social Sciences Service

Member, Steering Committee and Working Group, Masters of Public Policy in Digital Society, April 2020 – 2021.
Member, Award Committees: Arts Research Board 2020. Early Researcher, Impact Awards, and Scholar-in-Community Fellowship 2018 and 2020, Canada Research Chair 2019, University Scholar 2017 – 2019, Canada 150 Chairs 2017, Collaborative Research Initiatives 2013.
Member, Selection Committees: Faculty Dean 2019, Associate Dean, Graduate Studies & Research 2012.
Faculty Council, Department of Economics Representative, 2002 – 2003, 2021 – 2022.
University Officer, Research Misconduct Investigation Panel, Faculty Representative, 2014.
Scrutineer, Faculty Elections to Senate, 2008 and 2010.

McMaster University Service

President, McMaster University Faculty Association, 2022 – 2023.
Vice-President, McMaster University Faculty Association, 2021 – 2022.
Chair, Senate Committee on Appointments, 2020 – 2021.
Executive Member, Academic Affairs, McMaster University Faculty Association, 2020 –2021.
Member, Senate Committee on Appointments 2007 –2008 and 2018 – 2020.
Internal Review Panel for the Canada Foundation for Innovation Fund Competition, 2019.
Senate, Faculty Elected Representative, 2007 – 2008, 2009 – 2010, and 2018 – 2021.
Joint Drafting Committee to Review the Tenure and Promotion Policy Supplementary Policy Statements, McMaster University Faculty Association Representative, 2010 – 2012.
Senate Committee on Academic Integrity, Member, 2009 – 2010.

Exhibit "C": Acknowledgement of Expert Witness

I, *Katherine Cuff,* acknowledge that I will comply with the Competition Tribunal's code of conduct for expert witnesses which is described below:

1. An expert witness who provides a report for use as evidence has a duty to assist the Tribunal impartially on matters relevant to his or her area of expertise.

2. This duty overrides any duty to a party to the proceeding, including the person retaining the expert witness. An expert is to be independent and objective. An expert is not an advocate for a party.

_____September 21, 2022_______ ______________________________________
(Date) *(Signature of expert witness)*

Exhibit “D”: Sources and Documents Relied Upon

Sources and documents relied upon in the Cuff Report are those referenced in the report and its appendices, and are listed below.

The data and documents relied upon also include records from the following sets of materials provided by the Competition Bureau:

- The application and two response pleadings in this matter.
- The demand for particulars, response and replies in this matter.

Research Publications

Boadway, Robin (2019) `Rationalizing the Canadian Income System,’ Canadian Tax Journal 67(3) 643-666.

Boadway, Robin and Katherine Cuff (2022) ‘Tax Policy: Principles and Lessons’ in Robin Boadway, Frank A. Cowell, Massimo Florio (eds.) *Cambridge Elements: Elements in Public Economics*. Cambridge: Cambridge University Press.

Boadway, Robin and Pierre Pestieau (2019) `Over the Top: Why an Annual Wealth Tax for Canada is Unnecessary,’ C.D. Howe Institute Commentary No. 546.

Jackson, Andrew and Toby Sanger (2020), `Policy Forum: The Case for an Annual Net Wealth Tax,’ Canadian Tax Journal 68(3), 835-850.

Kurnaz, Musab and Terry A. Yip (2022) `The Canadian Income Taxation: Statistical Analysis and Parametric Estimates,’ Canadian Journal of Economics 55(1), 272-311.

Lin, David (2020) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2019-2020,’ Canadian Tax Journal 68(1), 185-250.

Lin, David (2021) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2020-2021’ Canadian Tax Journal 69(1), 145-215

Lin, David (2022) `Finances of the Nation: Survey of Provincial and Territorial Budgets, 2021-2022’ Canadian Tax Journal 69(1), 125-185.

Mehdi, Tashin and Brian Murphy (2021) `Finances of the Nation: Net Income Tax Rates and the Changing Progressivity of the Cash Tax/Transfer System,’ Canadian Tax Journal 69(2), 575-593.

Messacar, Derek (2022) `Labor Supply Responses to Income Taxation among Older Couples: Evidence from a Canadian Reform,’ mimeo. (https://drive.google.com/file/d/1xdomb1tZOilzo1H1FZbvBVs_kBgtNHRs/edit)

McKenzie, Kenneth J. (2021) `The Taxation of Capital Income in Canada: Analysis and Directions for Reform,' National Tax Journal 74(2) p 529-551.

Milligan, Kevin (2019) `The Future of the Progressive Personal Income Tax: How High Can it Go?' Canadian Tax Journal 67(3), 693-710.

Milligan, Kevin (2021) `Average Tax Rates in the Canadian Personal Income Tax,' National Tax Journal 74(2), 513-527.

Milligan, Kevin (2022), `How Progressive is the Canadian Personal Income Tax? A Buffett Curve Analysis,' Canadian Public Policy 48(2), 211-224.

Murphy, Brian, Michael Veall and Michael Wolfson (2015) `Top-End Progressivity and Federal Tax Preferences in Canada: Estimates from Personal Income Tax Data,' Canadian Tax Journal 63(3), 661-688

Smart, Michael (2019) `Finances of the Nation: Taxation of Top Incomes in Canada – Recent Developments in Rates and Redistribution,' Canadian Tax Journal 67(2), 349-361.

Smith, Adam (1776) *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: W. Strahan.

Tuomala, Matti and Matthew Weinzierl (2022) `Chapter 4: Prioritarianism and Optimal Taxation' in Matthew Adler and Ole Norheim (editors) *Prioritarianism in Practice*, Cambridge: Cambridge University Press.

Wolfson, Michael and Scott Legree (2015) `Policy Forum: Private Companies, Professionals, and Income Splitting – Recent Canadian Experience,' Canadian Tax Journal 63(3), 717-737.

Wolfson, Michael, Mike Veall, Neil Brooks and Brian Murphy (2016) `Piercing the Veil: Private Corporations and the Income of the Affluent,' Canadian Tax Journal 64(1), 1-30

Woolley, Frances, Alan Macnaughton, Kevin Milligan and Daniel Sandler (2021) 'Policy Forum: Editor's Introduction – The Rate of Taxation on Capital Gains' in the Canadian Tax Journal 69(4), 1151-1155.

Government Publications

British Columbia, Ministry of Finance, Tax Information Sheet 2022-001, Personal Income Tax Rates: 2012-2020, January 2022 (https://www2.gov.bc.ca/assets/gov/taxes/income-taxes/publications/is-2022-001-personal-income-tax-rates-2012-2020.pdf)

Canada, Department of Finance, *Summary of 1971 Tax Reform Legislation,* Ottawa: Department of Finance, 1971.
(https://publications.gc.ca/collections/collection_2016/fin/F2-241-1971-eng.pdf)

Canada, Department of Finance, *Proposals for Tax Reform*, Ottawa: Department of Finance, 1969.
(https://publications.gc.ca/collections/collection_2016/fin/F32-169-1969-eng.pdf)

Canada, Department of Finance, *Summary of 1971 Tax Reform Legislation,* Ottawa: Department of Finance, 1971. (https://publications.gc.ca/collections/collection_2016/fin/F2-241-1971-eng.pdf)

Canada, Department of Finance, *The White Paper: Tax Reform* 1987, Ottawa: Department of Finance, June 18, 1987. (https://publications.gc.ca/collections/collection_2016/fin/F2-75-1987-2-eng.pdf)

Canada, Department of Finance, Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations, 2017.

Canada, Department of Finance, Report on Federal Tax Expenditures: Concepts, Estimates and Evaluations, 2022.

Canada, Department of Finance Canada and Canada Customs and Revenue Agency, Federal Administration of Provincial Taxes: New Directions, January 2000. (https://publications.gc.ca/Collection/F2-142-2000E.pdf)

Canada, Employment and Social Development. Opportunity for All: Canada's First Poverty Reduction Strategy, 2018. (https://www.canada.ca/content/dam/canada/employment-social-development/programs/poverty-reduction/reports/poverty-reduction-strategy-report-EN.pdf)

Canada, Privy Council Office, *Guide to Making Federal Acts and Regulations 2nd edition*. Ottawa: Department of Justice Canada, 2001. (https://www.canada.ca/content/dam/pco-bcp/documents/pdfs/fed-acts-eng.pdf.)

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Ontario, Ministry of Finance, News Bulletin: New Ontario Personal Tax Rates and Thresholds for 2014, August 26, 2014. (https://news.ontario.ca/en/bulletin/30196/new-ontario-personal-income-tax-rates-and-thresholds-for-2014)

OECD (2013), OECD *Framework for Statistics on the Distribution of Household Income, Consumption and Wealth*. Paris: OECD Publishing. (https://doi.org/10.1787/9789264194830-en).

Parliamentary Budget Officer Publications

Office of the Parliamentary Budget Officer, Estimating the Top Tail of the Family Wealth Distribution, June 17, 2020.

Office of the Parliamentary Budget Officer, Net Wealth Tax on Canadian Resident Families, July 8, 2020.

Office of the Parliamentary Budget Officer, Cost Estimate of Election Campaign Proposal: Implement annual net wealth tax, September 4, 2021.

Office of the Parliamentary Budget Officer, Revenue Estimates of M-68: One-time Tax on Extreme Wealth, July 15, 2021.

Office of the Parliamentary Budget Officer, Estimating the Top Tail of the Family Wealth Distribution in Canada: Updates and Trends, December 9, 2021.

Statistic Canada Publications and Data Sources

Dijidel, Samir, Burton Gustajtis, Andrew Heisz, Keith Lam and Sarah McDermott (2019) `Towards and update of the Market Basket' Statistic Canada, Income Research Paper Cat. No. 75F0002M, December 6, 2019.
(https://www150.statcan.gc.ca/n1/en/pub/75f0002m/75f0002m2019013-eng.pdf?st=T6ZeAmdt)

Dijidel, Samir, Burton Gustajtis, Andrew Heisz, Keith Lam and Sarah McDermott (2019) `Defining disposable income in the Market Basket Measure' Statistic Canada, Income Research Paper Cat. No. 75F0002M, December 20, 2019.
(https://www150.statcan.gc.ca/n1/en/pub/75f0002m/75f0002m2019014-eng.pdf?st=yURKTauk)

Hamalainen, Nell and Tahsin Mehdi (2019) `Effective Income Tax and Transfer Rates: Technical Reference Note,' Income Research Paper Series, Statistic Canada.

Heisnz, Andrew (2019) `An update on the Market Basket Measure comprehensive review' Statistic Canada, Income Research Paper Cat. No. 75F0002M.

Statistic Canada. *Canadian Income Survey 2020* catalogue no. 11-001-X, The Daily, March 23, 2022.

Statistic Canada. *Charitable Donors 2020* catalogue no. 11-001-X, The Daily, April 12, 2022.

Statistic Canada, Longitudinal Administrative Database (LAD), Documentation: 12-585-X.

Statistics Canada, Table 11-10-0047-01 "Summary characteristics of Canadian tax filers (preliminary T1 Family File)" https://doi.org/10.25318/1110004701-eng.

Statistic Canada. Table 11-10-0054-01 "Federal and provincial individual effective tax rates" https://doi.org/10.25318/1110005401-eng.

Statistic Canada. Table 11-10-0055-01 "High income tax filers in Canada" https://doi.org/10.25318/1110005501-eng.

Statistics Canada. Table 11-10-0066-01 "Market Basket Measure (MBM) thresholds for the reference family by Market Basket Measure region, component and base year" https://doi.org/10.25318/1110006601-eng.

Federal Budget Documents, Speeches and Mandate Letter

Canada, Department of Finance, 2006 Tax Fairness Plan, October 31, 2006.

Canada, Department of Finance Canada, Budget 2007: Aspire to a Stronger, Safer, Better Canada, March 19, 2007.

Canada, Department of Finance, Budget 2016, Speech by the Honorable Bill Morneau, P.C., M.P., March 22, 2016.

Canada, Department of Finance, Speech on Measures to Strengthen the Middle Class, December 7, 2015.

Canada, Department of Finance, Backgrounder: Middle Class Tax Cut, December 7, 2015.

Canada, Department of Finance Canada, Budget 2019: Investing in the Middle Class, March 19, 2019.

Canada, Department of Finance, 2019 Economic and Fiscal Update, December 16, 2019.

Canada, Department of Finance, Economic and Fiscal Snapshot 2020, July 8, 2020.

Canada, Department of Finance, Supporting Canadians and Fighting COVID-19: Fall Economic Statement 2020, November 30, 2020.

Canada, Department of Finance Canada, Budget 2021: A Recovery Plan for Jobs, Growth and Resilience, April 19, 2021.

Canada, Department of Finance, Budget 2021, Address by the Deputy Prime Minister and Minister of Finance, April 19, 2021.

Canada, Department of Finance Canada, Budget 2022: A Plan to Grow Our Economy and Make Life More Affordable, April 7, 2022.

Canada, Governor General, A stronger and more resilient Canada: Speech from the Throne to Open the Second Session of the Forty-third Parliament of Canada, September 23, 2020.

Canada, Office of the Prime Minister, Minister of Finance Mandate Letter, December 13, 2019.

Government Websites

Canada, Canada Revenue Agency, About the Canada Revenue Agency, https://www.canada.ca/en/revenue-agency/corporate/about-canada-revenue-agency-cra.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, Tax packages for all years, https://www.canada.ca/en/revenue-agency/services/forms-publications/tax-packages-years.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, T1 income tax packages for 2021, https://www.canada.ca/en/revenue-agency/services/forms-publications/tax-packages-years/general-income-tax-benefit-package.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, 5000-D1 Federal Worksheet (for all except non-residents), https://www.canada.ca/en/revenue-agency/services/forms-publications/tax-packages-years/general-income-tax-benefit-package/5000-d1.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, Individual income tax return statistics for the 2022 tax-filing season, https://www.canada.ca/en/revenue-agency/corporate/about-canada-revenue-agency-cra/individual-income-tax-return-statistics.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, Basic Personal Amount https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/federal-government-budgets/basic-personal-amount.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, Capital Gains 2021, https://www.canada.ca/en/revenue-agency/services/forms-publications/publications/t4037/capital-gains.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, Family income level where the recipient will no longer receive the GST/HST credit, https://www.canada.ca/en/revenue-agency/services/child-family-benefits/goods-services-tax-harmonized-sales-tax-gst-hst-credit/family-income-level-where-recipient-will-no-longer-receive-gst-hst-credit.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, T1 Final Statistics https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/income-statistics-gst-hst-statistics/t1-final-statistics.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, Climate action incentive payment, https://www.canada.ca/en/revenue-agency/services/child-family-benefits/cai-payment.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, Canada child benefit, https://www.canada.ca/en/revenue-agency/services/child-family-benefits/canada-child-benefit-overview.html, accessed August 30, 2022.

Canada, Canada Revenue Agency, GST/HST credit - Overview, https://www.canada.ca/en/revenue-agency/services/child-family-benefits/goods-services-tax-harmonized-sales-tax-gst-hst-credit.html, accessed August 30, 2022.

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