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MIND THE GAP: DEALING WITH RESOURCE REVENUE IN THREE PROVINCES

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SUMMARY

Alberta, Saskatchewan, Newfoundland and Labrador have each enjoyed a "rags to riches" story. Each of these provinces entered Confederation as poor cousins relative to the rest of the country; Alberta and Saskatchewan in 1905 and Newfoundland and Labrador in 1949. Rather remarkably, almost exactly four decades after entering Confederation each province began to enjoy the strong economic growth resulting from the development of their natural resources; Alberta and Saskatchewan in the late 1940s with the discovery of large pools of oil and Newfoundland and Labrador in the early 1990s with the development of off-shore oil. The governments of these provinces have similarly enjoyed the benefits of large amounts of revenue realized from the sale of these natural resources. In 2013-14, resource revenues accounted for 21 per cent, 22 per cent and 32 per cent of provincial revenues in Alberta, Saskatchewan, Newfoundland and Labrador, respectively.

Unfortunately, the benefit of receiving large amounts of resource revenue must be weighed against two costs. The first is that these revenues, having flowed into provincial coffers without the need to impose high tax rates on citizens, are easily spent. The second cost is that the prices of resources are determined in international markets and so a significant amount of the revenues of these provinces is largely unpredictable and often volatile. All three provinces have fallen prey to the temptation to allow a large fiscal gap to open between the costs of providing health care, education, social assistance and other areas of provincial responsibility and the taxes imposed on citizens to pay for these services. Doing so has put all three provinces at financial risk should resource prices fall.

Using a newly constructed data set spanning the period 1970 to 2014, I review the history of how Alberta and Saskatchewan have dealt with commodity price shocks and what this has meant for provincial finances. With that history as background, I review the response of the government of Newfoundland and Labrador to the flood of revenue it has received over the past decade as a result of the development of off-shore oil fields. The evidence is clear that Newfoundland and Labrador has adopted the same high-risk budgeting strategy as Alberta and Saskatchewan; a strategy that has seen the province choose to fund health care, education and social assistance using revenues that are unreliable and unpredictable. As Newfoundland and Labrador prepares for the release of its budget for 2015-16, it must begin to deal with the effect on its revenues of a dramatic fall in oil prices, a historically large budget deficit and a threat to the financial viability of its health, education and social assistance programs.

[†] I owe thanks to Margarita Wilkins and to Gina Sea for their patient and careful attention to detail while combing through provincial public accounts. Thanks are also owed to an anonymous referee for helpful comments.

1. INTRODUCTION

Three Canadian provinces have enjoyed a "rags to riches" story thanks to having access to generous amounts of natural resources; resources that have, in recent history, generated large amounts of revenues for the governments of those provinces.

The province of Alberta entered Confederation in 1905 and although deposits of small pools of oil were known at that time, it was not until 1947 that very large amounts of oil were discovered. Prior to then, Alberta was a poor province reliant upon agriculture. It was hard-hit by the Great Depression and declared bankruptcy in 1935. Once the extent of Alberta's oil wealth became apparent, however, a well-developed royalty regime ensured that its public finances would benefit from an enormous inflow of oil revenue. The OPEC oil price shocks of the 1970s, a constitutional battle with the federal government in the early 1980s and frequent dramatic rises and falls in oil prices since then, have all contributed to the government of Alberta having to continually deal with uncertainty in its largest source of revenue. In 2013-14, the province relied on the income earned from the exploitation of its natural resources to fund 22 per cent of its program expenditures.

Entering Confederation at the same time as Alberta, the province of Saskatchewan was, like Alberta, mainly agricultural. The Great Depression devastated the agriculturally-based economy but, like Alberta, the province soon after enjoyed the benefits of the discovery of significant pools of oil in the early 1950s. Potash was also discovered in the 1950s as a by-product of oil and gas exploration and today Saskatchewan is the 2nd largest producer of the mineral in the world. In 2013-14, the province relied on the income earned from the exploitation of its natural resources to fund 22 per cent of its program expenditures.

A very similar story, though one shifted ahead by four decades, can be told of Newfoundland & Labrador. The province entered Confederation in 1949 as a very poor province. For the next four decades it remained poor and heavily reliant on transfers from the federal government. Its finances were weak and by the 1980s the cost of servicing government debt threatened it with bankruptcy. The discovery and development of off-shore oil beginning in the 1990s had a dramatic effect on the economy and the finances of the provincial government. In 2013-14, the province relied on the income earned from the exploitation of its natural resources to fund over 32 per cent of its program expenditures.

Having access to the revenues generated by the exploitation of fossil fuels and other natural resources carries with it both positive and negative consequences for provincial government budgets. On the one hand, royalties, land sales and fees provide governments with sometimes very large revenues that can be used to finance the provision of health care, education and other vital public services without the need for usurious tax rates on personal or corporate incomes. On the other hand, these revenues are often volatile and unpredictable making it a risky budgeting strategy to rely on them to fund critical programs in health, education and social welfare.

This note examines 44 years of data (1970-71 to 2013-14) drawn from the public accounts of the provinces of Alberta, Saskatchewan, Newfoundland and Labrador.[1] During this period price shocks resulting from the efforts of the Oil Producing Exporting Countries (OPEC) to influence world oil prices, the federal government's National Energy Program, increases in world demand for oil resulting from the transformation of the economy of China and the recent fall in prices as a result of the glut in supply stemming from the development of oil shale have all had dramatic effects on

[1] A description of the data is found in the appendix to this paper.

the revenues these provinces realize from the production of oil and gas. Shocks to potash prices and disagreements between the industry and the government have also played a role in creating volatility in the resource revenues collected by the government of Saskatchewan. Unique to Newfoundland and Labrador is that only late in our sample period did the province begin to collect substantial amounts of resource revenues; this stemming from the development of off-shore oil fields beginning in the 1990s.

Using these long time series, I compare the histories of how resource revenues have impacted the budgets of these three provinces and highlight how unfortunate budgetary responses are common across provinces which have been repeated over time.

The next section presents a simple accounting framework for understanding and appreciating the implications of how provincial governments respond to rises and falls in resource revenues. This framework is then put to work by using it to understand the finances of the three provincial governments over the past 44 years. The paper closes with a discussion of the implications of resource revenues for effective budgeting.

2. THE GAP

The following equation defines a budget constraint for a government's operating account balance:

$$D_t - D_{t-1} = G_t + r_t D_{t-1} - T_t - TR_t - NRR_t$$

G_t = provincial government program spending; spending on goods and services and transfers to individuals and firms in period t

T_t = provincial government revenues from taxation on all sources but natural resources in period t

TR_t = federal government transfers received by the provincial government

NRR_t = provincial government revenue realized from the sale of natural resources in period t that enters the operating account.

D_{t-1} = government debt at beginning of year t

D_t = government debt at end of year t

$D_t - D_{t-1}$ = government deficit in year t

r_t = average effective rate of interest on net debt in year t.

This equation is an accounting relationship that specifies the difference between all sources of government spending (G_t and $r_t D_{t-1}$) and all sources of government tax, transfer and resource revenue (T_t, TR_t and NRR_t) as the change in the government's debt (i.e. the government's deficit). In any given year debt may rise or fall depending on whether spending exceeds revenue or revenue exceeds spending.

A bit of rearranging allows us to write;

$$D_t - D_{t-1} + NRR_t = G_t + r_t D_{t-1} - T_t - TR_t$$
$$= GAP.$$

The budget *GAP* is the amount of revenue required to avoid an imbalance between all sources of spending and all sources of non-resource revenue. The *GAP* can be filled with borrowing and/or by resource revenue. This is an interesting way of arranging the government budget constraint because the two items on the left hand side define amounts being borrowed from future generations; either by consuming the revenue gained from selling non-renewable resources or by borrowing against their future income.[2] Defining the budget *GAP* in this way is also interesting because it identifies the exposure of the provincial budget to the vagaries of international commodity price movements and so the extent to which these governments are willing to fund programs with uncertain and oft-times highly volatile revenues.

3. FILLING THE GAP

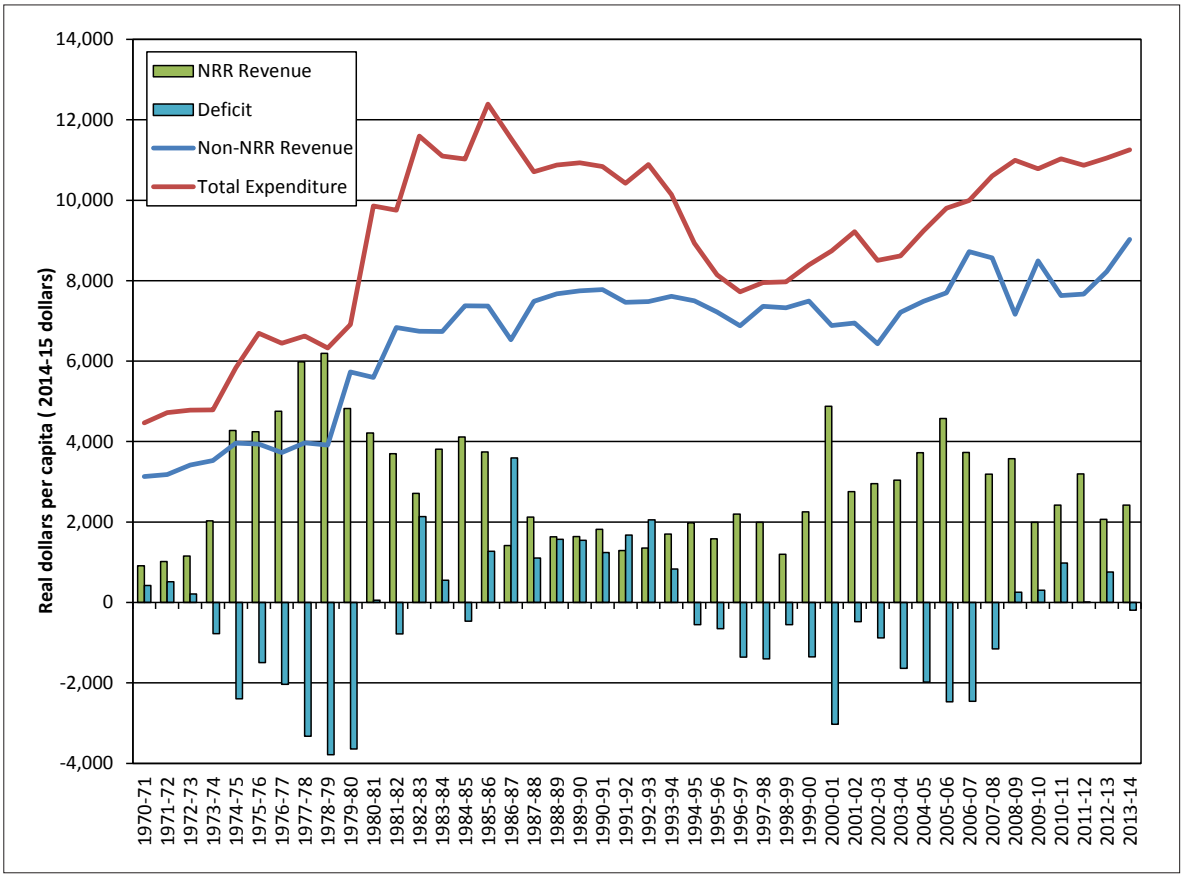
In this section I present for Alberta, Saskatchewan, Newfoundland and Labrador, measures of the *GAP* and the sources of revenue – resource revenues and borrowing – available to fill it. I also provide a very brief history of how these measures have changed over time in each of the three provinces.

Alberta

Figure 1 presents data describing key budget categories for Alberta. The red line shows provincial government spending on goods and services (G_t) plus interest payments on previously accumulated debt ($r_t D_{t-1}$). The blue line shows provincial revenues from taxation net of transfers to individuals and firms (T_t) as well as the cash value of federal transfers (TR_t). The difference in these amounts is what we call the budget *GAP* and is shown by the vertical distance between the red and blue lines. The bars identify sources of revenue available to fill the *GAP*; natural resource revenues (NRR_t) and borrowing (D_t - D_{t-1}). All data is adjusted for inflation and is presented on a per capita basis. The data, then, should be understood as representing per capita values measured in constant 2014-15 dollars.

[2] Different budget "gaps" can be defined. Thus we could also define;
$D_t - D_{t-1} + NRR_t + TR_t = G_t + r_t D_{t-1} - T_t = GAP1$. *GAP1* defines the difference between the value of goods and services received (including interest income on government debt) and taxes paid by citizens of the province. Available to fill this version of the budget gap is borrowing, federal transfers and natural resource revenue.

FIGURE 1 ALBERTA



When above the zero line, the blue bars indicate that resource revenues have been insufficient for filling the *GAP* so that the government has had to borrow. These bars, then, identify a budget deficit. When below the zero line, the blue bars indicate that resource revenues have been more than sufficient to fill the *GAP* and so the government has been able to pay down previously accumulated debt. These bars, then, identify a budget surplus.

The OPEC price shocks of the mid and late 1970s had a dramatic effect on the resource revenues collected by the province. As shown in Figure 1, in 1978-79 resource revenues were nearly sufficient to pay for *all* of provincial expenditure. For the first three years of our analysis (1970-71 to 1972-73), resource revenues accounted for an average of 24 per cent of total revenues but for the rest of the decade this share would average 52 per cent. In the 1970s, resource revenues were more than sufficient to fill the *GAP* with the result that the government was able to report large overall surpluses.

From 1979-80 to 1985-86, the average annual growth rate in total expenditures (21 per cent) was far greater than that for non-resource revenue (14 per cent) so that the *GAP* widened dramatically. In 1985-86, the *GAP* was the widest it has ever been; over $5,000 per person (in 2014-15 dollars). Resource revenues were unable to fill that *GAP* and so the government had to borrow. The government reported deficits in 4 of 6 years from 1979-80 to 1985-86.

And then things got worse. The collapse in oil prices in 1986-87 saw resource revenues fall by 60 per cent and with a still large *GAP* to finance, the government began reporting what would be a long string of deficits.

The election of 1993 brought a series of large cuts to spending that dramatically reduced the size of the budget *GAP*. Between 1992-93 and 1997-98, total spending fell by over 25 per cent and the *GAP* was reduced by over 80 per cent in real per capita dollars. With the *GAP* now at less than $600 per capita in 1997-98, resource revenues, which although to this point had still not recovered to anywhere near 1985-86 levels, were again more than sufficient to fill the *GAP* so that budget surpluses returned.

A string of larger amounts of resource revenue, starting with a large spike in resource revenues in 2000-01, coincided with a significant widening of the *GAP* starting in that year. Despite the growing *GAP*, the larger amounts of resource revenue were more than sufficient to enable the government to report steadily larger surpluses. Even the recession that saw non-resource revenues fall in 2008-09, causing the *GAP* to nearly double in size relative to the previous year – produced only a small deficit thanks to the large amounts of resource revenue remaining.

By the time the economy started to recover in 2010-11, the *GAP* had widened to equal $3,400 or nearly six times what it was in 1997-98. Non-resource revenues recovered strongly following the recession closing the *GAP* to $2,230 in 2013-14. The government could report a barely balanced budget on its operating account.

Fiscal year 2014-15 was a momentous one for the government as oil prices fell by half in the second half of the year. In its budget released on March 26, 2015, the government indicated that it expects resource revenues will fall from $2,100 per capita in 2014-15 to just $680 per capita in 2015-16.[3] Recognizing the need to reduce its dependence on resource revenues, the government also announced a 10-year plan to shrink spending in real per capita terms by about 1.4 per cent annually. With non-*NRR* revenues expected to grow by about 0.8 per cent per year in real per capita terms, the *GAP* will close by 2.2 percentage points per year. If all this can be maintained for 10 years, by 2024-25 the *GAP* will have been reduced by about one-fifth from its level in 2013-14. This modest shrinking of the *GAP* to $1,745 in real per capita dollars will return it to its value in 2004-05.[4]

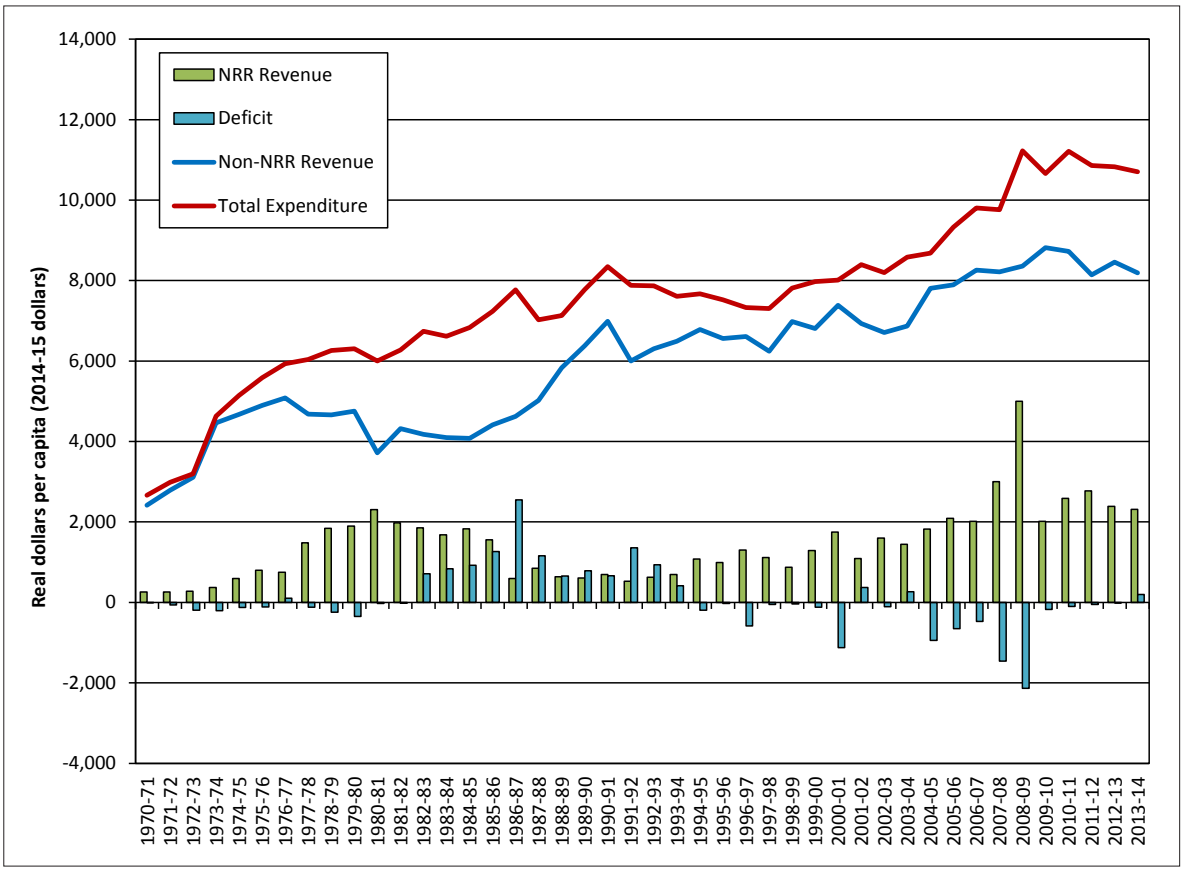
Saskatchewan

Figure 2 plots the same budget information for Saskatchewan as Figure 1 presented for Alberta. The same vertical scale is used to make for an easier comparison of the values in the two provinces.

[3] This calculation and the rest of the calculations in this paragraph, assumes an annual rate of inflation and an annual rate of population growth each equal to 1.7 per cent. That assumption is consistent with what is forecast in the 2015 Budget. Interestingly, had the *GAP* been kept at its 1997-98 level of $600 per capita, even this low amount of resource revenue would have been sufficient to result in a budget surplus.

[4] Closing the *GAP* with resource revenues in 2024-25 will therefore require approximately $8,500 million of resource revenue (in 2014-15 dollars and assuming a 1.7 per cent annual growth rate in population). The 2015 Budget forecasts resource revenues of $12,744 million in 2024-25. Assuming an annual rate of inflation averaging 1.7 per cent per year, this is equivalent to $10,736 million in 2014-15 dollars. If all goes according to the Budget 2015 forecasts, resource revenues will therefore be more than sufficient to fill the *GAP* in 2024-25 and so leave the government with a budget surplus of about $2,000 million in 2014-15 dollars.

FIGURE 2 SASKATCHEWAN



It is obvious from comparing Figures 1 and 2 that, like Alberta, the government of Saskatchewan has relied heavily on resource revenues to fill a persistent gap between what the government spends and what it collects in non-resource related revenues. An important difference is that until very recently Alberta has typically received far more resource revenue than Saskatchewan. Prior to 2007-08, Alberta received an average of $2,913 per capita in resource revenues compared to $1,222 in Saskatchewan. Since that time, however, the two provinces have collected very similar amounts of resource revenue when measured in real per capita terms.

Prior to the first OPEC oil price shock, resource revenues constituted about 8 per cent of total provincial revenues and the *GAP*, averaging only $175 per capita, was equal to about 5 per cent of total revenues. The combination of this small *GAP* and resource revenues averaging nearly $300 per capita was small budget surpluses. Increases in oil prices during the 1970s simultaneously increased resource revenues and widened the *GAP*. By 1985-86, the *GAP* had grown to over $2,800 per capita (26 per cent of total revenue) and resource revenues were now over $1,550 per capita. As these numbers suggest, the government now had to borrow nearly $1,300 per capita to fill the *GAP*. Although resource revenues had grown to be nine times what they were in the early 1970s, the provincial government's dependence of those revenues – a dependence measured by the size of the *GAP* – had grown even faster. Sizeable deficits, which first appeared in 1982-83, would become the norm for 12 straight years and the province was rapidly accumulating a large amount of public debt.[5]

[5] See Ron Kneebone, "Sources of Debt Accumulation in Resource Dependent Provinces," The School of Public Policy (forthcoming) for details and for an examination of the amount of this debt due to policy choices as opposed to cycle and commodity prices.

The collapse in oil prices in 1986 caused, as they did in Alberta, a dramatic increase in the budget deficit Saskatchewan reported in fiscal year 1986-87. What followed was a decade of deficits and low resource revenues until 1994-95. Over this period spending restraint and, especially, faster revenue growth combined to shrink the *GAP* from $3,150 per capita in 1986-87 – equal to a remarkable 60 per cent of revenue to 11 per cent of total revenue ($890 per capita) in 1994-95. By 1994-95, the *GAP* was small enough that resource revenues were sufficient to fill it and the government was able to report, for the first time since 1981-82, a budget surplus.

From 1994-95 to 2006-07, the budget *GAP* remained relatively small, averaging $1,280 per capita or 15 per cent of total revenue. Resource revenues closely matched the size of the *GAP* and the government was able to report budget surpluses in all but two of those years.

Fiscal years 2007-08 and 2008-09 were notable for the effect on provincial finances of a dramatic increase in potash prices. Resource revenues made up 27 per cent and 37 per cent of total revenues in those two years (up from 20 per cent in 2006-07) and the government was able to report large surpluses despite it allowing a significant widening of the budget *GAP* from $1,540 per capita in 2006-07 to $2,865 per capita in 2008-09. Unfortunately, after 2008-09 potash prices fell and Saskatchewan also had to suffer the consequences of the world-wide economic slowdown. Since 2009-10 spending restraint has more or less offset losses on non-resource revenue so that the *GAP* has remained roughly constant. While since 2009-10 the province has been able to maintain balanced budgets, it has been able to do so only by devoting 100 per cent of resource revenue to filling the budget *GAP*.

Interestingly, Saskatchewan's budget *GAP* in 2013-14, at $2,500 per capita and 24 per cent of revenue, was significantly larger than Alberta's $2,200 per capita and 19 per cent of revenue. Despite that, the most recent budget in Saskatchewan[6] reports a small surplus and unlike the Government of Alberta for which this was a focus, reports little concern over its reliance on resource revenues.

The relative lack of anxiety over the size of its *GAP,* is likely due to the fact Saskatchewan's reliance on oil prices to generate resource revenues is not as great as Alberta's. The same fall in world oil prices that occurred in 2014 and that is expected to cost Alberta 67 per cent of its resource revenues in 2015-16 is forecast, by the Government of Saskatchewan, to cause its resource revenues to fall by only 7 per cent.[7] The fall in oil prices, then, is not exerting the same sense of urgency on Saskatchewan as it is Alberta, to lessen the province's reliance on resource revenues.

Newfoundland and Labrador

Figure 3 presents data describing the finances of the Government of Newfoundland and Labrador, since 1970-71. The vertical scale differs from Figures 1 and 2 reflecting the fact per capita spending is significantly larger than in Alberta and Saskatchewan.[8]

Data is presented from 1970-71 even though resource revenues became significant in Newfoundland and Labrador only by the mid 2000s. This is done so that some appreciation can be had for the effect of resource revenues have had on public finances in general and on federal transfer payments in

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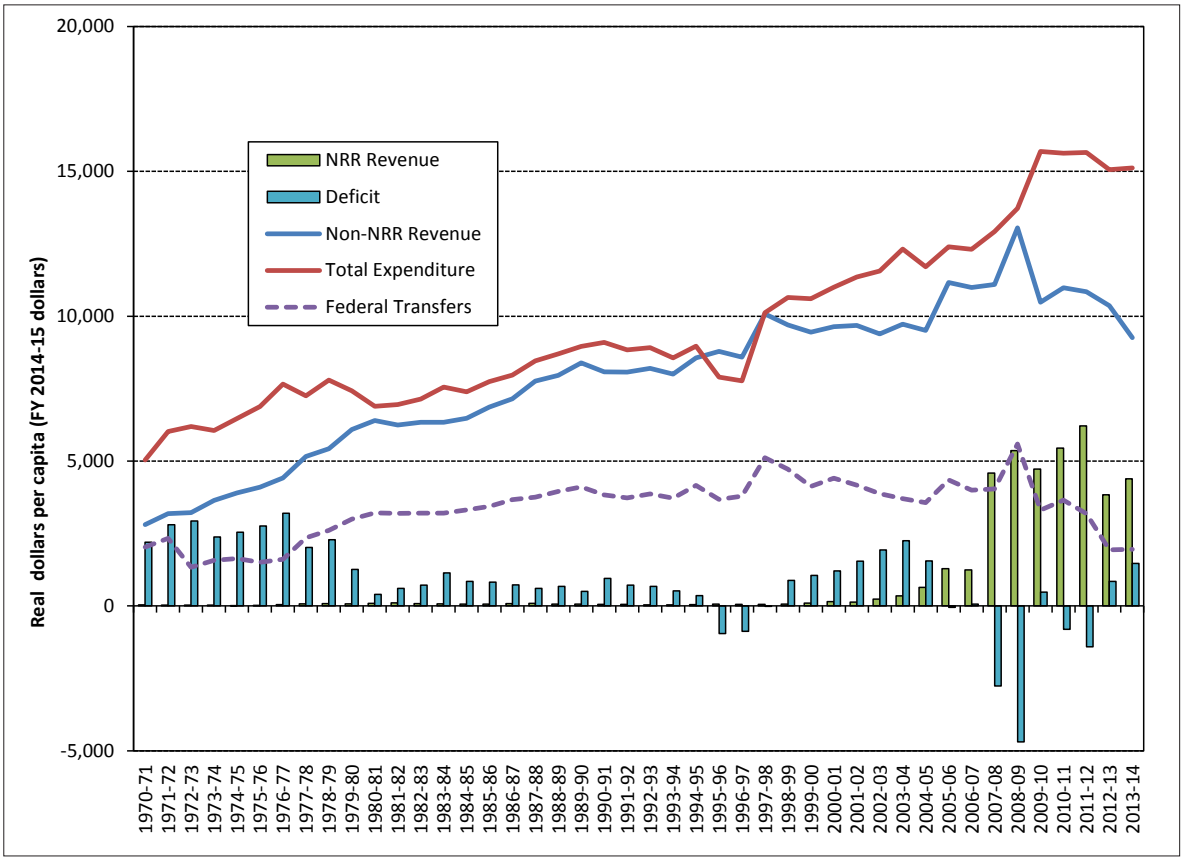
6 *Saskatchewan Provincial Budget 15-16*, released March 31, 2015.

7 See *Saskatchewan Provincial Budget 15-16*. Non-renewable resource revenue is forecast to fall from $2,634 million in 2014-15 to $2,453 in 2015-16. This reflects a loss of $402 million due to the fall in the price of oil but a gain of $233 million in potash revenue and increases in other non-renewable resources, primarily uranium.

8 At least in part this reflects economies of scale in the provision of public services.

particular. Federal transfer payments, which are included in the measure of non-resource revenues shown by the solid blue line, are shown by the dashed line. From 1970-71 to 2004-05 when noticeable amounts on resource revenues began to enter the budget, federal transfers averaged 46 per cent of total revenues. As resource revenues have grown in importance, federal transfers have fallen both absolutely and as a fraction of total revenue.[9] In 2013-14, federal transfers constituted only 14 per cent of total revenue, down from 45 per cent at the beginning of the century.

FIGURE 3 NEWFOUNDLAND AND LABRADOR



During the 1970s the budget *GAP* was very large – averaging $2,500 per capita and 63 per cent of total revenues. With the government receiving very little in the way of resource revenues, the result was that the government realized very large deficits and accumulated a significant amount of debt. The fiscal picture improved in the 1980s when the *GAP* closed to average $784 per capita or 11 per cent of revenues. The declaration by the Minister of Finance of a "financial crisis" in 1990-91 and the federal moratorium to close the Atlantic cod fishery in 1992 preceded a severe program of fiscal austerity that constrained spending, particularly in 1995-96 and 1996-97.[10] What resulted were the first budgetary surpluses since 1949-50. Unfortunately, the rest of the 1990s and the early part of the 2000s were marked by slow revenue growth resulting from the closing of the fishery and a significant out-migration. The budgetary *GAP* grew from zero in 1997-98 to $2,600 per capita or 26 per cent of total revenue in 2003-04.

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9 This is a consequence of the various provisions of the Atlantic Accord by which the province stopped receiving equalization payments effective 2008-09 and other transition payments effective 2012-13.

10 For a detailed description of the province's finances during this period, see Dave Norris, "The Fiscal Position of Newfoundland and Labrador," "Royal Commission on Renewing and Strengthening Our Place in Canada," March 2003.

Prior to 2003-04, the government had virtually no access to resource revenues to help finance the budget *GAP*. Revenue collected from the application of a minerals tax was never been a significant contributor to the budget. This began to change with the development of off-shore oil fields and the flow of oil royalties that started to have a significant impact on the budget by the mid-2000s. The growth of the oil industry not only increased income and corporate tax revenues and shrank the budgetary *GAP*, but it also provided resource revenues sufficient to close the *GAP*. By 2007-08, resource revenues had grown so large they could not only fill the *GAP* but would also allow the province to report large budget surpluses in 2007-08 and 2008-09.

Fiscal year 2009-10 saw the province suffer a significant loss of revenue as a result of a large cut to federal transfers; a consequence of a deal with the federal government that granted the province access to 100 per cent of oil royalties but also saw large cuts to equalization payments. The fiscal *GAP* yawned wide open after 2008-09; from less than $700 per capita and 4 per cent of revenue to nearly $5,900 per capita and 43 per cent of revenue by 2013-14. Even large amounts of resource revenues averaging $4,115 per capita and 30 per cent of revenue in 2012-13 and 2013-14 could not fill the *GAP*. With the result, the province returned to deficit in those years.

Like Alberta, Newfoundland and Labrador entered the 2014-15 fiscal year highly exposed to any fall in oil prices. In its *Fall Update,*[11] the government indicated that resource revenue would be lower by $792 million or 35 per cent lower relative to the previous year. As the impact of lower oil prices is felt for a full fiscal year, the expectation for 2015-16 is that resource revenues will be lower still. Assuming the *GAP* in 2015-16 is the same as in 2013-14 ($5,900 per person) and assuming resource revenues are lower by $1,000 million relative to 2013-14 (leaving per capita resource revenues at about $2,400), we should expect a deficit of about $3,300 per person or about $1,800 million in total.[12] A deficit of $3,300 per person would make this the largest deficit in real per capita terms since at least 1970-71.

4. DISCUSSION

Significant amounts of resource revenues provide governments with the opportunity to minimize tax rates and provide high-quality public services without the need to impose high tax rates on citizens and firms. This advantage, however, comes at a price: These revenues are often volatile. Given that they enter government coffers without the need to impose taxes on voters, these revenues also offer the temptation for governments to gain favour with voters with cuts to tax rates and/or increases in services beyond what might otherwise be affordable.

This note has presented a brief review of the fiscal histories of two provinces with long histories of dealing with resource revenues and one province that has only begun to deal with this issue. What can the experiences of the governments of Alberta and Saskatchewan tell us that might be helpful for advising the government of Newfoundland and Labrador?

Below are the results of simple pooled regression intended to identify the sensitivity of the current size of the *GAP* to changes in natural resource revenues (*NRR*) observed in the previous year. A

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[11] *Fall Update 2014-15* (http://www.fin.gov.nl.ca/fin/publications/fallupdate_2014_15.pdf).

[12] In its Pre-Budget Consultation document (http://www.fin.gov.nl.ca/fin/budget/prebudget/index.html) the government indicates a revenue shortfall (a deficit) of over $1,000 million for the 2015-16 fiscal year. For the deficit to come in near that amount, one must assume either a much smaller loss of resource revenue than predicted in the *Fall Update* or a vigorous response to cut spending and raising tax revenues during the fiscal year.

positive relationship indicates that an increase in resource revenues encourages policy-makers to allow their budget *GAP* to grow either by allowing for spending increases with no additional tax revenue or by introducing tax cuts without a corresponding reduction in spending.[13] The data is measured in real per capita dollars and uses data on the *GAP* and *NRR* for Alberta and Saskatchewan for the period 1971-72 to 2013-14.

$GAP = 1148 + 0.407*NRR(-1)$ $\quad R^2 = 0.253$
(5.91) (5.34) $\quad N = 86$

The regression confirms that Alberta and Saskatchewan typically maintain large budgetary *GAP* measures (averaging $1,148 per capita) and the size of that *GAP* is sensitive to the recent receipt of resource revenues. In particular, every $1.00 increase in resource revenues causes the *GAP* to increase by $0.41 in the year following.

The idea that revenue obtained by ways other than taxing voters might encourage governments to budget differently than otherwise is well-known in the literature. Political economists have coined the term *fiscal illusion* to describe the tendency for taxpayers to systematically underestimate the true cost of publicly-provided goods and services. The illusion arises because of the difficulty taxpayers have in understanding how much they pay in taxes toward specific programs. Generally speaking, a fiscal illusion arises when governments rely on indirect ways of funding expenditures. Provincial governments extract revenue from taxpayers directly via income taxes, less directly via sales taxes, less directly again via the revenue they receive from the federal government in the form of intergovernmental transfers and even less directly still by the revenue they gain from taxing the rents earned on the development of natural resources.[14] The result of the simple regression reported above is consistent with the fiscal illusion hypothesis. As the availability of resource revenues grows, governments find it easier to increase spending and lower taxes; that is, it becomes easier for governments to increase the size of the budget *GAP*.

In the next regression I identify the sensitivity of the *GAP* to resource revenues in Newfoundland and Labrador.[15]

$GAP = 1236 + 0.596*NRR(-1)$ $\quad R^2 = 0.463$
(6.42) (5.95) $\quad N = 43$

The result of this regression suggests that although the government of Newfoundland and Labrador is new to this game of dealing with large amounts of resource revenue, it seems to be following the same playbook as the governments of Alberta and Saskatchewan, namely, allow the budget *GAP* to grow when resource revenues have increased in the year previous.

Figure 4 presents for the three provinces, the size of resource revenues measured in real per capita terms since 1970-71. The remarkable similarity in the dramatic oil-induced rise in resource revenues observed recently in Newfoundland and Labrador to what Alberta experienced in the early 1970s

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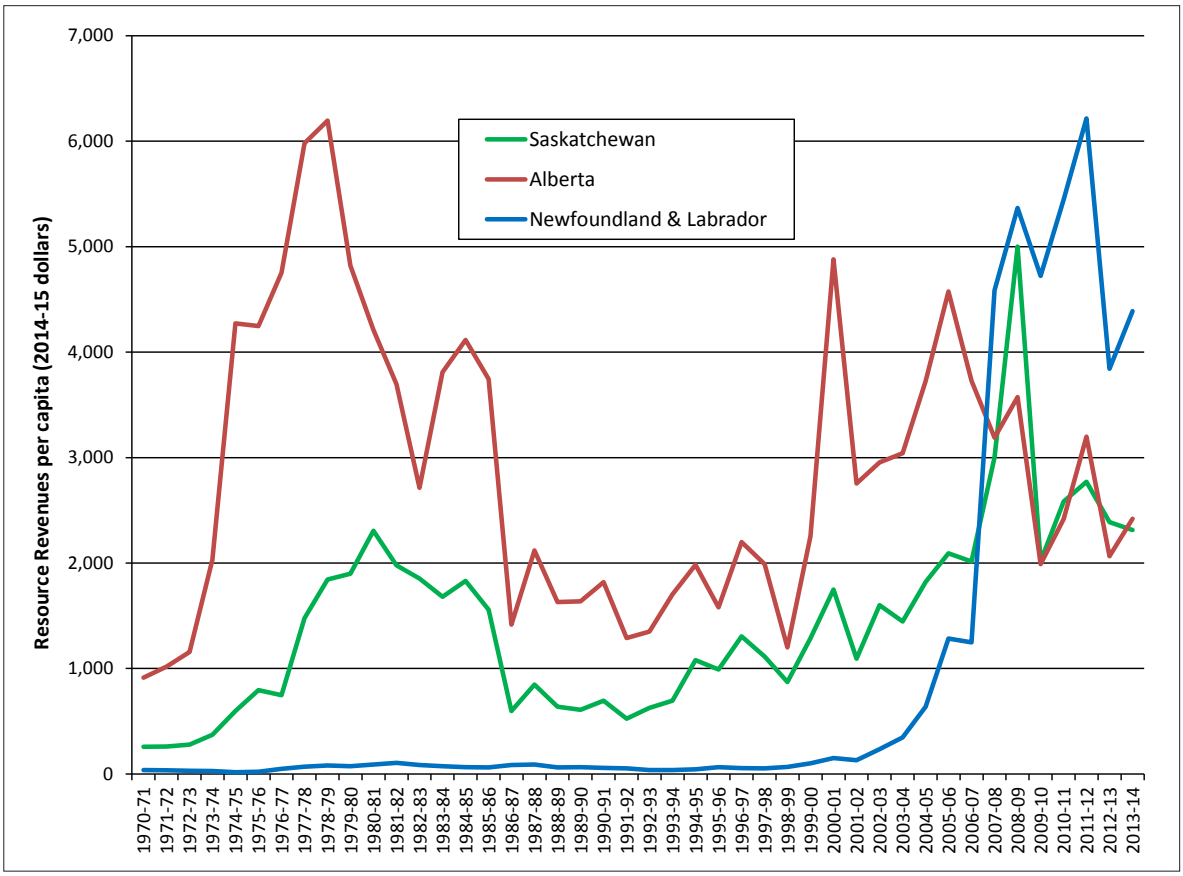
[13] t-statistics appear in parenthesis below the estimated coefficients.

[14] Economists also note that the *incidence* of these revenues – who actually pays the tax as opposed to who is legislated to pay it – is typically opaque and so further complicates the voter's efforts to assess his or her true share of program costs.

[15] An alternative specification recognizes that in Newfoundland and Labrador provisions of the Atlantic Accord specified that the increase in *NRR* would result in a fall in federal transfers. Regressing the *GAP* against the increase in resource revenues net of federal transfers results in a very similar measure of the sensitivity of the *GAP* to revenue gained from not taxing citizens of the province;
$GAP = 3391 + 0.650*(NRR\text{-}TRANSFERS)(-1)$ $\quad R^2 = 0.626$
(13.75) (8.29)

should give pause to budget-makers in Newfoundland and Labrador. Like Alberta in that earlier era, Newfoundland and Labrador has today allowed this gusher of revenue to widen the gap between what it spends and what it collects by way of non-resource revenue. Like Alberta then, the government of Newfoundland and Labrador has responded to this revenue in a way that exposes itself, and its taxpayers, to the potential for draconian spending cuts and/or sudden increases in tax rates when world oil prices fall. It is a high-risk budgeting strategy that has been the bane of Albertans for decades.

FIGURE 4 REAL PER CAPITA RESOURCE REVENUES



5. CONCLUSION

The purpose of this note was to summarize how provincial governments fortunate enough to have access to significant amounts of resource revenue deal with the budgetary implications of that data. The governments of Alberta and Saskatchewan have long histories of dealing with large amounts of resource revenue. It is fair to say that they have not always dealt with these revenues very effectively. Both provinces have at times allowed themselves to become very heavily dependent on volatile and unpredictable resource revenues to fund the provision of health care, education, social services and other important programs. Periodic efforts to reduce this dependence – to close what has been identified here as the budget *GAP*, have resulted in sometimes draconian spending cuts the effect of

which have been felt for many years into the future. Except for very short periods of time in the late 1970s (Alberta) and mid 1980s (Saskatchewan), neither province has been successful at saving their non-renewable resource revenues for the benefit of future generations.[16]

The government of Newfoundland and Labrador has unfortunately followed in the footsteps of the governments of Alberta and Saskatchewan by allowing itself to become heavily dependent on resource revenues. Indeed, as shown in the table below, by the end of 2013-14, the last year for which we have reliable data, the government of Newfoundland and Labrador was the most dependent on resource revenues and the most exposed should those revenues fall.

	Fiscal *GAP*	Resource Revenue
	(as percentage of total provincial revenue)	
Alberta	19%	21%
Saskatchewan	24%	22%
Newfoundland & Labrador	43%	32%

The governments of Alberta and Saskatchewan have recently tabled budgets for the 2015-16 fiscal year. The Government of Alberta introduced a budget with significant tax increases and a plan for gradual cuts to spending; both explicitly intended to reduce the reliance on resource revenues. In its budget for 2015-16, the Government of Saskatchewan has been much more sanguine about its reliance on resource revenues likely because potash prices have proved to be more stable than the prices for fossil fuels. The Government of Newfoundland and Labrador, easily the most dependent on resource revenues and the most exposed to volatility in oil prices, will table its 2015-16 budget at the end of April 2015. In that budget, hard choices will need to be made if the government is to avoid the discouraging budgetary history of Saskatchewan and particularly, Alberta in allowing volatility of resource revenues to cause volatility in funding for health, education and social services.

[16] Alberta established the Alberta Heritage Savings Trust Fund in 1976 but, as I have described elsewhere ("From Famine to Feast: The Evolution of Budgeting Rules in Alberta," *Canadian Tax Journal*, Volume 54, No. 3, 2006) the provincial government's commitment to depositing resource revenues into the AHSTF has rarely survived demands for revenue resulting from economic downturns. The government of Saskatchewan established the Saskatchewan Heritage Fund in 1978 to receive and invest natural resource revenues but that was divested and eliminated in 1992. In its 2014 budget, the government indicated its intention to use resource revenues to fund the creation of a Saskatchewan Futures Fund. In the recent 2015 budget, that plan was once again put on hold. The government of Newfoundland and Labrador, a relatively recent recipient of significant amounts of resource revenue, has not to my knowledge had any public discussions of using resource revenues for other than current consumption.

APPENDIX

The following three tables present the provincial budget data used in this study. These data comes from the Public Accounts of the three provinces and are reported in dollars per capita measured in 2014-15 dollars. The data represent each provincial government's operating account. The operating account is intended to measure the cost of on-going programs and services and the amount of revenue collected for the purpose of financing those costs. It excludes spending related to public infrastructure investments.

There are two distinct advantages over other sources of using data drawn from provincial public accounts. The first is that one is able to construct a dataset that spans any period described by those accounts. The second is that public accounts make available information on the amount of revenue governments collect from taxes and royalties applied to natural resources. Statistics Canada's *Financial Management System* reports data only for the period 1988-98 to 2008-09 and does not report resource revenue separate from what it defines as "investment income."[17] Statistics Canada *Provincial Economic Accounts* suffer from similar problems; they do not report resource revenues as a separate budget category and is limited to providing data for the period 1981-2009. To describe the influence on provincial finances of the OPEC oil price shocks of the 1970s and the more recent shocks to oil and potash prices since 2009, one needs to rely on public accounts data.

It is worth noting that that the *Fiscal Reference Tables* (FRT) published by the federal Department of Finance also present data from provincial public accounts. The FRT, however, do not report natural resource revenues and those accounts report data only back to fiscal year 1980-81. Where the FRT and the data used here overlap, they are in very close agreement. A notable difference is for Alberta, where in the data used here – resource revenues transferred to the Alberta Heritage Savings and Trust Fund have been subtracted from resource revenue and from total revenue.[18] This is done so that the data represents, as noted above, only the government's operating account. It is also important to note that while in the data used here the deficit is measured as the difference between total expenditures and total revenue that is not true in the FRT. The FRT includes in its calculations of the deficit "other" expenditures not always associated with the operating account.

Data on total provincial population data is from CANSIM tables 510001 (1971-2014) and 510024 (1971). These data are reported by calendar year (CY). To match budget data, which is reported on by fiscal year (FY, April 1st to March 31st), a fiscal year version of provincial population is calculated using the formula $FY_{t-1,t} = 0.25*CY_t + 0.75*CY_{t-1}$. Nominal values of budget categories are deflated using the all-items Consumer Price Index for major cities. The CPI for St. John's is used to represent the CPI for Newfoundland and Labrador while the simple average of the CPIs for Saskatoon and Regina and for Calgary and Edmonton are used to represent Saskatchewan and Alberta, respectively. These CPI data are from CANSIM Table 3260020 and is reported monthly. Averages of the monthly CPI data are calculated over the period defining a fiscal year.

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17 Statistics Canada is moving to a new approach to measuring government financial statistics and has indicated that it intends to soon begin publishing data based on its new accounting framework starting with fiscal year 2008-09. I am not aware of any statement suggesting a revision to historical data will accompany the adoption of the new accounting framework.

18 These transfers occurred in 1976-77 to 1986-87 and from 2005-06 to 2007-08, inclusive.

Alberta (2014-15 dollars per capita)							
Fiscal Year	Program Expenditure	Debt Charges	Natural Resource Revenue	Non-NRR Revenue		GAP	Deficit
				Total	Federal Transfers		
1970-71	4,427	35	914	3,128	787	1,334	420
1971-72	4,654	62	1,018	3,182	900	1,534	517
1972-73	4,704	80	1,157	3,413	807	1,371	214
1973-74	4,710	75	2,032	3,528	1,092	1,257	-775
1974-75	5,752	86	4,273	3,963	621	1,875	-2,398
1975-76	6,613	79	4,247	3,938	1,064	2,754	-1,493
1976-77	6,390	54	4,752	3,729	1,237	2,716	-2,036
1977-78	6,580	47	5,981	3,971	998	2,656	-3,325
1978-79	6,279	46	6,196	3,914	1,050	2,410	-3,785
1979-80	6,879	31	4,821	5,729	912	1,180	-3,641
1980-81	9,831	29	4,211	5,595	970	4,265	54
1981-82	9,648	102	3,697	6,832	1,278	2,917	-780
1982-83	11,540	54	2,713	6,745	1,151	4,849	2,136
1983-84	10,937	160	3,809	6,733	1,228	4,364	555
1984-85	10,815	209	4,114	7,375	1,544	3,648	-466
1985-86	12,229	160	3,744	7,371	1,576	5,019	1,275
1986-87	11,288	251	1,416	6,531	1,428	5,009	3,593
1987-88	10,249	462	2,119	7,489	1,543	3,221	1,102
1988-89	10,251	623	1,630	7,675	1,669	3,200	1,569
1989-90	10,118	815	1,638	7,748	1,420	3,184	1,547
1990-91	9,968	867	1,818	7,778	1,600	3,058	1,239
1991-92	9,588	837	1,288	7,462	1,369	2,963	1,675
1992-93	10,011	878	1,351	7,481	1,521	3,408	2,057
1993-94	9,142	1,000	1,703	7,610	1,263	2,532	829
1994-95	7,909	1,024	1,982	7,502	1,132	1,432	-550
1995-96	7,193	955	1,580	7,220	991	927	-653
1996-97	6,926	797	2,200	6,881	737	842	-1,357
1997-98	7,254	696	1,990	7,361	623	589	-1,400
1998-99	7,274	699	1,201	7,328	677	646	-555
1999-00	7,929	463	2,254	7,491	795	901	-1,353
2000-01	8,286	452	4,880	6,887	836	1,851	-3,029
2001-02	8,878	342	2,754	6,944	1,001	2,276	-478
2002-03	8,308	197	2,954	6,435	859	2,070	-884
2003-04	8,511	107	3,041	7,216	1,159	1,403	-1,639
2004-05	9,121	115	3,726	7,489	1,231	1,747	-1,979
2005-06	9,713	90	4,575	7,698	1,232	2,105	-2,470
2006-07	9,922	73	3,729	8,724	1,042	1,270	-2,459
2007-08	10,534	68	3,190	8,568	962	2,034	-1,156
2008-09	10,932	62	3,573	7,166	1,255	3,829	255
2009-10	10,678	107	1,989	8,492	1,452	2,293	303
2010-11	10,892	135	2,417	7,632	1,441	3,396	978
2011-12	10,700	137	3,197	7,668	1,313	3,203	6
2012-13	10,912	136	2,066	8,227	1,276	2,821	755
2013-14	11,104	149	2,420	9,024	1,700	2,229	-191

Saskatchewan (2014-15 dollars per capita)							
Fiscal Year	Program Expenditure	Debt Charges	Natural Resource Revenue	Non-NRR Revenue		GAP	Deficit
				Total	Federal Transfers		
1970-71	2,653	13	259	2,417	647	250	-9
1971-72	2,974	11	261	2,788	1,021	197	-64
1972-73	3,188	11	279	3,113	1,053	87	-192
1973-74	4,619	12	372	4,461	2,015	170	-203
1974-75	5,135	12	596	4,675	1,834	472	-124
1975-76	5,576	10	796	4,900	1,605	686	-110
1976-77	5,919	15	748	5,084	1,410	850	102
1977-78	6,008	29	1,479	4,679	1,266	1,358	-121
1978-79	6,201	61	1,844	4,664	1,355	1,599	-245
1979-80	6,227	81	1,900	4,756	1,343	1,552	-347
1980-81	5,935	64	2,307	3,716	1,249	2,282	-24
1981-82	6,164	113	1,978	4,320	1,396	1,957	-21
1982-83	6,639	99	1,853	4,175	996	2,564	711
1983-84	6,490	125	1,681	4,096	1,237	2,518	837
1984-85	6,617	217	1,831	4,078	1,265	2,756	925
1985-86	6,849	385	1,557	4,411	1,320	2,823	1,266
1986-87	7,392	377	597	4,622	1,564	3,147	2,551
1987-88	6,503	522	848	5,019	1,708	2,005	1,157
1988-89	6,554	574	637	5,833	1,926	1,295	657
1989-90	6,874	905	609	6,382	2,130	1,397	788
1990-91	7,553	793	696	6,989	2,488	1,356	661
1991-92	7,073	809	524	6,000	2,030	1,881	1,357
1992-93	6,695	1,172	627	6,303	2,065	1,565	938
1993-94	6,264	1,341	695	6,493	1,917	1,112	417
1994-95	6,346	1,327	1,080	6,785	1,952	887	-193
1995-96	6,272	1,249	990	6,558	1,434	963	-27
1996-97	6,185	1,142	1,305	6,606	1,093	720	-585
1997-98	6,232	1,075	1,114	6,244	788	1,064	-50
1998-99	6,769	1,044	872	6,981	1,347	832	-40
1999-00	7,015	962	1,287	6,806	1,670	1,171	-116
2000-01	7,112	898	1,749	7,388	1,180	622	-1,127
2001-02	7,578	817	1,092	6,933	1,639	1,462	369
2002-03	7,412	786	1,600	6,706	1,030	1,493	-107
2003-04	7,815	764	1,446	6,867	1,309	1,712	266
2004-05	7,966	715	1,821	7,805	2,059	876	-945
2005-06	8,668	662	2,091	7,894	1,538	1,436	-655
2006-07	9,163	640	2,014	8,262	1,651	1,541	-473
2007-08	9,137	622	3,002	8,215	1,822	1,543	-1,459
2008-09	10,661	564	5,000	8,361	1,853	2,865	-2,135
2009-10	10,152	507	2,016	8,819	1,693	1,839	-177
2010-11	10,777	434	2,585	8,724	1,636	2,487	-97
2011-12	10,456	404	2,769	8,144	1,694	2,716	-54
2012-13	10,460	371	2,388	8,457	1,587	2,373	-15
2013-14	10,400	301	2,314	8,188	1,484	2,513	199

Newfoundland and Labrador (2014-15 dollars per capita)							
Fiscal Year	Program Expenditure	Debt Charges	Natural Resource Revenue	Non-NRR Revenue		GAP	Deficit
				Total	Federal Transfers		
1970-71	4,621	423	36	2,806	2,032	2,238	2,202
1971-72	5,569	456	34	3,189	2,334	2,836	2,801
1972-73	5,749	442	32	3,222	1,337	2,969	2,938
1973-74	5,551	509	28	3,648	1,574	2,413	2,385
1974-75	5,924	546	17	3,905	1,638	2,565	2,548
1975-76	6,322	561	22	4,102	1,505	2,781	2,759
1976-77	6,981	682	48	4,417	1,609	3,245	3,197
1977-78	6,474	781	69	5,164	2,355	2,091	2,022
1978-79	6,960	839	81	5,427	2,609	2,372	2,291
1979-80	6,520	908	73	6,091	2,996	1,337	1,264
1980-81	5,961	934	90	6,403	3,209	492	402
1981-82	5,999	958	107	6,244	3,200	712	606
1982-83	6,133	1,007	84	6,341	3,201	799	715
1983-84	6,496	1,063	73	6,342	3,206	1,217	1,143
1984-85	6,211	1,184	65	6,482	3,317	913	849
1985-86	6,426	1,319	62	6,864	3,442	882	820
1986-87	6,586	1,382	86	7,150	3,667	818	732
1987-88	7,050	1,409	90	7,760	3,756	699	609
1988-89	7,336	1,367	62	7,962	3,959	741	679
1989-90	7,633	1,324	64	8,388	4,112	569	504
1990-91	7,753	1,345	59	8,085	3,836	1,012	954
1991-92	7,546	1,296	52	8,069	3,729	773	721
1992-93	7,656	1,259	38	8,203	3,872	712	674
1993-94	7,290	1,273	38	8,002	3,722	560	522
1994-95	7,613	1,352	45	8,560	4,158	405	360
1995-96	6,514	1,384	66	8,784	3,682	-887	-952
1996-97	6,397	1,374	55	8,589	3,787	-817	-872
1997-98	7,935	2,192	54	10,082	5,117	45	-9
1998-99	8,055	2,592	66	9,697	4,718	951	885
1999-00	8,359	2,247	100	9,454	4,124	1,152	1,052
2000-01	8,614	2,389	152	9,644	4,413	1,359	1,207
2001-02	8,988	2,370	131	9,682	4,168	1,676	1,545
2002-03	9,175	2,386	236	9,388	3,873	2,173	1,937
2003-04	9,967	2,357	346	9,724	3,704	2,600	2,254
2004-05	9,492	2,214	639	9,513	3,563	2,193	1,554
2005-06	10,206	2,192	1,284	11,163	4,352	1,235	-49
2006-07	10,526	1,782	1,249	10,997	3,996	1,311	62
2007-08	11,224	1,697	4,586	11,094	4,039	1,826	-2,760
2008-09	12,100	1,627	5,366	13,049	5,589	678	-4,688
2009-10	13,781	1,906	4,722	10,487	3,308	5,200	478
2010-11	13,891	1,735	5,446	10,985	3,655	4,641	-805
2011-12	14,075	1,576	6,215	10,846	3,184	4,806	-1,409
2012-13	13,536	1,525	3,842	10,367	1,940	4,694	852
2013-14	13,487	1,634	4,389	9,259	1,959	5,862	1,473

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Ron Kneebone is a Professor of Economics and Director of Economic & Social Policy in The School of Public Policy, both at the University of Calgary. His current research is examining the characteristics of Canadian federal, provincial and municipal fiscal policy choices, the problem of homelessness and income supports for persons with disabilities.

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