MEASURING PERSONAL INCOME TAX COMPLEXITY IN CANADA

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Contents

Executive summary

Canadian families and businesses incur significant costs complying with the tax system. Those costs include direct spending on items such as accountants, lawyers, and computer software, as well as the financial cost of the time it takes to compile the materials and complete the forms. Governments also incur costs to administer and collect taxes. These costs are driven in part by the complexity of the tax system.

This study measures the evolution of tax complexity in Canada's personal income tax system. It uses three broad categories of empirical measurements: tax expenditures, tax legislation, and administrative tax documents. According to various specific indicators, the system has become more complex over time.

For instance, from 1981 to 2014, the number of federal personal income tax expenditures (which are credits, deductions, exemptions, exclusions, and other preferences) increased from 101 to 128—an increase of 27 percent. The number of tax expenditures was essentially flat up to 2001, after which there was a marked increase. In fact, since 2006, every federal budget has included a new tax credit for specific activities or eligible groups.

For perspective, in 2014, the value of these tax expenditures ($165.0 billion) exceeded total federal personal income tax revenue ($135.7 billion). Indeed, tax expenditures cost the federal government more than it collects in personal income tax revenue.

The study also measures the text area occupied by the Income Tax Act and regulations from 1971 to 2014. The text area is the number of pages multiplied by page size, which measures the area that the legislation would take up were we to lay out all the pages side by side. Over this period, the area of the tax legislation increased 355 percent, from 345,948 cm^2 to 1,575,537 cm^2. It is important to measure text area because not only did the number of pages in the Income Tax Act increase, but so did page size. Together, both changes have the effect of magnifying the growth in text area. In standard letter paper format (8.5x11 inches), the space occupied by the tax code represents an increase from 573 to 2,612 pages over the period.

Finally, an analysis of provincial administrative documents (examining the number of documents, pages, and total lines in the tax forms) also

points to growing tax complexity. Consider the results for the total number of lines, arguably the most appropriate indicator of complexity since governments can reduce the number of documents simply by combining them, and cut the number of pages by reorganizing blank spaces, and so on—without reducing the complexity of calculations linked to the personal income tax system. From 2000 to 2015, the average number of total lines in tax forms for the provinces (excluding Quebec) increased from 52 to 172.

While Canada's personal tax system would benefit from simplification, the country does not have the equivalent of the United Kingdom's Office of Tax Simplification (either federally or provincially). That means there is no systematic work being done to measure, let alone reduce, tax complexity in Canada. This study is part of an ongoing research program at the Fraser Institute that attempts to help fill that void.

Introduction

The Canadian tax system is often described as complex. For example, the Canadian Council of Chief Executives states that: "The Canadian tax system is complex and costly for business to comply with, mainly due to the complexity of Canadian tax legislation, the number of taxes companies are subject to, and the multi-jurisdictional tax system" (PwC, 2014: 16). And the Canadian Chamber of Commerce argues that "Canada's tax system is in urgent need of reform. It has become increasingly complex, multi-layered, and a costly challenge for Canadian businesses of all sizes" (CCC, 2015: 1). Even the Certified General Accountants Association of Canada notes "Canada's income tax system has become increasingly complex and compliance costs have continued to grow at an unsustainable rate" (Clark and Farber, 2011: 4).

Why does tax complexity exist? Vaillancourt and Bird (2016: 74) offer four explanations (see box 1). And why does tax complexity persist? Clark and Farber explain that in Canada, "There have been very few attempts to simplify the tax system…. The reason is very clear. Tax simplification comes at a very high political cost, since any reform will involve choices and trade-offs, and have both winners and losers" (2011: 5). Whatever the reason, to date neither the federal nor provincial governments have recently reacted to the various pleas for simplicity (or complaints about complexity) in a meaningful way, although many official government reports and documents have paid lip service to the need for more simplicity.[1] That said, a recent major reform proposal put forth by the Quebec Taxation Review Committee (2015) did not even mention the issue and in fact recommended making the provincial tax system more complex by increasing the number of income tax brackets.

[1] For example, in the 2015 federal Liberal election platform, a noted priority is to conduct "an overdue and wide-ranging review of the over $100 billion in increasingly complex tax expenditures that now exist" (Liberal Party of Canada, 2015). After tabling the 2016 federal budget, Finance Minister Bill Morneau noted that a review of tax expenditures is likely coming (see Cheadle, 2016, March 25).

Box 1: Four possible reasons why tax complexity exists

1. Governments need revenue. They not only need to impose taxes—and sometimes to increase them—but also to protect existing revenue by making and enforcing rules to curb tax avoidance and evasion.
2. People want taxes to be fair. In a complex world in which the tax system must accommodate many different situations, the desire for fairness breeds complexity and tends to override the desire for simplicity.
3. People also want certainty. While few people seem to be very certain about their tax position, everyone seems to want more certainty in this area. In a rapidly changing world, however, the search for certainty often leads to frequent changes in tax rules and language, thus giving rise to more uncertainty.
4. Governments want to be elected. To do so they are constantly driven or tempted to use the tax system to achieve a variety of specific objectives, with each new objective requiring new rules to distinguish the activity or entity that benefits from those less favoured—and each such distinction creates a new group of supporters for a particular complexity now entrenched more or less deeply in the tax system.

Vaillancourt and Bird (2016: 74).

Canada's tax system would benefit from simplification. The complexity of the tax system (broadly defined) imposes significant costs on Canadian families and businesses as they expend considerable resources and time on compliance. These costs include direct spending on accountants, lawyers, computer software, and the like, as well as the financial cost of the time it takes to compile the materials and complete the forms. The total annual cost to Canadians of complying with income taxes is estimated to be up to $7.0 billion or $501 per household (Speer et al., 2014). Notably, tax compliance costs are borne disproportionately by lower-income Canadians who pay the highest share of their income to comply with the tax system.

What drives these costs? While the Fraser Institute has published studies on measuring the compliance and administrative costs of taxation in Canada over the years (Speer et al., 2014; Vaillancourt et al., 2013), this study examines the distinct but related issue of tax complexity using empirical indicators identified through a review of the relevant literature. It is the second in a series published by the Fraser Institute. The first study on tax complexity (Vaillancourt et al., 2015) examined tax complexity for

three types of taxes: the personal income tax (PIT), corporate income tax (CIT), and the goods and services tax (GST). This second study focuses exclusively on the PIT system's complexity.

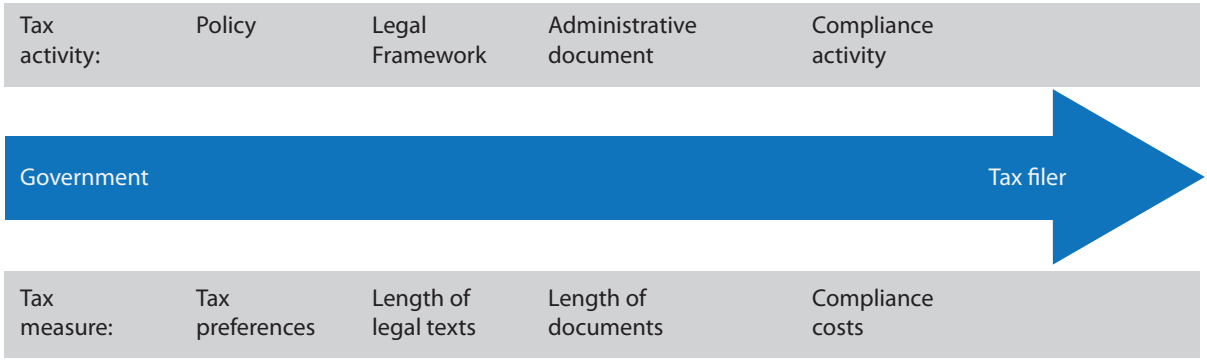
The study first briefly reviews the literature on measuring tax complexity. It then examines different empirical measurements of tax complexity for Canada to see how those measurements have evolved. It focuses on the personal income tax, the most important source of revenue for both the federal and provincial governments in Canada. The study finds that, according to various empirical measurements, Canada's federal and provincial personal income tax system has generally become more complex over time.

Background on Measuring Tax Complexity

The literature on measuring tax complexity was recently summarized by Lugo and Vaillancourt (2015) and Vaillancourt et al. (2015). This section draws upon that work to focus on a review of empirical measurements. The Tax Foundation (see Moody et al., 2005), Slemrod (2005), and the Progressive Policy Institute (see Weinstein, 2014) each use a different measure of tax complexity in the United States. The Tax Foundation measures complexity by the number of words in the US federal tax code and the volume of income tax regulations. The foundation found that, over a 45-year period, "the number of words detailing income tax law has grown from 172,000 in 1955 to 1,286,000 in 2005, a staggering 648% increase. Income tax regulations, which provide taxpayers with guidance in calculating taxable income, have grown at an even faster pace. Federal income tax regulations have grown from 547,000 words in 1955 to 5,778,000 words by 2005, an increase of 956%" (Moody et al., 2005: 5). Slemrod (2005) measures tax complexity by the number of lines on the income tax form and the number of pages in the instruction booklet (in both cases, the measures are modified slightly to ensure comparability between states). Meanwhile, the Progressive Policy Institute uses the number of tax expenditures (which includes credits, deductions, exemptions, exclusions, and other tax preferences) by state as an indicator of tax complexity (Weinstein, 2014). For the 43 states for which information is available, this number ranges from 550-600 for Washington State to 0-50 for Alaska, with the most common range being 100-150 (11 states).

Results in Vaillancourt et al. (2015) show a strong correlation between three measures for Canada: tax expenditures, tax legislation, and administrative documents. All three point to an increase in federal tax complexity over a 20-year period. Further, there is a similar increase in all the indicators in recent years. From 2000 (or 2001 depending on the specific indicator) to 2011 (or 2014), the number of tax expenditures increased 22 percent, the text area of tax legislation (measured in cm^2) increased 19 percent, and the size of the federal personal income tax guide increased 25 percent.

Figure 1: Tax Activity-Complexity Measurement Continuum



Are these good indicators of tax complexity? Both Slemrod (2005) and Turnbull-Hall and Thomas (2012) note that longer legislation or text in an information booklet may reduce complexity if, for example, it allows the use of plain English (i.e., simpler language) or covers various possible types of taxpayers. In addition, it is important, where feasible, to carefully distinguish and separate out non-tax related aspects from the documents (such as income support delivered through the tax system) to truly gauge tax complexity.

Figure 1 presents the three measures of tax complexity along a continuum from government policy to tax filer. Governments choose to favour a specific behaviour by introducing (or removing) a tax preference in a policy declaration such as a budget speech, which in turn will result in an expected tax expenditure. That tax preference must then be transformed into a law or regulation in order for it to be implemented. Tax filers interact with the law and legal framework through lines in the tax form and instructions in the tax booklet (administrative documents). Their efforts ultimately lead to tax compliance activities which then manifest in the form of tax compliance costs.[2] The relationship between these various indicators can be influenced by government decisions that can shift costs between administrative costs and compliance costs.

[2] Readers interested in the measurement of tax compliance costs are encouraged to see Speer et al. (2014) and Vaillancourt et al. (2013).

Personal Income Tax Complexity: Measurement for Canada

This section moves away from theory and the conceptual framework to present data for Canada on three broad measures of personal income tax complexity discussed above: tax expenditures, tax legislation, and administrative documents. The first two measures examine indicators at the federal level while the third examines indicators at the provincial level. The section also includes an analysis of the number of tax brackets in provincial personal income tax systems over time.

Federal tax complexity

Tax expenditures

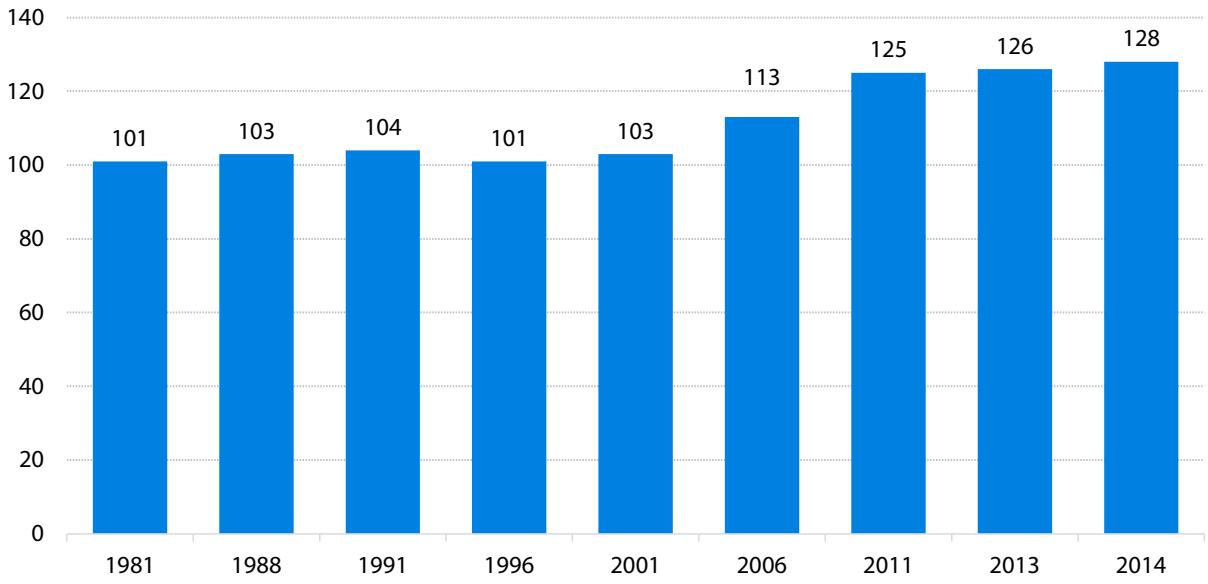
Figures 2, 3, and 4 present a series of data for Canada on federal personal income tax expenditures (which are credits, deductions, exemptions, exclusions, and other preferences) for select years from 1981 to 2014.[3] The starting year is dictated by the availability of comparable data on tax expenditures and the number of personal income tax filers.[4]

Figure 2 shows that, from 1981 to 2014, the number of federal personal income tax expenditures increased from 101 to 128. From 1981 to 2001, the number of tax expenditures was essentially flat but there was a marked increase between 2001 and 2011. In fact, since 2006, every federal budget has included a new tax credit for specific activities or eligible

[3] This analysis goes further back into time than the analysis in Vaillancourt et al (2015), the original study upon which this report is based.

[4] In the 1970s, the number of federal personal income tax filers usually increased by 200,000 to 300,000 each year. The number jumps by 1.7 million from 1977 to 1978. This is the result of replacing family allowances by the refundable child tax credit; this credit is computed using family income and thus requires both adults in two-parent families to file an income tax return even if one of them, usually the mother in 1978, has no taxable income.

Figure 2: Number of Federal Personal Income Tax Expenditures in Canada, selected years, 1981-2014



Sources: Department of Finance (various years); calculations by authors.
Notes:
a) The number of personal income tax expenditures includes every tax expenditures included in the Department of Finance's annual *Tax Expenditures and Evaluations* report. It excludes the sub-expenditures and the "Supplementary information: present-value of tax-assisted retirement savings plans."
b) The "Reclassification of flow-through shares" is considered to be one tax expenditure, even though this tax expenditure is listed as a sub-category of "Deduction of resource-related expenditure."
c) Data are based on the latest information available for the estimates of the number and cost of tax expenditures. For data prior to 1990, the Department of Finance's 1985 report is the source. Data may vary by report.

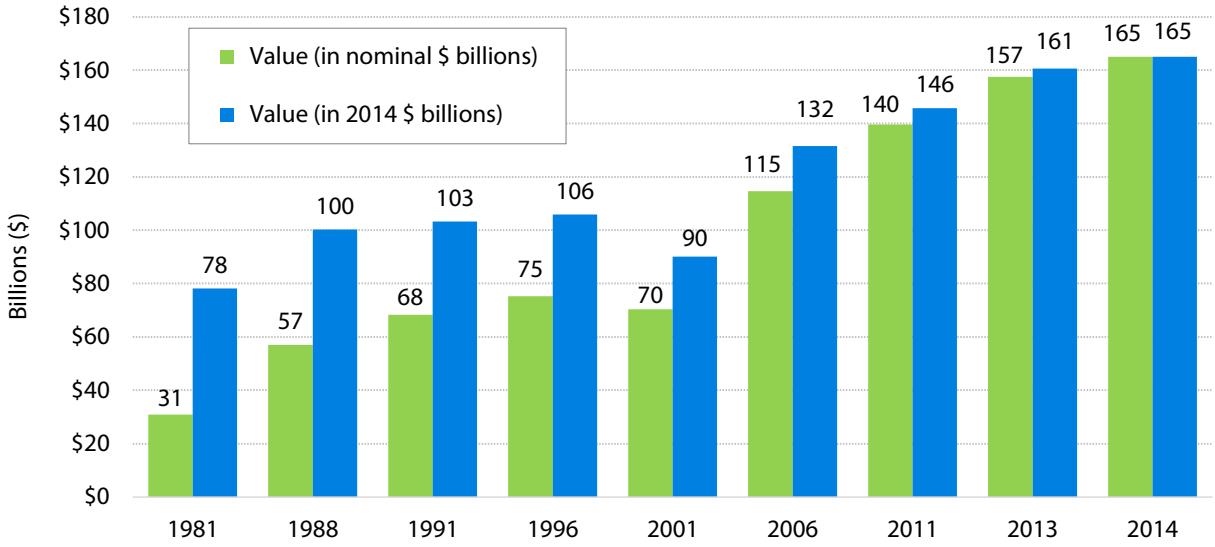
groups (Speer et al., 2014).[5] All told, the number of tax expenditures has grown by 27 percent over the 33-year period from 1981 to 2014.

Figure 3 examines the value of federal personal income tax expenditures over the same period, both in nominal terms and after adjusting for inflation. In 33 years, the value of these tax expenditures grew by 434 percent in nominal terms and 111 percent after adjusting for inflation.

Since the value of personal income tax expenditures could increase simply by virtue of a growing number of tax filers, and thus potential tax expenditure users, in figure 4 we present the inflation-adjusted value of

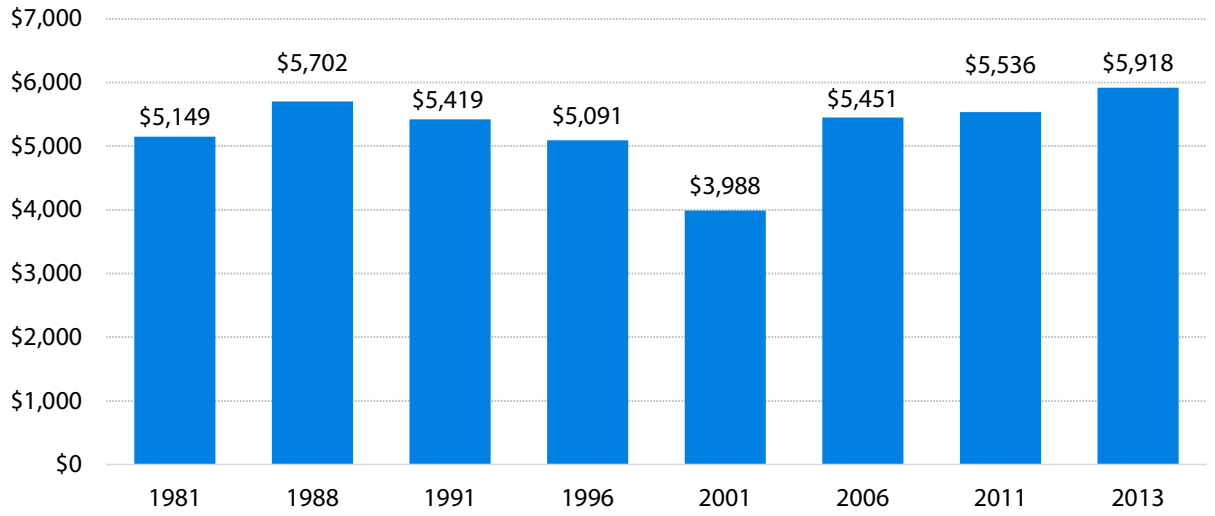
[5] For example, from 2006 to 2014, the federal government introduced the Canada Employment Credit, First-Time Home Buyers' Tax Credit, Children's Arts Tax Credit, Volunteer Firefighters Tax Credit, and Family Caregiver Tax Credit. In its 2015 budget, the former Conservative government introduced the Home Accessibility Tax Credit for seniors and residents with disabilities. This credit is not reflected in figure 2 which ends in the 2014 tax year.

Figure 3: Value of Federal Personal Income Tax Expenditures in Canada (in billions of $), selected years, 1981-2014



Sources: Department of Finance (various years); calculations by authors.
Notes: a) See figure 2.
b) Prior to 2004, the Tax Expenditures and Evaluations reports include "Partial inclusion rate" and "Full inclusion rate" under the "Non-taxation of capital gains on principal residences" category, only "Partial inclusion rate" was taken into account as the tax expenditures for consistency reason. After 2004, the report no more report the "Full inclusion rate."

Figure 4: Federal Personal Income Tax Expenditures Per Tax Filer in Canada (2014 $), selected years, 1981-2013



Sources: Figure 3; Canada Revenue Agency (2008, 2013, and 2015); calculations by authors.
Notes: a) See figure 3.
b) The Canada Revenue Agency (CRA) only provides data on the total number of tax filers up to 2013. Thus, data for 2014 are not available.

Table 1: Value of Federal Personal Income Tax Expenditures, Federal Personal Income Tax Revenue, and Ratio, selected years, 1981-2014

	1981	1988	1991	1996	2001	2006	2011	2013	2014
Value of personal income tax expenditures (billions of nominal dollars)	31.7	60.7	72.7	75.2	70.4	114.7	139.6	157.5	165.0
Federal personal income tax revenue (billions of nominal dollars)	24.0	45.5	59.7	67.8	87.0	110.6	120.5	130.8	135.7
Ratio	1.32	1.33	1.22	1.11	0.81	1.04	1.16	1.20	1.22

Sources: Figure 1; Department of Finance (2015); calculations by authors.

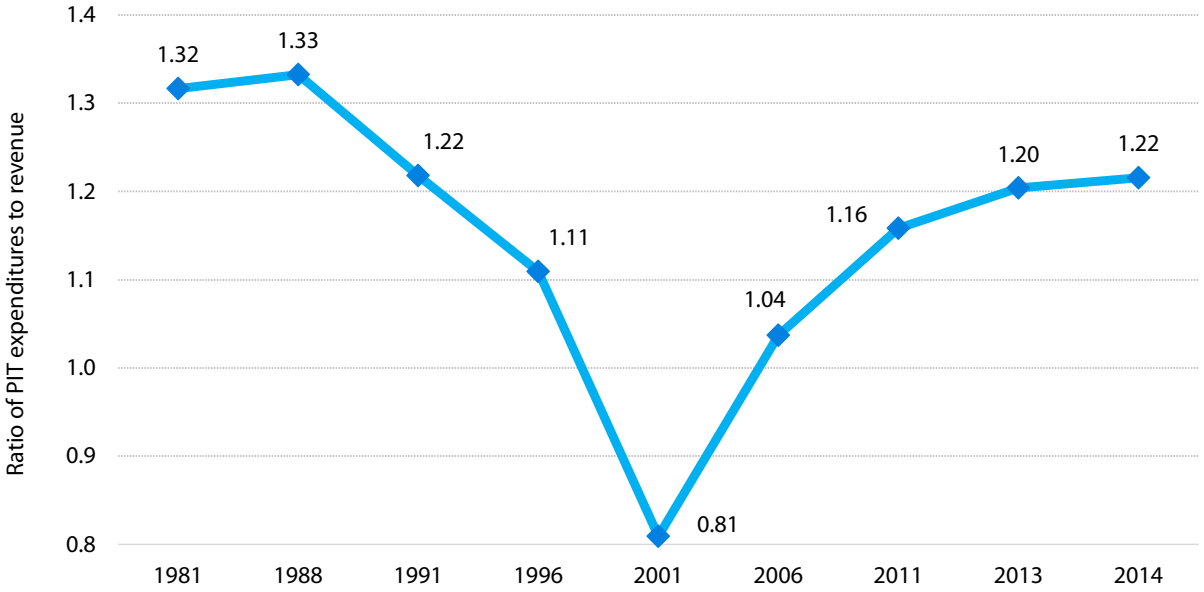
Note: Tax revenue data are on fiscal year basis. In 1982/83, the Government of Canada switched to full accrual accounting so caution should therefore be exercised in making direct comparisons between years before and after this break in the data series.

federal personal income tax expenditures per tax filer from 1981 to 2013 (The Canada Revenue Agency only provides data on the total number of tax filers up to 2013 so data for 2014 are not available.) Over the period, the number of tax filers increased from 15.2 million to 27.1 million. This, and the increase in the total value of tax expenditures, translates into an increase of 15 percent in the inflation-adjusted value of personal income tax expenditures per tax filer. Based on basic tax expenditure indicators (their sheer number and two complementary measures), it seems reasonable to conclude that the complexity of the federal personal income tax system has increased from 1981 to 2014.

To get a sense of how large personal income tax expenditures have become, figure 5 presents the ratio of the value of federal personal income tax expenditures to the amount of revenue collected by the federal government from personal income taxes (table 1 displays the underlying data). This ratio is, on average, 1.2 for the years displayed, meaning that tax expenditures cost the federal government more than it brings in in personal income tax revenue. In the latest year of data (2014), personal income tax expenditures totalled $165 billion while federal personal income tax revenue totalled $135.7 billion.[6]

[6] We carried out this calculation since there is no published sum of tax expenditures. This sum is biased upward because summing each tax expenditure to obtain their totals overestimates the grand total as each tax expenditure was calculated at the marginal tax rate of the individual. The bias is present for all years thus making intertemporal comparisons acceptable.

Figure 5: Ratio of the Value of Personal Income Tax Expenditures to the Amount of Federal Personal Income Revenue, selected years, 1981-2014



Sources: Figure 1; Department of Finance (2015); calculations by authors.
Note: Tax revenue data are on fiscal year basis. In 1982/83, the Government of Canada switched to full accrual accounting so caution should therefore be exercised in making direct comparisons between years before and after this break in the data series.

Tax legislation

Table 2 displays data on the evolution of the size of the English language federal Income Tax Act (including regulations). This covers both personal and corporate income taxes. Specifically, the table presents data from 1971 to 2014 on the number of pages, the book's page size in square centimetres, and the area the text takes up, also in square centimetres.[7] (The text area measures the area that the legislation would take up were we to lay out all the pages side by side.) Figure 6 presents the page count and text area data as an index, which captures comparative changes in each variable. By giving each variable an index value of 1.0 in the starting year (1971), we can more clearly see subsequent changes in relation to the initial year's value.

From 1971 to 2014, the text area, or overall space occupied by the Income Tax Act and regulations, increased 355 percent. Specifically, the

[7] It is important to adjust page counts for size since the same publisher (Commerce Clearing House) changed the book's format over time. Text area is simply page count multiplied by the page size.

Table 2: Page Count, Page Size, and Text Area of Federal Income Tax Act and Regulations, Canada, selected years, 1971-2014

Year	Number of pages	Page size (cm^2)	Text area (cm^2)	Number of pages (std letter)
1971	1,016	341	345,948	573
1975	2,003	341	682,022	1,131
1981	2,823	341	961,232	1,593
1985	3,013	341	1,025,927	1,701
1986	3,117	344	1,070,690	1,775
1990	2,750	354	974,050	1,615
1994	2,386	456	1,088,732	1,805
1999	2,627	447	1,175,215	1,948
2004	2,997	458	1,373,375	2,277
2009	2,997	582	1,743,355	2,890
2014	2,636	598	1,575,537	2,612

Sources: Commerce Clearing House [CCH] (various years); calculations by authors.

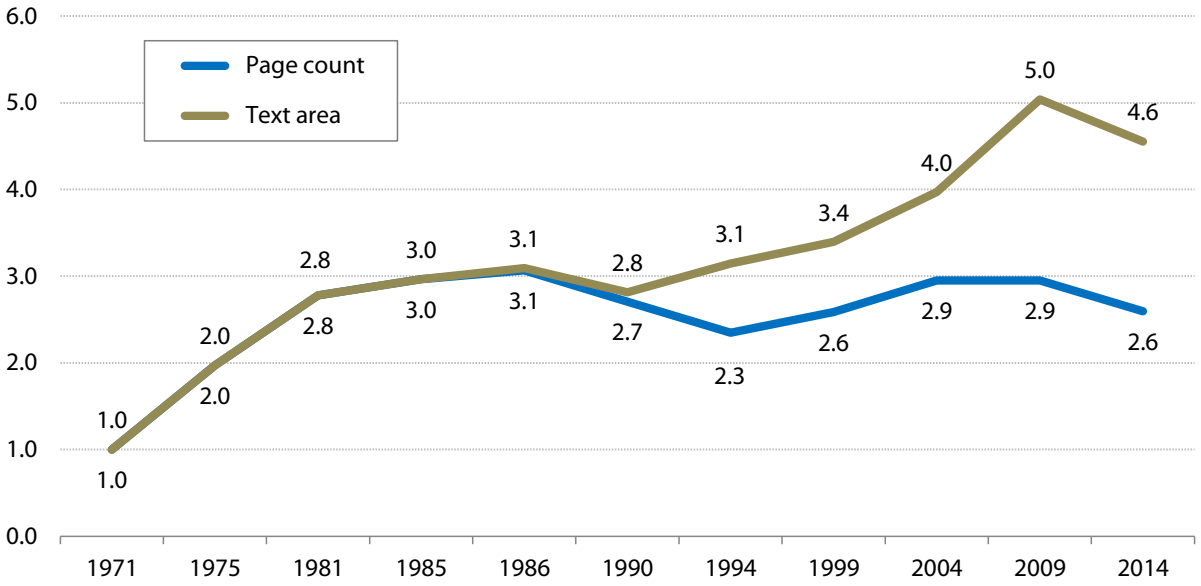
Note: Text area is simply number of pages multiplied by page size.

text area grew from 345,948 cm^2 to 1,575,537 cm^2. It is important to measure text area because not only did the number of pages in the Income Tax Act increase by 159 percent (from 1,016 to 2,636 pages), but page size also increased by 76 percent (from 341 cm^2 to 598 cm^2). Together, both changes have the effect of magnifying the growth in text area. In standard letter paper format (8.5x11 inches), the space occupied by the tax code represents an increase from 573 to 2,612 pages over the period.

Provincial tax complexity

We now turn to an analysis of provincial personal income tax complexity based on administrative documents (i.e., tax forms). But first, it is important to note that a major change occurred in 2000 in provincial personal income taxation in Canada. Before 2000, the provincial tax was a surtax on federal income tax, with statutory progressivity (higher rates on higher income ranges) and the number of brackets determined by the federal government. Since 2000, provinces have used a tax on income (rather than a tax on tax) and have been free to set their own rates, number of brackets, and the income range for which the brackets apply. This change is discussed in detail in Guimond and Vaillancourt (2013).

Figure 6: Index of Page Count and Text Area of Federal Income Tax Act and Regulations (where 1.0 = index value in 1971), Canada, selected years, 1971-2014



Sources: Commerce Clearing House [CCH] (various years); calculations by authors.

Table 3 presents information on the diversity and complexity of provincial personal income tax systems. The table includes data on the average (mean) and coefficient of variation (CV) for the nine Canadian Revenue Agency (CRA) provinces plus Quebec and the federal government. Quebec collects its own personal income tax and does not use the CRA definition of taxable income so it is not a CRA province. The coefficient of variation (CV) is the standard deviation divided by the mean (average). A larger CV means there is larger variation within the data set (in this case, provinces for a given year and indicator of complexity).

Specifically, table 3 examines the number of personal income tax brackets for the various jurisdictions in 2001, 2008, and 2016.[8] A larger number of tax brackets (all things equal) signals a greater degree of tax complexity. The table shows that the average number of tax brackets remained stable from 2001 to 2008 but increased from 2008 to 2016 with notable increases in both Ontario and Alberta. In fact, from 2008 to 2016, five provinces and the federal government increased the number of

[8] As noted above, there was a major change in 2000 in the taxation of personal income provincially. Thus comparisons with years before 2000 are less meaningful.

Table 3: Number of Personal Income Tax Brackets, Canada, Provinces and Federal, selected years, 2001-2016

	2001	2008	2016
Newfoundland & Labrador	4	3	5
Prince Edward Island	4	4	4
Nova Scotia	4	5	5
New Brunswick	4	4	5
Ontario	5	5	7
Manitoba	3	3	3
Saskatchewan	3	3	3
Alberta	1	1	5
British Columbia	5	5	5
Average of nine CRA provinces	3.7	3.7	4.7
CV (Coefficient of Variation)	0.33	0.36	0.26
Federal	4	4	5
Quebec	3	3	4

Sources: Treff and Perry (2001); Price Waterhouse Cooper (2008); CRA (2016a and 2016b); New Brunswick, Department of Finance (2016); Revenue Quebec (2016); calculations by authors.

Notes:

a) Number of brackets for the 2016 tax year are as of March 3, 2016.

b) Quebec's tax rates are statutory rates without adjusting for the federal abatement. There is a 16.5 percent abatement for residents in Quebec. The federal abatement results in Quebecers paying less in federal taxes than other provinces (but federal transfers payments to the Québec government are reduced by the total value of this abatment and Québec PIT is higher than without this abatment).

c) Personal income tax system prior to 2001 is different from the current tax system. From 2000, provinces started to move from "tax-on-tax" assessment of personal income to "tax-on-income" assessment. British Columbia, Manitoba, New Brunswick, Nova Scotia, and Ontario introduced tax-on-income systems in 2000. Alberta, Saskatchewan, Prince Edward Island, and Newfoundland and Labrador introduced tax-on-income systems for 2001.

personal income tax brackets, signalling an increase in tax complexity on this metric.[9]

The other aspects of provincial personal income tax systems are presented in Appendix A. Specifically, appendix table 1 examines the floor (minimum) income associated with the lowest and highest bracket while appendix table 2 examines the tax rates applied to those two brackets. In general, we observe increased variation across the provinces on both measures. With more diverse sub-national personal income tax systems within a country, mobile workers have to relearn the personal income tax system when they move to a new province, which adds to the tax complexity they face. It may also signal increased tax complexity for employers that operate in multiple provinces.

Administrative documents

Ideally, we would measure provincial personal income tax complexity using tax expenditure data but there is a lack of available and uniform data across the provinces. We thus turn to tax complexity indicators based on administrative documents (i.e. tax forms), which include accessible and comparable data for the provinces.

There are three specific indicators, which are derived from a detailed examination of the tax package associated with each province's personal income tax system on the Canada Revenue Agency's website (http://www.cra-arc.gc.ca/formspubs/t1gnrl/menu-eng.html). The site has a relevant link for each province. Those links immediately yield the first indicator: the number of documents for each province. Opening up the various documents, one can then count for each the number of pages (the second indicator). The third and final indicator is the total number of lines associated with the tax calculations in the various forms. Examples of the information used to construct these indicators are provided in Appendix B.

The underlying data for all three indicators are displayed in table 4 for the nine CRA provinces and the average in 2000, 2005, 2010, and 2015. Figure 7a displays, in index form, the nine CRA provincial averages for the three measures of tax complexity in 2000, 2005, 2010, and 2015 (where 1.0 = index value in 2000).[10] It shows that from 2000 to 2015,

[9] Virtually all of the increases were driven by new tax brackets and higher rates on upper earners (Lammam et al., 2016).

[10] We start with a common point in the year 2000, before changes were introduced to the provincial personal income tax system. In other words, 2000 is the reference point, so the index value is 1.0.

Table 4: Three Indicators of Complexity Based on Provincial Tax Forms, 2000, 2005, 2010, and 2015

Prov.	Number of documents				Number of pages				Number of total lines			
	2000	2005	2010	2015	2000	2005	2010	2015	2000	2005	2010	2015
NL	2	7	6	6	3	13	15	15	19	149	162	163
PE	2	6	5	5	3	12	12	13	32	146	156	163
NS	4	7	5	5	8	15	14	14	60	158	152	148
NB	4	6	5	6	4	12	13	16	44	147	156	163
ON	4	7	7	8	12	18	26	27	77	185	194	194
MB	4	7	7	7	13	19	22	25	114	186	219	237
SK	2	6	6	6	3	12	16	15	34	143	168	162
AB	2	6	5	5	3	11	12	12	22	128	137	132
BC	4	7	6	8	7	14	15	22	64	162	157	183
Average of nine CRA provinces	3.1	6.6	5.8	6.2	6.2	14.0	16.1	17.7	51.8	156.0	166.8	171.7

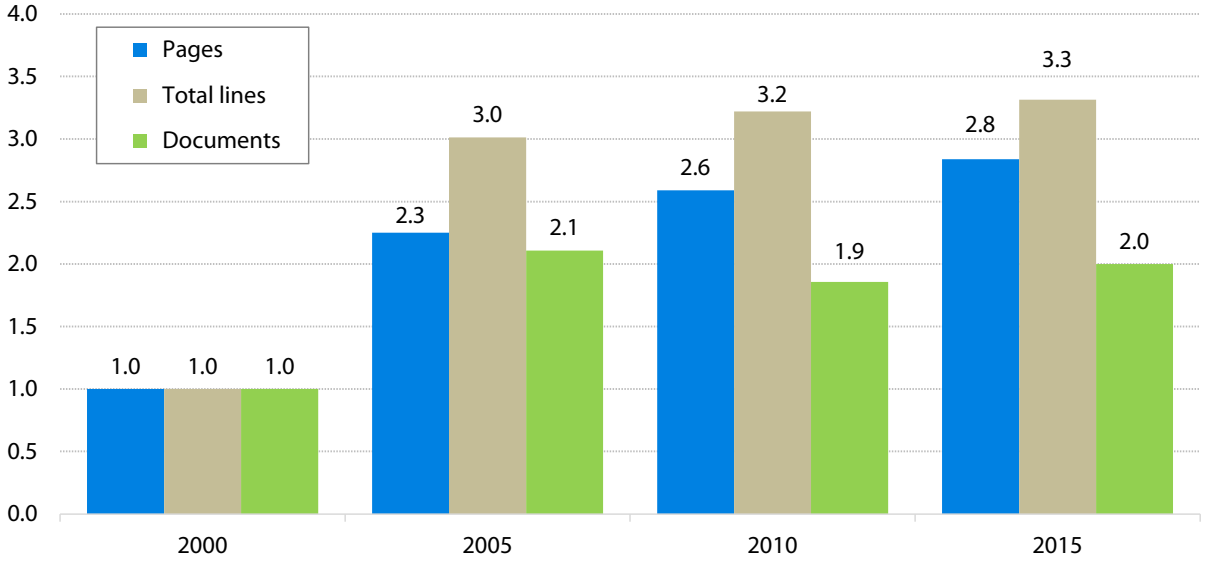
Sources: CRA (2016a); calculations by authors.

Notes: The four indicators include the provincial information sheets and all the tax forms listed under "Provincial information and forms".

the average number of pages and total lines increased, while the average number of documents first increased following the change in the personal income tax system after 2000 and then stabilized. Figure 7b shows that the differences among the three indicators (measured by the coefficient of variation) for the nine CRA provinces first declined dramatically after 2000, but then increased from 2005 to 2015. In other words, following the 2000 change, there is generally more variation over time between the provinces on the three indicators (page count, number of total lines, and number of documents). In both cases (figures 7a and 7b), the data show more complexity for taxpayers[11]

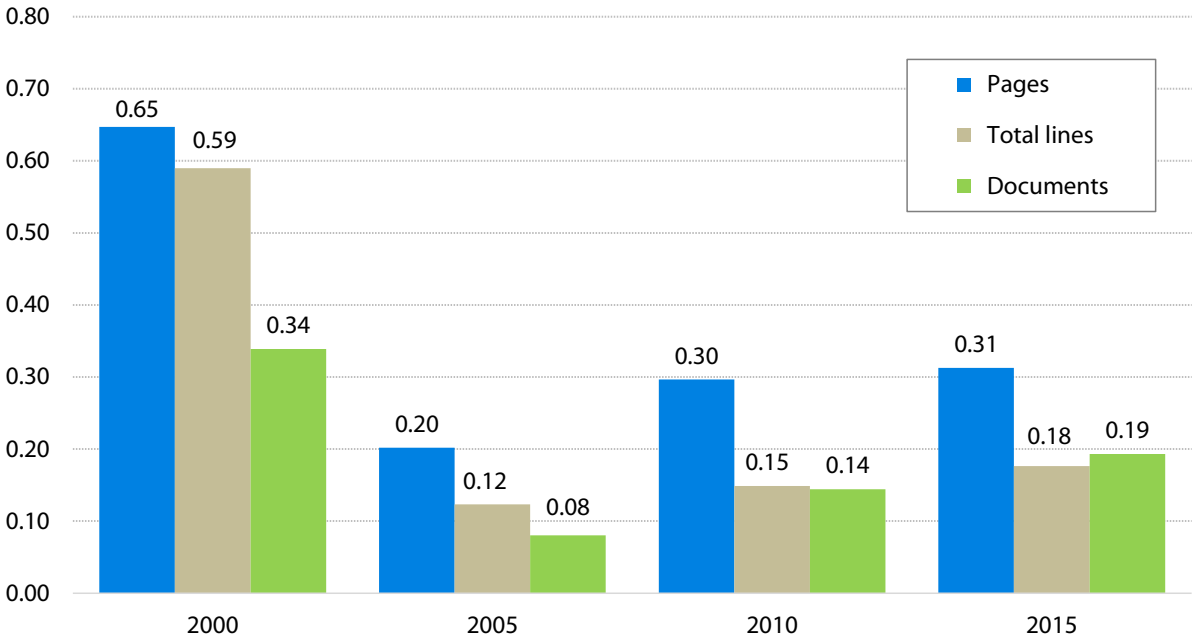
[11] This increased complexity is the result of giving provinces more freedom in setting their provincial income tax. The increased freedom facilitates provincial choices that match the preferences of the electorate, be it a single rate tax system or one that is more progressive. Thus this complexity can be seen as the price of a better functioning overall federal system. However, one may want to minimize this complexity for a given level of sub-national choice.

Figure 7a: Index, Three Indicators of Complexity Based on Provincial Tax Forms, Average of Nine CRA Provinces, 2000, 2005, 2010, and 2015 (where 1 = index value in 2000)



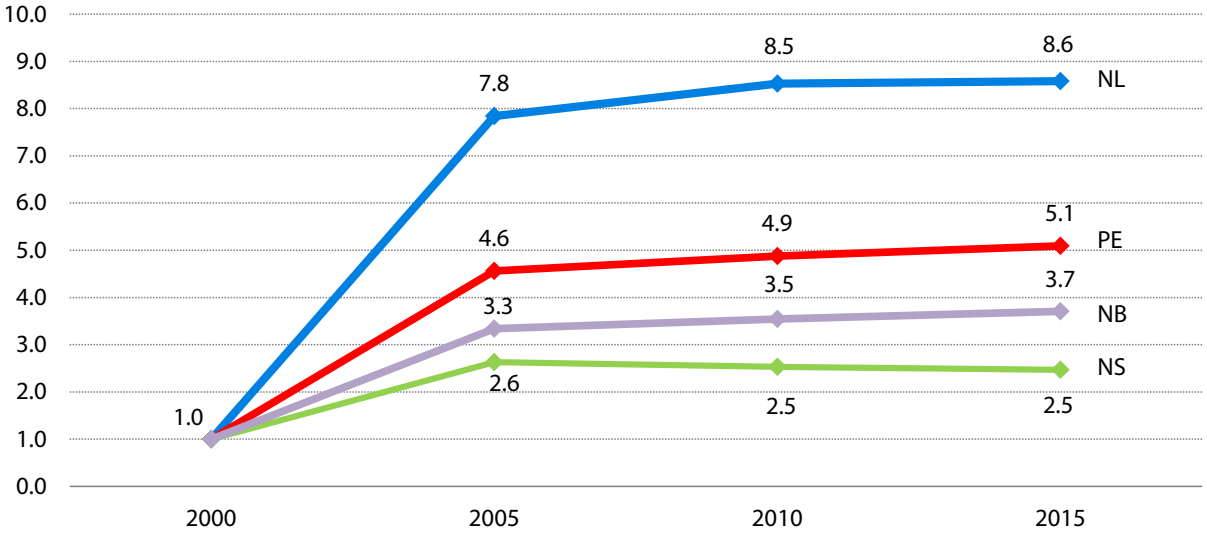
Sources: CRA (2016a); calculations by authors.

Figure 7b: Coefficient of Variation (CV), Three Indicators of Complexity Based on Provincial Tax Forms, Average of Nine CRA provinces, 2000, 2005, 2010, and 2015



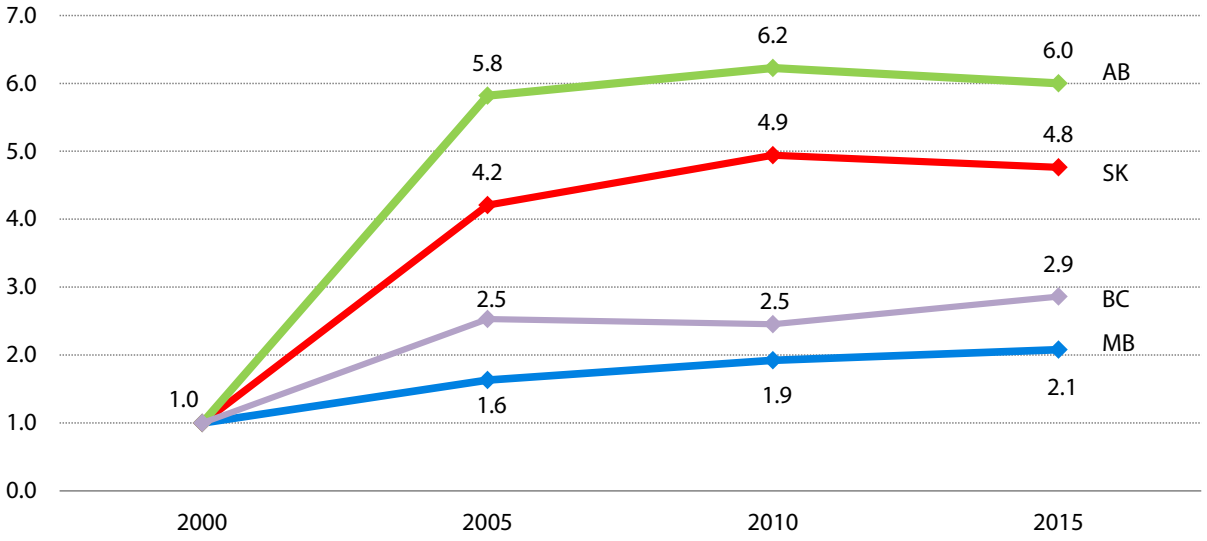
Sources: CRA (2016a); calculations by authors.

Figure 8a: Index, Number of Lines in Personal Income Tax Forms, Atlantic Provinces, selected years, 2000-2015 (where 1.0 = index value in 2000)



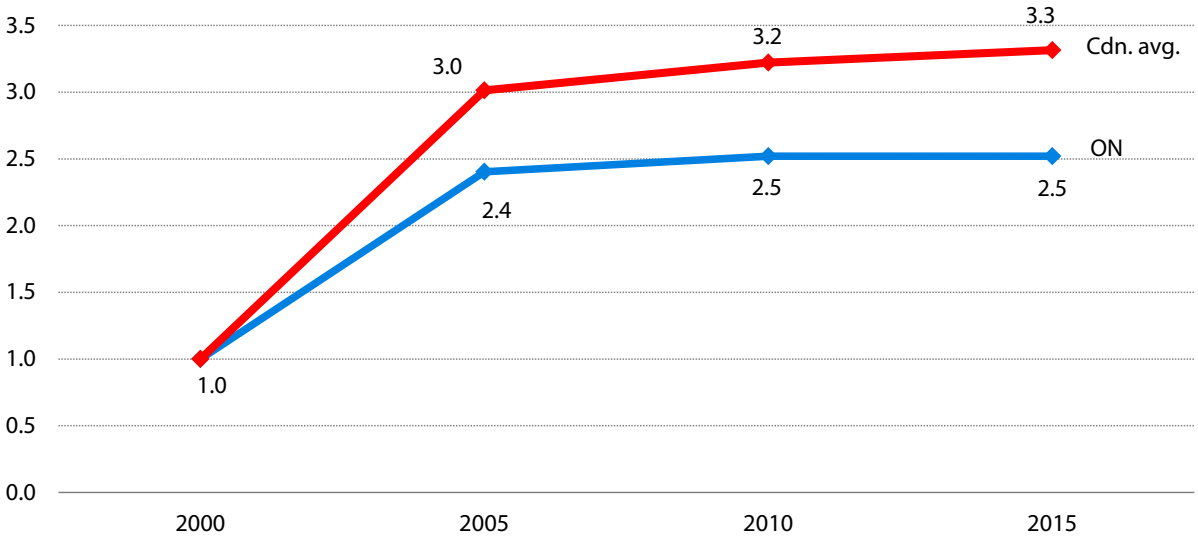
Sources: CRA (2016a); calculations by authors.
Note: There was marked change in the various provincial personal income tax systems after 2000.

Figure 8b: Index, Number of Lines in Personal Income Tax Forms, Western Provinces, selected years, 2000-2015 (where 1.0 = index value in 2000)



Sources: CRA (2016a); calculations by authors.
Note: There was marked change in the various provincial personal income tax systems after 2000.

Figure 8c: Index, Number of Lines in Personal Income Tax Forms, Ontario and Canadian average, selected years, 2000-2015 (where 1.0 = index value in 2000)

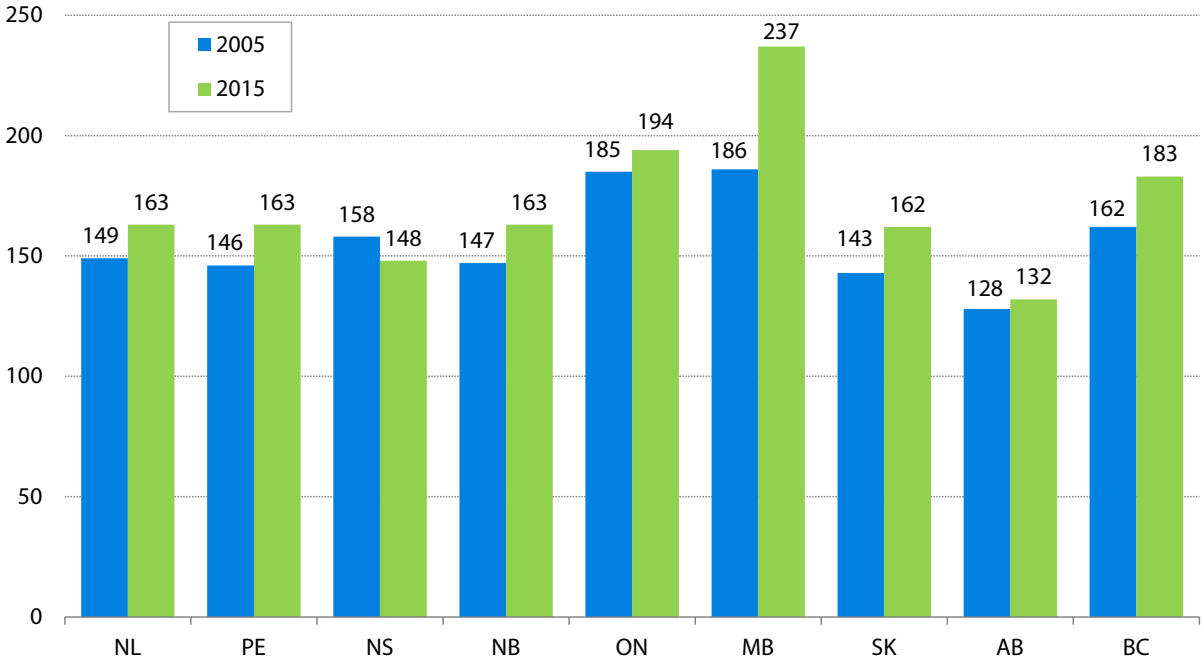


Sources: CRA (2016a); calculations by authors.
Note: There was marked change in the various provincial personal income tax systems after 2000.

Figures 8a, 8b, and 8c display, again in index form, the total number of lines between 2000 and 2015 for the nine CRA provinces (where 1.0 = index value in 2000). We focus on the total number of lines as the most appropriate indicator of complexity since one can reduce the number of documents simply by combining them, and cut the number of pages by reorganizing blank spaces, and so on, without reducing the complexity of calculations linked to the personal income tax system. But if a government adds (or subtracts) lines of calculations for a credit or for another purpose, that jurisdiction has increased (or decreased) complexity for the relevant subset of taxpayers, and thus for all taxpayers on average. Figure 8a includes all the Atlantic provinces, figure 8b includes the Western provinces, and figure 8c includes Ontario and the Canadian average.[12] The number of lines in Newfoundland & Labrador's tax forms grew the most over the period, followed by Alberta and Prince

[12] In results not displayed the authors computed the nine CRA provincial average number of lines weighted by number of provincial tax filers. Not surprisingly, it is fairly similar to the Ontario index as tax fillers from that province account for 50 percent of all CRA provinces personal income tax filers.

Figure 9: Number of Total Lines in Personal Income Tax Forms, Canadian Provinces (excluding Quebec), 2005 and 2015



Sources: CRA (2016a); calculations by authors.

Edward Island. In general, from 2000 to 2015, the number of lines in the tax forms of the nine CRA provinces increased—often quite dramatically when considering the total growth rate. Again, it is important to note that there was a change in the provincial personal income tax system after 2000. This means the system that existed in 2000 is different than that in the other years in the figure. Nonetheless, it is clear that following the system change, tax complexity increased.

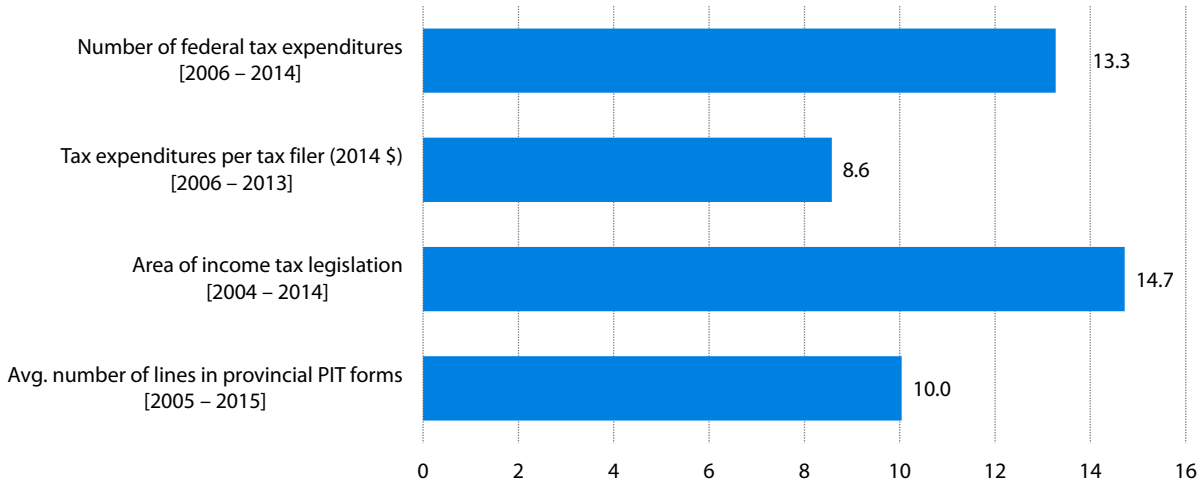
Figure 9 displays in graphical form the total number of lines in the various provincial tax forms (excluding Quebec) for 2005 and 2015. At 237, Manitoba has the greatest number of lines in 2015, followed by Ontario (194) and British Columbia (183). At the other extreme, Alberta has the fewest number of lines (132).

Conclusion

This study has reviewed the literature on measuring tax complexity and provided empirical measurements for Canada at both the federal and provincial levels using indicators on tax expenditures, tax legislation, and administrative documents (tax forms). The indicators measure different aspects of tax complexity, meaning each indicator has its weaknesses and strengths. But all indicators clearly point to an increase in federal and provincial personal income tax complexity over time.

Figure 10 displays the percentage growth in the empirical measure for four select indicators used to measure personal income tax complexity. They were selected to: 1) account for both federal and provincial personal income tax complexity; 2) cover all three measures of complexity discussed in figure 1; and 3) focus on what we argue are the preferred indicators of complexity (for instance, focusing on the total number of lines rather than number of documents or pages in provincial tax forms).

Figure 10: Percentage Increase in Four Personal Income Tax Complexity Indicators, Canada, Provinces and Federal, 10-year Interval (approximate)



Sources: See figure 2, figure 4, table 2, and table 4; calculations by authors.

The interval is approximately a 10-year period (starting in 2004-2006 and ending in 2013-2015). Over the period, all indicators signal growing tax complexity with increases ranging from 8.6 to 14.7 percent.

Canada does not have the equivalent of the United Kingdom's Office of Tax Simplification (either federally or provincially) (United Kingdom, 2015a, 2015b). That means there is no systematic work underway to measure, let alone reduce, tax complexity in Canada, although the new federal government has expressed interest in reviewing federal tax expenditures (Cheadle, 2016, March 25). This paper is part of an ongoing research program at the Fraser Institute that attempts to help fill that void.

Appendix A: Income Floor and Tax Rates of Lowest and Highest Personal Income Tax Brackets

Appendix table 1 displays the floor (minimum) income associated with the lowest and highest tax brackets for the various jurisdictions in 2001, 2008, and 2016. From 2001 to 2016, there was an increase in the average minimum income for the lowest tax bracket of 34 percent. The increase

Appendix Table 1: Minimum Income (Floor) for Lowest and Highest Tax Bracket (in dollars), Canada, Provinces and Federal, selected years, 2001-2016

	Min income for lowest tax bracket			Min income for highest tax bracket		
	2001	2008	2016	2001	2008	2016
Newfoundland & Labrador	7,410	7,566	8,802	59,180	60,429	175,700
Prince Edward Island	7,412	7,708	7,708	61,509	98,143	98,143
Nova Scotia	7,231	7,731	8,481	79,527	93,000	150,000
New Brunswick	7,412	8,395	9,758	100,000	113,273	150,000
Ontario	7,426	8,681	10,011	63,503	74,721	220,000
Manitoba	7,412	8,034	9,134	61,089	66,000	67,000
Saskatchewan	8,000	8,945	15,843	60,000	111,814	127,430
Alberta	12,900	16,161	18,451	12,900	16,161	300,000
British Columbia	8,000	9,189	10,027	85,000	97,636	106,543
Average of nine CRA provinces	8,134	9,157	10,913	64,745	81,242	154,980
CV (Coefficient of Variation)	0.22	0.29	0.34	0.37	0.38	0.46
Federal	7,412	9,600	11,474	100,000	123,184	200,000
Quebec	5,900	10,215	11,550	52,000	75,000	103,150

Sources: Treff and Perry (2001); Price Waterhouse Cooper (2008); CRA (2016a and 2016b); New Brunswick, Department of Finance (2016); Revenue Quebec (2016); calculations by authors.

Note: See Table 3.

in the average minimum income for the highest tax bracket is 139 percent. Both increases are greater than the rise in overall prices (29 percent) for the period as measured by the Canadian Consumer Price Index (Statistics Canada, 2016b). The two coefficients of variations increased over the period, indicating greater variation between the nine CRA provinces. The sharp increase in the minimum income for the highest bracket is associated with the introduction of more brackets with higher marginal rates.

Appendix table 2 displays the tax rates applied to the lowest and highest tax brackets for the various jurisdictions in 2001, 2008, and 2016. From 2001 to 2016, there has been a drop in the average rate for the lowest tax bracket, with the average of the nine CRA provinces falling from 9.5 to 8.7 percent. Turning to the highest tax bracket, we see

Appendix Table 2: Tax Rate for the Lowest and Highest Personal Income Tax Brackets, Canada, Provinces and Federal, selected years, 2001-2016

	Tax rate for the lowest tax bracket			Tax rate for the highest tax bracket		
	2001	2008	2016	2001	2008	2016
Newfoundland & Labrador	10.57%	8.20%	7.70%	19.64%	16.00%	15.30%
Prince Edward Island	9.80%	9.80%	9.80%	18.37%	18.37%	18.37%
Nova Scotia	9.77%	8.79%	8.79%	18.34%	19.25%	21.00%
New Brunswick	9.68%	10.12%	9.68%	17.84%	17.95%	20.30%
Ontario	6.16%	6.05%	5.05%	17.41%	17.41%	20.53%
Manitoba	10.90%	10.90%	10.80%	17.40%	17.40%	17.40%
Saskatchewan	11.50%	11.00%	11.00%	16.00%	15.00%	15.00%
Alberta	10.00%	10.00%	10.00%	10.00%	10.00%	15.00%
British Columbia	7.30%	5.24%	5.06%	16.70%	14.70%	14.70%
Average of nine CRA provinces	9.52%	8.90%	8.65%	16.86%	16.23%	17.51%
CV (Coefficient of Variation)	0.18	0.23	0.26	0.16	0.17	0.15
Federal	16.00%	15.00%	15.00%	29.00%	29.00%	33.00%
Quebec	17.00%	16.00%	16.00%	24.50%	24.00%	25.75%

Sources: Treff and Perry (2001); Price Waterhouse Cooper (2008); CRA (2016a and 2016b); New Brunswick, Department of Finance (2016); Revenue Quebec (2016); calculations by authors.

Notes: a) See Table 3.

b) Newfoundland & Labrador decreased a personal income tax rate as of July 1, 2008, so an average rate was used for the year.

relative stability from 2001 to 2008 until an increase in 2016. Variation between provinces increases for the lowest rate, as demonstrated by the coefficient of variation, while for the higher rate it first increases then decreases.

Appendix B: Calculating indicators Based on Provincial Tax Forms

Appendix B details the three measures of provincial tax complexity based on administrative documents (i.e., tax forms).

Number of documents

The data for each province comes from the YEAR General Income Tax and Benefit package web page. For Ontario, for instance, the 2015 data can be found at http://www.cra-arc.gc.ca/formspubs/t1gnrl/on-eng.html. A physical count of the number of items for each CRA province can be determined under the provincial information and forms headings. For Alberta in 2015, the five items are as follows:

1) Information Sheet—Residents of Alberta
2) Provincial Worksheet—Alberta
3) Form AB428—Alberta Tax and Credits
4) Schedule AB (S2)—Provincial Amounts Transferred from Your Spouse or Common-Law Partner
5) Schedule AB (S11)—Provincial Tuition and Education Amounts

Number of pages

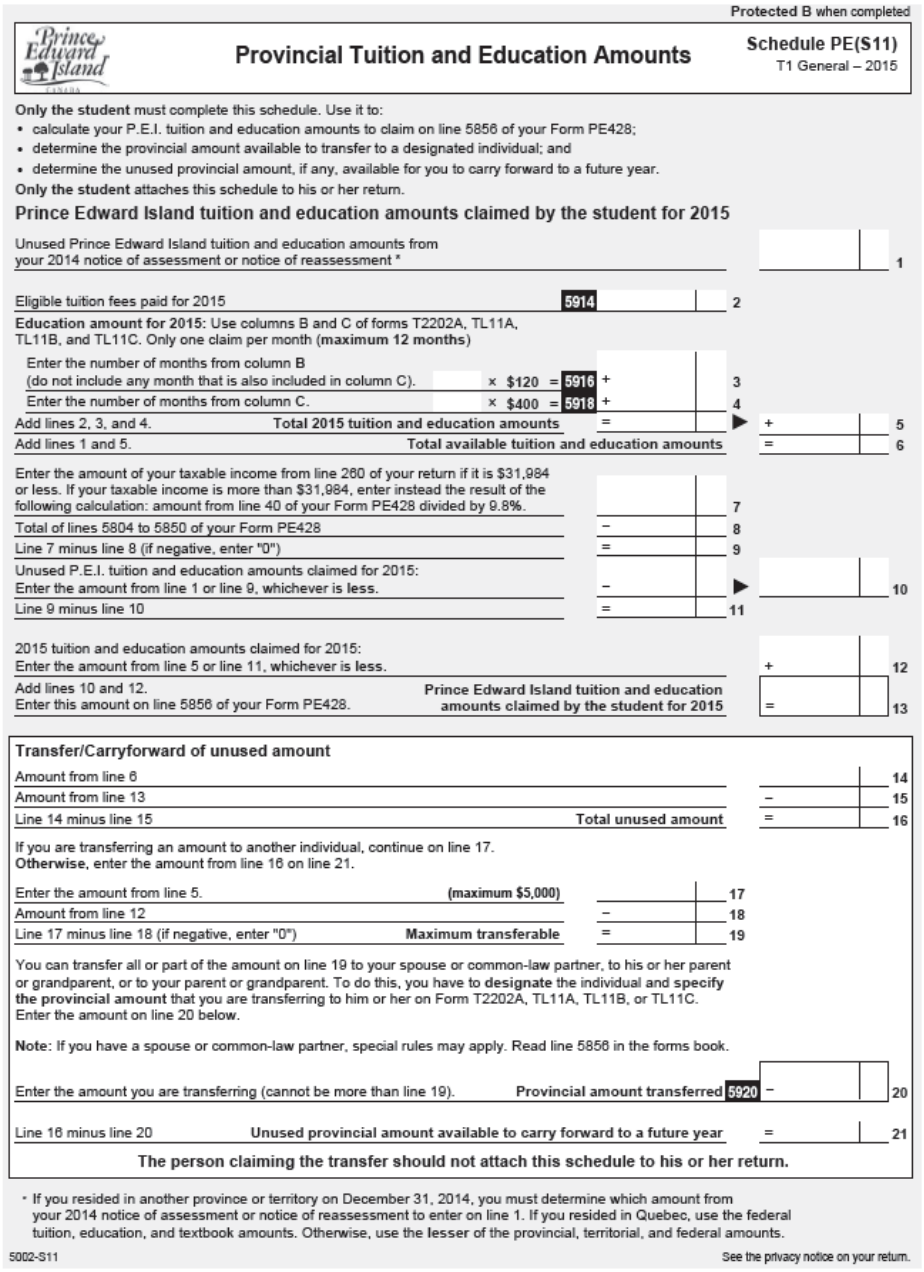
Once each item is opened as a PDF file, its length in pages is listed at the top of the file. The page counts are then added up for each province. For Nova Scotia in 2010, for example, there are five documents and a total of 14 pages:

- Information Sheet—Residents of Nova Scotia (7 pages);
- Provincial Worksheet—Nova Scotia (2 pages);
- Form NS428—Nova Scotia Tax and Credits (3 pages);
- Schedule NS (S2)—Provincial Amounts Transferred from Your Spouse or Common-law Partner (1 page); and
- Schedule NS (S11)—Provincial Tuition and Education Amounts (1 page).

Identical pages were not double counted.

Number of lines

The number of lines in each PDF is counted (except for the information sheet) and added up. Using PEI as an example, the Provincial Tuition and Education Amount identified on the web page as Schedule PE (S11)—Provincial Tuition and Education Amounts (reproduced below) contains 21 lines. The Provincial Worksheet has 45 lines, the tax and credits form has 88 lines, and the transfer between spouses form has 9 lines, for a total of 163 lines for PEI's personal income tax forms in 2015.



Protected B when completed

Prince Edward Island CANADA

Provincial Tuition and Education Amounts

Schedule PE(S11)
T1 General – 2015

Only the student must complete this schedule. Use it to:
- calculate your P.E.I. tuition and education amounts to claim on line 5856 of your Form PE428;
- determine the provincial amount available to transfer to a designated individual; and
- determine the unused provincial amount, if any, available for you to carry forward to a future year.

Only the student attaches this schedule to his or her return.

Prince Edward Island tuition and education amounts claimed by the student for 2015

Unused Prince Edward Island tuition and education amounts from your 2014 notice of assessment or notice of reassessment * — 1

Eligible tuition fees paid for 2015 — 5914 — 2

Education amount for 2015: Use columns B and C of forms T2202A, TL11A, TL11B, and TL11C. Only one claim per month (**maximum 12 months**)

Enter the number of months from column B (do not include any month that is also included in column C). × $120 = 5916 — 3

Enter the number of months from column C. × $400 = 5918 — 4

Add lines 2, 3, and 4. **Total 2015 tuition and education amounts** — 5

Add lines 1 and 5. **Total available tuition and education amounts** — 6

Enter the amount of your taxable income from line 260 of your return if it is $31,984 or less. If your taxable income is more than $31,984, enter instead the result of the following calculation: amount from line 40 of your Form PE428 divided by 9.8%. — 7

Total of lines 5804 to 5850 of your Form PE428 — 8

Line 7 minus line 8 (if negative, enter "0") — 9

Unused P.E.I. tuition and education amounts claimed for 2015: Enter the amount from line 1 or line 9, whichever is less. — 10

Line 9 minus line 10 — 11

2015 tuition and education amounts claimed for 2015: Enter the amount from line 5 or line 11, whichever is less. — 12

Add lines 10 and 12. Enter this amount on line 5856 of your Form PE428. **Prince Edward Island tuition and education amounts claimed by the student for 2015** — 13

Transfer/Carryforward of unused amount

Amount from line 6 — 14

Amount from line 13 — 15

Line 14 minus line 15 **Total unused amount** — 16

If you are transferring an amount to another individual, continue on line 17. **Otherwise**, enter the amount from line 16 on line 21.

Enter the amount from line 5. **(maximum $5,000)** — 17

Amount from line 12 — 18

Line 17 minus line 18 (if negative, enter "0") **Maximum transferable** — 19

You can transfer all or part of the amount on line 19 to your spouse or common-law partner, to his or her parent or grandparent, or to your parent or grandparent. To do this, you have to **designate** the individual and **specify the provincial amount** that you are transferring to him or her on Form T2202A, TL11A, TL11B, or TL11C. Enter the amount on line 20 below.

Note: If you have a spouse or common-law partner, special rules may apply. Read line 5856 in the forms book.

Enter the amount you are transferring (cannot be more than line 19). **Provincial amount transferred** 5920 — 20

Line 16 minus line 20 **Unused provincial amount available to carry forward to a future year** — 21

The person claiming the transfer should not attach this schedule to his or her return.

* If you resided in another province or territory on December 31, 2014, you must determine which amount from your 2014 notice of assessment or notice of reassessment to enter on line 1. If you resided in Quebec, use the federal tuition, education, and textbook amounts. Otherwise, use the **lesser** of the provincial, territorial, and federal amounts.

5002-S11 — See the privacy notice on your return.

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