

Final, Unalterable (and Up for Negotiation): Federal-Provincial Transfers in Canada

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Abstract

Federal transfers are a central but ever-changing feature of Canada's federation. Despite early hopes that transfer arrangements were "a final and unalterable settlement" of provincial demands, complex economic and political pressures forced successive governments to negotiate. To explore this history and Canada's various transfer programs, I compile uniquely detailed data from Confederation to today. Explicit transfers to provincial governments are large, but more equally distributed today than throughout most of Canada's history. I also propose a uniform methodology to quantify and analyze both explicit and implicit fiscal transfers. Overall, federal tax and spending activities redistribute just under 2 per cent of Canada's GDP across provinces; but this too is less than any point in the past six decades. This data, analysis and brief historical review reveal why today's transfer programs are designed as they are, what pressures they must withstand, and what future reforms might consider.

1 Introduction

Federal transfers are essential to Canada's fiscal landscape, and have been since Confederation. But achieving stable, equitable, and efficient arrangements is difficult. Canada's original provincial subsidies were "in full settlement of all future demands on Canada," according to Section 118 of the British North America Act. But as new provinces joined and special arrangements proliferated, the Constitution was amended in 1907 to enlarge the subsidies and to achieve (they thought) "a final and unalterable settlement of the amounts to be paid yearly to the several provinces". But then, as now, governments constantly balance competing, often irreconcilable interests in ever changing economic, social, and political environments. Fiscal transfers are always up for negotiation. Today, they've evolved into complex arrangements many times their original size, and include both explicit programs, such as equalization, and implicit ones through federal tax and spending policies. This

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paper will survey the history, and explore the scale, scope, and design of various fiscal transfer programs using comprehensive data since Confederation.

First, some context. Canada is a highly decentralized country, though significant revenue powers reside with the central government in Ottawa. This creates both “vertical” challenges (i.e., between federal and provincial governments) and “horizontal” ones (between provinces). The vertical challenges involve a potential imbalance between provincial spending responsibilities and their revenue raising ability. Historically, customs duties were the primary revenue source and these were strictly federal. Today, provincial and local governments are responsible for more than two-thirds of total government spending in Canada, including the large and growing areas of health, education, and social services, though they raise just over half of total revenue. Federal transfers make up the difference. But while cash grants from Ottawa provide financial resources, they restrain provincial autonomy. Former Quebec Premier Maurice Duplessis said it best,

A central government which would appropriate to itself the sources of taxation would, by this very fact, reduce the provinces to legislative impotence. Effectively, a province with no other revenues than federal subsidies would become a kind of inferior organism, under control of the authority which could measure out its means of subsistence. In other words, such a situation would amount to replacing the reins enabling one to drive with shackles that paralyze and enslave.¹

Designing transfer programs to maintain provincial autonomy, yet provide provinces sufficient revenues to deliver public services, is a central concern.

Horizontal challenges involve inter-provincial equity and efficiency. In terms of equity, provinces differ in the strength and composition of their economies. Some have an easier time raising revenue than others, and each are exposed to unique economic shocks. Transfers help ensure sufficient fiscal capacity exists in all regions to deliver comparable public services despite those differences. In terms of efficiency, both federal and provincial governments share many important tax fields, notably income taxes. Changes by one level of government therefore affect the other. Some provinces also have ready access to funds in addition to taxes levied on their residents, such as Alberta’s resource revenues derived from rents and royalties, which allow those provinces to provide more public services at lower tax rates than are possible elsewhere. Interprovincial migration that chases such fiscal benefits, instead of more fundamental considerations like productivity or local amenities, can distort the allocation of labour across regions and shrink Canada’s economy. In principle, federal transfer programs can overcome many of these challenges. By harmonizing fiscal benefits across the country (Boadway and Flatters, 1982), pooling risk (Lee, 1998), and overall making federalism more attractive for all (Bucovetsky, 1998; Boadway, 2004), federal transfers can improve the effectiveness of decentralization.

Though these broad principles are sound, there are inevitable and ever-changing design issues to contend with. Consider equalization, which transfers federal dollars to top-up provinces with

¹As quoted in Appendix B of Moore et al. (1966)

below-average ability to raise revenue. Though simple in principle, there are many difficult theoretical and practical questions. How should ability be measured? Which revenue sources should be included? Should the cost of delivering public services be considered (Shah, 1996; Gusen, 2012)? Should differences in tax base elasticities matter (Dahlby and Wilson, 1994)? There are also political considerations, especially in Canada where the historic, linguistic, and cultural uniqueness of Quebec looms large. And the practical difficulties of equalizing revenue – from accurate measurement to adverse incentive effects – are not trivial, and change over time. This paper will explore the functioning of equalization since it began over sixty years ago. With the latest data, I also explore how effectively the program achieves its objectives today, and what some alternative design options might be.

Larger than equalization, or any explicit transfer program, is the myriad of ways in which federal tax and spending policies *implicitly* transfers financial resources across provinces. Some programs were explicitly designed to redistribute, like the National Energy Program decades ago and Employment Insurance program today, while others are uniform programs that nonetheless have redistributive effects, like income taxes and the GST. This paper will systematically explore these data from 1961 to today, and quantify the extent and effect of these implicit transfers by province. I find that all federal revenue and spending activities combined redistribute just under 2 per cent of Canada's GDP across provinces, driven more by federal taxes than by equalization. But redistribution in recent years is lower than at any point in the past six decades, and significantly below the nearly 3.5 per cent of GDP redistributed in the early 1980s.

A broad, historical, data-oriented review of fiscal transfers matters. We'll see Canada's current system of transfers has changed significantly over time. How earlier programs responded to economic and political challenges reveal why our programs today are structured as they are. This paper will briefly highlight a number of particularly relevant episodes, drawing on the work of many others (Maxwell, 1937; Moore et al., 1966; Perry, 1989, 1997; MacNevin, 2004; Courchene, 2006). There is also a significant academic literature exploring inter-government transfers in a federation, including earlier theoretical treatments (Buchanan, 1950, 1952; Flatters et al., 1974; Boadway, 1980; Boadway and Flatters, 1982; Watson, 1986) and more recent research (Wilson, 2003; Bucovetsky and Smart, 2006; Shah and Boadway, 2006; Smart, 2007; Albouy, 2009, 2012). For a broad review, with a focus on research by Canadian economists in particular, Boadway and Cuff (2017) is an excellent source. I abstract from many of the critically important considerations raised in this literature, but will contribute to it nonetheless. In particular, I compile uniquely detailed data spanning many decades, and in some cases since Confederation, and propose a unified methodology to characterize both explicit and implicit transfers. It reveals previously undocumented patterns of the size and distribution of federal transfers, and characterizes implicit transfers through federal tax and spending since 1961. This is new. But first, some history.

2 A Brief History of Fiscal Transfers in Canada

Federal-provincial transfers have a long history. At confederation, provinces gave the federal government the most important taxing power at the time – customs duties, which were its chief source of revenue until the first world war. In exchange, the federal government gave provinces annual subsidies. They included fixed amounts to assist in operating government and legislatures, and a per capita amount set at eighty cents per person up to 400,000.² The federal government also assumed \$77.5 million in provincial debt, equivalent to roughly one third of the economy at the time. Provinces with per capita debt below the national average received 5 per cent of the difference as an additional subsidy.³ At first, these so-called Statutory Subsidies were very important. They provided roughly half of provincial revenues, and as much as two thirds for BC when it joined or nearly 80 per cent for Saskatchewan and Alberta when they did.

There were also many special grants that provinces received in addition to these subsidies. Some were ad-hoc, such as the 1867 grant to New Brunswick (\$63,000 for ten years) or the 1869 one to Nova Scotia (\$83,000 for ten years). But others were in compensation for lost rights. In 1873, for example, the federal government began paying New Brunswick \$150,000 per year in exchange for it forgoing duties on lumber exports, to comply with the new Treaty of Washington between the United Kingdom and the United States. In 1901, Prince Edward Island received \$30,000 per year “on account of alleged non-fulfillment” of Canada’s commitment to maintain steamship service with the island.⁴ Both provinces still receive these payments today. Out west, the Prairie provinces did not have rights to their natural resources (until 1930), unlike the original provinces. Instead, they received direct federal cash transfers in lieu of those rights. For Alberta and Saskatchewan, that transfer totaled \$375,000 and Manitoba’s started at \$45,000 but rose to \$409,000 by 1912. Various other changes, from altering the population subsidy to adjusting debt allowances to new ad-hoc grants, also occurred during this period.⁵

These special arrangements led to widening differences between provinces. I display the per capita subsidies and grants for selected years in Table 1. All are adjusted for inflation. Ontario and Quebec, the richest provinces, initially received the least – at between \$15 to \$26 per capita, respectively. The Maritimes received more, with PEI receiving nearly \$90. But the western provinces of BC, Alberta, and Saskatchewan – with their small populations and relatively favourable treatment upon joining – received the most. Alberta received over \$206 per capita when it joined, for example. This favorable treatment led, in part, to an overhaul of subsidies in 1907 and to new special grants for the Maritimes by 1935. Finally, when Newfoundland joined Confederation in 1949 it received subsidies from the standard formula, plus an additional \$1.1 million per year and

²Until 1907, the population subsidies were capped for Ontario, Quebec, and (after the 1881 census) Nova Scotia as their populations exceeded 400,000. After 1907, the cap was removed, but the subsidy escalated at a lower rate of 60 cents per capita above 2.5 million. This subsidy remains in place today.

³Debt allowances were fixed, but based on a (roughly) common nominal \$25 per person allocation across provinces. The federal government gradually assumed more provincial debt, both as new provinces joined and more from the original four, which increased the total to over \$109 million.

⁴As described in legislation (1 Ed. VII c.3).

⁵For a comprehensive review, see [Government of Canada \(1945\)](#).

Table 1: Statutory Subsidies and Special Grants (Real 2017 Dollars per Capita)

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL
First Year *	182.18	206.61	145.32	85.08	15.31	26.02	39.52	31.05	89.54	61.75
1905	35.49	206.61	145.32	54.01	17.85	18.72	45.02	28.46	65.31	–
1935	44.46	46.64	46.45	48.69	16.57	17.08	74.97	73.39	143.82	–
1949	9.98	26.09	27.56	25.84	7.98	8.17	35.56	35.28	77.34	61.75
2017	0.74	1.10	1.95	2.05	0.62	0.67	2.46	2.44	4.50	18.36

Note: Displays the inflation-adjusted per capita subsidy paid to each province by the federal government under their terms of confederation and various other agreements. Years denote fiscal years starting. * Provinces joined confederation at different times. The values reported here are all 2017 dollars.

Source: Own calculations from various Canada Year Books public accounts records, and Government of Canada, Department of Finance data for 2017-18. Inflation adjustments use [McInnis \(2001\)](#) GDP deflators updated with Statistics Canada data table 36-10-0223. I use the 1871 deflator for 1867 payments.

a further unspecified amount to be determined later. A deal on this latter payment was difficult to reach, involved multiple commissions, and eventually the federal government imposed in 1959 what Prime Minister Diefenbaker called a "final and irrevocable settlement" of \$8 million per year until 1962 less previously paid transition support.⁶ As with all other "final" settlements, this too was negotiable. Two years later the government extended payments another five years, and in 1966 Prime Minister Pearson made them permanent.⁷ Today, Newfoundland and Labrador receives one third of all statutory subsidies. But they are of little significance overall.

So for a broader perspective, I gather data on all transfers from a variety of sources, including Statistics Canada data tables for recent decades, [Perry \(1997\)](#) for the early post-war years, and various Public Accounts for 1867 to 1942. I plot the size of transfers in panel (a) of Figure 1. To quantify differences across provinces, I use a particularly useful measure: the [Schutz \(1951\)](#) Index. This measures the weighted absolute deviation of a variable, in this case per capita federal transfers, from its mean

$$\delta_t = \frac{1}{2} \frac{\sum_{i=1}^N |x_i - \bar{x}| P_i}{\sum_{i=1}^N x_i P_i} \equiv \frac{1}{2} \sum_{i=1}^N |p_i - s_i|, \quad (1)$$

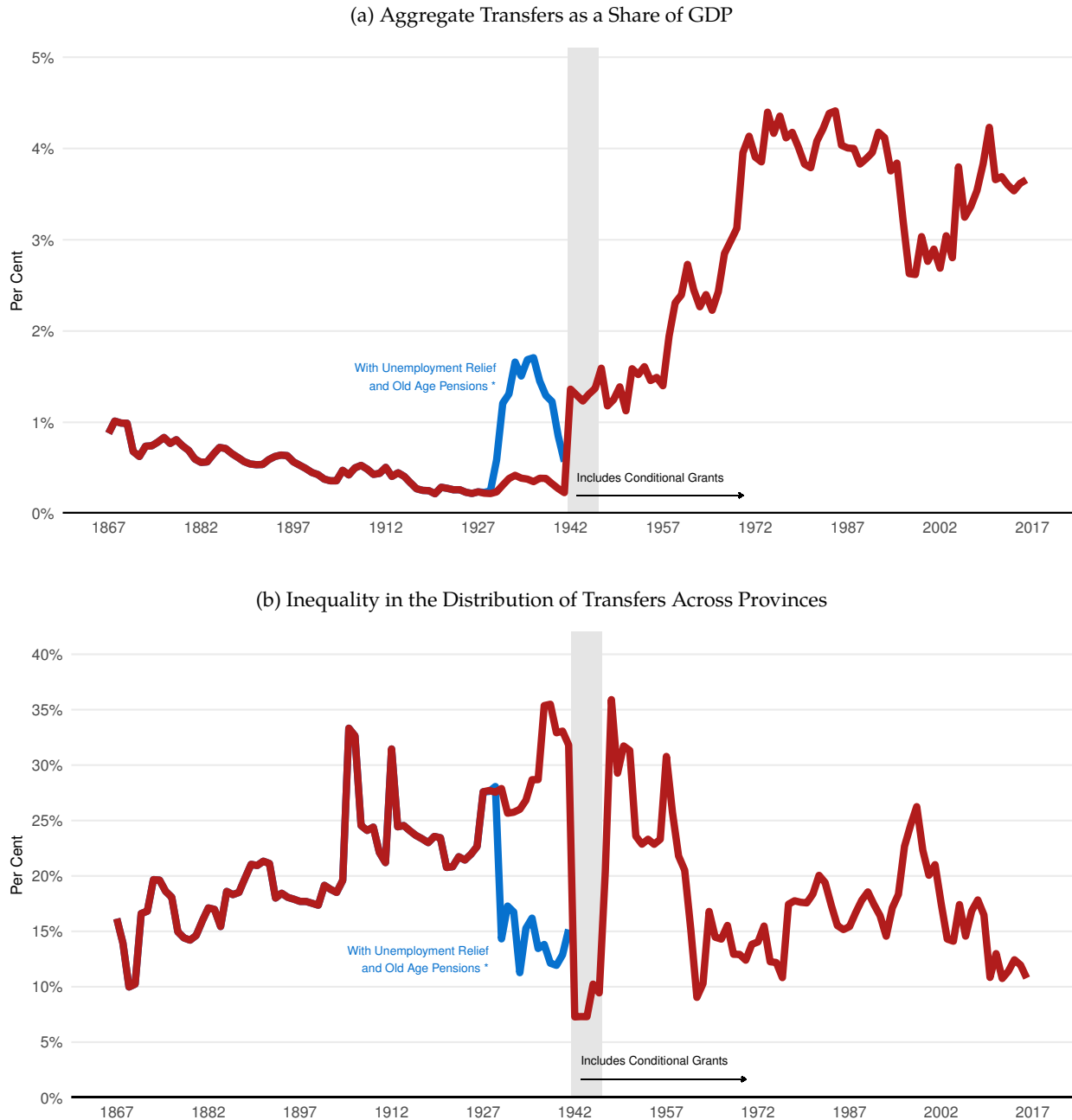
where x_i is some per capita data for province i , \bar{x} the population-weighted average, and P_i is the province's population. Equivalently, and perhaps more intuitively, this is half the total deviation between each province's share of the population p_i and of the total x , given by s_i . It represents the share of total value that must be reallocated to achieve perfect per capita equality. I use this Index throughout the paper, especially when we turn to Canada's equalization program. I display the Schutz Index of federal transfers in panel (b) of Figure 1.

At Confederation, transfers were roughly one per cent of GDP, declining to one quarter of one per cent by the late 1930s. As new provinces joined and special arrangements grew so too did

⁶Statement by Prime Minister Diefenbaker in House of Commons Debates, March 25, 1959, p. 2215-2216 related to the settlement of Article 29 of the Newfoundland Act, 12 & 13 Geo. VI, c. 22 (UK).

⁷The federal McNair Commission tasked with determining payments under Article 29 of Newfoundland's terms of union originally recommended indefinite payments of \$8 million from 1961-62 onwards. More recently, in 1996-97, payments for a 20 year period were suspended in exchange for \$130 million over three years. The \$8 million annual payment restarted in 2016-17.

Figure 1: Federal Transfers to Provincial Governments, 1867-Present



Note: Panel (a) displays total federal (cash) transfers to provincial governments as a share of national GDP. Panel (b) displays a measure of inequality in per capita federal transfers to provinces (the Schutz Index) as the share of transfers that needs to be reallocated to achieve full equality. The shaded region marks the period 1942-1946 when the Wartime Tax Agreement was in effect. * The federal government shared the cost of unemployment relief and old age pensions, until those became federal programs; includes support for the blind and youth training.

Sources: Own calculations using various federal Public Accounts for 1867-1941, [Perry \(1997\)](#) for 1942-1980, Statistics Canada data table 36-10-0321 for 1981-2006 and 36-10-0450 for 2007-present. Population data for 1867-1920 from DBS (1931), 1921-1971 from Statistics Canada data table 17-10-0027 and 1971-present from table 17-10-0005. GDP data from [McInnis \(2001\)](#) for 1871-1960 (interpolated back to 1867 using population) and Statistics Canada data table 36-10-0104 for 1961-present. Results based on [Perry \(1997\)](#) are verified with alternative Statistics Canada data between 1961-1980 from table 36-10-0343 and between 1952-1962 from [Dominion Bureau of Statistics \(1966\)](#). Both excluded from plot.

inequality of transfers across provinces. The spikes in inequality in 1905 followed the creation of Alberta and Saskatchewan, though inequality quickly fell as populations there grew. In 1912, provincial boundaries were expanded and transfers increased, especially to Manitoba. The general increase in inequality during the 1930s is also notable. The Great Depression strained different provinces to different degrees. The situation in western Canada was particularly challenging. In 1934, BC received an additional \$750,000 per year. The following year additional special grants to the Maritimes following the White Commission recommendations also added to inequality, with \$275,000 to PEI, \$1.3 million to Nova Scotia, and \$900,000 to New Brunswick. And by 1937, Manitoba was granted \$750,000 more per year and Saskatchewan \$3.5 million more (a 165% increase, though this shrank soon after). All of these ad-hoc arrangements contributed to rising inequality in transfers. At peak, with a Schutz Index of over 0.35, more than one-third of transfers would need to be reallocated to achieve per capita equity.

Though grants and subsidies were increasingly unequal, new transfer programs started that weren't. Beginning in 1927, the federal government shared the cost of old age pensions administered by the provinces. And beginning in 1930, it shared the cost of unemployment relief. Those programs would later become wholly federal, so I isolate them from other intergovernmental transfers in the figure.⁸ Including those programs with subsidies and grants, transfers during the Great Depression exceeded 1.5 per cent of GDP at peak and the Schutz index fell to an average of just under 0.15.

After 1942, the size and distribution of federal transfers changed dramatically. First, wartime arrangements replaced many previous transfers. These were meant to help provinces cover their debts and to fund wartime activities (building, training, and so on). Transfers rose to roughly 1.5 per cent of GDP. Following the war, the federal government began increasing transfers and tax room to provinces. And as cost-share programs related to health and education grew significantly larger, transfers eventually exceeded 4 per cent of GDP by the 1970s. Unconditional grants, such as equalization, also grew over this period. The deficit cutting efforts of the Chretien-Martin years in the mid- to late-1990s shrank transfers temporarily, but they are today only slightly smaller than their peak of over 4 percent. The remainder of this paper explores these post-war arrangements.

2.1 Tax Sharing in Canada: Tax-Point Transfers and the Birth of Equalization

Prior to the First World War, federal revenues were predominantly derived from customs duties, and provincial revenues predominantly came from federal transfers, licences, and fees, though many provinces also imposed income taxes (beginning with British Columbia in 1876). Provincial income taxes, along with taxes on gasoline, alcohol, and estates, grew in importance in the interwar years as the Depression strained finances. By 1939, seven of the nine provinces had taxes on personal and corporate income. The Second World War, however, changed Canada's fiscal

⁸Loans to western provinces under the Unemployment and Farm Relief Act were partially a subsidy. The Western Provinces Treasury Bills and Natural Resources Settlement Act, 1947, for example, reduced outstanding loans under the Relief Act by half, and converted the remainder to a zero interest 30 year loan. Despite this, I exclude them from this analysis.

landscape dramatically, as the federal government occupied the entire income and estate tax fields. After the war, policy makers in Ottawa were hesitant to return these taxes to the provinces.

There were strong reasons for a single government to occupy this tax area, such as to ensure minimal distortions and differences across provinces that could harm Canada's economy. But there was no constitutional basis to stop provinces from establishing their own income taxes. Ottawa instead offered cash grants to provinces that "rented" their tax room to the Federal government. These "tax rental arrangements", as they were called, began in 1947 and required provinces not establish their own personal income tax systems, and placed certain other restrictions on corporate income taxes.

The early tax rental arrangements took many forms. The 1947 grants were, for most provinces, a combination of a minimum \$12.75 per capita, plus the statutory subsidies discussed earlier, plus a fixed amount equivalent to half the 1940 income tax that a province raised before ceding the field during the war. Alternatively, provinces could choose a minimum \$15 per capita grant plus the statutory subsidies.⁹ Ontario and Quebec rejected the deal, so received no federal transfers under this arrangement – which explains the large increase in transfer inequality in Figure 1. Negotiations continued, though the Korean War delayed progress. In 1952, the arrangements were little changed, except Ontario agreed to join and began receiving payments.¹⁰ For many provinces, ceding income taxes to the federal government in exchange for fairly equal per capita cash grants was not ideal. This was especially true for Quebec, whose sovereignty concerns added to generic ones over provincial autonomy. And in 1954, they established their own income tax regime equivalent to 15 per cent of the Federal income tax (Moore et al., 1966). The following year, Ontario announced they would also set up their own corporate income tax system. Ottawa was forced to re-evaluate the current arrangements. A full accounting of the negotiations that followed between Quebec, Ottawa, and other provinces over fiscal arrangements is beyond the scope of this paper. Suffice it to say, they were complex but Ottawa's solution was elegant.

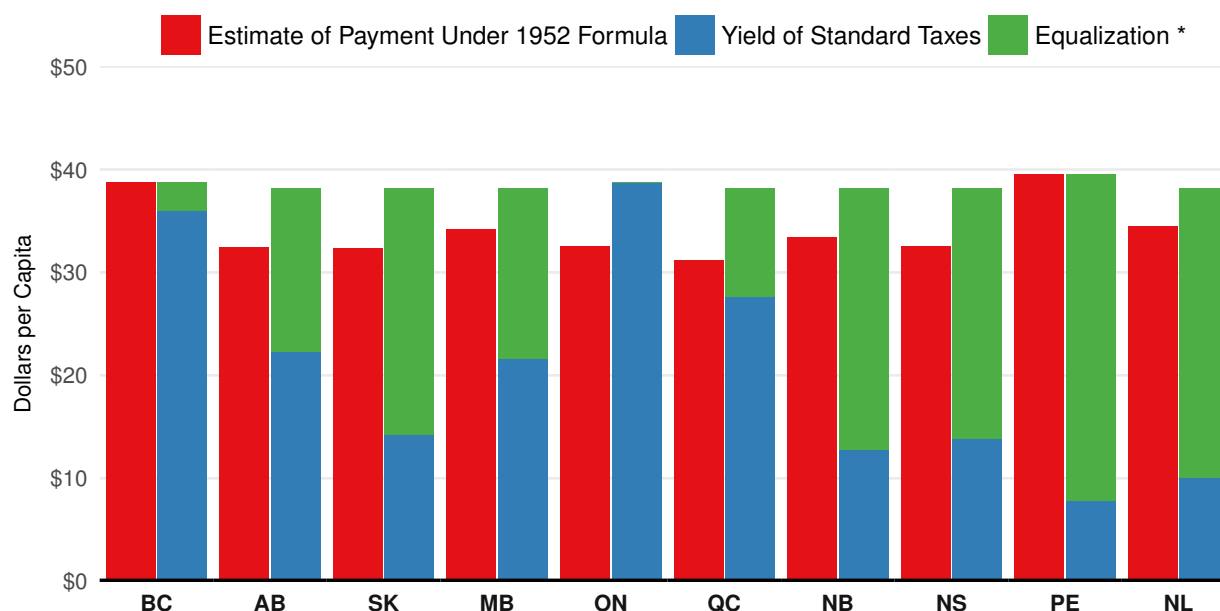
Both the 1947 and 1952 arrangements featured significant implicit equalization, as per capita transfers were (for provinces that accepted the deal) largely similar. Beginning in 1957, however, Ottawa would separate the tax rental payments from its fiscal aid. Tax rentals would give each province a portion of the federal personal income tax (10 per cent), corporate income tax (9 per cent), and succession duties (50 per cent) that was generated from within it. But as tax points are worth more to provinces with higher income, Ottawa topped-up this tax point transfer to the average of the richest two provinces (Ontario and BC). This top up was called equalization. Combined, the two cash transfers were worth roughly \$39 per capita but any province that set up its own tax system would receive only the equalization payment – an improvement over prior deals where non-agreeing provinces received nothing.¹¹ Provinces were free to levy higher rates, but taxpayers could only deduct 10 per cent of their federal taxes.

⁹See Moore et al. (1966) for comprehensive coverage and discussion.

¹⁰Ontario only rented the personal and corporate income taxes; it maintained its own succession duties.

¹¹Ontario would receive (slightly) more than this, since the tax points there were worth nearly \$40 per person on account of its higher income.

Figure 2: Comparing The 1957 and 1952 Fiscal Arrangements, for 1957-58

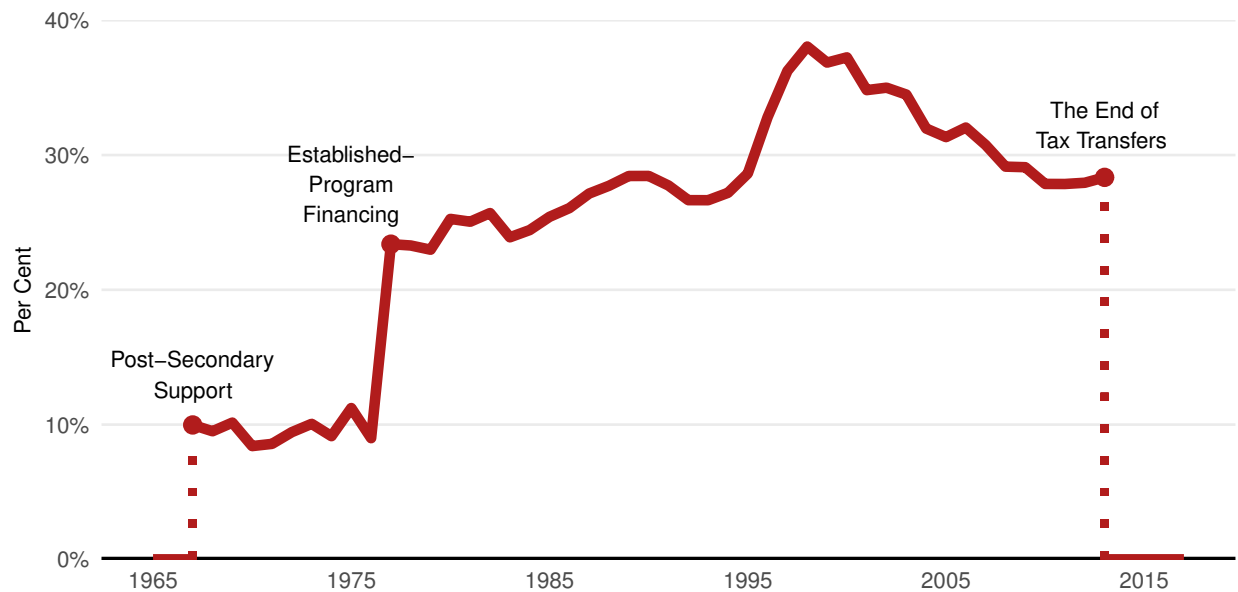


Note: Displays an estimate of per capita payments to each provinces in 1957-58 under the 1957 fiscal arrangements compared to what the prior 1952 arrangement would have yielded that same year. I exclude the 2 percent insurance premium tax that the federal government vacated for provinces to fill under the 1957 arrangement. * Equalization includes stabilization payments to BC and PEI. Source: Own calculations from information tabled by Hon. W. E. Harris (Minister of Finance) in House of Commons Debates, July 16, 1956, p. 5989.

In Figure 2, I display the difference between the 1957 and 1952 arrangements for each province in fiscal year 1957-58. It is clear here that the 1952 arrangements already contained significant implicit equalization. Though payments overall were set to rise by 7 dollars per capita, the variation across provinces became only slightly more uniform. In short, the 1957 arrangements were not significantly different in the extent to which they equalized provincial revenues or provided additional assistance to poor regions. Indeed, the federal government recognized the lack of sufficient support to poor provinces in its 1957 arrangements and provided a special ad-hoc “Atlantic Provinces Adjustment Grants” to compensate – \$2.5 million to PEI, and \$7.5 million each to Newfoundland, Nova Scotia, and New Brunswick. This averaged over \$13 per capita, or nearly one-third more than other provinces received. These annual payments were abolished in 1967, when they were rolled into the equalization program starting that year.

Despite the more generous payments in 1957, Quebec still did not agree. They would receive equalization payments, but levied their own income taxes. Quebec taxpayers could access a federal credit equal to 10 per cent of federal personal income taxes and 9 per cent of corporate income taxes, but as Quebec levied higher rates this was not an ideal solution. The federal government also continued to effectively decide on tax instruments and rates that were included – an irritant for many provinces not solved until 1967. The birth of equalization illustrates the challenge of providing transfers to provinces in a way that maintains their autonomy, yet achieve important equity and efficiency goals within a tax space shared by two orders of government.

Figure 3: Tax Transfers as a Share of Major Conditional Federal Transfers, 1965-2017



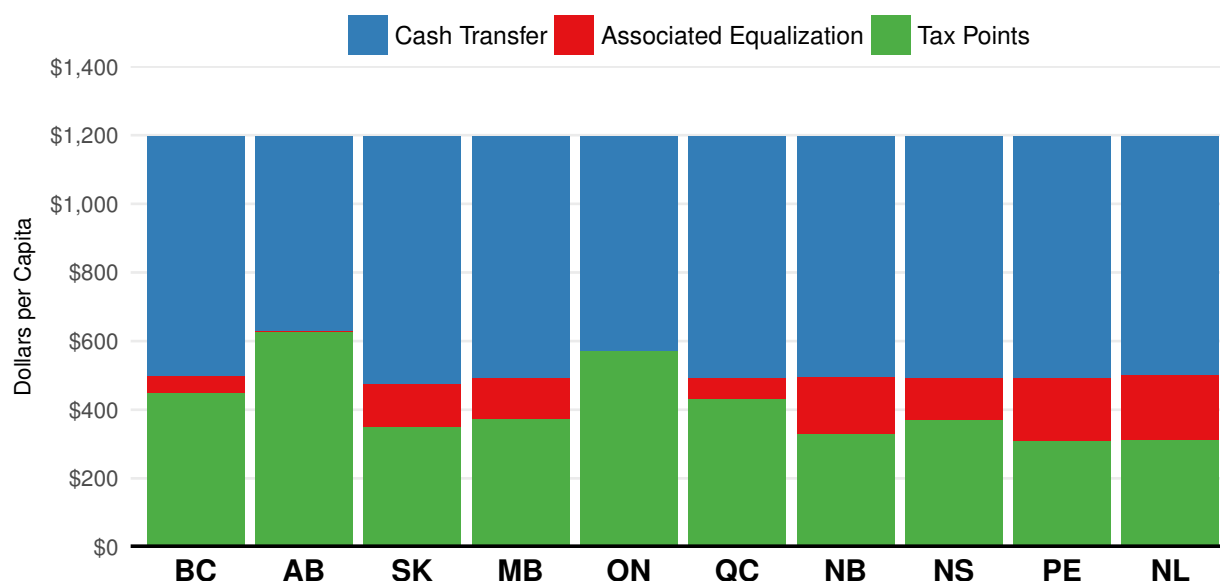
Note: Displays the share of major federal transfers to provinces accounted for by tax point transfers. Excludes tax transfers associated with Quebec’s opting-out of certain federal programs beginning in 1960, with 1 point of corporate income taxes transfer to Quebec in lieu of federal grants to post-secondary institutions there.

Source: Own calculations from Department of Finance Historical Transfer Tables for the years 1980-2017 and [Perry \(1989\)](#) for 1967-1980.

Unlike today, the 1957 equalization payments are best considered a top-up to a tax point transfer whereby the federal government gives some of its tax room to provinces. Though this approach to equalization ended in 1967, as we will discuss shortly, tax transfers were a central component of many federal transfer programs until 2014. This was especially true for the rapidly expanding health and education programs. After 1960, the number of such transfers proliferated and the federal government eventually consolidated most into two: the Canada Assistance Program (CAP, starting 1966, supported income security programs) and Established Programs Financing (EPF, starting 1977, supported provincial health and education spending). Both featured tax point transfers, but only Quebec opted to receive tax points under the CAP ([Perry, 1989](#)).

I display the importance of tax points as a share of total in Figure 3. At first accounting for roughly 10 percent, and rising to over one quarter soon after the EPF, tax points were an important component of federal transfers for decades. Under the EPF, provinces would receive an identical per capita transfer to fund health and education programs, but the composition of the transfer would differ between cash and tax points. In 1977 those tax points were worth 13.5 percentage points of federal personal income tax and 1 point of corporate income tax. Tax points have value to a province because they generate tax revenue and, in addition, entitle the province to greater equalization payments that implicitly top-up the value of tax point transfers up to the equalization standard (more on this in the next section). These tax points and associated equalization were added and cash transfers topped-up provinces to the desired equal per capita amount. Later,

Figure 4: Canada Health and Social Transfers per Capita (2003-04)



Note: Displays each province's per capita transfer under the Canada Health and Social Transfer program. Total entitlements are equal per capita, but cash and tax-point transfers can vary.

Source: Own calculations from Department of Finance Historical Transfer Tables, 1980-Present, and the Public Accounts of Canada 2004, Appendix 2.

during the federal fiscal restraint of the Chretien-Martin years, the EPF and CAP programs were replaced with a single Canada Health and Social Transfer. The size of cash transfers fell, so the tax point component grew relatively more important. It rose to nearly 40 per cent of the total. But the principle remained the same as the EPF. By 2001-02, following a period of transition, all CHST transfers were equal per capita across provinces once again. I illustrate the CHST program for 2003-04 in Figure 4. Tax points were particularly valuable for Alberta and Ontario, so they received a smaller cash transfer than other provinces.

But is a tax point transfer really a transfer? Perhaps not anymore. No province is obliged to increase taxes if the federal government lowers theirs. They share the same tax room, and one cannot dictate the rates of the other. And many decades after the last tax point transfer in 1977 occurred, its value to provinces became increasingly ambiguous. Tax transfers were effectively an accounting fiction that served only to determine the size of cash transfers to provinces, and those receiving less weren't pleased. So in Budget 2007, the federal government moved to equal per capita transfers, starting immediately with its social transfer and by 2014/15 with its health transfer. As a result, and as is evident in Figure 1, Canada is currently in a period of more structural equality in federal transfers than at any point since Confederation. Equalization, the topic of the next section, is now the only major federal program with unequal per capita cash amounts.

3 Explicit Redistribution: Canada's Equalization Program

Beginning in 1967, Canada's equalization program ceased to be one of equalizing the yield of federal tax point transfers. Instead, federal minister of finance, Mitchell Sharp, said equalization should "enable each province to provide an adequate level of public services without resort to rates of taxation substantially higher than those of other provinces" (Perry, 1997). This was not a new idea. It echoed, for example, the Rowell-Sirois Commission recommendations of 1940 for "National Adjustment Grants" to provinces that "could not supply Canadian average standards of [public] service and balance its budget without taxation appreciably exceeding the national average."¹² Today, this principle is enshrined in the Constitution:

Parliament and the government of Canada are committed to the principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation. (Subsection 36(2) of the Constitution Act, 1982)

Importantly, this does not *require* provinces deliver comparable levels of public services or set taxes comparable to others. Instead, equalization payments should aim to ensure that provinces *could*. This again highlights the importance of provincial autonomy.

The formula, though often portrayed as complex, is more straightforward than many appreciate. Each province has a certain "ability" to raise revenue. Governments levy taxes on income, consumption, property, and so on. And some provinces have larger tax bases than others. A 10 per cent personal income tax rate, for example, will raise more dollars per person in a high income province than in a lower income one. Similarly, a 1 per cent property tax rate will raise more in a province with higher real estate values. Some provinces will therefore have an easier time funding public services than others. Equalization is meant to counteract this. Complexities exist, to be sure, but they are largely behind the scenes constructing and aggregating various data. There is a strong theoretical justification for how a program like equalization may increase Canada's productivity. We start there. Following that, we will explore equalization's design details, and how they have changed over time and why.

3.1 The Case for Equalization: Equity and Efficiency

There are a variety of justifications for equalization payments, covering both equity and efficiency considerations. Though I leave a full treatment of the literature to others, such as [Boadway and Flatters \(1982\)](#) and subsequent work, the intuition is straightforward.

On equity grounds, the notion of "horizontal equity" is useful: people in similar circumstances ought to be treated similarly by fiscal authorities. In a decentralized federation such as Canada's, where provincial governments have differential access to revenues other than those provided by

¹²In keeping with the general theme of early Federal-Provincial fiscal arrangements, the Commission recommended the initial National Adjustment Grants entitlements be irreducible, regardless of future economic developments.

personal income, sales, and other taxes paid by residents, horizontal equity can easily be violated. Such revenues may be resource royalties, corporate income taxes, or property taxes paid by non-residents. A resident of Alberta, for example, will benefit from public services funded by such revenues more than a resident of other provinces. Equalization payments can therefore compensate provincial governments that are less well endowed so as to ensure comparable public services are possible at comparable taxation.

On efficiency grounds, people are mobile and respond to real disposable income differences across locations. To the extent that high productivity causes high incomes, this migration is beneficial. But migration responds to many other factors. If taxes are low relative to the public services one receives – perhaps due to abundant nature resource revenues or corporate income taxes – then an individual may migrate to a region even if her productivity there is lower. This results in a misallocation of labour and lower national productivity. In effect, differences in fiscal capacity across provinces can drive a wedge between labour productivities across locations. This idea was first explored by [Buchanan \(1950\)](#), and later in the Canadian context by [Boadway and Flatters \(1982\)](#); [Watson \(1986\)](#); [Day \(1992\)](#); [Wilson \(2003\)](#) and others.

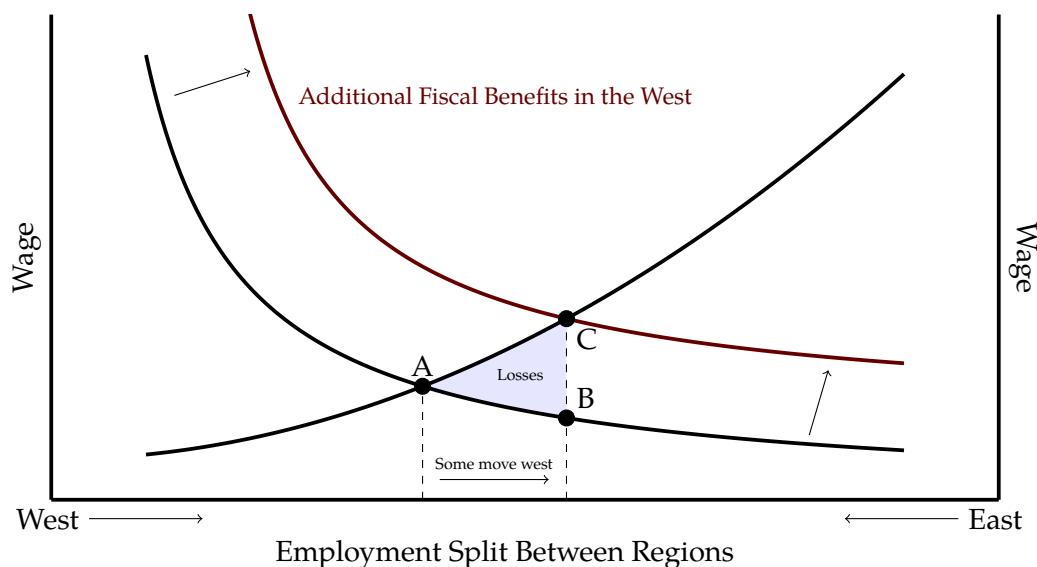
The intuition is simple. Figure 5 illustrates a stylized case where labour is misallocated due to differences in fiscal capacity. If there is a fixed number of workers to be allocated between two regions, East and West, then the optimal allocation is one where national output is maximized. If worker productivity declines as employment rises (say, because less valuable tasks are done) the optimal allocation is where the last worker hired in the East is just as productive as the last one hired in the West. That is, when their marginal productivities are equal at point A in the figure. But if the West provides residents with additional fiscal benefits due to its abundant resource revenues, more people will move there even if their productivity is lower in the West (at point B) than in the East (at point C). The overall losses to Canada's economy from this over-migration to the West is the shaded triangle.

The potential losses aren't trivial. For example, if fiscal benefits differ between two provinces by, say, 10 per cent and the migration elasticity is 1.5 then the population of the province will be 15 per cent larger than it otherwise would be.¹³ The efficiency loss implied by the simple model above would then be 0.75 per cent of total income. A large amount.

But equalization is no panacea, nor is its efficiency case conclusive. Regional governments could make transfers themselves ([Myers, 1990](#)), local fiscal benefits could be capitalized into the value of land, wages, and prices ([Albouy, 2016](#)), or (as we will see later) other transfer programs and federal tax policy may already offset differences in net fiscal benefits and equalization may worsen the situation ([Albouy, 2012](#)). There are also practical and theoretical challenges, such as how (or whether) to incorporate differences in price levels or individual preferences for leisure. After all, if people choose to work fewer hours then income will be lower but welfare may not be. But most

¹³Economic conditions are strong determinants of migration. [Helliwell \(1996\)](#), for example, finds an elasticity of provincial population with respect to GDP per capita or real disposable income of just over 1.5. More recently, [Fajgelbaum et al. \(2018\)](#) find the elasticity of a state's employment with respect to after-tax real wages is 1.1 for the United States. In what follows, I use 1.5 to illustrate the potential magnitudes involved, as in [Tombe and Winter \(2018\)](#).

Figure 5: Differences in Marginal Fiscal Benefits Across Regions Lowers Productivity



Note: Illustrates the efficiency consequences of unequal fiscal benefits. The black lines plot worker marginal productivities. If each region has identical fiscal benefits and workers can freely move, then the allocation at point A is efficient as marginal products are equalized. If the West gains a revenue stream not paid by residents, which either provides them more benefits or lowers their taxes, then people will move west. Now, at the margin, labour is more productive in the east than the west, so the allocation of labour is inefficient. Total losses to the economy equal the shaded region.

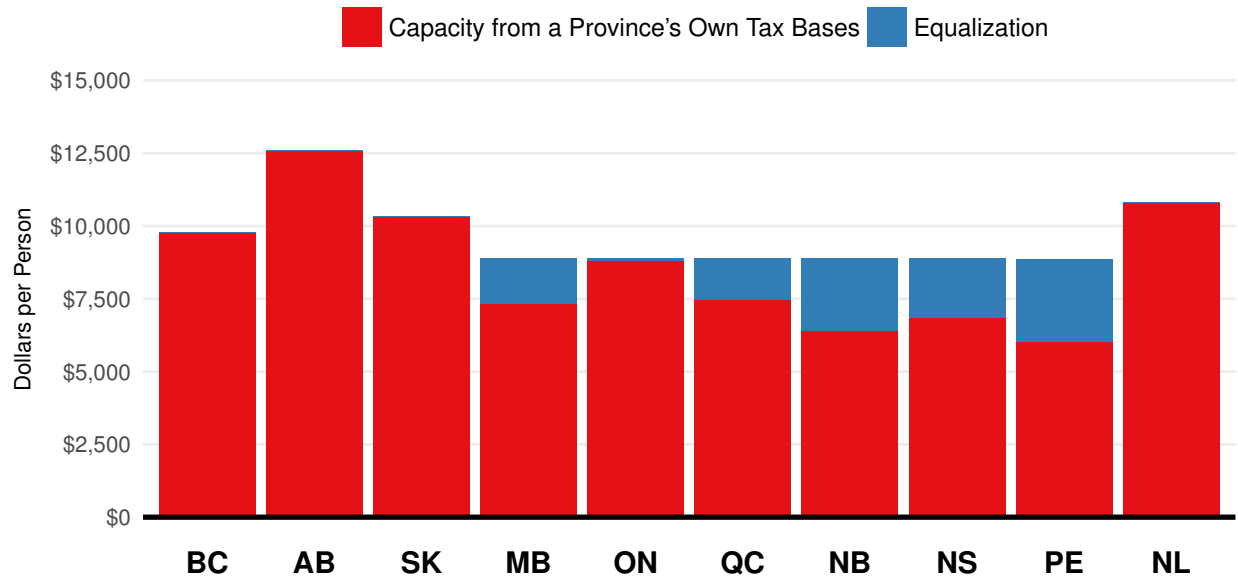
importantly, equalization grants may induce provincial governments to adopt inefficiently high tax rates (Smart, 1998, 2007). The costs of such adverse incentives may outweigh the gains from a more efficient spatial allocation of labour. But with these caveats in mind, however, we next explore how Canada’s equalization program works.

3.2 Understanding the Equalization Formula

To equalize fiscal benefits across regions, one must first measure them. Canada’s approach first estimates how much each province would raise if it had *average* rates of taxation. These *fiscal capacities* vary widely across provinces – from a high of \$12,577 per person in Alberta to a low of \$6,013 in PEI. Equalization then seeks to top-up provinces with below-average fiscal capacities. I display the payments made in 2018-19 and each province’s measured fiscal capacity in Figure 6.

The program’s goal is to bring up a province’s fiscal capacity to the national average level. This requires larger payments to provinces with many people but a small tax base, and smaller payments (or none) to others. I summarize the distribution of tax bases and revenue sources in Table 2, along with each province’s share of the population. The large differences across provinces are evident in many tax categories. High real estate prices in British Columbia, for example, endows the province with the largest property tax base (per person) in Canada. Despite only having 13 per cent of the country’s population, it is home to over one fifth of the nearly \$5 trillion in residential property in Canada. Ontario, home of the most corporate headquarters in Canada, has nearly 47 per cent of the corporate tax base though only 39 per cent of the population. And,

Figure 6: Fiscal Capacity per Capita, by Province (2018-19)



Note: Displays each province's measured fiscal capacity and equalization payments for 2018-19. Fiscal capacity calculations are based on a 50/25/25 weighted-average of the three fiscal years ending 2016-17. 100% of resource revenues are included.
Source: Own calculations from Equalization Worksheets, Department of Finance for 1982-2016.

of course, the resource rich provinces of Alberta, Saskatchewan and Newfoundland and Labrador can access significant revenues from oil and gas development.

These differences in tax base and population shares map naturally into the equalization formula. If a province has 10 per cent of the national population and 10 per cent of the tax bases (income, property values, etc), then it could raise an average amount with average tax rates. To see this, consider a simple situation where only income is taxable. Let $\bar{\tau}$ be the national average income tax rate, b_i be the per capita tax base in province i (that is, its average income), and p_i its population share. If everyone adopted the national average tax rate, then per capita revenues would be $r_i = \bar{\tau} b_i$ and a province's per capita equalization entitlements would be

$$e_i = \bar{\tau} (\bar{b} - b_i), \quad (2)$$

where \bar{b} is the national average per capita tax base. This can be re-written in terms of total equalization payments

$$E_i = (p_i - f_i) R, \quad (3)$$

where f_i is the province's share of the national tax base and R is total provincial tax revenue across all ten provinces. So provinces with less fiscal capacity (smaller tax bases) than their population shares are entitled to equalization while others are not. The amount they're entitled to is a share $(p_i - f_i)$ of provincial revenue R . I'll refer to this share as a province's basic equalization entitlement, and I report each in the bottom row of 2. Conveniently, multiple tax instruments does not introduce

Table 2: Distribution of Tax Bases Across Provinces (2016-17)

Tax Base	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL
Personal Income	13.6	15.6	3.0	2.9	40.5	19.0	1.5	2.1	0.3	1.4
Business Income	13.2	12.3	2.8	2.4	46.9	18.9	1.0	1.4	0.2	0.8
Consumption	14.3	14.4	3.3	3.3	38.7	19.9	1.9	2.3	0.3	1.5
Natural Resources	23.1	27.7	10.5	1.2	1.6	26.2	0.5	0.3	0.0	8.8
Property and Misc	16.0	13.7	3.2	3.1	40.6	18.5	1.3	2.0	0.3	1.4
Total *	14.7	15.0	3.4	3.0	39.0	19.4	1.5	2.0	0.3	1.7
Population Share	13.2	11.7	3.2	3.6	38.7	23.0	2.1	2.6	0.4	1.5
Basic Equalization Entitlement	-1.5	-3.3	-0.2	0.6	-0.3	3.6	0.6	0.6	0.1	-0.2

Note: Displays each provinces fiscal capacity per person in 2016-17 across all revenue sources and tax bases included in the current equalization formula. * 100% of natural resource revenue is included here. The basic entitlement reports what share of total provincial revenue to be equalized is required to bring each province to the national per capita average (each tenth of a point is equivalent to approximately \$330 million).

Source: Own calculations from Equalization Worksheets, Department of Finance (S-Table 2 and S-Table 5).

much additional complexity. In particular,

$$E_i = \sum_j (p_i - f_i^j) R^j, \quad (4)$$

$$= (p_i - f_i) R, \quad (5)$$

where f_i^j is province i 's share of tax base j , f_i is the province's overall fiscal capacity based on the average across all taxes j , weighted by the tax's share of total national revenue R^j/R . Finally, total payments is the sum of all positive entitlements or, equivalently,

$$E = \frac{1}{2} \sum_{i=1}^N |p_i - f_i| R. \quad (6)$$

which is the Schutz index of inequality (see equation 1) multiplied by R .¹⁴ Put simply,

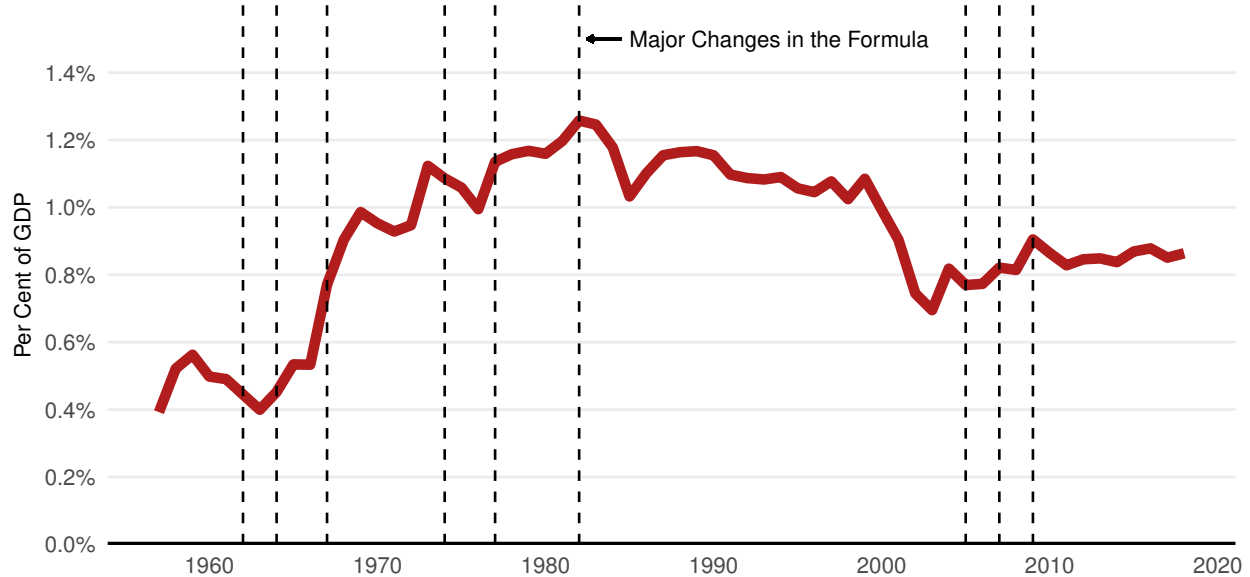
$$\begin{aligned} \text{Total Equalization Payments} &= (\text{Total Provincial Revenue to be Equalized}) \\ &\times (\text{Schutz Index of Fiscal Capacity Inequality}). \end{aligned} \quad (7)$$

Today's formula does not do this *exactly*, but this stylized representation is remarkably powerful.

To illustrate, consider data for 2016-17 (the latest available). That year, total provincial revenues to be equalized was \$329 billion and the Schutz Index was 0.056. Total equalization payments necessary to ensure all provinces have at least average fiscal capacity per capita is therefore \$18.3 billion. And province i 's share of that is the difference between its share of the population and its share of total fiscal capacity. In the case of Quebec, for example, its 23 per cent of the population less its 19.4 per cent of the total fiscal capacity entitles it to a payment of 3.6 per cent of the \$329

¹⁴This derivation uses the fact that if the sum of a sequence of variables equals zero then the sum of the absolute value of those variables is twice the sum of only the positive subset of those same variables.

Figure 7: Total Equalization Payments as a Share of GDP, 1957-2018



Note: Displays the total size of Canada’s equalization program as a share of its nominal GDP from 1957-2018. The vertical dashed lines denote moments when the federal government made major changes to the formula.

Source: Own calculations from Historical Transfer Tables, 1980-Present, Department of Finance Canada, which includes 1957-2017 equalization data. Year 2018 is from the federal equalization workbooks. GDP data from Statistics Canada data table 36-10-0222, supplement with [McInnis \(2001\)](#) data for pre-1961.

billion. That’s \$11.8 billion, which is near the \$11.7 billion actually paid in 2018-19. With the exception of Ontario, the above formula are within 5 per cent of each province’s actual payments.

3.3 The Equalization Formula in Practice

In practice, the equalization formula must carefully balance equity, efficiency, and practical considerations not reflected in the stylized representation of the program. The first 25 years of equalization featured continuous change and re-negotiation. Between 1962 and 1982, total equalization payments tripled as a share of Canada’s economy, as shown in Figure 7. And this period highlights well the two main sources of pressure on the modern program: Quebec and energy prices. Quebec presents difficulties because its fiscal capacity is below-average and its large size means that it unavoidably receives most of the equalization dollars. The political and budgetary implications are clear. Energy resources, meanwhile, are unevenly distributed across provinces and are an extremely volatile revenue source. Depending on the precise equalization formula, energy price movements causes not only rapid changes in entitlements across provinces but exposes the federal government – which pays equalization from its own coffers, yet earns no resource revenues – to significant budget pressures.

The years between 1962 and 1964 illustrate these tensions best. Then, as now, Alberta had a higher fiscal capacity than any other province. Yet, unlike now, it received equalization payments under the original 1957 formula. This was a problem. So in 1962, the federal government included

50 per cent of resource revenues into the formula so Alberta would no longer qualify. But, by including more revenue to be equalized, the program's cost would rise (see equation 7). By just including resources, I estimate the program would have cost the federal government nearly \$500 million in 1962-63 – nearly 2.5 times more it would have cost with the 1957 formula. So, instead of equalizing provinces up to the average of the top two, Ottawa introduced the “ten province standard”. The bar to which provinces were topped up was then, as it is today, set at the national average level. By moving to a ten-province standard, the total cost fell to just under \$125 million. This solved one problem but created another: Quebec would receive less.

During the 1963 election – a particularly bitter one – Pearson committed to reform equalization and set the bar at the highest fiscal capacity province. Specifically, the Liberal Party platform promised they would “provide full equalization of provincial revenues” to “bring the other provinces up to the level of the richest, in revenue per head from shared taxes” (Carrigan, ed, 1968). Fulfilling this promise would be expensive. The yield of standard taxes in Ontario was \$54.92 that year, compared to the national average yield of \$42.10. Equalizing to the higher level would cost the federal government roughly \$110 million, and Alberta would receive equalization payments once again, despite its well endowed fiscal position.

Upon forming government, Prime Minister Pearson opted instead to bring back the top-two province standard (as in 1957) and change the way resources were treated. He couldn't simply remove resources from the formula, or Alberta would receive payments. He couldn't keep them in and equalize to the top two, or Ontario would start receiving payments and program costs would balloon. So, instead of counting towards a province's fiscal capacity, resource revenues were deducted from any equalization entitlement that a province might receive. A clever, if ad-hoc, solution and program costs would grow on modestly. I estimate the overall costs to the federal government of Pearson's changes in 1963-64 were only about \$41 million, with Quebec receiving nearly two-thirds of the gains.

These ad-hoc changes were short lived. A Federal-Provincial Tax Structure Committee, composed of federal and provincial representatives, examined a broad range of tax issues, including equalization. At this committee in 1966, Minister of Finance Mitchell Sharp proposed an entirely new approach to equalization – one that mirrored the stylized system explored in the previous section. Following later work and discussion, the government adopted such a system in 1967.¹⁵ Equalization was now based on a national standard, with all provincial revenues included, and resource revenues counting 100 per cent towards a province's fiscal capacity. It was clean and simple. But it too wouldn't last.

¹⁵Actual payments in 1967 were slightly larger than the stylized formula since there were certain minor differences between the two, such as rolling the Atlantic Provinces Adjustment Grants into the formula that year through a guaranteed equalization increase to Atlantic provinces.

Table 3: Actual Payments vs a Full-Equalization Benchmark, 1967-2016

Year	Schutz Index of Fiscal Capacity	Actual Equalization (\$ millions)	Full Equalization (\$ millions)	Deviation (%)
1967	0.091	552	528	4.6
1972	0.123	1,070	1,346	-20.5
1977	0.179	2,573	4,310	-40.3
1982	0.116	4,865	7,411	-34.4
1987	0.077	6,605	7,396	-10.7
1992	0.063	7,784	8,225	-5.4
1997	0.066	9,738	11,089	-12.2
2002	0.070	8,859	13,424	-34.0
2007	0.100	12,925	25,335	-49.0
2012	0.084	15,423	24,102	-36.0
2016	0.056	17,880	18,348	-2.5

Note: Displays the Schutz Index of provincial per capita fiscal capacity inequality, actual equalization payments made to all provinces, and payments under an idealized system that fully equalizes fiscal capacity per capita across provinces. Source: Table 69 (page 138) of [Foundation \(1967\)](#) for the year 1967; Table 4.4 of [Boadway and Hobson \(1993\)](#) for 1972-1981; own calculations from Equalization Worksheets, Department of Finance for 1982-2016.

3.4 Equalization Responds to the Oil Shock

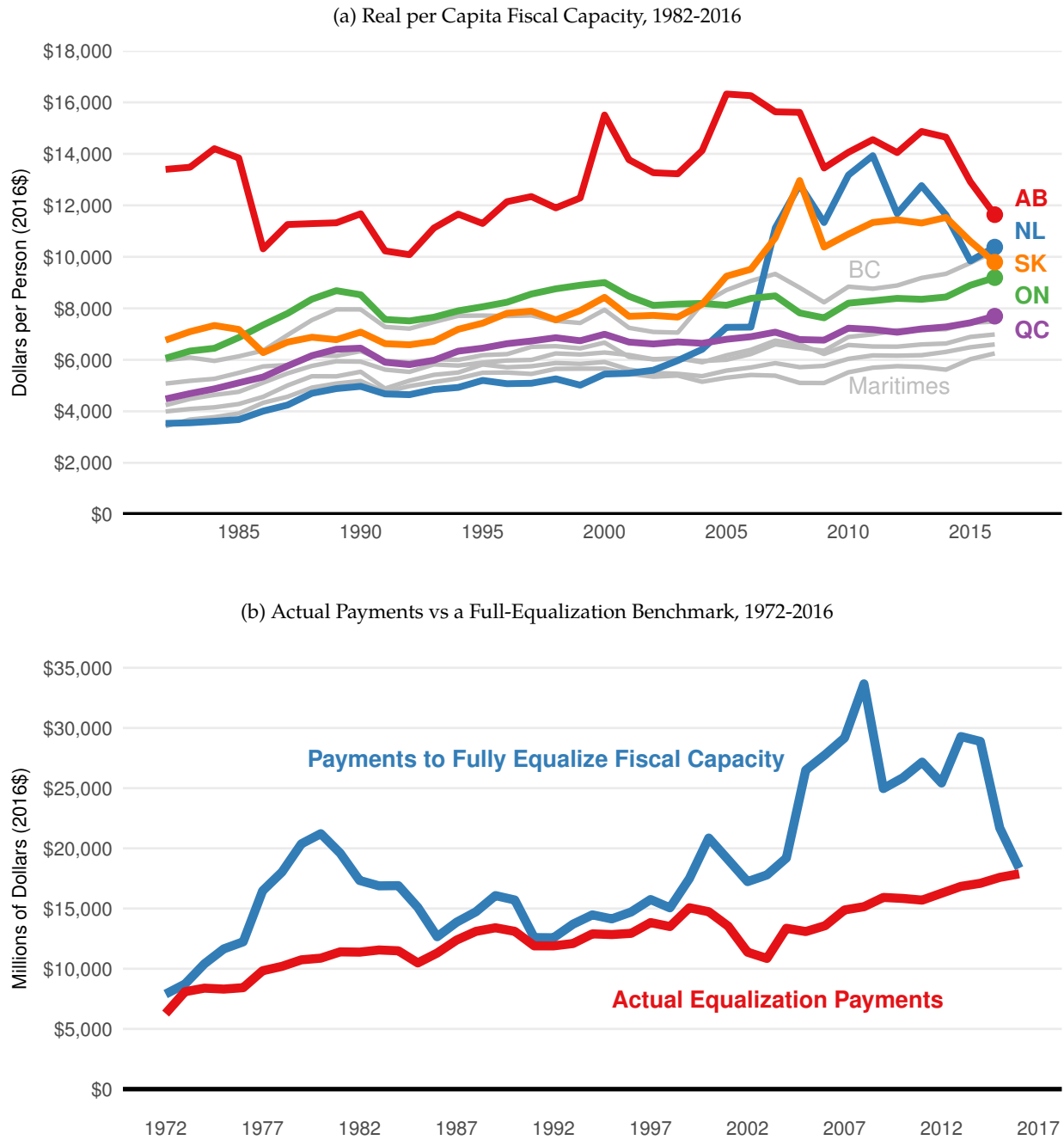
Starting in the early 1970s, oil prices increased dramatically. The 1973 Yom Kippur War, the OPEC embargo, the Iran Revolution, the Iran-Iraq war, and other developments, increased oil prices from \$3.56 per barrel (US\$, WTI) in July 1973 to \$10.11 in January 1974, and later increasing to \$39.50 by April 1980.¹⁶ Combined with rising provincial royalty rates, this shock had significant implications for Canada's equalization program and fiscal relations in general.

As I document in Figure 8 and Table 3, inequality in fiscal capacity increased significantly during periods of high energy prices. Through the 1970s, the Schutz Index of fiscal capacity increased to a 1980 peak in excess of 0.21, which implies more than one in five provincial revenue dollars would need to be reallocated to achieve full equality. The resulting equalization payments would be more than double what they actually were. This was a problem for Ottawa. Under the 1972 formula, which mirrored equation 5, each dollar of resource revenue earned by Alberta and Saskatchewan would increase equalization payments by nearly fifty cents. If resource revenues grew large enough, Ontario and BC would qualify for payments and each incremental dollar of resource revenues would then cost Ottawa nearly 90 cents.

Facing this budget pressure in the early 1970s, Ottawa made many significant policy decisions. They removed land lease sales from equalization and denied equalization payments to any province with above-average personal income (i.e., Ontario). By 1977, only half of resource revenues were included in the equalization formula. And to help increase federal revenue, they stopped allowing firms to deduct provincial royalty payments in their federal corporate income taxes. But most dramatic of all was direct federal intervention in oil markets to lower the Canadian price of energy.

¹⁶Source: Monthly West Texas Intermediate spot prices, FRED Data WTISPLC.

Figure 8: Equalization Payments and Provincial Fiscal Capacity in Canada



Note: Panel (a) displays the revenue per person that provinces could raise with national average tax rates, adjusting for inflation. Panel (b) compares actual equalization payments with an idealized system that fully equalizes fiscal capacity per capita across provinces. All values are adjusted for inflation and reported in constant 2016 dollars.

Source: Table 4.4 of [Boadway and Hobson \(1993\)](#) for 1972-1981 and own calculations from Equalization Worksheets, Department of Finance for 1982-2016. Consumer prices from Statistics Canada data table 18-10-0005.

Through price controls and export restrictions in 1973, culminating later in the National Energy Program in 1980, the government drove a wedge between world prices and what refiners (and ultimately consumers) paid in Canada.

These decisions had enormous fiscal implications and caused a massive implicit redistribution of resource rents across provinces. Consumers gain from lower domestic prices, but oil and gas producers lost the higher rents available at world prices. Analysis by [Economic Council of Canada \(1982\)](#) suggests that in 1980/81 between \$15.9 and \$20.3 billion in oil and gas rents were foregone by producers – 85 per cent of which were in Alberta. Net of the implicit consumer subsidy, between \$11.1 and \$14.1 billion was transferred out of Alberta to other provinces – the equivalent of nearly one-quarter of the province’s GDP at the time and over \$18,600 per capita (in 2018 dollars). Nationally, the redistribution was equivalent to between 3.5 and 4 per cent of Canada’s GDP. These were not only massive implicit transfers from Alberta to the rest of Canada, they also reduced the size of the equalization program. To illustrate, if two-thirds of the foregone rents, say, were captured by government as resource revenue, total equalization payments would increase by \$5.8 billion in 1980/81 – or by \$8.9 billion without the personal income override.¹⁷ With full resource revenues included and no personal income override (the 1967-1972 formula), total payments in 1980/81 would have been roughly \$17.8 billion or the equivalent of over one-third of Federal government revenue that year.

Though the NEP helped address that cost concern, and spread the gains from high world energy prices across Canada, the resulting economic, political, and constitutional turmoil is hard to overstate. And it set the stage for a dramatic overhaul in the system. In 1981, a Parliamentary Task Force reviewed various formal proposals and academic analysis. Its comprehensive report and recommendations led to a new formula in 1982 that would last for over two decades. To briefly summarize it: equalization would include all revenues but be based on only five provinces (British Columbia, Saskatchewan, Manitoba, Quebec, and Ontario) when setting the standard to which all provinces were topped-up. By excluding Alberta, energy price movements became much less of a concern.

3.5 The Equalization Formula Today

Twenty years after the 1982 formula was adopted, equalization faced another significant challenge. Between 2000 and 2003, equalization shrank by 21 per cent from nearly \$11 billion to \$8.7 billion. Newfoundland’s Hibernia offshore oil field began producing in late 1997, and with rising resource revenues came falling equalization entitlements. Under the five province standard, any resource revenues earned by Newfoundland and Labrador reduced its equalization entitlement dollar-for-dollar. Nova Scotia faced a similar challenge. Anticipating this, the federal government guaranteed less equalization clawback in the 1985 Atlantic Accord, but this guarantee was time limited and a delay in developing offshore resources meant clawbacks were larger than anticipated. Compounding this challenge, Ontario’s fiscal capacity was falling as manufacturing activity shrank.

¹⁷Source: own calculations based on Table 4-1 and 5-1 of [Economic Council of Canada \(1982\)](#).

This lowered the bar to which all provinces were compared and reduced payments overall. This affected Quebec more than others, as their payments declined \$1.6 billion between 2000 and 2003, accounting for more than 70 per cent of the aggregate drop despite no material change in their own fiscal or economic situation.

The federal government addressed these challenges in the short-term with ad-hoc changes. In 2004, for example, the government abandoned the 1982 formula to set total payments exogenously and distribute them as a function (in part) of past payments. It also negotiated new offshore accords with Newfoundland and Nova Scotia. But as various other provinces raised concerns and demanded their own deals, the government established an expert panel to examine the overall system and propose changes. The changes it recommended, which the government adopted in Budget 2007, are (for the most part) with us today.

The federal government now determines equalization payments with a five step process

1. Calculate the 3-year weighted average of non-resource fiscal capacity;
2. Calculate the 3-year weighted average of resource fiscal capacity;
3. Estimate equalization entitlements as the better of 0% or 50% resource revenue inclusion and a national average standard;
4. Implement a formula-driven cap on payments to individual provinces;
5. Implement a hard cap on total payments to all provinces.

Given fiscal capacity estimates, steps one through three (almost) implement the stylized equalization formula summarized in equations 5 and 7. The slight difference reflects the 3-year moving average of fiscal capacity estimates (to dampen variability over time) and the "better of" treatment of each province with respect to how much of a province's resource revenues are included. This is a less than ideal compromise. Non-resource fiscal capacity is what a province would raise with national average taxes, as in the stylized formula of the previous section, but resource fiscal capacity is the actual resource revenues raised by a province. This is due to the difficulty in defining what a resource's "tax base" is. This matters since, as we saw, higher fiscal capacity means lower equalization payments. If resource revenues count dollar-for-dollar towards a province's fiscal capacity, then its incentive to develop those resource is reduced. The partial inclusion of such revenues is a compromise to mitigate some of this disincentive, though it creates a quirk that Step 4 tries to address.

Step 4 applies to each receiving province a cap on total equalization payments it can receive. This 'Fiscal Capacity Cap' started in 2007 when Ontario did not receive equalization and had the lowest fiscal capacity among non-receiving provinces. The cap on payments ensures no receiving province is made better off than Ontario. This can happen since only half of resource revenues are included to determine equalization entitlements. So a receiving province with significant resource revenues (such as Quebec) appears to have less fiscal capacity than it really does and equalization

Table 4: Deriving Equalization Payments in 2018/19 (\$ Millions)

	Resource Revenue Share		Best of 50% or 0% Share	Fiscal Capacity Cap	Adjustment Payment	Final Payment
	50%	0%				
BC	0	0	0	0	0	0
AB	0	0	0	0	0	0
SK	0	0	0	0	0	0
MB	1,948	1,754	1,948	-2	91	2,037
ON	0	0	0	0	963	963
QC	12,433	12,462	12,462	-1,305	576	11,732
NB	1,824	1,713	1,824	-3	53	1,874
NS	1,868	1,698	1,868	0	66	1,933
PE	409	378	409	0	10	419
NL	0	208	208	-1,039	0	0

Note: Displays the total equalization payments made to each province in 2018/19, and the steps involved in reaching those amounts. The first and second columns are calculated using formula described in Section 3.2. Columns three through five display the effect of various ad-hoc adjustments. Column six is the final payment actually made in 2018/19.

Source: Own calculations from Equalization Worksheets, Department of Finance, 2018/19.

payments are consequently larger. The cap claws some of the payments back, in a way slightly reminiscent of the 1964-1967 resource revenue deduction that was briefly part of the program.

A complication arose in 2009, when Ontario began receiving equalization after the large negative shock from the financial crisis and auto-sector disruption. That year, only Alberta and BC wouldn't have qualified, so the lowest fiscal capacity of non-receivers would have been BC's at \$7,945 – far higher than prevailed in 2008, so fewer equalization dollars would be clawed back. I estimate equalization payments would have increased to \$16.1 billion in 2009, from \$13.5 billion the prior year. Ottawa made two changes to scale that back. First, it set the fiscal capacity cap at the average fiscal capacity among receiving provinces if the more than half of Canada's population lived in a receiving province. Effectively, this depends only on whether Ontario is a recipient or not. This shrank the cap to \$7,162 and reduced total equalization payments by nearly \$920 million. Second, the federal government capped the total size of the equalization program to increase no faster than overall nominal GDP (effectively pegging it at 0.85 per cent of GDP). This reduced total payments by a further \$981 million at the time, and is the fifth and final step in the formula today. This cap, though implemented at a time of financial crisis, is not new. The 1982 arrangements, for example, featured an aggregate cap that increased with national GNP.

For each province's 2018-19 payment, I display the values in each step in Table 4. The first and second columns are calculated using formula described in Section 3.2, including either half or no resource revenues. A province is then initially entitled to the higher of the two payments. Then, the fiscal capacity cap claws back payments, primarily from Quebec. Finally, the aggregate cap on payments used to bind. But 2018/19, with low oil prices and consequently less fiscal capacity inequality than recent years, aggregate payments were less than the cap. The federal government chose to pay out the difference to recipient provinces in the form of an "adjustment payment". The law does not require the government pay these amounts, but in the event that they chose to the law

specifies they are to be equal per capita among equalization receiving provinces. If a non-receiving province would have a total fiscal capacity below any equalization receiving province as a result of the adjustment payments, it too is entitled to such payments. This explains why Ontario received \$963 million in 2018/19, despite not qualifying for equalization under the main formula.

The positive adjustment payments made in 2018/19 are new, but based on an old idea. Individual provinces have often enjoyed a buffer on by how much equalization payments could decline. Alberta in 1962/63, for example, received approximately \$12 million, despite not qualifying under the main formula. Its entire payment was what was called a “guaranteed equalization” payment that was gradually phased out. The 1982 arrangements also guaranteed a province’s payment would not be less than between 85 and 95 per cent of the prior year’s payment, depending on the province’s per capita fiscal capacity. One could interpret the adjustment payments as the aggregate analogue of a province-specific floor.

Explicit federal transfers like equalization are not the only way funds are transferred across regions. Federal revenue and spending patterns also implicitly transfer financial resources across provinces. We turn to these next.

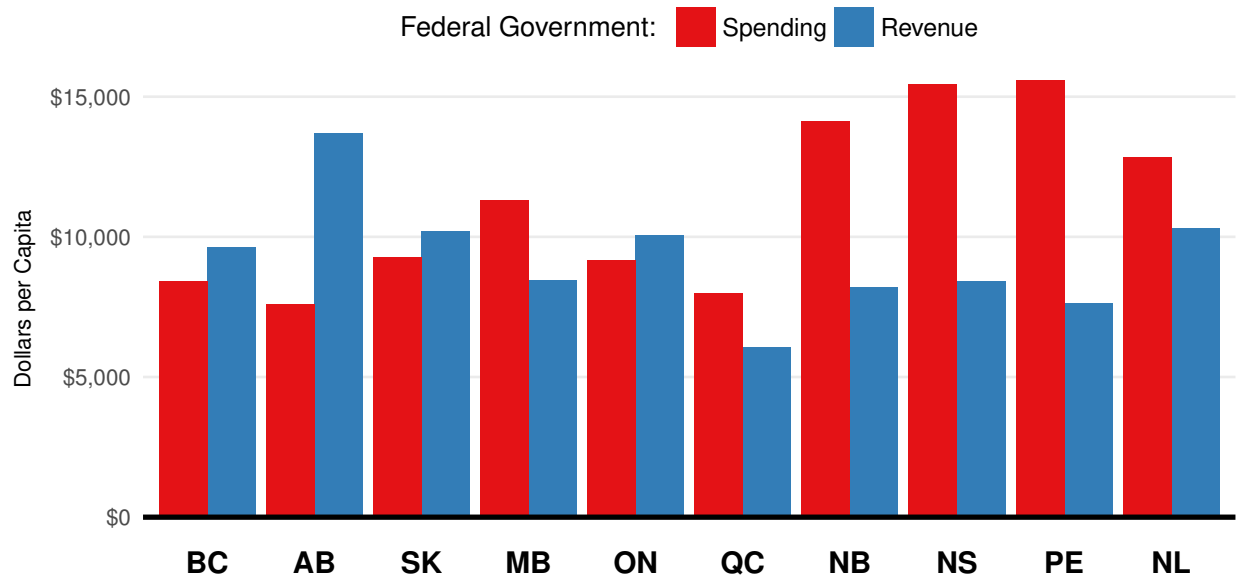
4 Implicit Redistribution: Federal Revenue and Spending

The federal government raises more taxes per capita from some regions, and spends more per capita in others. To quantify the size of these *implicit* transfers, I use detailed data from multiple Statistics Canada sources and estimate differences in per capital values over time and across provinces for a number of federal revenue and spending categories. I find large transfers across provinces, and significant changes over time.

In Figure 9, I plot per person federal revenue and spending in each province for 2016. Higher income provinces like BC, Alberta, Saskatchewan, and Ontario tend to pay more per person in federal revenue than is spent in each province. Lower income provinces like Manitoba, Quebec, and the Atlantic provinces show the reverse pattern. The implicit transfers are large for many provinces, especially the outflow from Alberta and inflows to the Maritimes. For the country as a whole, just under 2 per cent of GDP is transferred across provinces through federal revenue and spending today. This is not unique to Canada. In fact, based on 2015 data for the United States (the latest available), one finds a statistically identical relationship between a state’s relative GDP per capita and its net federal contributions as one sees across Canadian provinces.

What causes such large differences in federal revenue and spending? It’s mostly a byproduct of uniform policies. To show this, I report in Table 5 a selection of tax or spending programs. On the revenue side, an uneven distribution of tax bases causes an uneven distribution of tax revenue. Consider income taxes, where personal and corporate payments to the federal government exceed \$8,000 per person in Alberta but less than \$3,000 in Prince Edward Island. This is due not to differences in federal tax rates, but to differences in each province’s average income. Alberta has nearly one fifth of the taxable income of individuals and corporations, and Ontario too has a

Figure 9: Federal Revenue and Spending as a Share of GDP (2016)



Note: Displays per capita revenue and spending by the federal government in each province. Territories excluded.
 Source: Own calculations from various Statistics Canada data tables. Fiscal data: 36-10-0332 and 36-10-0336 (1961-1980), 36-10-0314 and 36-10-0315 (1981-2009), 36-10-0450 (2007-2016). Population: 17-10-0027 (1961-1970) and 17-10-0005 (1971-2016). GDP: 36-10-0104 (all years).

disproportionate share. Higher incomes also translate into higher consumption spending, and therefore more GST, excise tax, and tariff payments than other provinces. Albertans pay nearly \$1,800 per capita in such taxes on products while Quebecers pay just over \$1,200. The same 5 per cent GST rate applies nationally, but higher spending by Albertans means larger GST payments.

Federal spending also redistributes resources across provinces. Defence purchases are, on a per capita basis, significantly higher in Nova Scotia. As home to the headquarters of Canada’s Maritime Forces Atlantic and Canadian Fleet Atlantic, CFB Halifax is the largest military base in Canada and Nova Scotia benefits from the associated spending. Federal transfers to individuals also matter, as the composition of each province’s population differs. Old Age Security payments, for example, are equivalent to \$801 per person to Alberta but \$1,467 to Newfoundland and Labrador. This is not due to differences in the value of OAS cheques, but to demographic differences. Alberta, for example, is home to 11.6 per cent of Canada’s population, but only 8.5 per cent of those aged 65 and over. Meanwhile, British Columbia, Quebec, and the Atlantic provinces have relatively more of Canada’s elderly population. Other programs, however, are explicitly redistributive. Employment Insurance is designed to transfer more to regions with higher unemployment rates. And then there’s equalization. From 2007 to 2016, Prince Edward Island received nearly \$2,400 per person in equalization payments while Alberta received none (but did receive \$251 million in stabilization payments in 2015-16). These are indeed large differences, but not relative to many other federal tax or spending programs. Consider the second panel of table 5. Had equalization dollars been equally distributed, Alberta would have received \$450 more per person. But had GST, excise, and

Table 5: Selected Federal Tax and Spending Items, by Province (Dollars per Capita, 2007-2016)

	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL
Pers. Inc. Tax	3,572	5,786	3,606	2,919	3,852	2,545	2,659	2,835	2,431	3,260
Corp. Inc. Tax	971	2,229	1,397	734	1,022	820	546	643	514	884
Product Taxes	1,480	1,796	1,501	1,311	1,359	1,210	1,294	1,343	1,293	1,440
Equalization *	8	6	22	1,526	121	1,055	2,173	1,719	2,376	132
EI Benefits	413	415	381	377	396	441	1,085	808	1,484	1,707
OAS Benefits	1,152	801	1,123	1,090	1,062	1,316	1,406	1,335	1,323	1,467
Defence	345	439	224	597	594	321	1,142	2,512	393	345
<i>Deviations from the National Average</i>										
Pers. Inc. Tax	-46	2,168	-12	-699	234	-1,073	-959	-783	-1,187	-358
Corp. Inc. Tax	-110	1,148	317	-346	-58	-260	-534	-438	-566	-196
Product Taxes	89	405	111	-80	-32	-181	-97	-48	-98	49
Equalization *	-449	-450	-435	1,069	-336	599	1,717	1,262	1,919	-325
EI Benefits	-47	-45	-80	-83	-64	-20	625	348	1,024	1,246
OAS Benefits	23	-328	-6	-39	-66	187	278	206	194	338
Defence	-184	-90	-305	68	66	-208	613	1,984	-136	-184

Note: Displays the average per capita payments and receipts of selected federal revenue and spending programs, by province, for years 2007 to 2016. These data are for calendar years, and therefore do not precisely correspond to government budget data. In addition, these data are reported as is and therefore contain certain specific adjustments. Quebec federal personal income tax payments, for example, are net of the Quebec Abatement. Average gross federal PIT per capita from Quebec would be \$3,048 were it not for the abatement. Quebec EI benefits are also lower due a specific agreement to provide space for Quebec's Parental Insurance Plan. Such adjustments do not affect the aggregate implicit transfer calculations reported in the paper.

* Equalization here includes stabilization program payments.

Source: Own calculations from Statistics Canada data table 36-10-0450 and 17-10-0005.

other product tax payments been equal per capita, Albertans would pay \$405 less. In this sense, Canada’s equalization program is only slightly more redistributive than product taxes like the GST – a fact not broadly known.

Given these estimates, I systematically decompose the underlying sources of implicit transfers. First, some additional structure is necessary. Formally, a province receives positive net fiscal benefits if per person federal spending s_i exceeds per person federal revenue r_i . To subtract any national surplus or deficit, I measure this difference relative to national per person averages,

$$t_i = (s_i - \bar{s}) - (r_i - \bar{r}). \quad (8)$$

For an individual revenue or spending component, let t_i^j be the per capita implicit transfer resulting from component j . There is a net inflow $t_i^j = s_i^j - \bar{s}^j > 0$ if a spending component is above average for a province or $t_i^j = \bar{r}^j - r_i^j > 0$ if a revenue component is below. Finally, the total transfer to or from province is $T_i = t_i P_i$, which can be aggregated across all provinces into a single measure of total implicit transfers,

$$T = \frac{1}{2} \sum_{i=1}^N |T_i|, \quad (9)$$

which is analogous to the Schutz Index described earlier.

For Alberta, total implicit outflow exceeded \$243 billion from 2007-2016 – an average annual value of T_i of \$24.3 billion or nearly \$6,300 per person. One third of this is due to above-average personal income tax payments per capita, with a further 18 per cent is due to above-average corporate income taxes and 6 per cent from the GST and other taxes on products. Below average levels of federal purchases in Alberta, defence and otherwise, account for a further 11 per cent. Alberta’s young population means OAS and CPP account for 16 per cent. But equalization, despite receiving most of the public attention, accounts for only 6 per cent of the total fiscal transfer. The rest are the result of high incomes, high employment rates, and a young population.

Decomposing aggregate transfers across all provinces T by component is more difficult since, unlike for Alberta, T_i^j can be different signs within the same province i depending on the component. That is, one component may offset the implicit transfer caused by another. Federal personal income taxes per capita from Ontario, for example, are higher than average, but this is more than compensated for by higher than average levels of government purchases there.¹⁸ To fully decompose aggregate transfers by source, I quantify the marginal contribution of each component by adding each in sequence, recording the change in T , and repeating across all 3.6 million (10!) possible orderings. This fully accounts for all of the possible interactions between components, and averages them out. I report the results in Table 6.

Most implicit transfers across provinces are due to policies that automatically respond to economic conditions or population compositions. Over half of transfers, for example, are accounted

¹⁸Mathematically, Jensen’s inequality implies $\sum_i |T_i| = \sum_i |\sum_j T_i^j| \leq \sum_i \sum_j |T_i^j|$. In aggregate, between 2007 and 2016, I find $\frac{1}{2} \sum_i |T_i|$ averages \$34.3 billion per year while $\frac{1}{2} \sum_i \sum_j |T_i^j|$ averages \$47.9 billion.

Table 6: Decomposing Implicit Transfers in Canada, by Component (2007-2016)

Component	Share of All Implicit Transfers (%)	Share of National GDP (%)	Correlation with Provincial GDP/Capita
Personal Income Taxes	31.1	0.60	88.3
Equalization / Stabilization	22.7	0.44	-76.6
Corporate Income Taxes	10.2	0.20	94.0
CPP Net Contributions	8.0	0.15	79.9
Non-Defence Purchases	5.8	0.11	-67.7
EI Payments less Receipts	5.7	0.11	35.7
OAS Benefits	5.4	0.10	-65.8
GST and Excise Taxes	4.6	0.09	90.4
Defence Purchases	2.8	0.05	-41.5
Other Factors	3.6	0.07	4.7

Note: Displays a decomposition of aggregate implicit transfers in Canada by individual revenue and spending items, and each component's correlation with provincial average GDP/capita. The share of all transfers accounted for by a given item is the average marginal effect on total implicit transfers T under all possible permutations of the components. CPP and EI are both contributions net of receipts.

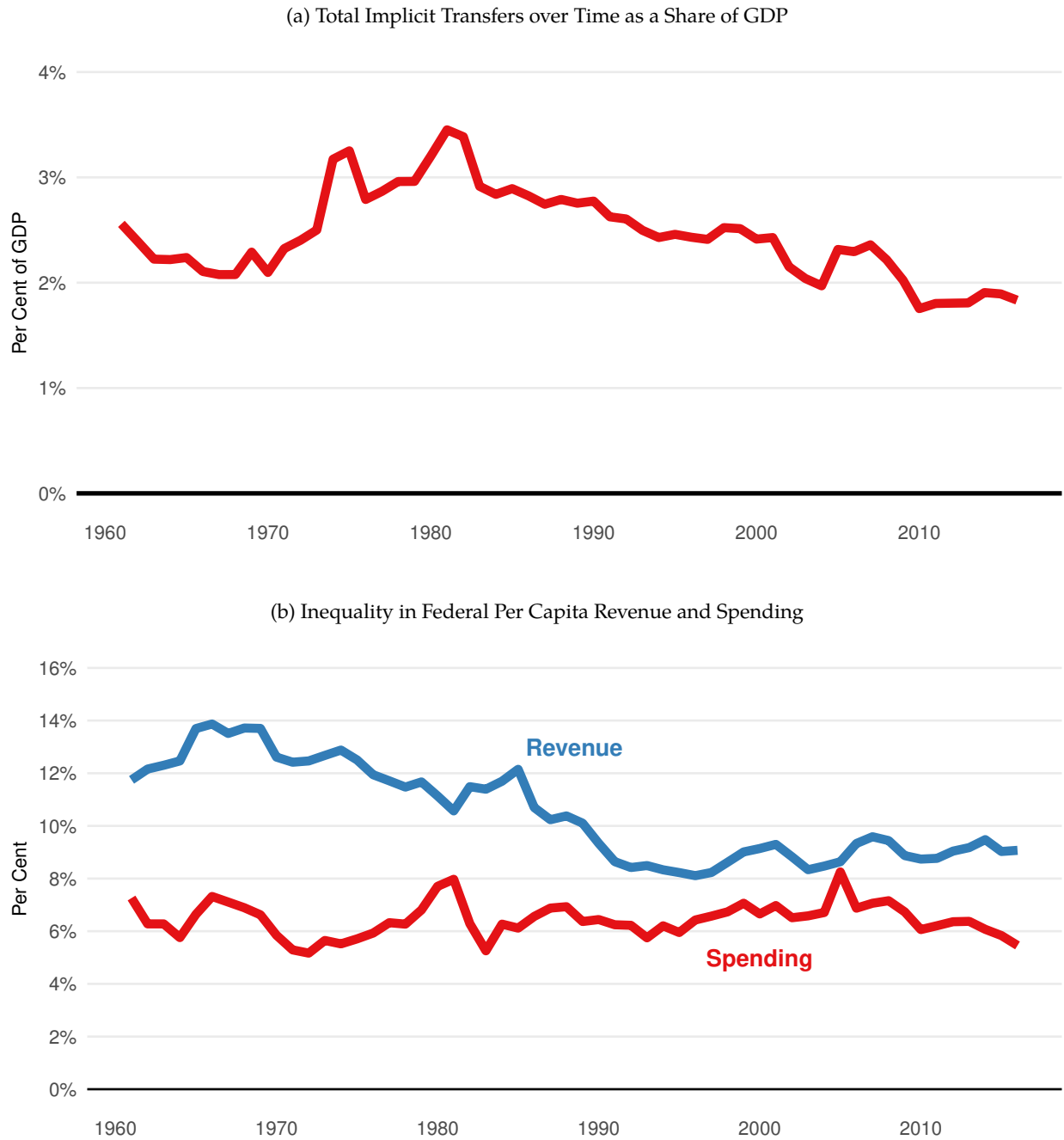
Source: Own calculations from Statistics Canada data tables 36-10-0450, 36-10,0222, and 17-10-0005.

for by income taxes (54 per cent), EI (6 per cent), and the GST and excise taxes (5 per cent). In addition, CPP and OAS account for an additional 13 per cent of transfers. The only major transfer program today that is redistributive is equalization, which accounts for roughly one fifth of total transfers. The Canada Health Transfer (CHT) and Canada Social Transfer (CST) are often said to be redistributive, but this is not the case; they are distributed equally per capita across provinces. Of course, federal revenue to fund these transfers are disproportionately raised from higher-income provinces but one must not conflate the redistributive nature of revenue with that of the spending programs it funds.

Finally, I calculate and report in Table 7 the magnitude of federal implicit transfers T_i relative to each provinces GDP over time. Net outflows from Alberta after 2000 approach 8 per cent of GDP. Net inflows into the Maritimes exceeded 25 per cent in the 1980s in all three provinces, but have since declined. The large change of all, however, is seen in Newfoundland and Labrador. Federal net inflows were nearly one third of the province's GDP as early as the 1990s, but has since dropped to less than 5 per cent. Offshore oil and gas development in Newfoundland and Labrador has boosted incomes significantly in what was previously a lower income province.

Aggregate transfers T have also fallen in recent years. In Figure 10 I display the size of federal implicit transfers relative to GDP since 1961. Nationally, implicit transfers have declined from nearly 3.5 per cent of GDP in the early 1980s to less than 2 per cent today. And this does not even count the larger non-budgetary transfers implicit within the National Energy Program, described earlier. Canada's federal fiscal footprint has not been as even as it is today for at least the past six decades. More equal federal revenue across provinces is the main reason for the falling transfers. In panel (b) of 10, I plot the Schutz Index of per capita federal revenue and spending across

Figure 10: Total Inter-Provincial Redistribution by the Federal Government, 1961-2016



Note: Panel (a) displays the total implicit transfers as a share of GDP over time. Both include Canada Pension Plan revenue and spending. Panel (b) displays the deviation of federal revenue and spending per person in each province with the national per capita average. Specifically, this plots the Schutz index of inequality in federal revenue and spending across province. Intuitively, it displays the share of revenue or spending that must be reallocated to achieve perfect equality. Includes Canada Pension Plan revenue and spending. Territories excluded.

Source: Own calculations from various Statistics Canada data tables. Fiscal data: 36-10-0332 and 36-10-0336 (1961-1980), 36-10-0314 and 36-10-0315 (1981-2009), 36-10-0450 (2007-2016). Population: 17-10-0027 (1961-1970) and 17-10-0005 (1971-2016). GDP: 36-10-0104 (all years).

Table 7: Implicit Federal Fiscal Transfers, by Decade and Province (Share of GDP)

Decade	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL
1961-1969	-2.1	0.6	7.0	4.8	-5.7	-3.1	17.5	23.6	34.8	21.9
1970-1979	-2.2	-6.6	5.6	6.3	-4.4	4.0	24.8	28.9	43.4	31.2
1980-1989	2.6	-3.3	10.8	11.5	-2.2	7.8	25.6	28.9	37.3	32.8
1990-1999	-0.6	-3.0	10.2	11.5	-2.3	5.4	19.4	23.8	26.6	31.3
2000-2009	-2.5	-7.8	3.1	8.7	-3.8	2.5	13.4	16.5	19.9	11.3
2010-2016	-1.9	-7.9	-1.0	6.3	-0.9	4.3	13.9	17.2	20.0	4.8

Note: Displays total federal spending minus revenue as a share of a province's GDP, by decade.
Source: Own calculations from Statistics Canada data tables. Fiscal data: 36-10-0332 and 36-10-0336 (1961-1980), 36-10-0314 and 36-10-0315 (1981-2009), 36-10-0450 (2007-2016). GDP: 36-10-0104 (all years).

provinces. Revenue inequality fell for two reasons. First, a drop in the cross-province differences in household income and GDP/capita (Brown and Macdonald, 2015). Second, significantly lower income tax rates. Corporate tax rates, for example, have declined from 41 per cent to while the top effective federal marginal personal income tax rate declined from over 67 per cent to 33 per cent today (Milligan, 2017). With greater income convergence and lower tax rates, the redistributive effect of federal revenue has declined.

5 Improving Inter-Provincial Transfers

Federal-Provincial transfers have always been, and will continue to be, a source of contention and political challenge. We've also seen some technical shortcomings with the current equalization formula. The following clarifies, and proposes options to address, some of these concerns.

5.1 Option 1: Change Federal Tax and Spending Policies

Lower implicit fiscal transfers across provinces requires changes to federal tax and spending policies. Making revenue sources less sensitive to income, for example, or making spending programs more equal. On the spending side, there is less scope for changes. As we've seen, implicit transfers through federal spending, excluding equalization, account for only slightly over one-quarter of total implicit transfers. And CPP and OAS (on account of demographic differences) account for half of that. But Canada's employment insurance program is perhaps ripest for reform.¹⁹ Regions with higher average unemployment rates receive preferential treatment (more generous benefits and longer benefit periods). This could change, though would be politically challenging.

But on the revenue side, two recent tax changes, both motivated by election commitments by victorious opposition parties, illustrates some potential options. First, the GST was reduced from 7

¹⁹For more on potential reforms to EI, see recent work by Michel Bedard and Pierre Fortin, "Onze propositions pour un meilleur régime d'assurance-emploi," Institute for Research on Public Policy Insight Number 7, July 2015.

per cent to 6 in July 2006 and to 5 per cent in January 2008. Today, those two points are equivalent to roughly 10 per cent of total personal income taxes. Had the GST not been lowered but personal income taxes cut by 10 per cent across the board, net federal revenue from Alberta would be over \$500 million lower today and nearly \$700 million higher from Quebec. Second, in Budget 2016 the federal personal income tax rates were changed. The second bracket rates were lowered to 20.5 per cent, from 22, while the top rate was increased to 33, from 29. Absent behavioral effects, the foregone revenue of the tax reduction was roughly offset by the increased rates at the top. But this varied widely across provinces. Alberta, with an above average income and disproportionate share of top income earners, saw a net increase in total federal personal income tax payments of 1.2 percent in 2016, while all other provinces saw a decrease in payments. This increased the net fiscal outflow by roughly \$400 million according to my own estimates based on Statistics Canada's tax policy simulation model. Those concerned with net outflows from Alberta could propose increasing the GST once again, combined with a revenue-neutral reduction in income tax rates, or a flattening of marginal income tax rates.

5.2 Option 2: Build Efficiency Considerations Into Equalization

That provinces differ in measured fiscal capacity is not sufficient to conclude that equalization improves aggregate economic efficiency. In Section 3.1, we explored the theoretical rationale for this. But other factors may (at least partially) compensate for fiscal benefit differences. In many Maritime regions, for example, higher than average federal spending and lower income tax liabilities help offset the below average fiscal capacity there. In higher-income provinces, increased federal tax liabilities may similarly discourage desirable in-migration – an important result in [Albouy \(2009\)](#).

Finally, whether provincial personal income taxes should be included in measured fiscal capacity is unclear. It is true that higher-income provinces, given their progressive income tax regimes, have higher average government revenue per capita than lower-income provinces. This creates an incentive to migrate to higher-income provinces, even if it means taking a (marginally) less valuable job there. But the [Albouy \(2009\)](#) model addresses this by reversing within-province redistribution. Such a correction has no net interprovincial flow, so doesn't factor into equalization payments. Only so-called "source-based" taxes, like corporate income taxes, resources revenues, or investment income, are included in such a model. To be sure, this would effectively remove the ability of provinces to enact redistributive income tax policy, which would be problematic in practice and therefore the rationale to equalize residence-based taxes returns. In what follows, I explore the implications of including either only source-based taxes or all revenue sources.

In any case, in Table 8 I list all federal transfers and tax differentials, and measures of provincial revenue and fiscal capacity. The differences are large. Between 2007 and 2016, for example, Newfoundland and Labrador received over \$2,700 more per person in non-equalization transfers than the national average.²⁰ The Maritimes, Manitoba, Saskatchewan, and (to a lesser extent) Quebec also received more over this period. The table reports transfers including equalization.

²⁰Based on own calculations from Statistics Canada data tables 36-10-0450 and 17-10-0005.

Table 8: Fiscal Benefit Differences in Canada (Average 2007-2016, \$ per capita)

	Per Capita Differentials in					
	Source- Based Taxes (1)	Fiscal Capacity (2)	Federal Taxes (3)	Federal Transfers (4)	Narrow NFB (1)-(3)+(4)	Broad NFB (2)-(3)+(4)
BC	-229	435	-1	-526	-754	-90
AB	2,699	4,936	2,060	-700	-61	2,176
SK	1,958	2,031	645	-41	1,272	1,345
MB	-288	-1,740	-859	1,189	1,760	308
ON	-726	-475	291	-451	-1,468	-1,217
QC	-111	-1,477	-1,115	659	1,663	297
NB	-486	-2,531	-1,367	1,776	2,657	612
NS	-809	-2,055	-1,294	1,556	2,041	795
PE	-956	-2,941	-1,725	2,487	3,256	1,271
NL	1,308	2,625	-63	2,351	3,722	5,039

Note: Displays differences between provincial fiscal benefit sources per capita and the national average value for each. Federal tax differentials are estimated on 25% of average income differences, conditional on individual worker characteristics (age, gender, marital status, unionization, education, and industry) using the 2007-2016 LFS microdata. This closely follows [Albouy \(2012\)](#), though with updated data and a broader measure of net fiscal benefit that incorporates all fiscal capacity differentials (column 2). Federal transfers include all programs, and includes the Quebec abatement.

Source: Own calculations from various Statistics Canada data tables 36-10-0450 and 17-10-0005, and the Labour Force Survey microdata files for 2007-2016.

Federal tax differences are also large. Controlling for differences in worker characteristics I find an average worker in Alberta may earn nearly \$8,000 more per year than the national average. One in Prince Edward Island, roughly \$6,000 less. If I approximate the implied federal tax liability as [Albouy \(2012\)](#) does, with a 25 per cent rate to roughly capture the marginal income tax rate plus GST, I find increased federal tax liabilities of over \$2,000 above the national average for workers in Alberta. This subtracts from the incentive to migrate.

Combining provincial own-source revenue capacity, federal transfers, and federal tax differentials, I find large differences in measured fiscal benefits. This isn't a new observation, and merely replicates [Albouy \(2012\)](#)'s contribution with updated data. If equalization were singularly focused on an efficiency goal, then an ideal equalization program would result in all values in columns five and six of [Table 8](#) equaling zero. To achieve this would imply smaller equalization entitlements to Atlantic and Prairie provinces, and larger entitlements to Ontario.

This matters. To ballpark the aggregate efficiency consequences of differences in fiscal benefits and the consequent inefficient migration it may induce, consider [Figure 5](#) once again. The efficiency loss is (roughly) half the migration times the difference in fiscal benefits. In a multi-region model, following [Albouy \(2009\)](#), this is approximately half the GDP-weighted variance of fiscal benefit differentials (expressed relative to each province's GDP/capita) times an assumed elasticity of migration to income differences. That is,

$$Efficiency\ loss = \frac{\epsilon}{2} \cdot Var\left(\frac{NFB_i}{y_i}\right), \quad (10)$$

where NFB_i is province i 's net fiscal benefits, y_i is its per capita GDP, and ϵ is the income-elasticity of migration. The migration elasticity matters since the more sensitive workers are, the more labour will be misallocated. Just for illustrative purposes, I use an elasticity of 1.5 as in Section 3.1. Applying this expression to the values in Table 1, I find Canada's transfer programs worsen aggregate efficiency. If the only differences were from per capita fiscal capacity gaps, equation 10 implies losses of nearly 0.09 per cent of GDP (equivalent to nearly \$2 billion per year). But subtracting federal tax differentials shrinks this to 0.03 per cent. With federal transfers added, however, losses grow to 0.04 per cent. Losses with source-based taxes less federal tax differences, meanwhile, are less than 0.02 per cent but adding transfers increases this to 0.07 per cent. In a very important sense, Canada's transfer programs worsen efficiency outcomes.²¹

Adjusting the formula to better achieve its efficiency goals requires we incorporate federal tax differentials and other transfer programs into the calculation. This is straightforward. First, include federal transfers as a revenue source. Indeed, some transfers already are – such as offshore resource revenues, which are less provincial own-source revenue than a federal transfer (though they aren't explicitly recorded as such).²² Second, subtract federal tax differentials from the overall measure of fiscal capacity. I display the results of this change in Table 9. Relative to the current formula with no caps, the Maritimes, Quebec, and Manitoba would see smaller equalization payments if other transfers are included, while Ontario would receive more. The largest reduction would be to PEI, whose equalization payment would decline by nearly \$500 per person. It would also shrink total payments slightly – roughly \$500 million – since federal transfers are more equally distributed than provincial tax bases. Including federal tax differentials shrinks payments further – and dramatically – but boosts payments to Ontario. The overall size of the program would fall to less than half its current size, but improve aggregate efficiency outcomes. And the savings could, in principle, be recycled back to all provinces with boosted CHT and CST payments.²³

5.3 Option 3: Treat Resource Revenues as Corporate Income

As we have seen, resource revenues pose a particularly difficult challenge for Canada's equalization program. Resource deposits are unequally distributed across provinces, and therefore equalization payments tend to rise with energy prices. This can be easily addressed through caps, either on individual provinces or on the program as a whole. The more difficult challenge concerns

²¹This result confirms [Albouy \(2012\)](#), though the magnitudes for 2007 through 2016 appear smaller than the 0.41 per cent cost he reports for 2001. This is partly on account my smaller migration elasticity, as he used 3.2.

²²The federal government holds all rights to offshore resources. In *Reference re Offshore Mineral Rights of British Columbia*, [1967] S.C.R. 792, the Supreme Court of Canada concluded "There is no historical, legal or constitutional basis upon which the province of British Columbia could claim the right to explore and exploit or claim legislative jurisdiction over the resources of the continental shelf." And Newfoundland is no different, it concluded in *Reference re Newfoundland Continental Shelf*, [1984] 1 S.C.R. 86, saying: "There is no basis upon which the Province of Newfoundland could claim the right to explore and exploit or claim legislative jurisdiction over the resources of the continental shelf." Provincial revenues derived from such activity are therefore permitted only insofar as the federal government allows. Transferring offshore revenues to provinces is a political decision.

²³This is similar to Saskatchewan Premier Scott Moe's "50/50 Plan", though the distribution of transfer payments across provinces here is more favorable to Ontario than under his proposal.

Table 9: Simulating Alternative Equalization Formulas (2018-19, \$ per capita)

Scenario	BC	AB	SK	MB	ON	QC	NB	NS	PE	NL
Actual Equalization	0	0	0	1,566	70	1,419	2,480	2,046	2,835	0
<i>Modifications to the Current Formula</i>										
Remove Floors/Caps	0	0	0	1,498	0	1,504	2,414	1,977	2,766	0
& Include Transfers	0	0	0	1,453	63	1,365	2,351	1,915	2,284	0
& Fed Tax Differentials	0	0	0	574	305	265	970	634	560	0
Include NRRR as CIT	0	0	0	1,509	0	1,588	2,498	2,018	2,818	267
& Include Transfers	0	0	0	1,465	0	1,449	2,435	1,957	2,336	0
& Fed Tax Differentials	0	0	3	585	131	349	1,054	675	612	0
<i>Macro Approaches</i>										
Gross Domestic Product	285	0	0	783	58	1,494	1,915	2,072	2,360	0
Net Domestic Product	88	0	0	764	0	1,471	2,047	2,247	2,128	0
NB's 1955 Proposal *	0	0	0	0	0	92	668	869	749	0

Note: Displays counterfactual equalization payments per capita for 2018-19 under various alternative formula. Removing floors and caps from the current formula refers to removing the fiscal capacity caps, growth cap, and adjustment (floor) payments. Non-equalization federal transfers are then included, followed by adjusting fiscal capacity gaps to reflect federal tax differentials (see Section 3.1). Macro approaches use either GDP or NDP (at factor cost). * New Brunswick's 1955 proposal was based on personal income; here I use NDP at factor cost. See text for details.

Source: Own calculations from various Statistics Canada data tables and the federal equalization workbooks.

incentives. Provinces that receive equalization will receive less if they develop their resources. And though only 50 per cent of resources revenues are included, the fiscal capacity cap almost fully eliminates the incentive to develop natural resources in provinces where it binds. In 2018-19, for example, New Brunswick, Quebec, and Manitoba all faced this cap. The floor on equalization payments dampens this effect somewhat, but only for a large province like Quebec. Manitoba has only a tiny incentive, at least as far as their provincial budget is concerned, to increase resource revenues as 95 cents of each additional dollar earned is lost to smaller equalization payments.

But there are ways to fully include resource revenues that both limits the federal government's liability in the event of high energy prices and improves provincial incentive of provinces. Indeed, the Parliamentary Task Force explored multiple proposals. Though it made no specific recommendation regarding resource revenues, it "believed" that all resource revenues should be included, except those deposited in a savings fund. It noted one option of "treating all resource revenues as if they were personal income tax revenue, or revenues from business income, or a mixture of both." Their interpretation of this was that only a portion of resource revenues be included in equalization. After all, if resource rents were earned by private actors, then 25 to 30 per cent would accrue to government through income taxes. Thus, this should be the included share, equalized according to the distribution of income tax bases across provinces. Building on this, in 1982, Quebec developed its own proposal to fully include resource revenues in the formula, but to equalize them according to the distribution of provincial tax bases.

Here I will explore a related, though somewhat more elegant and robust, option that simply

includes all resource revenues as additional levies on certain corporate activities. Corporate income taxes in Canada already treat different activities differently. Small businesses have lower rates than large. Manufacturing and processing activities receive favorable treatment. Profit from activities outside the country face a ten point higher federal rate than the general one. And, until recently, tobacco manufacturers faced a special higher corporate tax rate than other businesses. Many other sources of corporate income are also already economic rents, such as when a corporation is granted a lucrative patent. That firms engaged in natural resource extraction also earn rents is not qualitatively different, except for the fact that governments (as owners of the resource) succeed in extracting most of it. And resource rents not collected by government are already implicitly contained within the corporate income tax base. To interpret royalties and other resource revenues as part of corporate income taxes is therefore not unreasonable. The implications for equalization would be significant.

This option requires two simple adjustments to the fiscal capacity calculation: add a province's resource revenues to both corporate income tax revenue and the corporate taxable income. A province's fiscal capacity from corporate income taxes will then be

$$f_i^{CIT} = \left(\sum_{i=1}^N CIT_i + RR_i \right) \times \left[\frac{B_i^{CIT} + RR_i}{\sum_n (B_n^{CIT} + RR_n)} \right], \quad (11)$$

where RR_i is resource revenue of province i and B_i^{CIT} is its corporate tax base as currently measured. In 2016-17, this change would increase the average national tax rate on corporate income from 10.34 to 14.68 per cent and increase total corporate tax revenues to be equalized from \$25.45 billion to \$37.97 billion.

This change would notably benefit Quebec, as the fiscal capacity cap would no longer bind, and Newfoundland and Labrador. I display the full results in rows 5 through 7 in Table 9. Though payments change little, the adverse incentive effect of developing one's resources would be dampened significantly under this proposal. I estimate the implied claw-back rate for natural resource revenues from Quebec would decline to less than 9 per cent from the current rate of over two-thirds.²⁴ Another advantage is this change dampens the sensitivity of equalization to energy prices. Under a simple equalization formula that included 100% of resource revenues, total payments under the program grow dramatically. From 2016/17, if resource revenues increase proportionally in Alberta, Saskatchewan, and Newfoundland and Labrador, equalization will grow by just over 67 cents for each dollar of royalty revenue growth in those provinces. But, if resources are included in the corporate income tax base instead, the program grows only 12 cents per dollar. And if oil prices or production rise sufficiently high that provincial royalties exceed \$40 billion, for example, I estimate (under this simple alternative formula) that equalization payments would increase less than \$3.7 billion. This is well within federal means, especially as its income tax

²⁴The claw-back in the current formula depends on circumstances. It is 38 per cent in the basic 'Step 3a' entitlement, but 100 per cent after the fiscal capacity cap binds. The fixed pool of dollars, however, returns some of the implied savings to Quebec making the overall claw-back today roughly 69 per cent.

revenue would be higher in such a scenario, so aggregate caps on total equalization dollars would no longer be necessary.

5.4 Option 4: Keep It Simple with A Macro Approach

In principle, equalization ought to equalize some measure of net fiscal benefits across regions. But in the face of a myriad of other spatial distortions and implicit federal transfers, achieving the equity and efficiency goals of equalization is a significant challenge. And typical equalization formula present provinces with potentially strong incentives to manipulate tax bases, as we've seen. Consider instead a formula that bases equalization on broader macroeconomic variables like GDP or total income.

This "macro approach" to equalization has a long history. Indeed, one of the first specific proposals for Canada's equalization system was a formula based on a macroeconomic indicator. In their proposal to the Federal-Provincial Conference in 1955, New Brunswick proposed to calculate equalization based on average per capita personal income. If a province's average income level fell below 85 per cent of the national average, they would be provided a payment equal to

$$E_i = R (0.85p_i - y_i) , \quad (12)$$

where R is total provincial and local revenue in all ten provinces, p_i is province i 's population share, and y_i is its share of total personal income in Canada.²⁵ Such a formula using net domestic product as an alternative to personal income would cost roughly \$1.5 billion dollars today. And only the three Maritime provinces and, marginally, Quebec would receive transfers. I report this in the bottom row of Table 9.

Not all macro formula would imply such a large reduction in payments. Each province could instead receive, say, the larger of zero or $E_i = R(p_i - y_i)$, which merely drops the 85 per cent threshold from the original New Brunswick proposal. I implement this alternative formula using measures of both provincial gross domestic product and net domestic product at factor cost, which excludes depreciation and taxes less subsidies from GDP. Comparing the results in the bottom panel of Table 9 with actual payments shows BC, Quebec, and Nova Scotia would receive more (their economies are weaker than fiscal capacity estimates suggest) while PEI, New Brunswick, and Manitoba would receive less.

Manitoba stands out. While others would see only modest changes in their entitlements, Manitoba's would be cut in half. Behind this result may be understated fiscal capacity due to artificially low resource revenues. As discussed earlier, there is a strong incentive to do this. And we see it in the data. At roughly \$3.50 per MWh, based on the latest equalization data for 2016-17, Manitoba's water rental rates (the way in which it earns revenue from its hydro resources) are significantly lower than the over \$15 per MWh for either Quebec or British Columbia. If Manitoba were to match their rates, resource revenues would be over \$400 million higher and

²⁵See Appendix C of Moore et al. (1966). The proposal was not equation 12 but was equivalent to it.

equalization in 2016-17 nearly that much lower.²⁶ Basing payments on macroeconomic indicators would substantially improve incentives, and better reflect the fact that Manitoba has a stronger economy, and provides greater fiscal benefits to residents, than its fiscal capacity suggests.

To be sure, there are shortcomings of the macro approach. Provinces with similar incomes or GDP do not necessarily have the same ability to raise revenue. The composition of economic activity matters since some activities are taxed differently than others. In addition, the location of economic activity may differ from where it is taxed. A worker in Alberta's oil sands, for example, may actually reside elsewhere. Income earned on the job was generated in Alberta, but is taxable in the worker's home province. These and other concerns motivated the O'Brien Panel to recommend the Representative Tax System remain the backbone of equalization.²⁷ Though the macro approach departs from the theoretical goal of equalizing fiscal benefits, the current formula may already exacerbate the equity and efficiency gaps it is meant to address, and is poorly understood by the public. A macro approach is simple, easy to communicate, and has minimal distortions to provincial policy decisions.

6 Conclusion

Federal transfers are central to Canada's fiscal federalism. They ensure provinces have sufficient capacity to deliver public services, such as health and education, and they redistribute across provinces to help achieve equity and efficiency goals. Such transfers come in many forms, from explicit programs like Equalization and the CHT and CST to implicit transfers that are a byproduct of national tax and spending decisions. This paper reviewed the history behind such transfers and quantified, for the first time, their size and distribution over Canada's 150 year history. This long history revealed the various economic, social, and political pressures to which government must respond. And today, though transfers have grown to many times their original size, they are now more equally distributed. The process of change is ongoing, and always will be. Governments must contend, as we've seen, to continuous and unexpected economic, social, and political developments. Throughout these changes, one thing always remained true: despite hopes of achieving a final and unalterable settlement, federal transfers are always up for negotiation.

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²⁶Although only 50 per cent of resource revenues count against a province's fiscal capacity, if Manitoba's were to increase the binding fiscal capacity cap – which includes all resource revenues – claws back equalization nearly dollar for dollar in Manitoba's case.

²⁷The 1981 Parliamentary Task Force exploring equalization also recommended against a macro approach, in part because comparable data on provincial GDP was only experimental at the time.

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