Finances of the Nation

"FINAL AND UNALTERABLE"—BUT UP FOR NEGOTIATION: FEDERAL-PROVINCIAL TRANSFERS IN CANADA

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For almost 60 years, the Canadian Tax Foundation published an annual monograph, Finances of the Nation*, and its predecessor,* The National Finances*. In a change of format, the 2014* Canadian Tax Journal *introduced a new "Finances of the Nation" feature, which presents annual surveys of provincial and territorial budgets, and topical articles on taxation and public expenditures in Canada.*

In this article, Trevor Tombe explores the history of federal-provincial transfers in Canada. He compiles and analyzes uniquely detailed data from Confederation to the present showing that (1) explicit transfers to provincial governments are more equally distributed today than they have been throughout most of Canada's history, and (2) while overall federal tax and spending activities currently redistribute just under 2 percent of Canada's gross domestic product across provinces, this is the lowest level in the past six decades. Tombe proposes a uniform methodology to quantify and analyze explicit and implicit fiscal transfers, discusses the design of today's transfer programs and the pressures that they must withstand, and suggests some changes that might be considered in future reforms.

The underlying data for the Finances of the Nation *monographs and the articles in this journal will be published online in the near future.*

KEYWORDS: TRANSFER PAYMENTS ■ FEDERAL-PROVINCIAL ■ FISCAL ■ EQUALIZATION ■ FEDERALISM ■ SPENDING

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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.[1] But as new provinces joined the federation and special arrangements proliferated, the constitution was amended, in 1907, to enlarge the subsidies and to achieve (or so the negotiators thought) "a final and unalterable settlement of the amounts to be paid yearly to the several provinces."[2] However, governments (then as now) constantly balance competing and often irreconcilable interests in ever-changing economic, social, and political environments. Consequently, fiscal transfers are always up for negotiation. Today, they have evolved into complex arrangements involving amounts many times their original size, and they include both explicit programs, such as equalization, and implicit transfers through federal tax and spending policies. This article surveys the history of various fiscal transfer programs, and explores their scale, scope, and design, using comprehensive data from Confederation to the present.

First, it is necessary to provide some context. Canada is a highly decentralized country, though significant revenue powers reside with the central government in Ottawa. This creates both "vertical" challenges (between the federal and provincial governments) and "horizontal" ones (between provinces). The vertical challenges involve a potential imbalance between the provinces' 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:

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1 British North America Act, 1867 (UK), 30 & 31 Vict., c. 3.

2 Paragraph D of the schedule to the British North America Act, 1907 (UK), 7 Ed. VII, c. 11.

> 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.[3]

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

Horizontal challenges involve interprovincial 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 all are exposed to unique economic shocks. Transfers help to ensure that sufficient fiscal capacity exists in all regions to deliver comparable public services despite those differences. In terms of efficiency, the federal and provincial governments share many important tax fields including, 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 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 being motivated by 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,[4] pooling risk,[5] and making federalism more attractive for all,[6] federal transfers can improve the effectiveness of decentralization.

Although 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 below-average ability to raise revenue. While the concept is simple in principle, many difficult theoretical and practical questions arise. How should ability be measured? Which revenue sources should be included? Should the

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3 From the statement by Premier Maurice L. Duplessis to the Federal-Provincial Conference of October 1955, as quoted in A. Milton Moore, J. Harvey Perry, and Donald I. Beach, *The Financing of Canadian Federation: The First Hundred Years*, Canadian Tax Paper no. 43 (Toronto: Canadian Tax Foundation, 1966), appendix B, at 123.

4 See Robin Boadway and Frank Flatters, "Efficiency and Equalization Payments in a Federal System of Government: A Synthesis and Extension of Recent Results" (1982) 15:4 *Canadian Journal of Economics* 613-33.

5 See Kangoh Lee, "Uncertain Income and Redistribution in a Federal System" (1998) 69:3 *Journal of Public Economics* 413-33.

6 See Sam Bucovetsky, "Federalism, Equalization and Risk Aversion" (1998) 67:3 *Journal of Public Economics* 301-28; and Robin Boadway, "The Theory and Practice of Equalization" (2004) 50:1 *CESifo Economic Studies* 211-54.

cost of delivering public services be considered?[7] Should differences in tax base elasticities matter?[8] There are also political considerations, especially in Canada, where the historical, 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 article explores the functioning of equalization since it began over 60 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* transfer financial resources across provinces. Some programs have been explicitly designed to redistribute revenues, like the national energy program decades ago and the employment insurance program today, while others are uniform programs that nonetheless have redistributive effects, like income taxes and the goods and services tax (GST). This article systematically explores the data from 1961 to today and quantifies the extent and effect of these implicit transfers by province. I find that all federal revenue and spending activities combined redistribute just under 2 percent of Canada's gross domestic product (GDP) across provinces, driven more by federal taxes than by equalization. But redistribution in recent years has been lower than at any point in the past six decades, and is significantly below the nearly 3.5 percent of GDP redistributed in the early 1980s.

A broad, historical, data-oriented review of fiscal transfers matters. We will see that Canada's system of transfers has changed significantly over time. Examining how earlier programs responded to economic and political challenges reveals why programs today are structured as they are. This article briefly highlights a number of particularly relevant episodes, drawing on the work of many others.[9] There is also a sizable academic literature exploring intergovernment transfers in a federation,

7   See Anwar Shah, "A Fiscal Need Approach to Equalization" (1996) 22:2 *Canadian Public Policy* 99-115; and Peter Gusen, *Expenditure Needs: Equalization's Other Half* (Toronto: University of Toronto, School of Public Policy and Governance, Mowat Centre for Policy Innovation, February 2012).

8   See B. Dahlby and L.S. Wilson, "Fiscal Capacity, Tax Effort, and Optimal Equalization Grants" (1994) 27:3 *Canadian Journal of Economics* 657-72.

9   J.A. Maxwell, *Federal Subsidies to the Provincial Governments in Canada* (Cambridge, MA: Harvard University Press, 1937); Moore et al., supra note 3; J. Harvey Perry, *A Fiscal History of Canada—The Postwar Years*, Canadian Tax Paper no. 85 (Toronto: Canadian Tax Foundation, 1989); David B. Perry, *Financing the Canadian Federation, 1867 to 1995: Setting the Stage for Change*, Canadian Tax Paper no. 102 (Toronto: Canadian Tax Foundation, 1997); Alex S. MacNevin, *The Canadian Federal-Provincial Equalization Regime: An Assessment*, Canadian Tax Paper no. 109 (Toronto: Canadian Tax Foundation, 2004); and Thomas J. Courchene, "Energy Prices, Equalization and Canadian Federalism: Comparing Canada's Energy Price Shocks" (2006) 31:2 *Queen's Law Journal* 644-95.

including earlier theoretical treatments[10] and more recent research.[11] For a broad review, with a focus on research by Canadian economists in particular, Boadway and Cuff is an excellent source.[12] I abstract from many of the critically important considerations raised in the literature, but also contribute to that research. In particular, I compile uniquely detailed data spanning many decades—in some cases, dating back to Confederation—and propose a unified methodology to characterize both explicit and implicit transfers. My analysis reveals previously undocumented patterns in the size and distribution of federal transfers, and characterizes implicit transfers through federal tax and spending since 1961. This is new. But first, I will provide some history.

A BRIEF HISTORY OF FISCAL TRANSFERS IN CANADA
Confederation to 1945

Federal-provincial transfers have a long history. At Confederation in 1867, provinces gave the federal government the most important taxing power at the time—namely, customs duties—which remained the government's chief source of revenue until the First World War. In exchange, the federal government gave provinces annual subsidies. These included fixed amounts to assist with the costs of operating government and legislatures, and a per capita amount set at 80 cents per person up to a provincial population of 400,000.[13] The federal government also assumed $77.5 million in provincial debt, equivalent to roughly one-third of the economy at

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10 James M. Buchanan, "Federalism and Fiscal Equity" (1950) 40:4 *American Economic Review* 583-99; James M. Buchanan, "Federal Grants and Resource Allocation: A Reply" (1952) 60:6 *Journal of Political Economy* 536-38; Frank Flatters, Vernon Henderson, and Peter Mieszkowski, "Public Goods, Efficiency, and Regional Fiscal Equalization" (1974) 3:2 *Journal of Public Economics* 99-112; Robin W. Boadway, *Intergovernmental Transfers in Canada*, Financing Canadian Federation no. 2 (Toronto: Canadian Tax Foundation, 1980); Boadway and Flatters, supra note 4; and William G. Watson, "An Estimate of the Welfare Gain from Fiscal Equalization" (1986) 19:2 *Canadian Journal of Economics* 298-308.

11 L.S. Wilson, "Equalization, Efficiency and Migration: Watson Revisited" (2003) 29:4 *Canadian Public Policy* 385-95; Sam Bucovetsky and Michael Smart, "The Efficiency Consequences of Local Revenue Equalization: Tax Competition and Tax Distortions" (2006) 8:1 *Journal of Public Economic Theory* 119-44; Anwar Shah and Robin Boadway, eds., *Intergovernmental Fiscal Transfers: Principles and Practice* (Washington, DC: World Bank, 2007); Michael Smart, "Raising Taxes Through Equalization" (2007) 40:4 *Canadian Journal of Economics* 1188-1212; David Albouy, "The Unequal Geographic Burden of Federal Taxation" (2009) 117:4 *Journal of Political Economy* 635-67; and David Albouy, "Evaluating the Efficiency and Equity of Federal Fiscal Equalization" (2012) 96:9-10 *Journal of Public Economics* 824-39.

12 Robin Boadway and Katherine Cuff, "The Impressive Contribution of Canadian Economists to Fiscal Federalism Theory and Policy" (2017) 50:5 *Canadian Journal of Economics* 1348-80.

13 Until 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.

the time. Provinces with per capita debt below the national average received 5 percent of the difference as an additional subsidy.[14] At first, these so-called statutory subsidies were very important. Generally, they provided roughly half of provincial revenues, but as much as two-thirds for British Columbia when it joined Confederation in 1871 and nearly 80 percent for Saskatchewan and Alberta when they joined in 1905.

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 10 years) or the 1869 grant to Nova Scotia ($83,000 for 10 years). But others were paid in compensation for lost rights. In 1873, for example, the federal government began paying New Brunswick $150,000 per year in exchange for its agreement to forgo 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.[15] Both provinces still receive these payments today. Out west, the prairie provinces—unlike the founding provinces—did not initially have rights in respect of their natural resources. Instead, they received direct federal cash transfers in lieu of those rights. For each of Alberta and Saskatchewan, the transfer totalled $375,000; Manitoba's started at $45,000 but rose to $409,000 by 1912. (These provinces were granted resource rights in 1930.) Various other changes, from altering the population subsidy to adjusting debt allowances to new ad hoc grants, also occurred during this period.[16]

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 $15 and $26 per capita, respectively. The maritime provinces received more, with nearly $90 per capita going to Prince Edward Island. But the western provinces of British Columbia, Alberta, and Saskatchewan—with their small populations and relatively favourable treatment upon joining Confederation—received the most. For example, Alberta received over $206 per capita when it joined. This favourable 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 a further unspecified amount to be determined later. A deal on the

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14 Debt 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 from new provinces joining the federation and from the original four, increasing the total debt allowances to roughly $109 million by 1905, when Alberta and Saskatchewan joined Confederation.

15 As described in section 1 of An Act To Provide for a Further Annual Allowance to the Province of Prince Edward Island, 1 Ed. VII, c. 3 (1901).

16 For a comprehensive review, see Canada, *Dominion Subsidies to Provinces; Including Other Transfers: Reference Book for Dominion-Provincial Conference on Reconstruction* (Ottawa: Secretariat of the Cabinet Committee on Dominion-Provincial Relations, 1945).

unspecified payment was difficult to reach and involved multiple commissions, until eventually the federal government imposed, in 1959, what Prime Minister John Diefenbaker called a "final and irrevocable settlement" of $8 million per year, less previously paid transition support.[17] The settlement was payable only until 1962, but as with all other "final" settlements, this too was negotiable. Two years later, the government extended the payments for another five years, and in 1966 Prime Minister Lester Pearson made them permanent.[18] Today, Newfoundland and Labrador receives one-third of all statutory subsidies. But these transfers are of little significance overall.

For a broader perspective, I gather data on all transfers from a variety of sources, including Statistics Canada data tables for recent decades, Perry[19] for the early postwar 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 index.[20] This measures the weighted absolute deviation of a variable, in this case per capita federal transfers, from its mean

$$\delta_t = \frac{1}{2}\frac{\sum_{i=1}^{N}|x_i - \bar{x}|P_i}{\sum_{i=1}^{N}x_iP_i} = \frac{1}{2}\sum_{i=1}^{N}|p_i - s_i|, \tag{1}$$

where x_i is a per capita amount for province i, $\bar{x}$ is the population-weighted average, and P_i is the province's population. Equivalently, and perhaps more intuitively, the equation represents half of the total deviation between each province's share of the population p_i and of the total x, given by s_i, or the share of total value that must be reallocated to achieve perfect per capita equality. I use this index throughout the article, 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 1 percent of GDP, declining to ¼ of 1 percent by the late 1930s. As new provinces joined and special arrangements grew, so too did the 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

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17 Statement by Prime Minister John G. Diefenbaker in Canada, House of Commons, *Debates*, March 25, 1959, at 2216, concerning the settlement of article 29 of the Newfoundland Act (UK), 12 & 13 Geo. VI, c. 22.

18 The federal McNair commission (the Royal Commission on Newfoundland Finances Under the Terms of Union of Newfoundland with Canada) tasked with determining payments under article 29 of Newfoundland's terms of union originally recommended indefinite payments of $8 million from 1961-62 onward. 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.

19 Perry, *Financing the Canadian Federation*, supra note 9.

20 Robert R. Schutz, "On the Measurement of Income Inequality" (1951) 41:1 *American Economic Review* 107-22.
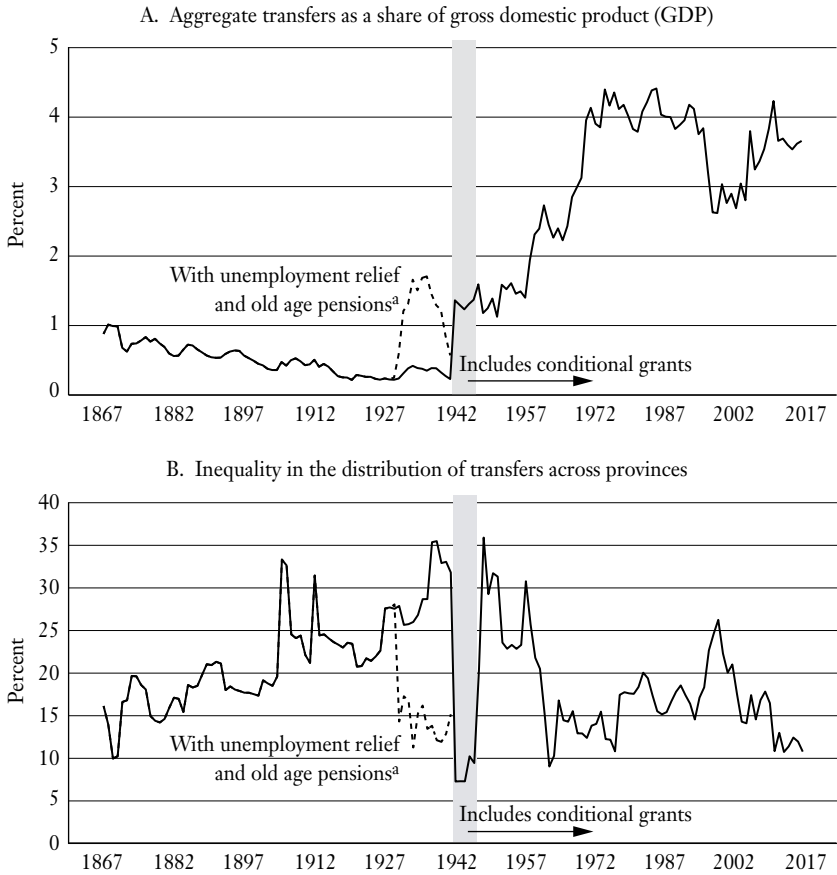
TABLE 1 Statutory Subsidies and Special Grants to Provinces, Selected Years, in Real 2017 Dollars per Capita

Year	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia	Prince Edward Island	Newfoundland and Labrador
First year[a]	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	na
1935	44.46	46.64	46.45	48.69	16.57	17.08	74.97	73.39	143.82	na
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 the terms of Confederation and various other agreements. Years denote fiscal years starting.

a Provinces joined Confederation at different times.

Sources: Author's calculations from various *Canada Year Book* public accounts records, and Canada, Department of Finance data for 2017-18. Inflation adjustments use Marvin McInnis, "Historical Canadian Macroeconomic Dataset 1871-1994" (hdl.handle.net/1974/7669). GDP deflators updated with Statistics Canada table 36-10-0223-01, "Implicit Price Indexes, Gross Domestic Product, Provincial and Territorial." I use the 1871 deflator for 1867 payments.

FIGURE 1   Federal Transfers to Provincial Governments, Canada, 1867-2017

A. Aggregate transfers as a share of gross domestic product (GDP)

B. Inequality in the distribution of transfers across provinces

Notes: 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.

a   The federal government shared the provincial cost of unemployment relief and old age pensions until those became federal programs. This calculation includes support for the blind and youth training.

Sources: Author's calculations using various federal public accounts for 1867 to 1941; David B. Perry, *Financing the Canadian Federation, 1867 to 1995: Setting the Stage for Change*, Canadian Tax Paper no. 102 (Toronto: Canadian Tax Foundation, 1997) for 1942 to 1980; and Statistics Canada tables 36-10-0321-01, "Intergovernmental Transfers, Provincial Economic Accounts, Annual, 1981-2009," for 1981 to 2006 and 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance—General Governments, Provincial and Territorial Economic Accounts," for 2007 to 2017. Population data for 1867 to 1920 from Dominion

(Figure 1 is concluded on the next page.)

FIGURE 1   Concluded

Bureau of Statistics, "Estimated Population of Canada by Province at June 1, 1867-1931," 1921 to 1971 from Statistics Canada table 17-10-0027-01, "Estimates of Population, Canada, Provinces and Territories," and 1971 to 2017 from table 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex." GDP data from Marvin McInnis, "Historical Canadian Macroeconomic Dataset 1871-1994" (hdl.handle.net/1974/7669) for 1871 to 1960 (interpolated back to 1867 using population) and Statistics Canada data table 36-10-0104-01, "Gross Domestic Product, Expenditure-Based, Canada, Quarterly," for 1961 to 2017. Results based on Perry, supra, are verified with alternative Statistics Canada data between 1961 and 1980 from table 36-10-0343-01, "Current Transfers to Other Levels of Government, Provincial Economic Accounts, Annual, 1961-1980," and between 1952 and 1962 from Dominion Bureau of Statistics, *Historical Review of Financial Statistics of Governments in Canada, 1952-1962* (Ottawa: Queen's Printer, 1966). Both are excluded from plot.

during the 1930s is also notable. The Depression strained different provinces to different degrees. The situation in western Canada was particularly challenging. In 1934, British Columbia received an additional $750,000 per year. In the following year, additional special grants to the Maritimes following the White commission recommendations[21] also added to inequality, with $275,000 being paid to Prince Edward Island, $1.3 million to Nova Scotia, and $900,000 to New Brunswick. By 1937, Manitoba was granted $750,000 more per year and Saskatchewan $3.5 million more (a 165 percent 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.

Although grants and subsidies were increasingly unequal, new transfer programs started that were not. 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.[22] Including those programs with subsidies and grants, transfers during the Depression exceeded 1.5 percent 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 to cover their debts and to fund wartime activities (building, training, and so on). Transfers rose to roughly 1.5 percent of GDP. Following the war, the

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21 Canada, *Report of the Royal Commission on Financial Arrangements Between the Dominion and the Maritime Provinces* (Ottawa: King's Printer, 1935) (Thomas White, chair).

22 Loans to western provinces under the Unemployment and Farm Relief Act, 1931, SC 1931, c. 58, were partially a subsidy. The Western Provinces Treasury Bills and Natural Resources Settlement Act, SC 1947, c. 77, for example, reduced outstanding loans under the Unemployment and Farm Relief Act by half and converted the remainder to a zero-interest 30-year loan. Despite this, I exclude them from this analysis.

federal government began increasing transfers and tax room to provinces. As cost-sharing programs related to health and education grew significantly larger, transfers eventually exceeded 4 percent of GDP by the 1970s. Unconditional grants, such as equalization, also grew over this period. The deficit-cutting efforts of the Chrétien-Martin years[23] in the mid- to late-1990s shrank transfers temporarily, but today they are only slightly smaller than their peak of over 4 percent. The remainder of this article explores these post-war arrangements.

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 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 on which provinces could be stopped 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" began in 1947; they required provinces to agree not to establish their own personal income tax systems and placed certain restrictions on provincial corporate income taxes.

The early tax rental arrangements took many forms.[24] 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. Ontario and Quebec rejected the deal and therefore received no federal transfers under this arrangement; this 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, but Ontario agreed to join and began receiving payments.[25] For many provinces, ceding income taxes to the federal government in

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23 The period when Prime Minister Jean Chrétien and his finance minister, Paul Martin, implemented a fiscal policy of restraint aimed at reducing the national deficit.

24 See Moore et al., supra note 3, for comprehensive coverage and discussion.

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

exchange for fairly equal per capita cash grants was not ideal. This was especially true for Quebec, whose sovereignty concerns added to generic concerns over provincial autonomy. In 1954, Quebec established its own income tax regime, equivalent to 15 percent of the federal income tax. In the following year, Ontario announced that it would also set up its own corporate income tax system. As a result, Ottawa was forced to re-evaluate the arrangements. A full accounting of the negotiations that followed between Quebec, Ottawa, and other provinces over fiscal arrangements is beyond the scope of this article. Suffice it to say, they were complex, but Ottawa's solution was elegant.

Both the 1947 and 1952 arrangements featured significant implicit equalization, since per capita transfers were (for provinces that accepted the deal) largely similar. Beginning in 1957, however, the federal government 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 percent), corporate income tax (9 percent), and succession duties (50 percent) that were generated in that province. But because tax points are worth more to provinces with higher income, the federal government topped up the transfer to match the average of the richest two provinces (Ontario and British Columbia). 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.[26] Provinces were free to levy higher rates, but taxpayers could deduct only 10 percent of their federal taxes.

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. Although payments overall were set to rise by $7 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 special ad hoc Atlantic provinces adjustment grants to compensate—$2.5 million to Prince Edward Island, and $7.5 million each to Newfoundland, Nova Scotia, and New Brunswick. The grant 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 to cede its taxing power. It would receive equalization payments, but would continue to levy its own income taxes. Quebec taxpayers could access a federal credit equal

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

FIGURE 2   Comparison of the 1957 and 1952 Fiscal Arrangements Formula, for the 1957-58 Fiscal Year
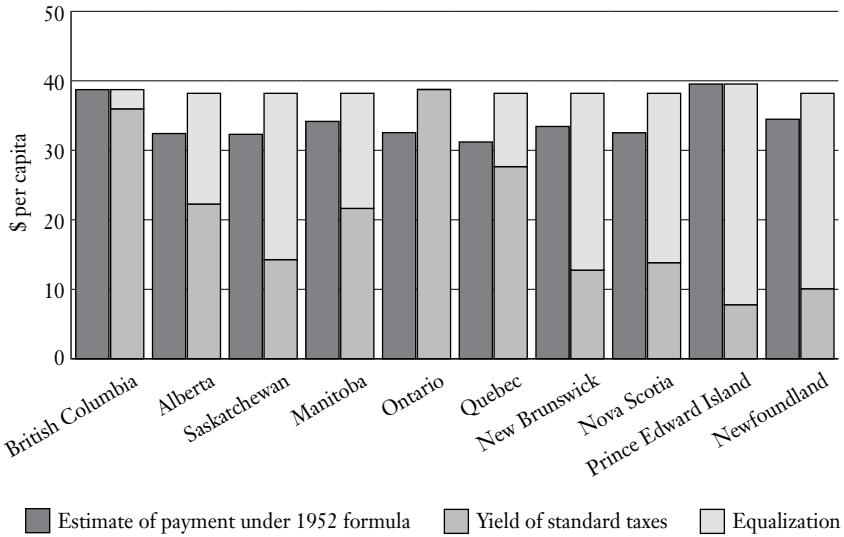
Notes: Displays an estimate of per capita payments to each province in 1957-58 under the 1957 fiscal arrangements compared to what the 1952 arrangement would have yielded had the prior structure remained in place. I exclude the 2 percent insurance premium tax that the federal government vacated for provinces to fill under the 1957 arrangement. Equalization includes stabilization payments to British Columbia and Prince Edward Island.

Source: Author's calculations from information tabled by Minister of Finance W. E. Harris in Canada, House of Commons, *Debates*, July 16, 1956, at 5989.

to 10 percent of federal personal income taxes and 9 percent of corporate income taxes, but because Quebec levied higher rates, this was not an ideal solution. The federal government also continued to effectively decide on the tax instruments and rates that were included—an irritant for many provinces that was not resolved until 1967. The birth of equalization illustrates the challenge of providing transfers to provinces in a way that maintains their autonomy, yet also achieves important equity and efficiency goals, within a tax space shared by two orders of government.

Unlike today, the 1957 equalization payments are best considered as a top-up to a tax point transfer whereby the federal government gives some of its tax room to provinces. Although this approach to equalization ended in 1967, as I 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 of them into two: the Canada assistance program (CAP), starting in 1966 and supporting income security programs; and established programs financing (EPF), starting in 1977 and supporting provincial

health and education spending. Both featured tax point transfers, but only Quebec opted to receive tax points under the CAP.[27]

I display the importance of tax points as a share of the total in figure 3. At first accounting for roughly 10 percent, and rising to over 25 percent soon after the introduction of EPF, tax points were an important component of federal transfers for decades. Under 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 to match the equalization standard. (I will discuss this further in the next section.) These tax points and the associated equalization entitlement were added, and cash transfers topped up provinces to the desired equal per capita amount. Later, during the federal fiscal restraint of the Chrétien-Martin years, the EPF and CAP programs were replaced with a single Canada health and social transfer (CHST). The size of cash transfers fell, so the tax point component became relatively more important, rising to nearly 40 percent of the total. But the principle remained the same as that on which EPF was based. By 2001-2, following a period of transition, all CHST transfers were equal per capita across provinces once again. I illustrate the CHST program for 2003-4 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 any more. No province is obliged to increase taxes if the federal government lowers its rates. They share the same tax room, and one cannot dictate the rates of the other. After the last tax point transfer in 1977, 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 were not pleased. So in the 2007 federal budget, the 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.

EXPLICIT REDISTRIBUTION: CANADA'S EQUALIZATION PROGRAM

1967 REFORM

Beginning in 1967, Canada's equalization program ceased to be one of equalizing the yield of federal tax point transfers. As federal Finance Minister Mitchell Sharp

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27 See Perry, *A Fiscal History of Canada*, supra note 9.

FIGURE 3 **Tax Transfers as a Share of Major Conditional Federal Transfers, Canada, 1965-2017**
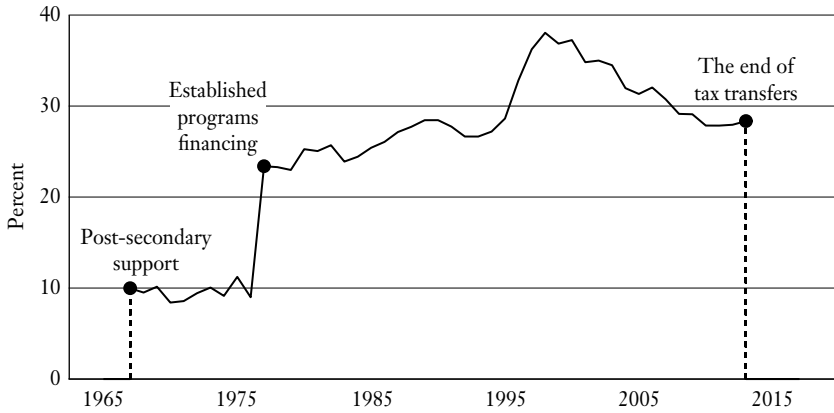
Notes: Displays the share of major federal transfers to provinces accounted for by tax point transfers. Excludes tax transfers associated with Quebec's opting out of certain federal programs beginning in 1960, with 1 point of corporate income taxes transferred to Quebec in lieu of federal grants to post-secondary institutions in that province.

Sources: Author's calculations from Canada, Department of Finance, "Historical Transfer Tables: 1980 to Present" (open.canada.ca/data/en/dataset/4eee1558-45b7-4484-9336 -e692897d393f) for 1980 to 2017, and from J. Harvey Perry, *A Fiscal History of Canada— The Postwar Years*, Canadian Tax Paper no. 85 (Toronto: Canadian Tax Foundation, 1989), for 1967 to 1980.

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."[28] This was not a new idea. It echoed, for example, the Rowell-Sirois commission recommendations of 1940 for a so-called national adjustment grant to any province that "could not supply Canadian average standards of [public] service and balance its budget without taxation (provincial and municipal) appreciably exceeding the national average."[29] 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

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28 Canada, *Federal-Provincial Tax Structure Committee*, proceedings of a meeting held in Ottawa, September 14-15, 1966 (Ottawa: Queen's Printer, 1966), at 14, quoted in Perry, *Financing the Canadian Federation*, supra note 9, at 122.

29 Canada, *Report of the Royal Commission on Dominion-Provincial Relations* (Ottawa: King's Printer, 1940), book II, at 83. In keeping with the general theme of early federal-provincial fiscal arrangements, the commission recommended that the initial national adjustment grant entitlements be irreducible, regardless of future economic developments.

FIGURE 4   **Canada Health and Social Transfers to Provinces, per Capita, 2003-4**
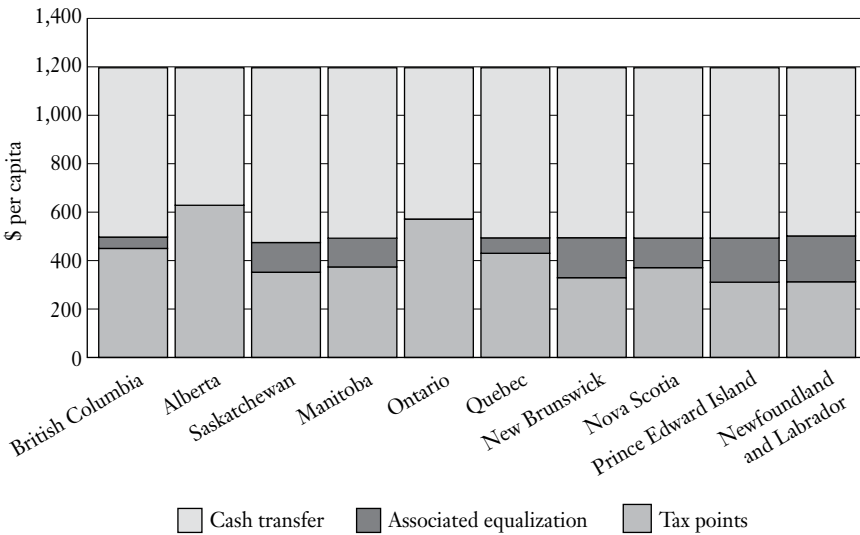
Notes: Displays each province's per capita transfer under the Canada health and social transfer program. Total entitlements are equal per capita, but cash and tax point transfers can vary.

    Sources: Author's calculations from Canada, Department of Finance, "Historical Transfer Tables: 1980 to Present" (open.canada.ca/data/en/dataset/4eee1558-45b7-4484-9336 -e692897d393f), and from the *Public Accounts of Canada 2004*, at appendix 2.

to provide reasonably comparable levels of public services at reasonably comparable levels of taxation.[30]

Importantly, this does not *require* that provinces deliver comparable levels of public services or set taxes comparable to others. Instead, equalization payments should aim to ensure that provinces have the *capability* to meet this standard, if they so choose. This approach 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 percent personal income tax rate, for example, will raise more dollars per capita in a high-income province than in a lower-income province. Similarly, a 1 percent property tax rate will raise more in a province with higher real estate values relative to a province with lower values. Some provinces will therefore have an easier time funding public services than others. Equalization is meant to counteract this disparity. Complexities exist, to be sure, but they are

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30   Section 36(2) of the Constitution Act, 1982, being schedule B to the Canada Act 1982 (UK), 1982, c. 11.

largely behind the scenes, in the construction and aggregation of various data. There is a strong theoretical justification for how a program like equalization may increase Canada's productivity. I start there. Following that, I will explore equalization's design details and describe how—and why—they have changed over time.

THE CASE FOR EQUALIZATION: EQUITY AND EFFICIENCY

There are a variety of justifications for equalization payments, covering both equity and efficiency considerations. I leave a full treatment of the literature to others (such as Boadway and Flatters[31] and subsequent work), but 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, where provincial governments have differential access to revenues other than those provided by personal income, sales, and other taxes paid by residents, horizontal equity can easily be violated. Such revenues may be derived from resource royalties, corporate income taxes, or property taxes paid by non-residents. A resident of Alberta, for example, may benefit from a higher level of public services funded by such revenues than may be available to residents of other provinces. Equalization payments can therefore compensate provincial governments that are less well endowed to ensure that comparable public services are possible at a comparable level of 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 in a particular region are low relative to the public services available—perhaps owing to abundant natural resource revenues or corporate income taxes—an individual may migrate to that region even if his or 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 in 1950,[32] and later in the Canadian context by Boadway and Flatters,[33] Watson,[34] Day,[35] and Wilson,[36] among others.

The intuition is simple. Figure 5 illustrates a stylized case where labour is misallocated owing to differences in fiscal capacity. If there is a fixed number of workers to be allocated between two regions, east and west, the optimal allocation is one

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31 Boadway and Flatters, supra note 4.

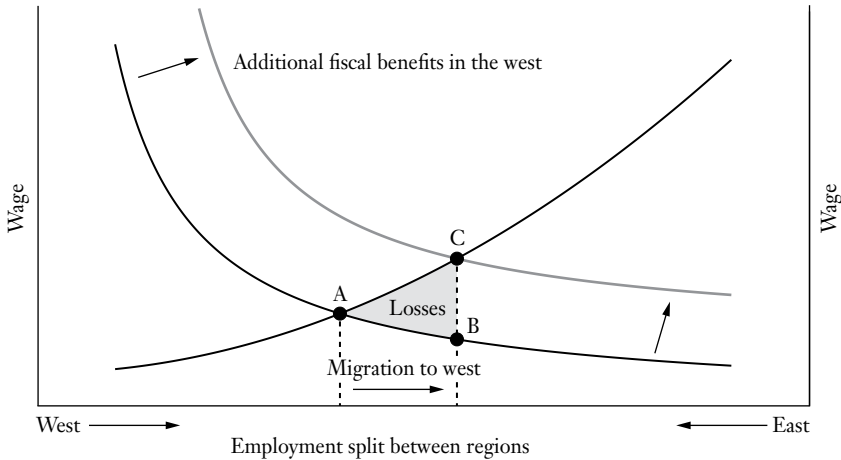32 Buchanan, "Federalism and Fiscal Equity," supra note 10.

33 Boadway and Flatters, supra note 4.

34 Watson, supra note 10.

35 Kathleen M. Day, "Interprovincial Migration and Local Public Goods" (1992) 25:1 *Canadian Journal of Economics* 123-44.

36 Wilson, supra note 11.

FIGURE 5   Effect of Differences in Marginal Fiscal Benefits Across Regions on Productivity

Notes: 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, the allocation at point A is efficient since marginal products are equalized. If the west gains a revenue stream not paid by individual residents, which either provides them with more benefits or lowers their taxes, people will move west. Now, at the margin, labour is more productive in the east than in the west, so the allocation of labour is inefficient. Total losses to the economy are shown by the shaded region.

where national output is maximized. If worker productivity declines as employment rises (say, because less valuable tasks are done), the optimal allocation is attained 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 funded by its abundant resource revenues, more people will move to that region even if their productivity will be lower there (at point B) than in the east (at point C). The overall losses to Canada's economy from this overmigration to the west are indicated by the shaded triangle. The potential losses are not trivial. For example, if fiscal benefits between two provinces differ by, say, 10 percent and the migration elasticity is 1.5, the population of the province will be 15 percent larger than it otherwise would be.[37] The efficiency loss implied by this simple model will then be 0.75 percent of total income. This is a large amount.

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37 Economic conditions are strong determinants of migration. For example, Helliwell finds an elasticity of provincial population with respect to GDP per capita or real disposable income of just over 1.5: John F. Helliwell, "Convergence and Migration Among Provinces" (1996) 29, special issue, part 1 *Canadian Journal of Economics* S324-30. More recently, Fajgelbaum et al. find that the elasticity of a state's employment with respect to after-tax real wages is 1.1 for the United States: Pablo D. Fajgelbaum, Eduardo Morales, Juan Carlos Suárez Serrato, and

But equalization is no panacea, nor is the efficiency case for the policy conclusive. Regional governments could make transfers themselves;[38] local fiscal benefits could be capitalized into the value of land, wages, and prices;[39] 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.[40] 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, income will be lower, but welfare may not be. But most importantly, equalization grants may induce provincial governments to adopt inefficiently high tax rates.[41] The costs of such adverse incentives may outweigh the gains from a more efficient spatial allocation of labour. With these caveats in mind, I next explore how Canada's equalization program works.

Understanding the Equalization Formula

To equalize fiscal benefits across regions, one must first measure them. Canada's approach begins with an estimate of how much each province would raise if it had average rates of taxation—that is, its fiscal capacity. Fiscal capacity varies widely across provinces, from a high of $12,577 per capita in Alberta to a low of $6,013 in Prince Edward Island. Equalization seeks to top up provinces with a below-average fiscal capacity. Figure 6 displays each province's measured fiscal capacity in 2018-19 and the amount of top-up payments required to achieve equalization.

Since the goal of the program is to raise the fiscal capacity of below-average provinces to the national average level, provinces with many people but a small tax base will receive larger payments while other provinces will receive smaller payments, or none. Table 2 summarizes the distribution of tax bases and revenue sources in 2016-17, 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, endow the province with the largest property tax base (per capita) in Canada. Although British Columbia has only 13 percent of the country's population, it is home to more than 20 percent of the nearly $5 trillion in

Owen M. Zidar, *State Taxes and Spatial Misallocation*, NBER Working Paper no. 21760 (Cambridge, MA: National Bureau of Economic Research, November 2015, rev. August 2018). In what follows, I use 1.5 to illustrate the potential magnitudes involved, as in Trevor Tombe and Jennifer Winter, "Fiscal Integration with Internal Trade: Quantifying the Effects of Equalizing Transfers," University of Calgary, Department of Economics Working Paper, 2018.

38 Gordon M. Myers, "Optimality, Free Mobility, and the Regional Authority in a Federation" (1990) 43:1 *Journal of Public Economics* 107-21.

39 David Albouy, "What Are Cities Worth? Land Rents, Local Productivity, and the Total Value of Amenities" (2016) 98:3 *Review of Economics and Statistics* 477-87.

40 Albouy, "Evaluating the Efficiency and Equity of Federal Fiscal Equalization," supra note 11.

41 Michael Smart, "Taxation and Deadweight Loss in a System of Intergovernmental Transfers" (1998) 31:1 *Canadian Journal of Economics* 189-206; and Michael Smart, "Raising Taxes Through Equalization" (2007) 40:4 *Canadian Journal of Economics* 1188-1212.

FIGURE 6   Fiscal Capacity per Capita by Province, 2018-19
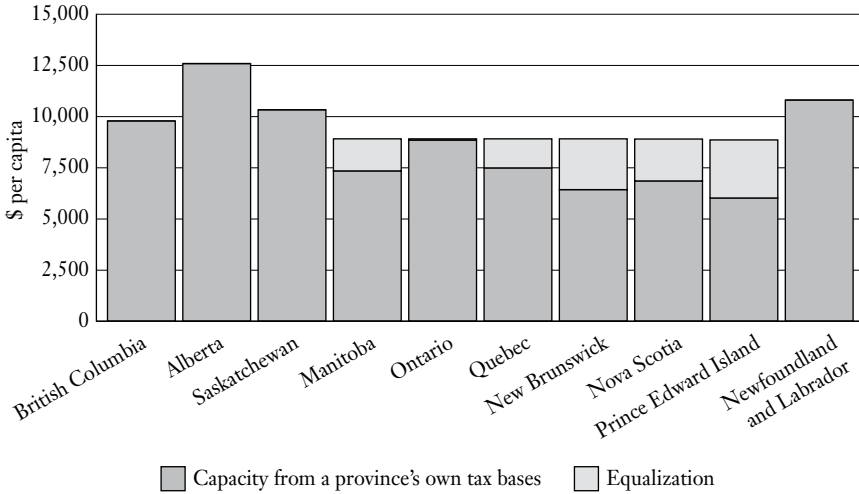
Notes: Displays each province's measured fiscal capacity and equalization payments for 2018-19. Fiscal capacity calculations are based on a 50/25/25 weighted average of the three fiscal years ending 2016-17. One hundred percent of resource revenues are included.

Source: Author's calculations from Equalization Worksheets, Department of Finance, for 1982 to 2016 (thanks to staff of the department for providing the data).

residential property in Canada. Ontario, home of the most corporate headquarters in Canada, has nearly 47 percent of the corporate tax base though only 39 percent of the population. And, 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 percent of the national population and 10 percent of the tax bases (income, property values, etc.), it could raise an average amount with average tax rates. To see this, consider a simple situation where only income is taxable. Assume that $\bar{\tau}$ is the national average income tax rate, b_i is the per capita tax base in province i (that is, its average income), and p_i is that province's population share. If everyone adopted the national average tax rate, provincial per capita revenues would be $r_i = \bar{\tau} b_i$ and a province's per capita equalization entitlement would be

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

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

$$E_i = (p_i - f_i)R, \tag{3}$$

TABLE 2 Distribution of Tax Bases Across Provinces, 2016-17

	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia	Prince Edward Island	Newfoundland and Labrador
Tax base										
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 miscellaneous[a]......	16.0	13.7	3.2	3.1	40.6	18.5	1.3	2.0	0.3	1.4
All tax bases combined[a]......	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

Notes: Displays each province's fiscal capacity per person in 2016-17 across all revenue sources and tax bases included in the current equalization formula. 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 $^{1}/_{10}$ of a point is equivalent to approximately $330 million).

a Includes 100 percent of resource revenues.

Source: Author's calculations from Equalization Worksheets, Department of Finance (S-Table 2 and S-Table 5), 2016-17.

where f_i is the province's share of the national tax base and R is total provincial tax revenue across all 10 provinces. Therefore, provinces with less fiscal capacity (a smaller tax base) than their population share are entitled to equalization while others are not. The amount that a province is entitled to is a share $(p_i - f_i)$ of provincial revenue R. I will refer to this share as a province's basic equalization entitlement, and I report each in the bottom row of table 2. Conveniently, multiple tax instruments do not introduce much additional complexity. In particular,

$$E_i = \sum_j (p_i - f_i^j)R^j, \tag{4}$$
$$= (p_i - f_i)R, \tag{5}$$

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 are calculated as the sum of all positive entitlements or, equivalently,

$$E = \frac{1}{2} \sum_{i=1}^{N} |p_i - f_i| R, \tag{6}$$

which is the Schutz index of inequality (see equation 1) multiplied by R.[42] Put simply,

Total equalization payments = (Total provincial revenue to be equalized)
× (Schutz index of fiscal capacity inequality). (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). In that year, total provincial revenues to be equalized were $329 billion and the Schutz index was 0.056. The total equalization payments necessary to ensure that all provinces have at least average fiscal capacity per capita are 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 percent of the population less its 19.4 percent of the total fiscal capacity entitles it to a payment of 3.6 percent of the $329 billion. That is $11.8 billion, which is near the $11.7 billion actually paid in 2018-19. With the exception of Ontario, the results from applying the above formula are within 5 percent of each province's actual payments.

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 renegotiation.

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42 This 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.

Between 1962 and 1982, total equalization payments tripled as a share of Canada's economy, as shown in figure 7. 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 population means that it unavoidably receives most of the equalization dollars. The political and budgetary implications are clear. Meanwhile, energy resources are unevenly distributed across provinces and are an extremely volatile revenue source. Depending on the precise equalization formula, energy price movements not only cause rapid changes in entitlements across provinces, but also expose the federal government—which pays equalization from its own coffers but 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 it received equalization payments under the original 1957 formula. This was a problem. So in 1962, the federal government included 50 percent of resource revenues in the formula, so that Alberta would no longer qualify. However, including more revenue to be equalized would increase the program's cost (see equation 7). I estimate that if resource revenues had been included without any offsetting adjustments, the program would have cost the federal government nearly $500 million in 1962-63—nearly 2.5 times more than it would have cost under the 1957 formula. So instead of equalizing provinces up to the average of the top two, the government introduced the 10-province standard. The bar to which provinces were topped up was then, as it is today, set at the national average level. As a result of moving to a 10-province standard, the total cost of the program 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—Liberal Party leader Lester Pearson committed to a reform of the equalization program and set the bar at the province with the highest fiscal capacity. Specifically, the party platform promised that, if elected, a Liberal government 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."[43] Fulfilling this promise would be expensive. The yield of standard taxes in Ontario in 1963 was $54.92, 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.

The Liberals won the election. On forming the government, Prime Minister Pearson rethought the campaign promise and opted instead to bring back the top-two province standard (as in 1957), and also change the way resources were treated. He could not simply remove resources from the formula, since Alberta would then receive payments. He also could not keep them in and equalize to the top two, since Ontario would then start receiving payments and program costs would balloon. So,

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43   D. Owen Carrigan, "The Policies of the Liberal Party," in D. Owen Carrigan, ed., *Canadian Party Platforms 1867-1968* (Toronto: Copp Clark, 1968), 294-302, at 296.

FIGURE 7   Total Equalization Payments as a Share of Gross Domestic Product (GDP), Canada, 1957-2018
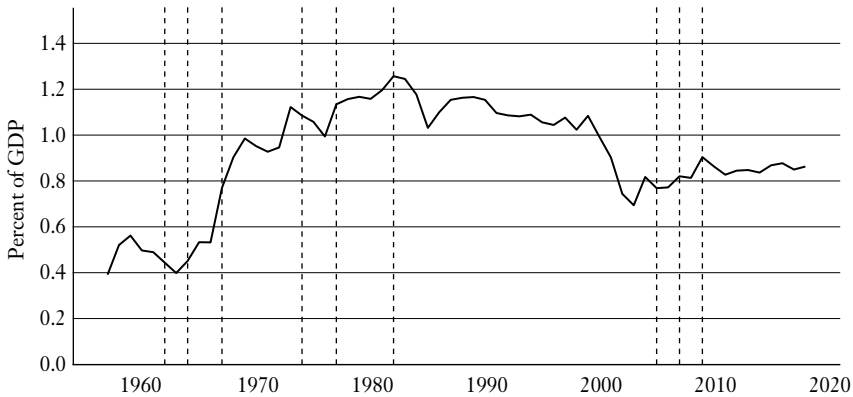
Notes: Displays the total size of Canada's equalization program as a share of its nominal GDP from 1957 to 2018. The vertical dashed lines mark the times when the federal government made major changes to the formula.

Sources: Author's calculations from Canada, Department of Finance, "Historical Transfer Tables: 1980 to Present" (open.canada.ca/data/en/dataset/4eee1558-45b7-4484-9336 -e692897d393f), which includes 1957-2017 equalization data. Data for 2018 are from the federal equalization worksheets. GDP data are from Statistics Canada table 36-10-0222-01, "Gross Domestic Product, Expenditure-Based, Provincial and Territorial, Annual," supplement with Marvin McInnis, "Historical Canadian Macroeconomic Dataset 1871-1994" (hdl.handle.net/1974/7669) data for pre-1961.

instead of counting toward a province's fiscal capacity, resource revenues were deducted from any equalization entitlement that a province might otherwise receive. This was a clever, if ad hoc, solution, and it would result in only a modest increase in program costs. I estimate that the overall cost to the federal government of the changes adopted in 1963-64 was 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, Finance Minister Mitchell Sharp proposed an entirely new approach to equalization—one that mirrored the stylized system explored in the previous section.[44] Following later work and discussion, the government adopted such a system in 1967.[45] Equalization was now based on a national standard, with all provincial revenues included, and

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44 See supra note 28.

45 Actual payments in 1967 were slightly larger than the amounts calculated by the stylized formula owing to certain modifications, such as rolling the Atlantic provinces adjustment grants into the formula that year through a guaranteed equalization increase to the Atlantic provinces.

resource revenues counting 100 percent toward a province's fiscal capacity. This approach was clean and simple. But it too would not last.

Response to the 1970s Oil Shock

Starting in the early 1970s, oil prices increased dramatically. The 1973 Yom Kippur War, the embargo imposed by the Organization of Arab Petroleum Exporting Countries, the Iran Revolution, the Iran-Iraq War, and other developments increased oil prices from US$3.56 per barrel (West Texas Intermediate) in July 1973 to US$10.11 in January 1974, and ultimately to US$39.50 by April 1980.[46] 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, implying that more than one-fifth of total provincial revenues would need to be reallocated to achieve full fiscal equity. The resulting equalization payments would be more than double what they actually were. This was a problem for the federal government. Under the 1972 formula, which mirrored equation 5, each dollar of resource revenue earned by Alberta and Saskatchewan would increase equalization payments by nearly 50 cents. If resource revenues grew large enough, Ontario and British Columbia would qualify for payments, and each incremental dollar of resource revenues would then cost the federal government nearly 90 cents.

Facing this budget pressure in the early 1970s, the federal government made many significant policy decisions. Land lease sales were removed from equalization, and equalization payments were denied to any province with above-average personal income (namely, Ontario). By 1977, only one-half of resource revenues were included in the equalization formula. In addition, to help increase federal revenue, firms were no longer allowed to deduct provincial royalty payments in calculating their federal corporate income taxes. But most dramatic of all was direct federal intervention in oil markets to lower the Canadian price of energy. Through price controls and export restrictions in 1973, culminating 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 the Economic Council of Canada[47] suggests that in 1980-81 between $15.9 and $20.3 billion in oil and gas rents were forgone by producers, 85 percent of which were in Alberta. Net of the implicit consumer subsidy, between $11.1 and

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46 "Spot Crude Oil Price: West Texas Intermediate (WTI)," Federal Reserve Bank of St. Louis (https://fred.stlouisfed.org/series/WTISPLC).

47 Economic Council of Canada, *Financing Confederation: Today and Tomorrow* (Ottawa: Supply and Services, 1982).

FIGURE 8   Equalization Payments and Provincial Fiscal Capacity in Canada, in 2016 Dollars

A. Real per capita fiscal capacity, 1982-2016

B. Actual payments versus a full equalization benchmark, 1972-2016
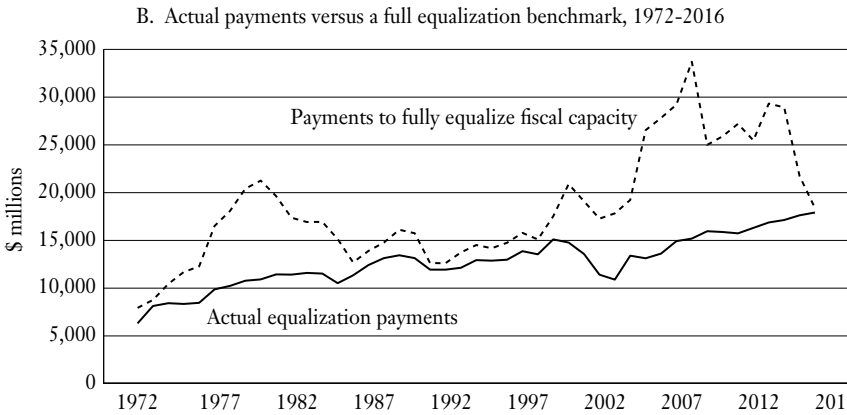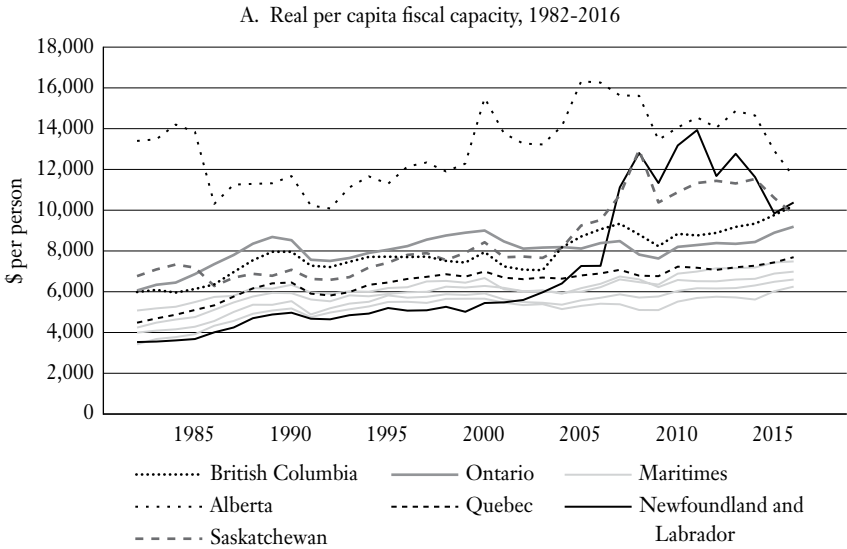
Notes: Panel A displays the revenue per person that provinces could raise with national average tax rates, adjusting for inflation. Panel B compares actual equalization payments with an idealized system that fully equalizes fiscal capacity per capita across provinces. All values are adjusted for inflation and reported in constant 2016 dollars.

Sources: Robin W. Boadway and Paul A.R. Hobson, *Intergovernmental Fiscal Relations in Canada*, Canadian Tax Paper no. 96 (Toronto: Canadian Tax Foundation, 1993), table 4.4, for 1972 to 1981, and author's calculations from Equalization Worksheets, Department of Finance, for 1982 to 2016. Consumer prices from Statistics Canada table 18-10-0005-01, "Consumer Price Index, Annual Average, Not Seasonally Adjusted."

TABLE 3 Actual Payments Versus 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

Notes: 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.

Sources: *The National Finances, 1967-68* (Toronto: Canadian Tax Foundation, 1967), at 138, table 69, for 1967; Robin W. Boadway and Paul A.R. Hobson, *Intergovernmental Fiscal Relations in Canada*, Canadian Tax Paper no. 96 (Toronto: Canadian Tax Foundation, 1993), table 4.4, for 1972 to 1981; author's calculations from Equalization Worksheets, Department of Finance, for 1982 to 2016.

$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 percent 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 forgone rents, say, had been captured by government as resource revenue, total equalization payments would have increased by $5.8 billion in 1980-81—or by $8.9 billion without the personal income override.[48] 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.

Although the national energy program helped to address that cost concern, and spread the gains from high world energy prices across Canada, the impact of the resulting economic, political, and constitutional turmoil is hard to overstate. The stage was set for a dramatic overhaul of the system. In 1981, a parliamentary task force reviewed various formal proposals and academic analyses.[49] Its comprehensive

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48 These amounts are my own calculations based on tables 4-1 and 5-1 of Economic Council of Canada, ibid.

49 Canada, *Fiscal Federalism in Canada: Report of the Parliamentary Task Force on Federal-Provincial Fiscal Arrangements* (Ottawa: Supply and Services, 1981).

report and recommendations led to a new formula in 1982 that would last for more than two decades. Briefly, 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. With the exclusion of Alberta, energy price movements became much less of a concern.

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 percent, from nearly $11 billion to $8.7 billion. Newfoundland and Labrador's Hibernia offshore oil field began producing in late 1997, and rising resource revenues led to 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 a reduced equalization clawback in the 1985 Atlantic Accord, but this guarantee was time-limited, and a delay in developing offshore resources meant that clawbacks were larger than anticipated. Compounding this challenge, Ontario's fiscal capacity was falling as manufacturing activity shrank. This lowered the bar against which all provinces were compared, and reduced payments overall. Quebec was affected more than other provinces: its payments declined by $1.6 billion between 2000 and 2003, accounting for more than 70 percent of the aggregate drop even though there was no material change in its 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 Labrador and Nova Scotia. However, various other provinces raised concerns and demanded their own deals, prompting the government to establish an expert panel to examine the overall system and propose changes. The changes that the panel recommended, which the government adopted in its 2007 budget, remain (for the most part) in effect today.[50]

Equalization payments are now determined by applying a five-step process:

1. Calculate the three-year weighted average of non-resource fiscal capacity.
2. Calculate the three-year weighted average of resource fiscal capacity.
3. Estimate equalization entitlements as the better of 0 percent or 50 percent 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.

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50 See Canada, Expert Panel on Equalization and Territorial Formula Financing, *Achieving a National Purpose: Putting Equalization Back on Track* (Ottawa: Department of Finance, May 2006).

Given fiscal capacity estimates, steps 1 through 3 come close to implementing the stylized equalization formula summarized in equations 5 and 7. The slight difference reflects the three-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 its resource revenues is 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 in the previous section, but resource fiscal capacity is the actual resource revenues raised by a province. The difficulty lies 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 toward a province's fiscal capacity, the incentive to develop those resources is reduced. The partial inclusion of such revenues is a compromise designed 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 the total equalization payments that 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 that no receiving province is made better off than Ontario. Because of the inclusion of (at most) only 50 percent of resource revenues in determining equalization entitlements, a receiving province with significant resource revenues (such as Quebec) appears to have less fiscal capacity than it really does, and equalization payments are consequently larger. The cap claws back a portion (or all) of the payments, 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 disruption of the automobile industry in the province. In that year, only Alberta and British Columbia would not have qualified, so the lowest fiscal capacity of non-receivers would have been British Columbia's, at $7,945. Since this was much higher than the level that prevailed in 2008, fewer equalization dollars would be clawed back. I estimate that equalization payments would have increased to $16.1 billion in 2009 from $13.5 billion in the prior year. The federal government 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 government capped the total size of the equalization program to increase no faster than overall nominal GDP (effectively pegging it at 0.85 percent 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 gross national product.

Table 4 displays the values in each step of the calculation for each province's 2018-19 payment. First, using the formula described earlier, the province's resource revenue share is calculated, including either half or none of its resource revenues. A

TABLE 4   Calculation of Equalization Payments for 2018-19

| | Resource revenue share | | Better of 50% and | Fiscal | Adjustment | Final |
| | 50% | 0% | 0% share | capacity cap | payment | payment |
Province	(1)	(2)	(3)	(4)	(5)	(6)
			$ millions			
British Columbia . . .	0	0	0	0	0	0
Alberta	0	0	0	0	0	0
Saskatchewan	0	0	0	0	0	0
Manitoba	1,948	1,754	1,948	−2	91	2,037
Ontario.	0	0	0	0	963	963
Quebec.	12,433	12,462	12,462	−1,305	576	11,732
New Brunswick	1,824	1,713	1,824	−3	53	1,874
Nova Scotia	1,868	1,698	1,868	0	66	1,933
Prince Edward Island.	409	378	409	0	10	419
Newfoundland and Labrador	0	208	208	−1,039	0	0

Notes: Displays the total equalization payments made to each province in 2018-19 and the steps involved in reaching those amounts. Columns 1 and 2 are calculated using the formula described in the text. Columns 3 through 5 display the effect of various ad hoc adjustments. Column 6 is the final payment actually made in 2018-19.

Source: Author's calculations from Equalization Worksheets, Department of Finance, 2018-19.

province is initially entitled to the higher of the two amounts. Then the fiscal capacity cap may claw back part or all of the entitlement. Finally, the aggregate cap on payments is applied. In 2018-19, however, with low oil prices and consequently less fiscal capacity inequality than in 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 to pay these amounts, but in the event that it chose to do so, the law specifies that the payments 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 in respect of a decline in the amount of equalization payments. For example, in 1962-63, Alberta received approximately $12 million, despite not qualifying under the main formula. Its entire payment was what was called a "guaranteed equalization" payment (though this mechanism was gradually phased out). The 1982 arrangements also guaranteed that a province's payment would not be less than between 85 and 95 percent 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 programs like equalization are not the only way that funds are transferred across regions. Federal revenue and spending patterns also implicitly transfer financial resources across provinces. I turn to these next.

## 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 capita 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 capita federal revenue and spending in each province for 2016. Higher-income provinces—British Columbia, Alberta, Saskatchewan, and Ontario—tend to pay more per capita in federal revenue than is spent in each province. Lower-income provinces—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 percent 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), a statistically identical relationship exists between a US state's relative GDP per capita and its net federal contributions to that seen across Canadian provinces.

What causes such large differences in federal revenue and spending? The variation is mostly a by-product of uniform policies. To show this, I report in table 5 a selection of taxes and spending programs. On the revenue side, an uneven distribution of tax bases causes an uneven distribution of tax revenue. For example, in the case of income taxes, personal and corporate payments to the federal government exceed $8,000 per capita in Alberta but are 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 accounts for nearly one-fifth of the taxable income of individuals and corporations, and Ontario too has a disproportionate share. Higher incomes also translate into higher consumption spending, and therefore higher GST, excise tax, and tariff payments than in other provinces. Albertans pay nearly $1,800 per capita in such taxes on products while Quebecers pay just over $1,200. The same 5 percent 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, since the composition of the population differs among provinces. Old age security (OAS) payments,

FIGURE 9 Federal Revenue and Spending as a Share of Gross Domestic Product, 2016
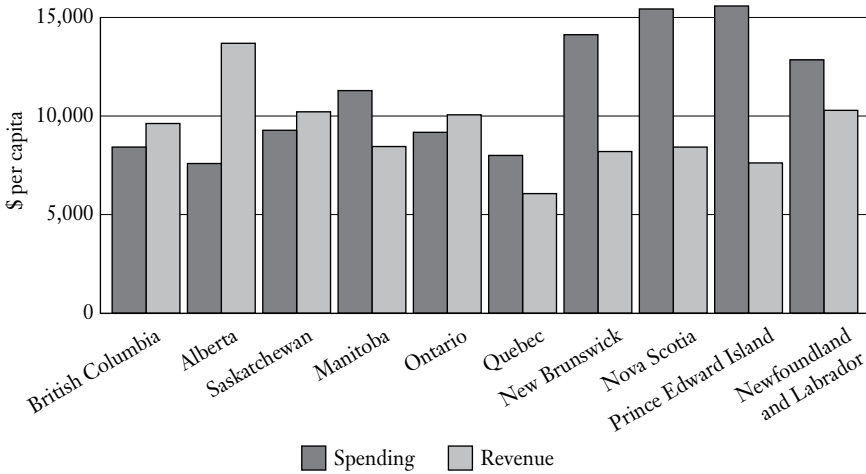
Notes: Displays per capita revenue and spending by the federal government in each province. Territories are excluded.

Sources: Author's calculations from various Statistics Canada data tables. Fiscal data: tables 36-10-0332-01, "Federal Government and Government Sector Revenue and Expenditure, Provincial Economic Accounts, Annual, 1961-1980," and 36-10-0336-01, "Canada and Quebec Pension Plans, Revenue and Expenditure, Provincial Economic Accounts, Annual, 1961-1980"; tables 36-10-0314-01, "Government Sector Revenue and Expenditure, Provincial Economic Accounts, Annual, 1981-2009," and 36-10-0315-01, "Canada and Quebec Pension Plans, Revenue and Expenditure, Provincial Economic Accounts, Annual, 1981-2009"; and table 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance— General Governments, Provincial and Territorial Economic Accounts" (2007-2016). Population: tables 17-10-0027-01, "Estimates of Population, Canada, Provinces and Territories" (1961-1970), and 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex" (1971-2016). GDP: table 36-10-0104-01, "Gross Domestic Product, Expenditure-Based, Canada, Quarterly" (all years).

for example, are equivalent to $801 per capita in Alberta but $1,467 in Newfound-land 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 percent of Canada's population but only 8.5 percent 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 funds to regions with higher unemployment rates. And then there is equalization. From 2007 to 2016, Prince Edward Island received nearly $2,400 per capita 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 other federal taxes or spending programs. Consider the deviations from the national average shown in

TABLE 5 Selected Federal Tax and Spending Items by Province, Dollars per Capita, 2007-2016

	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia	Prince Edward Island	Newfoundland and Labrador
Tax/spending program										
Personal income tax	3,572	5,786	3,606	2,919	3,852	2,545	2,659	2,835	2,431	3,260
Corporate income 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[a]	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
Deviations from the national average										
Personal income tax	-46	2,168	-12	-699	234	-1,073	-959	-783	-1,187	-358
Corporate income 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[a]	-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

EI = employment insurance; OAS = old age security.

Notes: Displays the average per capita payments and receipts of selected federal taxes and spending programs by province, for 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; without the abatement, average gross federal personal income tax per capita from Quebec would be $3,048. Quebec EI benefits are also lower owing to 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 article.

a Equalization includes stabilization program payments.

Sources: Author's calculations from Statistics Canada tables 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance—General Governments; Provincial and Territorial Economic Accounts," and 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex."

table 5. Had equalization dollars been equally distributed, Alberta would have received $450 more per capita. But had GST, excise, and other product tax payments been equal per capita, Albertans would have paid $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 capita federal spending s_i exceeds per capita federal revenue r_i. To subtract any national surplus or deficit, I measure this difference relative to national per capita averages as

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

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 a province is $T_i = t_i P_i$, which can be aggregated across all provinces into a single measure of total implicit transfers,

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

which is analogous to the Schutz index described earlier.

For Alberta, total implicit outflow exceeded $243 billion from 2007 to 2016—an average annual value of T_i of $24.3 billion or nearly $6,300 per capita. One-third of this is due to above-average personal income tax payments per capita, with a further 18 percent being due to above-average corporate income taxes and 6 percent from the GST and other taxes on products. Below-average levels of federal purchases in Alberta, defence and otherwise, account for 11 percent. Because Alberta has a young population, OAS and CPP account for 16 percent. But equalization, despite receiving most of the public attention, accounts for only 6 percent of the total fiscal transfer. The rest is 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, in contrast to the Alberta example, 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.[51] To

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51 Mathematically, 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.

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 the composition of the population. Over half of transfers, for example, are accounted for by income taxes (54 percent), employment insurance (6 percent), and the GST and excise taxes (5 percent). In addition, CPP and OAS account for an additional 13 percent 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) payments 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 province's GDP over time. Net outflows from Alberta after 2000 approach 8 percent of GDP. Net inflows into the Maritimes exceeded 25 percent in the 1980s in all three provinces, but have since declined. The largest change of all is seen in Newfoundland and Labrador. Federal net inflows were nearly one-third of the province's GDP from 1970 to 1999, but have since dropped to less than 5 percent. 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 a peak of nearly 3.5 percent of GDP in the early 1980s to less than 2 percent 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 previously 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 figure 10, I plot the Schutz index of per capita federal revenue and spending across provinces. Revenue inequality fell for two reasons: first, a drop in the cross-province differences in household income and GDP per capita;[52] and second, significantly lower federal income tax rates. Corporate tax rates, for example, have declined from 41 percent to 15 percent, while the top effective federal marginal personal income tax rate has declined from over 67 percent

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52 Mark Brown and Ryan Macdonald, "Provincial Convergence and Divergence in Canada, 1926 to 2011," Statistics Canada Economic Analysis Research Paper Series, 2015 (11F0027M2015096).

TABLE 6 Implicit Transfers in Canada by Component, 2007-2016

Component	Share of all implicit transfers (%)	Share of national GDP (%)	Correlation with provincial GDP per 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

GDP = gross domestic product; CPP = Canada Pension Plan; EI = employment insurance; OAS = old age security; GST = goods and services tax.

Notes: Displays a decomposition of aggregate implicit transfers in Canada by individual revenue and spending items, and each component's correlation with provincial average GDP per 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.

Sources: Author's calculations from Statistics Canada tables 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance—General Governments, Provincial and Territorial Economic Accounts"; 36-10-0222-01, "Gross Domestic Product, Expenditure-Based, Provincial and Territorial, Annual"; and 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex."

to 33 percent today.[53] With greater income convergence and lower tax rates, the redistributive effect of federal revenue has declined.

IMPROVING FEDERAL-PROVINCIAL TRANSFERS

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

OPTION 1: CHANGE FEDERAL TAX AND SPENDING POLICIES

Lower implicit fiscal transfers across provinces require changes to federal tax and spending policies—for example, making revenue sources less sensitive to income, or making spending programs more equal. On the spending side, there is less scope for

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53 Kevin Milligan, "The Progressivity of the Canadian Personal Income Tax," in Bev Dahlby, ed., *Reform of the Personal Income Tax in Canada* (Toronto: Canadian Tax Foundation, 2017).
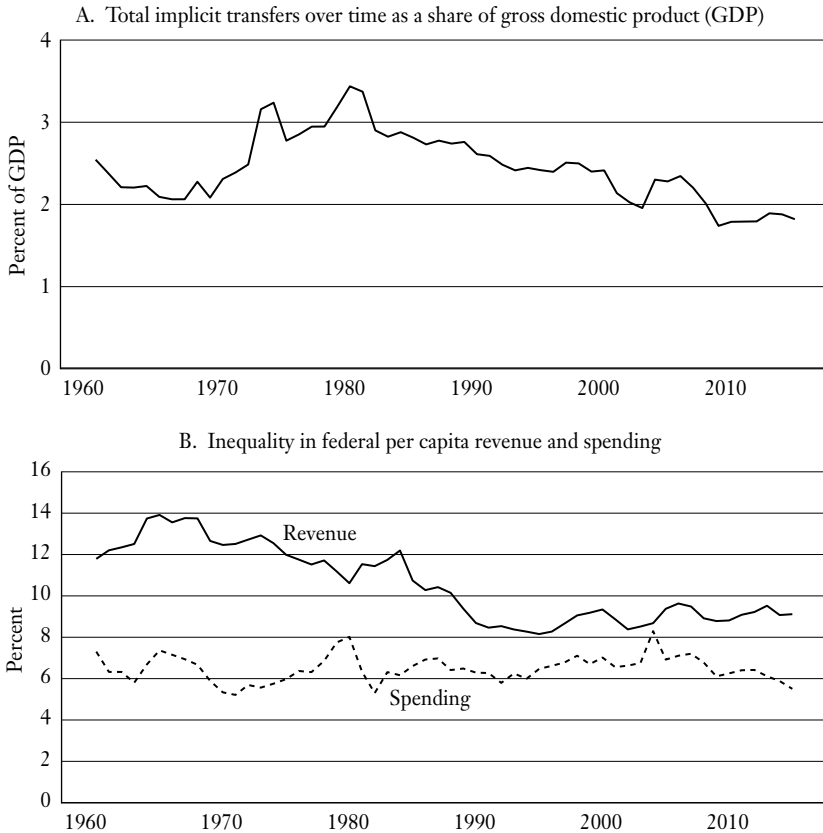
TABLE 7 Implicit Federal Fiscal Transfers as a Share of Gross Domestic Product (GDP), by Province, 1961-2016

Period	British Columbia	Alberta	Saskatch-ewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia	Prince Edward Island	Newfound-land and Labrador
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 (or part thereof).

Sources: Author's calculations from various Statistics Canada data tables. Fiscal data: tables 36-10-0332-01, "Federal Government and Government Sector Revenue and Expenditure, Provincial Economic Accounts, Annual, 1961-1980," and 36-10-0336-01, "Canada and Quebec Pension Plans, Revenue and Expenditure, Provincial Economic Accounts, Annual, 1961-1980"; tables 36-10-0314-01, "Government Sector Revenue and Expenditure, Provincial Economic Accounts, Annual, 1981-2009," and 36-10-0315-01, "Canada and Quebec Pension Plans, Revenue and Expenditure, Provincial Economic Accounts, Annual, 1981-2009"; and table 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance—General Governments, Provincial and Territorial Economic Accounts" (2007-2016). Population: tables 17-10-0027-01, "Estimates of Population, Canada, Provinces and Territories" (1961-1970) and 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex" (1971-2016). GDP: table 36-10-0104-01, "Gross Domestic Product, Expenditure-Based, Canada, Quarterly" (all years).

FIGURE 10   Total Interprovincial Redistribution by the Federal Government, 1961-2016

A. Total implicit transfers over time as a share of gross domestic product (GDP)

B. Inequality in federal per capita revenue and spending

Notes: Panel A displays the total implicit transfers as a share of GDP over time, including Canada Pension Plan (CPP) revenue and spending. Panel B displays the deviation of federal revenue and spending per capita in each province with the national per capita average. Specifically, this plots the Schutz index of inequality in federal revenue and spending across provinces. Intuitively, it displays the share of revenue or spending that must be reallocated to achieve perfect equality. Panel B includes CPP revenue and spending. Territories are excluded.

Sources: Author's calculations from various Statistics Canada data tables. Fiscal data: tables 36-10-0332-01, "Federal Government and Government Sector Revenue and Expenditure, Provincial Economic Accounts, Annual, 1961-1980," and 36-10-0336-01, "Canada and Quebec Pension Plans, Revenue and Expenditure, Provincial Economic Accounts, Annual, 1961-1980"; tables 36-10-0314-01, "Government Sector Revenue and Expenditure, Provincial Economic Accounts, Annual, 1981-2009," and 36-10-0315-01, "Canada and Quebec Pension Plans, Revenue and Expenditure, Provincial Economic Accounts, Annual, 1981-2009"; and table 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance—General Governments, Provincial and Territorial Economic Accounts" (2007-2016). Population: tables 17-10-0027-01, "Estimates of Population, Canada, Provinces and Territories" (1961-1970) and 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex" (1971-2016). GDP: table 36-10-0104-01, "Gross Domestic Product, Expenditure-Based, Canada, Quarterly" (all years).

change. As we have seen, implicit transfers through federal spending, excluding equalization, account for only a little 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. Regions with higher average unemployment rates receive preferential treatment (more generous benefits and longer benefit periods). This could change, but would be politically challenging.

On the revenue side, two recent tax changes, both motivated by election commitments by victorious Opposition parties, illustrate some potential options. First, the GST was reduced from 7 percent to 6 percent in July 2006 and 5 percent in January 2008. Today, those two points are equivalent to roughly 10 percent of total personal income taxes. If the GST had not been lowered and personal income taxes had been cut by 10 percent across the board, net federal revenue from Alberta would be more than $500 million lower today, and from Quebec nearly $700 million higher. Second, in the 2016 federal budget, the government introduced changes to personal income tax rates: the rate for the second bracket was lowered to 20.5 percent, from 22 percent, while the top rate was increased to 33 percent, from 29 percent. Absent behavioural effects, the forgone revenue of the rate reduction was roughly offset by the increased rate at the top. But the impact on revenues varied widely across provinces. Alberta, with an average income above the national average and a 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.

OPTION 2: BUILD EFFICIENCY CONSIDERATIONS INTO EQUALIZATION

That provinces differ in measured fiscal capacity is not a sufficient reason to conclude that equalization improves aggregate economic efficiency. Earlier in this article, I explored the theoretical rationale for that view. But other factors may (at least partially) compensate for differences in fiscal benefits. In many maritime regions, for example, higher-than-average federal spending and lower income tax liabilities help to offset below-average fiscal capacity. In higher-income provinces, increased federal tax liabilities may discourage desirable in-migration—an important result reported by Albouy.[54]

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

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54 Albouy, "The Unequal Geographic Burden of Federal Taxation," supra note 11.

compared to 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 Albouy's model addresses this by reversing within-province redistribution. Since such a correction has no net interprovincial flow, it does not factor into the calculation of equalization payments. Only so-called source-based taxes, such as taxes on corporate income, resource revenues, and investment income, are included in the model. To be sure, this would effectively remove the ability of provinces to enact redistributive income tax policy, and as a result would be problematic in practice; 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 capita in non-equalization transfers than the national average.[55] The Maritimes, Manitoba, Saskatchewan, and (to a lesser extent) Quebec also received more over this period. The table reports transfers including equalization. Federal tax differences are also large. Controlling for differences in worker characteristics, I find that an average worker in Alberta may earn nearly $8,000 more per year than the national average, compared to roughly $6,000 less for an average worker in Prince Edward Island. If I approximate the implied federal tax liability as Albouy does,[56] with a 25 percent 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 is not a new observation, and merely replicates Albouy's contribution with updated data. If equalization were singularly focused on an efficiency goal, an ideal equalization program would result in all values in columns 5 and 6 of table 8 equalling zero. To achieve this would imply smaller equalization entitlements to the Atlantic and prairie provinces, and larger entitlements to Ontario.

This matters. To arrive at a ballpark estimate of the aggregate efficiency consequences of differences in fiscal benefits and the consequent inefficient migration it may induce, again consider figure 5. The efficiency loss is (roughly) half the migration multiplied by the difference in fiscal benefits. In a multiregion model, following Albouy,[57] this is approximately half of the GDP-weighted variance of fiscal benefit differentials (expressed relative to each province's GDP per capita) multiplied by an assumed elasticity of migration to income differences. That is,

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55　Based on my own calculations from Statistics Canada data tables 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance—General Governments, Provincial and Territorial Economic Accounts," and 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex."

56　Albouy, "Evaluating the Efficiency and Equity of Federal Fiscal Equalization," supra note 11.

57　Albouy, "The Unequal Geographic Burden of Federal Taxation," supra note 11.

TABLE 8 Differences in Fiscal Benefits Among Provinces, Average National Value in Dollars per Capita, 2007-2016

	Source-based taxes (1)	Fiscal capacity (2)	Federal taxes (3)	Federal transfers (4)	Narrow net fiscal benefit (1) − (3) + (4)	Broad net fiscal benefit (2) − (3) + (4)
			Per capita differentials			
British Columbia	−229	435	−1	−526	−754	−90
Alberta	2,699	4,936	2,060	−700	−61	2,176
Saskatchewan	1,958	2,031	645	−41	1,272	1,345
Manitoba	−288	−1,740	−859	1,189	1,760	308
Ontario	−726	−475	291	−451	−1,468	−1,217
Quebec	−111	−1,477	−1,115	659	1,663	297
New Brunswick	−486	−2,531	−1,367	1,776	2,657	612
Nova Scotia	−809	−2,055	−1,294	1,556	2,041	795
Prince Edward Island	−956	−2,941	−1,725	2,487	3,256	1,271
Newfoundland and Labrador	1,308	2,625	−63	2,351	3,722	5,039

Notes: 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 Labour Force Survey microdata. This closely follows Albouy (David Albouy, "Evaluating the Efficiency and Equity of Federal Fiscal Equalization" (2012) 96:9-10 *Journal of Public Economics* 824-39), 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 also include the Quebec abatement.

Source: Author's calculations from Statistics Canada tables 36-10-0450-01, "Revenue, Expenditure and Budgetary Balance—General Governments, Provincial and Territorial Economic Accounts," and 17-10-0005-01, "Population Estimates on July 1st, by Age and Sex," and the "Labour Force Survey: Public Use Microdata File" (www150.statcan.gc.ca/n1/en/catalogue/71M0001X) for 2007 to 2016.

$$\text{Efficiency loss} = \frac{\varepsilon}{2} \cdot Var\left(\frac{NFB_i}{y_i}\right), \tag{10}$$

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 that workers are, the more labour will be misallocated. Just for illustrative purposes, I use an elasticity of 1.5, as in the earlier discussion. Applying this expression to the values in table 8, I find that Canada's transfer programs worsen aggregate efficiency. If the only differences were from gaps in per capita fiscal capacity, equation 10 would imply losses of nearly 0.09 percent of GDP (equivalent to nearly $2 billion per year). But subtracting federal tax differentials shrinks this to 0.03 percent. With federal transfers added, however, losses grow to 0.04 percent. Losses with source-based taxes less federal tax differences are less than 0.02 percent, but adding transfers increases this to 0.07 percent. In a very important sense, Canada's transfer programs worsen efficiency outcomes.[58]

Adjusting the formula to better achieve its efficiency goals requires that 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 included—such as offshore resource revenues, which are less provincial own-source revenues than a federal transfer (though they are not explicitly recorded as such).[59] 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 were included, while Ontario would receive more. The largest reduction would be borne by Prince Edward Island, whose equalization payment would decline by nearly $500 per capita. The adjustment would also shrink total payments slightly—by roughly $500 million—since federal transfers are more equally distributed than provincial tax bases. Including federal tax differentials would shrink payments further—and dramatically—but boost payments to Ontario. Overall, the program would be reduced to less than half its current size, but it would achieve improved aggregate efficiency

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58 This result confirms Albouy, "Evaluating the Efficiency and Equity of Federal Fiscal Equalization," supra note 11, though the magnitudes for 2007 through 2016 appear smaller than the 0.41 percent cost that he reports for 2001. This is partly due to the smaller migration elasticity in my calculation; Albouy used 3.2.

59 The federal government holds all rights to offshore resources. In *Reference Re: Offshore Mineral Rights*, [1967] SCR 792, at 821, 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." Newfoundland and Labrador is no different: in *Reference re Newfoundland Continental Shelf*, [1984] 1 SCR 86 (headnote), the court again concluded: "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.

TABLE 9 Equalization Calculations for 2018-19 Under Current and Alternative Formulas, in Dollars per Capita

	British Columbia	Alberta	Saskatch-ewan	Manitoba	Ontario	Quebec	New Brunswick	Nova Scotia	Prince Edward Island	Newfound-land and Labrador
Actual equalization	0	0	0	1,566	70	1,419	2,480	2,046	2,835	0
Modifications to the current formula										
1. 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
Include federal tax differentials	0	0	0	574	305	265	970	634	560	0
2. Include natural resource revenues as corporate income tax	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
Include federal tax differentials	0	0	3	585	131	349	1,054	675	612	0
Macro approaches										
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
New Brunswick's 1955 proposal[a]	0	0	0	0	0	92	668	869	749	0

Notes: Displays equalization payments per capita for 2018-19 under current and alternative formulas. 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 adjustment of fiscal capacity gaps to reflect federal tax differentials (see the discussion in the text). Macro approaches use either gross domestic product or net domestic product (at factor cost).

a New Brunswick's 1955 proposal was based on personal income; here I use net domestic product at factor cost. See the text for details.

Source: Author's calculations from various Statistics Canada data tables and the Department of Finance's Equalization Worksheets.

outcomes. And the savings could, in principle, be recycled back to all provinces through boosted CHT and CST payments.[60]

OPTION 3: TREAT RESOURCE REVENUES AS CORPORATE INCOME

As we have seen, resource revenues pose a particularly difficult challenge for Canada's equalization program. Natural resources—notably fossil fuel deposits—are unequally distributed across provinces, and therefore equalization payments tend to rise with energy prices. This volatility can be easily addressed through caps, either on individual provinces or on the program as a whole. The more difficult challenge concerns incentives. Provinces that receive equalization will receive less if they develop their resources, and although only 50 percent of resource revenues are included, the fiscal capacity cap almost entirely 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 province with a large population, like Quebec. Manitoba has only a tiny incentive—at least as far as its provincial budget is concerned—to increase resource revenues, since 95 cents of each additional dollar earned is lost to smaller equalization payments.

However, there are ways to fully include resource revenues that both limit the federal government's liability in the event of high energy prices and improve development incentives for resource-rich provinces. Indeed, the 1981 parliamentary task force explored multiple proposals.[61] Although it made no specific recommendation regarding resource revenues, the task force expressed the belief that all resource revenues should be included, except those deposited in a savings fund. It noted that one option was to "[treat] all resource revenues as if they were personal income tax revenue, or revenues from business income, or a mixture of both."[62] The task force's interpretation was that only a portion of resource revenues would be included in equalization. After all, if resource rents were earned by private actors, then 25 to 30 percent 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

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60 This is similar to Saskatchewan Premier Scott Moe's "50/50 Plan," though the distribution of transfer payments across provinces here is more favourable to Ontario than under his proposal. See, for example, David Baxter, "Saskatchewan Premier Scott Moe Pitches New 50-50 Equalization Formula," *Global News*, June 20, 2018 (https://globalnews.ca/news/4285836/saskatchewan-premier-scott-moe-pitches-new-50-50-equalization-formula/).

61 Supra note 49.

62 Ibid., at 165.

activities. Corporate income taxes in Canada already treat different activities differently. Small businesses have lower rates than large. Manufacturing and processing activities receive favourable treatment. Profits from activities outside the country face a federal corporate tax rate that is 10 points higher than the general rate; and, until recently, tobacco manufacturers faced a special higher corporate tax rate than other businesses. Many other sources of corporate income are also economic rents—for example, a lucrative patent granted to a corporation. 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 recovering most of those rents. Moreover, resource rents not collected by government are implicitly included in 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—the addition of a province's resource revenues to both corporate income tax revenue and corporate taxable income. A province's fiscal capacity from corporate income taxes will then be

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

where RR_i is resource revenue of province i and B_i^{CIT} is the 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 percent and increase total corporate tax revenues to be equalized from $25.45 billion to $37.97 billion.

This change would notably benefit Quebec, since the fiscal capacity cap would no longer bind, and Newfoundland and Labrador. I display the full results in table 9 ("Modifications . . . ," item 2). Although payments change little, the adverse incentive effect of developing a province's resources would be dampened significantly under this proposal. I estimate that the implied clawback rate for natural resource revenues from Quebec would decline to less than 9 percent from the current rate of over 69 percent.[63] Another advantage is that this change dampens the sensitivity of equalization to energy prices. Under a simple equalization formula that included 100 percent of resource revenues, total payments under the program would grow dramatically. Using data for 2016-17, if resource revenues increased proportionally in Alberta, Saskatchewan, and Newfoundland and Labrador, equalization would grow by just over 67 cents for each dollar of royalty revenue growth in those provinces; but if resources were included in the corporate income tax base instead, the program would grow by only 12 cents to the dollar. I estimate (under this simple alternative formula) that if oil prices or production rose sufficiently that provincial

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63 The clawback in the current formula depends on circumstances. It is 38 percent in the basic step 3 entitlement but 100 percent after the fiscal capacity cap binds. The fixed pool of dollars, however, returns some of the implied savings to Quebec, making the overall clawback in 2017-18 roughly 69 percent.

royalties exceeded $40 billion, for example, equalization payments would increase by less than $3.7 billion. This is well within the federal government's means, especially given that its income tax revenue would be higher in such a scenario; therefore, aggregate caps on total equalization dollars would no longer be necessary.

OPTION 4: THE REFORM OPTION—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. Also, as we have seen, typical equalization formulas present provinces with potentially strong incentives to manipulate tax bases. 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 a proposal to the federal-provincial conference in 1955, New Brunswick recommended that equalization be calculated on the basis of average per capita personal income. If a province's average income level fell below 85 percent of the national average, that province would receive a payment equal to

$$E_i = R(0.85p_i - y_i), \tag{12}$$

where R is total provincial and local revenue in all 10 provinces, p_i is province i's population share, and y_i is its share of total personal income in Canada.[64] Such a formula using net domestic product as an alternative to personal income would cost roughly $1.5 billion today, and only the three maritime provinces and, marginally, Quebec would receive transfers. I report these results in the bottom row of table 9.

Not all macro formulas 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 percent threshold from the original New Brunswick proposal. I implement this alternative formula using measures of both provincial GDP and net domestic product at factor cost, which excludes depreciation and taxes less subsidies from GDP. Comparing the results in the "macro" section of table 9 with actual payments shows that British Columbia, Quebec, and Nova Scotia would receive more (because their economies are weaker than fiscal capacity estimates suggest) while Prince Edward Island, New Brunswick, and Manitoba would receive less.

Manitoba stands out. While other provinces would see only modest changes in their entitlements, Manitoba's would be cut in half. Behind this result may be understated fiscal capacity owing to artificially low resource revenues. As discussed earlier, there is a strong incentive to adopt this approach, and this is confirmed in the data. Based on the latest equalization data for 2016-17, Manitoba's water rental rates

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64 See Moore et al., supra note 3, at appendix C. Equation 12 is my formulation of the proposal.

(the way it earns revenue from its hydro resources), at roughly $3.50 per MWh, are significantly lower than the rates of over $15 per MWh in Quebec and British Columbia. If Manitoba were to match those rates, resource revenues would be over $400 million higher and equalization in 2016-17 nearly that much lower.[65] Basing payments on macroeconomic indicators would substantially improve incentives, and would better reflect the fact that Manitoba has a stronger economy and provides greater fiscal benefits to its residents than its fiscal capacity suggests.

To be sure, the macro approach has some shortcomings. Provinces with similar incomes or similar 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 be outside the jurisdiction where it is taxed. A worker in Alberta's oil sands, for example, may actually reside elsewhere. While income earned on the job is generated in Alberta, it is taxable in the worker's home province. These and other concerns motivated the expert panel on equalization to recommend in 2006 that the representative tax system remain the backbone of the program.[66] Although the macro approach departs from the theoretical goal of equalizing fiscal benefits, the current formula may already exacerbate the equity and efficiency gaps that it is meant to address, and it is poorly understood by the public. A macro approach is simple and easy to communicate, and would result in minimal distortions to provincial policy decisions.

CONCLUSION

Federal transfers are central to Canada's fiscal federalism. They ensure that provinces have sufficient capacity to deliver public services, such as health and education, and they redistribute revenues 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 by-product of national tax and spending decisions. This article has reviewed the history behind such transfers and quantified, for the first time, their size and distribution since Confederation. This long history reveals the various economic, social, and political pressures to which government must respond. Today, although 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 have seen, with continuous and unexpected economic, social, and political developments. Throughout these changes, one thing has always remained true: despite hopes of achieving a final and unalterable settlement, federal transfers are always up for negotiation.

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65 Although only 50 percent of resource revenues count against a province's fiscal capacity, if Manitoba's resource revenues were to increase, the binding fiscal capacity cap (which includes all resource revenues) would claw back equalization nearly dollar for dollar in Manitoba's case.

66 See supra note 50. The 1981 parliamentary task force exploring equalization, supra note 48, also recommended against a macro approach, in part because comparable data on provincial GDP were only experimental at the time.