

# Equalization Reform

## Promoting Equity and Wise Stewardship



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Robert Murphy and Brian Lee Crowley

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## Executive summary

How do provinces with varying levels of revenue provide access to the same level and quality of health care, education, and welfare? The federal equalization program aims to make this possible through transfer payments to provinces with below average tax bases. The equalization formula measures each province's ability to raise revenue and then makes a compensatory transfer to provinces that fall below the average.

The method used to determine a province's fiscal capacity currently considers more than two dozen tax and resource revenue bases, including personal income taxes, business income taxes, consumption taxes, property taxes, and up to 50 percent of natural resource revenues. Currently, "natural resources" includes *nonrenewable* resources (NRNR), which violates the spirit of the program, creates perverse economic incentives and, the authors argue, should be removed.

There is a widespread misconception that resource rich provinces capture all the benefits from the development of their resources. After all, the province receives substantial royalty payments in exchange for allowing companies to exploit its natural endowments, such as oil. However, between a third and up to nearly half of total government revenues from natural resources accrue to the federal government through various federal taxes.

An ideal equalization formula would completely exempt provincial nonrenewable resource royalties if the provincial government uses this money to provide for a sustainable, long-term flow of income for its residents rather than spending on current services. For example, a province might use resource royalties to pay down outstanding debt, allowing it to lower taxes or to allocate other tax receipts to provide services (rather than servicing the debt). Another possibility is for a province like Alberta to invest its royalties in a "heritage fund", effectively transforming its wealth from a narrow base of physical assets (such as oil sands) into a diversified collection of financial assets. Although contributions to such a heritage fund would not be included in the equalization formula, the *dividend or interest income* generated by such a fund could finance a perpetual flow of government services, and therefore would be included in the calculation of a province's fiscal capacity.

The correct reason to exclude NRNR revenues lies in a better understanding of what we should be trying to equalize, namely the *income* of the provinces, not total revenues. From an accounting perspective, nonrenewable natural resource revenues are not income at all. They are the transformation of one type of asset into another. Again using Alberta as an example, the royalty revenue derived from selling a barrel of oil ought not to be seen as the creation of new income, but rather the conversion of an existing asset (the oil) into another type of asset (cash). When these revenues are included in a province's fiscal capacity, the formula overstates the income of resource rich provinces and creates an incentive immediately to spend rather than to invest the revenue. In other words the system encourages provinces to treat their assets as if they were income.

These proposed changes to the treatment of nonrenewable natural resource royalty revenues more closely reflect the spirit of the equalization program. Our suggested framework would also help provincial governments avoid excessive reliance on volatile resource revenues. As investment in Canadian natural resources grows and generates more profit, it is vital that each province use the revenues to ensure long-term prosperity.



# Sommaire

Comment les provinces qui ont des revenus si différents peuvent-elles assurer un accès égal et de qualité comparable aux soins de santé, à l'éducation et à l'aide sociale? Il s'agit de l'objectif visé par le Programme de péréquation du gouvernement fédéral aux termes duquel des paiements de transfert sont versés aux provinces dont l'assiette fiscale est inférieure à la moyenne. La formule de péréquation mesure la capacité de chaque province à percevoir des revenus et calcule ensuite le montant du transfert fédéral qui sert à réduire l'écart.

La méthode utilisée pour déterminer la capacité fiscale d'une province tient compte à l'heure actuelle de plus de deux douzaines de taxes et des recettes tirées des ressources naturelles. Parmi ces dernières, on compte l'impôt sur le revenu des particuliers, l'impôt sur le revenu des entreprises, les taxes à la consommation, les taxes foncières et jusqu'à 50 % des recettes tirées des ressources naturelles. Actuellement, pour les fins du programme, les « ressources naturelles » comprennent les ressources *non renouvelables*.

On croit à tort que les provinces riches en ressources accaparent tous les bénéfices provenant de leur mise en valeur. Après tout, les provinces perçoivent des redevances considérables lorsqu'elles permettent aux sociétés d'exploiter leurs richesses naturelles comme le pétrole. Cependant, la part qui est versée au gouvernement fédéral sous la forme de diverses taxes représente entre le tiers et presque la moitié des recettes des gouvernements tirées des ressources naturelles. Le fait de changer le statut des ressources non renouvelables dans la formule de péréquation ne signifie pas une réduction des recettes tirées des ressources non renouvelables dans l'assiette de taxation fédérale.

La formule de péréquation idéale exclurait entièrement les redevances tirées des ressources non renouvelables provinciales lorsque les gouvernements provinciaux utilisent cet argent pour générer des flux de revenus durables à long terme au bénéfice de leurs résidents plutôt que pour financer des services courants. Par exemple, une province pourrait utiliser ses redevances pour réduire son endettement, ce qui lui permettrait d'abaisser les impôts ou de réaffecter les recettes d'autres taxes pour le financement de ses services (plutôt que d'utiliser ses redevances pour le service de la dette). Une autre option pour une province comme l'Alberta consisterait à investir ses redevances dans un « fonds du patrimoine », transformant ainsi la richesse que constitue son étroite base d'actifs matériels (comme les sables bitumineux) en un ensemble diversifié d'actifs financiers. Les contributions à un tel fonds du patrimoine ne seraient pas incluses dans la formule de péréquation. Par contre, *les dividendes ou les revenus* d'intérêts générés par ce fonds le seraient et pourraient donc servir à financer des services gouvernementaux récurrents; ils entreraient donc dans le calcul de la capacité fiscale d'une province.

L'argument qui justifie le retrait des recettes provenant des ressources naturelles non renouvelables (RNNR) se fonde sur la nécessité de reconnaître que la valeur à pondérer est *le revenu* des provinces, et non pas le total des recettes. D'un point de vue comptable, les recettes provenant des ressources naturelles non renouvelables ne constituent aucunement un revenu. Ces recettes sont le résultat de la conversion d'un type d'actif en un autre. En prenant une nouvelle fois l'exemple de l'Alberta, les redevances obtenues de la vente de barils de pétrole ne devraient pas être considérées comme la création d'un nouveau revenu, mais plutôt comme la conversion d'un actif existant (le pétrole) en un autre type d'actif (recettes en espèces). Lorsque les recettes d'une telle conversion sont incluses dans la capacité fiscale d'une province, la formule surévalue son revenu si cette province est riche en ressources, une situation qui peut l'inciter à dépenser immédiatement ce revenu plutôt que de l'investir. En d'autres mots, le système encourage les provinces à considérer leurs actifs comme des revenus.

Cette proposition de changement relativement au traitement des redevances tirées des ressources naturelles non renouvelables se rapproche de l'esprit même du programme de péréquation. Le cadre que nous suggérons aiderait les gouvernements provinciaux à éviter une dépendance excessive à l'égard des recettes tirées des ressources, qui sont de nature irrégulière. Au fur et à mesure que l'investissement dans les ressources naturelles canadiennes croît et engendre davantage de bénéfices, il est essentiel que chaque province profite de ses revenus pour assurer sa prospérité à long terme.

# Introduction

The spirit behind the equalization program is to allow every Canadian comparable access to government provided services such as health care, education, and welfare, while at the same time delegating specific decisions over expenditures to the provincial level. To achieve this end, the federal government uses an equalization formula to make transfer payments to provinces with below average tax bases. Specifically, the equalization formula calculates each province's fiscal capacity to generate tax revenues, and then transfers federal payments to compensate for shortfalls in fiscal capacity.

Currently, the equalization formula considers a province's capacity to raise revenues from more than two dozen tax and resource bases, largely consisting of personal income taxes, business income taxes, consumption taxes, property taxes, and up to 50 percent of natural resource revenues. This paper focuses on the last item, arguing that if a resource is *nonrenewable* then the current equalization formula violates the spirit of the program and also creates perverse economic incentives.

The public debate on the proper treatment of nonrenewable natural resource revenues typically suffers from two widespread misconceptions. The first is the false belief that a resource rich province, such as Alberta, reaps all the government revenues from the exploitation of its natural endowments (like oil) through royalty payments made to the provincial government. In Section I, we demonstrate that this view is incorrect because a large portion of the total government revenues generated from natural resources accrues to the federal government through various federal taxes. Before addressing the specific issues raised by equalization, it is important to document the actual pattern of revenue distribution.

**Extracting oil transforms it from  
an asset in the ground into  
an asset in the bank,  
not income.**

The second major misconception plaguing the debate about equalization is the treatment of nonrenewable resource royalty revenues as analogous to sales tax or income tax receipts. We show in Section II that, from an accounting perspective, nonrenewable natural resource revenues are not *income* at all. They represent the transformation of one type of asset – a physical resource, such as oil in the ground – into another type of asset, which is cash in the government's coffers. By including revenues from nonrenewable natural resources in a province's fiscal capacity, the current equalization formula overstates the income of resource rich provinces and provides perverse incentives to provincial governments to spend rather than save their revenues.

After explaining the two misconceptions outlined above, we argue that an ideal equalization formula would completely exempt provincial nonrenewable resource royalties if the provincial government uses this money to provide for a sustainable, long-term flow of income for its residents rather than spending on current services. For example, a province might use resource royalties to pay down outstanding debt, allowing it to lower taxes or to allocate other tax receipts to providing services (rather than servicing the debt). Another possibility is for a province like Alberta to invest its royalties in a "heritage fund", effectively transforming its wealth from a narrow base of physical assets (such as oil sands) into a diversified collection of financial assets. Although contributions to such a heritage fund would not be included in the equalization formula, the *dividend or interest income* generated by such a fund could finance a perpetual flow of government services, and therefore would be included in the calculation of a province's fiscal capacity.



We conclude the paper by arguing that these proposed changes to the treatment of nonrenewable natural resource royalty revenues more closely reflect the spirit of the equalization program. Our suggested framework would also help provincial governments avoid reliance on volatile resource revenues.

## I The distribution of tax revenues generated by natural resource development

Many Canadians believe that without the equalization system, resource rich provinces such as Alberta would reap all the benefits of their natural endowments, while resource poor provinces would be left in the cold. There are several errors with this popular misconception.

First, it is simply not true that, for example, the development of the oil sands in Alberta showers economic benefits exclusively on Albertans. Speaking purely in economic terms (ignoring cultural and other important factors), every Canadian worker benefits from the expansion of job opportunities in Alberta. This is because interprovincial migration means that a healthy Albertan economy provides an option for the unemployed in other provinces. Put simply, job seekers in other provinces with the relevant skills can move to Alberta or other resource rich provinces. This reduces the competition for jobs in the provinces from which these workers emigrate, thereby improving the labour market even for workers who do not possess the skills to work in the natural resource sector and who remain in their province.

**Every Canadian worker benefits from increased job opportunities in any province.**

The development of natural resources benefits all consumers, not only in other provinces but around the world. Alberta's crude oil production, for example, lowers the *world* oil price from what it otherwise would be. This ultimately reduces gasoline and other energy prices, increasing the standard of living for motorists as well as consumers of a wide variety of petroleum based products.

International trade theorists have developed models<sup>1</sup> illustrating the possibility of a resource boom (in the oil sector, for example) leading to an appreciation of a country's exchange rate that curtails manufacturing because its goods become more expensive. In this scenario, the benefits discussed above might be partly offset by losses in other industries. Even if this occurs, and there is little empirical evidence to support this theory,<sup>2</sup> the overall point remains that there are several mechanisms through which the market makes natural resource development advantageous for people other than their immediate owners.

Putting aside the market economy's transmission mechanisms, *all* Canadians benefit indirectly from natural resources because their development generates large tax revenues for the federal government. This is a crucial point for the discussion of the equalization program, because many Canadians mistakenly believe that resource rich provincial governments capture all of the associated revenues through royalty payments.

To gain some idea of the revenues that flow to the federal government from the development of nonrenewable natural resources, we summarize the results of two recent and independent models of Cana-

da's energy sector. *Both* models, despite different methods and assumptions, show that a large share of revenues is captured by the federal government.

**Natural resource development generates large federal tax revenues, benefitting all Canadians.**

## Study #1: Alberta Oil Sands (CERI)

The first model we review comes from the Canadian Energy Research Institute (CERI).<sup>3</sup> The purpose of the CERI study was to model the economic impacts (notably for GDP and job growth in Canada and the US) stemming from oil sands projects in Alberta over a 25-year horizon under four scenarios ("cases"), reflecting different assumptions about the development of pipeline capacity, including the Keystone XL, the Northern Gateway, and others on the drawing board (see the appendix for details on the methodology of the CERI paper).

The CERI findings are consistent with our observation that natural resource development in one province benefits other jurisdictions. For example, the CERI study has one scenario showing that if all planned oil sands projects (at the time of the study) continue on schedule, this would boost US GDP by CAD\$775 billion between 2010 and 2035, and US employment by up to 600,000 job-years over this period.

Even in the most conservative of scenarios, where there is no expansion of existing pipeline capacity, table 1 shows CERI's estimates of the provincial distribution of economic benefits attributable to the development of Alberta's oil sands.

**TABLE 1: CERI estimates of regional impact due to Alberta oil sands development, "Case 1," from 2010-2035**

INVESTMENTS AND OPERATIONS	GDP (\$CAD MILLION)	GDP (% OF TOTAL IMPACT)	EMPLOYMENT (THOUSAND PERSON-YEARS)	EMPLOYMENT (% OF TOTAL IMPACT)
Alberta	2,165,038	94.8%	10,372	86.1%
Ontario	64,888	2.8%	882	7.3%
British Columbia	28,776	1.3%	426	3.5%
Quebec	14,066	0.6%	211	1.8%
Manitoba	4323	0.2%	67	0.6%
Saskatchewan	4525	0.2%	55	0.5%
New Brunswick	838	0.0%	12	0.1%
Nova Scotia	857	0.0%	12	0.1%
Newfoundland & Labrador	369	0.0%	4	0.0%
Northwest Territories	151	0.0%	2	0.0%
Nunavut	30	0.0%	0	0.0%
Prince Edward Island	65	0.0%	1	0.0%
Yukon Territory	40	0.0%	1	0.0%
<b>Total Canada</b>	<b>2,283,966</b>	<b>100.0%</b>	<b>12,046</b>	<b>100.0%</b>

SOURCE: Adapted from Honarvar et al. (2011), Table 1.3, page 12.

As table 1 indicates, the CERI model finds that the lion's share of both GDP and employment impacts from oil sands projects accrue to Alberta itself. Even so, these projects produce substantial benefits in absolute terms for other provinces. For example, even Prince Edward Island – currently the biggest per



capita beneficiary of the equalization system – will see \$65 million in extra GDP, and 1000 “person-years” of extra employment over the 2010-2035 period from developing Alberta’s oil sands, according to the conservative assumptions of CERI’s Case 1 scenario. It is worth pointing out that the CERI model does *not* capture the indirect benefits we discussed above, such as how job opportunities in Alberta alleviate unemployment in other provinces due to migration, or that increased Albertan oil output lowers energy prices. Rather, the CERI model’s results in table 1 capture the impact of oil sands projects buying materials from other provinces and the subsequent spending that this sets in motion.

The CERI model shows that while the bulk of purchases made by oil sands projects stays in Alberta, the distribution becomes markedly less lopsided for *government revenues*. Relying on their underlying model of economic activity triggered by oil sands projects, the CERI authors are able to forecast the impact on government revenues, both by type of revenue and level of government. Table 2 summarizes the tax and royalty receipts Alberta and the federal government will make because of oil sands projects in the province.

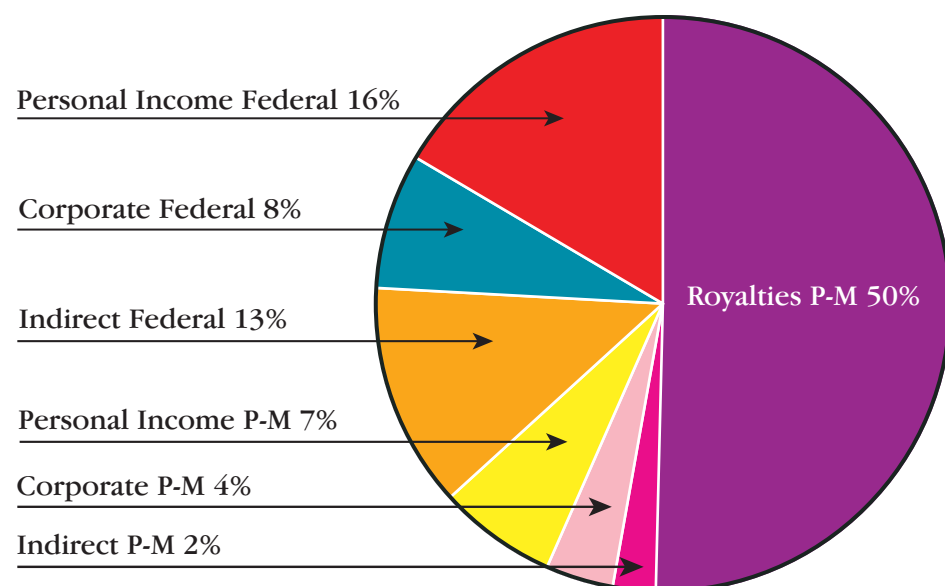
**TABLE 2 Alberta and federal government revenues from oil sands projects, “Case 1,” 2010-2035**

TYPE OF REVENUE	PROVINCIAL AND MUNICIPAL GOVERNMENTS IN ALBERTA (\$CAD MILLION)	FEDERAL GOVERNMENT (\$CAD MILLION)	FEDERAL SHARE OF TOTAL
Indirect	21,480	112,769	84%
Personal Income	59,342	147,342	71%
Corporate	33,900	68,124	67%
Royalties	450,000	–	0%
<b>Total</b>	<b>564,722</b>	<b>328,234</b>	<b>37%</b>

SOURCE: Adapted from Honarvar et al. (2011), page 13, as well as private communication with CERI for disaggregated revenue data.

Table 2 shows that while the royalties paid to the Alberta government from oil sands projects constitute the single largest part of government revenues, these projects also generate large tax revenues at both the provincial and federal levels (see figure 1). Over the 2010-2035 period, in this conservative scenario the CERI model projects that Alberta’s oil sands will generate \$328 billion for the federal government. Even with large provincial royalties, the federal government still collects 37 percent of the total revenues generated by these projects.

**FIGURE 1 Distribution of government revenues from Alberta’s oil sands projects, “Case 1,” 2010-2035**



This is quite significant for the discussion of equalization policy. While the CERI study focuses on Alberta's oil sands, the principle holds generally: even without a formal equalization program, the development of nonrenewable energy resources automatically redistributes wealth from resource rich to resource poor provinces through federal government fiscal policy. Citizens in resource poor provinces benefit from the abundance of their neighbors because higher federal tax collections stemming from resource projects allow for more federal services or lower federal taxes.

**Projects in Alberta produce substantial benefits for other provinces.**

## Study #2: Entire Canadian Oil and Gas Sector (CERI)

The previous section summarized the findings of a July 2011 CERI study on the impact of Alberta's oil sands. Now, we look at a July 2009 CERI study that examined the entire oil and gas industry.<sup>4</sup> Specifically, the 2009 CERI report analysed the

economic impacts on the following types of energy, in the following provinces and territories: Alberta (conventional oil, conventional gas, CBM, oil sands, major capital projects), British Columbia (conventional oil, conventional gas, shale/tight gas, major capital projects), Saskatchewan (conventional oil, conventional gas), Manitoba (conventional oil), Quebec (major capital projects), Nova Scotia (conventional gas) and Northwest Territories (major capital projects). Due to insufficient data analysis was not possible for several sources of energy, such as the Oil Sands in Saskatchewan or the large potential of the shale gas plays in Quebec (CERI 2009, 2).

With this broad focus, the CERI study was able to estimate provincial and federal tax receipts from the seven provinces and territories that produce oil and gas. These results are summarized below in tables 3 and 4. Table 3 shows federal tax revenues from oil and gas development over 25 years, while table 4 presents the revenues for provincial governments.

In both tables, each column represents the tax revenues generated across *all provinces and territories* by the oil and gas industry in the seven provinces and territories that produce oil and gas. For example, looking at the second column in table 3 for BC and moving down, we see that the oil and gas industry in British Columbia will generate an estimated \$1.375 billion in federal tax receipts in Alberta, \$52.924 billion in British Columbia itself, \$290 million in Manitoba, and so on. Total federal tax receipts in *all* provinces due to BC's oil and gas industry amount to an estimated \$57.73 billion over the 25-year period (these figures are simple summations for the period 2008 to 2033, adjusted for inflation, but are not discounted present values).

**After royalties, the federal government still collects 37 percent of the total revenue generated.**

**TABLE 3 Total federal tax revenues due to oil and gas industry, 2008-2033**  
(millions of 2008 dollars)

	AB	BC	MB	NT	NS	QC	SK	TOTAL
AB	266,886	1375	37	185	37	5	1509	270,033
BC	13,101	52,924	38	226	36	6	1063	67,394
MB	2848	290	1546	70	3	2	854	5613
NB	625	103	5	20	12	3	64	832
NL	450	49	2	13	8	1	37	561
NT	449	39	1	2906	19	-	35	3449
NS	977	136	5	32	1018	3	72	2243
NU	222	22	1	158	1	-	13	417
ON	14,768	1580	78	383	41	29	2081	18,960
PE	143	23	1	6	6	1	12	192
QC	4900	793	37	155	16	219	425	6546
SK	5785	330	23	62	5	2	25,870	32,076
YT	208	65	1	9	-	-	10	293
<b>Total</b>	<b>311,364</b>	<b>57,730</b>	<b>1773</b>	<b>4224</b>	<b>1201</b>	<b>272</b>	<b>32,046</b>	<b>408,609</b>

SOURCE: Adapted from CERI 2009, p. 10. (Some totals appear slightly incorrect due to rounding.)

Table 4 presents how much each provincial and territorial government receives from oil and gas development. The fourth row in table 4, for example, shows that of the total \$843 million in New Brunswick's provincial tax receipts generated by oil and gas activity in other provinces, \$633 million is due to the oil and gas industry in Alberta, \$104 million comes from this industry's activities in British Columbia, and so on.

**TABLE 4 Total provincial tax revenues due to oil and gas industry, 2008-2033**  
(millions of 2008 dollars)

	AB	BC	MB	NT	NS	QC	SK	TOTAL
AB	152,257	784	21	105	21	3	861	154,052
BC	12,358	49,924	36	213	34	6	1003	63,574
MB	3119	317	1693	77	3	2	936	6147
NB	633	104	5	20	12	3	65	843
NL	598	65	3	17	10	2	49	745
NT	222	19	-	1437	9	-	17	1705
NS	1109	155	5	36	1154	3	81	2544
NU	68	7	-	48	-	-	4	127
ON	15,317	1639	81	397	42	30	2158	19,665
PE	155	25	1	6	7	1	13	208
QC	6459	1046	49	205	22	289	560	8629
SK	5986	341	23	64	5	2	26,767	33,188
YT	94	30	-	4	-	-	5	133
<b>Total</b>	<b>198,375</b>	<b>54,457</b>	<b>1918</b>	<b>2630</b>	<b>1320</b>	<b>341</b>	<b>32,519</b>	<b>291,560</b>

SOURCE: Adapted from CERI 2009, p. 11. (Some totals appear slightly incorrect due to rounding. NOTE: Cells in color changed significantly to remove an inconsistency in the totals in the original document, due to an apparent typographical error.)

Looking at just tax receipts (excluding royalty payments), the CERI 2009 study estimates that for the whole 25-year period, the Canadian oil and gas industry will generate \$408.6 billion in federal tax revenues and \$291.6 billion in provincial tax revenues, implying the federal government reaps 58 percent of total projected tax receipts (excluding royalties). However, the study also estimates that the Alberta, British Columbia, Saskatchewan, and Manitoba governments collectively will receive \$428.9 billion in royalty payments from oil and gas during the same period. Including royalties, the federal government still reaps 36 percent of all tax and royalty payments in the study, virtually identical to its projected share (37 percent) from Alberta's oil sands.

**In the next 25 years, the oil and gas industry will generate over \$700 billion in tax revenue.**

### **Study #3: Enbridge Northern Gateway Pipeline (Wright Mansell Research Ltd.)**

A March 2010 study conducted by the independent group Wright Mansell Research analysed the economic impact of the Enbridge Northern Gateway pipeline.<sup>5</sup> The study explains the background:

Enbridge Northern Gateway Pipelines (Northern Gateway) is proposing to construct and operate a pipeline project to provide tidewater access to new markets for Canadian oil sands production. This consists of a line from near Edmonton, Alberta to a marine terminal at Kitimat, British Columbia to transport synthetic crude oil (SCO) and diluted bitumen and a line to transport condensate from Kitimat to Edmonton. At full capacity these lines could move an average of 525,000 barrels per day (bpd) (or 83,400 m<sup>3</sup> per day) of oil and 193,000 bpd (or 30,700 m<sup>3</sup>/d) of condensate. The anticipated in-service date for the project is 2016 (Wright Mansell 2010, 4).

Specifically, the Wright Mansell study looks at the “direct and indirect effects arising from the construction and operation of the pipelines, from the increase in prices received by Canadian oil producers” and “from the reinvestment arising from these increased revenues.”<sup>6</sup> Interestingly, the study does *not* assume that Canadian petroleum output will be affected by the pipeline. Instead, all of the impacts are due to higher prices Canadian petroleum exporters can obtain by selling to Asia rather than just the United States, if the Northern Gateway is completed.<sup>7</sup>

At first glance, the average Canadian might think that higher prices for Canadian oil exporters – without actually making more oil available to Canadian motorists – would only benefit the exporters themselves, or perhaps the people living in oil-rich provinces. This is not true: even in this ‘extreme’ example, improved export opportunities for Canadian oil producers showers benefits on *all* Canadians, mostly through federal tax collections.

**More oil exports benefit all Canadians through higher tax revenues.**

Table 5 summarizes the Wright Mansell estimate of the Northern Gateway pipeline impact on federal and provincial revenues through 2046.



**TABLE 5 Provincial and federal revenues due to the Northern Gateway Pipeline through 2046 (millions of constant 2009 dollars)**

REGION	BC	AB	ON	QC	SK	OTHER	CANADA
Provincial Revenue	6709	32,014	565	198	3914	1574	44,974
Federal Revenue	5133	26,054	912	145	2911	1099	36,253
Federal % of Total	43%	45%	62%	42%	43%	41%	45%

SOURCE: Adapted from Wright Mansell 2010, p. 7.

In the Wright Mansell study – which only considered the effect of higher prices for Canadian oil exports due to the Northern Gateway pipeline – the federal government reaps 45 percent of the increase in government revenues, slightly more than its share of 36 percent and 37 percent in the two CERI studies.

These models are fraught with potential error. For example, they must make various assumptions concerning oil prices, resource supplies, and greenhouse gas legislation. On top of that, the modelers must decide how many “rounds” or “layers” of economic impacts to assess (as higher investment leads to income growth, which leads to more investment, and so on) and they must implicitly have a model of how the Canadian product and labour markets react to changes in the petroleum industry (see the appendix for a discussion of the major differences between the CERI and Wright Mansell models.)

For the purposes of the present paper, however, these modeling challenges are largely irrelevant, since our focus is on the federal share of tax revenues. The message is that the development of nonrenewable resources in provinces such as Alberta produces very large flows of tax revenues outside of these provinces. We saw that two different modeling approaches estimated that the federal government reaps anywhere from 36 percent to 45 percent of the total government revenues generated by these activities.

To reiterate, this fact by itself does not favor one equalization proposal over another. However, it *does* correct a common public misperception about the ‘winners and losers’ from the development of nonrenewable natural resources. Having clarified the overall pattern of government revenue distribution from these resources, this paper proceeds with the more subtle issue of the proper equalization formula.

**The federal government reaps  
36-45 percent of nonrenewable  
resource revenue.**

## II *Nonrenewable* natural resource revenues are not “income” and should be excluded from equalization<sup>8</sup>

This section makes the simple yet powerful observation that, in a straightforward accounting sense, government revenues flowing from *nonrenewable* natural resources (such as oil sands, not renewable resources such as timber or fisheries), do not constitute income in its usual sense.<sup>9</sup> Therefore, when calculating a province’s fiscal capacity for the purposes of equalization, it is inappropriate to treat royalty payments from the sale of oil, for example, the same as a province’s personal income tax receipts.

Rather than constituting a flow of income, a provincial government's transfer of finite natural resources for cash constitutes a swap of assets. Selling depletable natural resources is a balance sheet transaction, not an income generating one.

Economic theory defines *income* as the flow of consumption services an entity can enjoy in a certain period without reducing the capital value of the entity in the next period. In the context of Canadian equalization and the calculation of a province's fiscal capacity, it is sensible to treat items such as personal income tax receipts as income for the provincial government. This is because, generally speaking, the ability of the residents of a province to sell their labour for wages, and hence generate personal income tax payments, is not diminished during the course of a year. In other words, under normal circumstances it makes perfect sense to treat an individual's wages as *net* income and hence to treat the resulting tax revenues as net income for the relevant government body.

**Selling depletable resources is a balance sheet transaction, not an income generating one.**

In stark contrast, nonrenewable natural resources like Alberta's oil sands do *not* represent an infinite fund of future services. When a barrel of oil is extracted from the ground, there is necessarily one fewer barrel available for future generations. Advances in extraction technology and changes in the world price of oil cannot alter this brute physical reality. It is bad economics and bad accounting to classify the revenue from the sale of a barrel of oil as net income, as the sale merely transforms the province's wealth from one form (physical oil in the ground) into another form (money).

Currently, the equalization formula counts up to half of a province's resource revenues as income, treating them like personal income tax or sales tax receipts. However, this treatment makes little sense from an economic or accounting perspective. An analogy illustrates the problem:

**Calling the revenue from the sale of oil "net income" is bad economics and bad accounting.**

The revenue from bread that Bill the Baker sells is income – it affects the profits and losses of the bakery. However, if Bill sells one of his ovens, the money from that sale does not enter the income statement. This sale is a balance sheet transaction, because all Bill has done is to exchange a physical asset (the oven) for a financial asset (the cash from the sale).

Taxes on personal and corporate income as well as sales are like revenue from the sale of bread. They are properly considered income for the purposes of providing public services.

Nonrenewable resource royalties are quite different. When these resources are sold and a royalty is levied on that sale, all that has changed is that the province has a cash asset instead of an asset in the ground. The trouble is, equalization does not make the distinction between income and the proceeds from the sale of a capital asset. It treats royalty revenues the same as it treats personal, corporate and sales taxes.

Equalization payments fall in response to changes in royalties even though all the province has done is convert a physical asset into a financial asset.<sup>10</sup>

In light of these difficulties, we propose a simple solution: if a province dedicates its revenues from non-

renewable natural resources to long-term purposes, then these funds should be excluded from the calculation of the province's fiscal capacity.<sup>11</sup> In particular, if a provincial government uses royalty receipts to either (a) pay down its outstanding government debt or (b) invest in a "heritage fund" of financial assets, then these monies should be excluded from the calculation of the province's income for the period. However, the *earnings* from such a heritage fund represent genuine income each period, and therefore should be included in the calculation of fiscal capacity.

Making this simple change to the fiscal capacity formula would better satisfy the spirit of the equalization system. Yes, a resource rich province – other things being equal – is wealthier than a resource poor province, and Canadians understandably desire some redistribution based on this geographical accident. However, the sensible and fair thing to do is redistribute genuine *income* on a periodic basis, *not* to effectively levy a stiff wealth tax that kicks in only when a province decides to develop its resources.

**Provincial NRNR revenues dedicated to saving or debt reduction should be excluded from its fiscal capacity.**

Our proposed change to the fiscal capacity formula would reward provincial governments for the proper, far-sighted stewardship of their natural heritage. Under this framework, a provincial government suffers no penalty from transforming the *composition* of its wealth from the narrow (and risky) form of resources in the ground into the safer, more diversified form of financial assets. Our framework would encourage provincial governments to base their budgets on the *dividends* generated by a heritage fund, as opposed to the much more volatile flow of *contributions* into the fund.

This last point bears repeating. It is a well-known paradox that resource rich areas of the world often have very poor populations. Not coincidentally, these areas often have irresponsible governments that survive because of their reliance on the sale of lucrative but volatile resource sales. When, for example, the world oil price is high, these governments see a large spike in their receipts and often boost their expenditures accordingly. When oil prices inevitably fall, government revenues crash in tandem, but the increased spending commitments are not nearly as flexible.<sup>12</sup>

**The fiscal capacity formula should be changed to reward provinces for good stewardship.**

Our suggested framework would encourage provincial governments to escape this boom-bust cycle. When the price of oil spikes, it would generate large increases in royalty revenues. However, our framework would encourage provincial governments *not* to spend these windfall receipts on current programs, but rather to make large contributions to a heritage fund or to pay down outstanding debt. The windfall payments would still benefit the province's current generation, but only because a larger heritage fund (or smaller debt) would yield higher net investment earnings in subsequent periods. The volatility in oil prices would translate into volatile contributions to the heritage fund (or debt repayments), *not* into volatile government spending on programs.

Under our suggested framework, the present generation would not be consuming a finite resource at the expense of future generations, because the people today would only live off of the genuine *income* generated by the growing pool of financial assets. Or, equivalently, the present generation would live off of the growing flow of government services that could be financed from other tax sources, as government debt was reduced. In either case – whether nonrenewable resource revenues were placed into a heritage fund or used to retire existing debt – the provincial government would be acting as a caretaker of the region's wealth, serving the interests of both current and future generations.

# Conclusion

The spirit behind the equalization program is that every Canadian should have comparable access to government provided services, while at the same time delegating specific decisions over expenditures to the provinces. However, the current equalization formula – including of some nonrenewable natural resource revenues in the calculation of fiscal capacity – does not satisfy the intent of the program, and implicitly penalizes far-sighted behavior by provinces with their nonrenewable natural resource revenue.

Many Canadians believe that only provincial governments benefit from the nonrenewable natural resources in their jurisdictions, but the data show this is false. It is true that *royalty payments* do not flow to the federal government, but a 2011 CERI study estimates that royalties account for only 50 percent of the total government revenues generated by the Alberta oil sands. When we include corporate and personal income and indirect taxes from resource development, the federal government reaps 37 percent of the total. A 2010 Wright Mansell study of the Northern Gateway pipeline estimates that the federal government would capture 45 percent of the total revenues generated by the project. These estimates correct a common misperception that provincial governments capture all the benefits of natural resource endowments within their jurisdictions.

**Putting NRNR revenues into a heritage fund shifts the volatility of oil prices away from government program spending and into fund contribution.**

Because the equalization program is designed to transfer funds to provinces that are relatively deficient in their ability to raise revenues internally, it is important to correctly calculate the actual fiscal capacity of the different provinces. The current formula includes up to 50 percent of a province's nonrenewable natural resource revenues. This is wrong in an accounting sense, because such revenues really are not true income but rather a transformation of capital assets from one balance sheet to another.

We propose that if a province dedicates its revenues from nonrenewable resources to long-term investments such as paying down the government debt or investing in a heritage fund, then these revenues in the present period should *not* be construed as income in the same way as personal income tax receipts. Our suggestion makes sense both from an accounting and economic perspective, helps provinces insulate their finances from the boom-bust cycle of resource royalties, and better satisfies the ultimate purpose of the equalization program.



# Appendix

This appendix outlines the methodological approaches of the CERI and Wright Mansell studies, so that the reader can understand why they generate the slightly different estimates of government revenue flows mentioned in the body of the paper.

One obvious difference is that the CERI models are estimating the impact of either Alberta oil sands or the entire oil and gas industry over a 25-year horizon. In contrast, the Wright Mansell study looks at the effect of the Northern Gateway pipeline, holding petroleum output fixed, but over a 35-year horizon. Even if they were using the same model, this difference in the scenarios and timeframes would be one source of variation in their estimates of government revenue distribution.

Another source of variation comes from the various assumptions that necessarily go into such detailed and long-term forecasts. The 2011 CERI study says the following in a section titled “Methodology” (p. 9):

Among the four cases, we recognize that the Keystone XL pipeline, the Northern Gateway pipeline, and the Announced and Potential Export Pipelines are intended to transport bitumen and SCO [synthetic crude oil] to different market destinations. More specifically, the Keystone XL and the Announced & Potential Export Pipelines would transport bitumen and SCO to the US market, while the Northern Gateway pipeline would provide transportation to the Pacific Ocean and the international oil market. In order to differentiate the economic impacts of the Alberta oil sands industry on the US and international markets, we have employed CERI’s proprietary US-Canada Multi-Regional I/O Model (*UCMRIO 2.0*). We expect that the projects which deliver bitumen and SCO to the US will create stronger energy ties between Canada and the US. These stronger future energy ties, which will elevate the energy trade between the two countries, are not captured in the I/O tables.

The first case under discussion in this report, Existing Pipeline Operations, is based on the existing trade pattern between the US and Canada. CERI employs the *Reference Case* scenario of the above-mentioned I/O model to evaluate the economic impact of Alberta’s existing oil sands projects on the US and Canadian economies.

As the Keystone XL Pipeline project has not yet received final State Department approval, judging its impact on North American crude transportation involves speculation on future developments. We therefore utilize a *Plausible Scenario* (see CERI Study 1247 for more information on this scenario) to forecast economic impacts and how the US-Canada trade pattern could be affected.

The Northern Gateway Pipeline project, also not yet approved, would not have as profound an effect as Keystone XL on the US-Canada trade pattern because the entire pipeline would be located within Canada – crude would ship to a Canadian port for delivery to various international destinations, possibly including or not including the US. For these reasons, we return to the *Reference Case* scenario to analyze economic impacts expected with an operational Gateway pipeline.

Finally, this report analyzes the effects of all oil sands projects and the required transportation capacity to move the produced product. In this case, the destina-

tion of much of the crude will be US refineries. Therefore, there would be considerable implications for the US-Canada trade pattern; the *Plausible Scenario* is the economic tool used to measure impacts under this situation.

The lengthy quotation above illustrates the numerous assumptions that must go into any model of the Canadian energy sector. In a section titled “Assumptions and Inputs” (pp. 24-25), the Wright Mansell paper lists the following:

- To convert current dollar values to real (or inflation adjusted values) an average rate of inflation of 2% per year is assumed for both the US and Canada. Real values are expressed in terms of mid-2009 dollars.
- To convert amounts denominated in U.S. dollars to Canadian dollars, an exchange rate of \$1Cdn = \$0.91US is assumed for 2010, falling by \$0.01 per year until 2015 and then remaining at \$1Cdn = \$0.85US in all subsequent years.
- The incremental benefits are estimated over an operating period of 30 years from the third quarter of 2016 to 2046. Although the pipeline would be expected to operate beyond 2046, the benefits are presented for only the first 30 years of operations.
- To estimate the oil price benefits for the period 2025 to 2046 the average price increase estimated by Muse for the years 2022 to 2024 is used.
- There are many environmental regulations applicable to the development and operations of pipelines, oil sands facilities and other upstream oil and gas facilities. The anticipated costs of meeting these regulatory requirements are generally included in the capital and operating costs used in the analysis. An exception is the treatment of future prices or penalties related to CO<sub>2</sub> emissions. While there is now a price of \$15/tonne for CO<sub>2</sub> emitted in Alberta, there remains considerable uncertainty as to future provincial and federal policies and regulations that will affect these prices / costs / penalties. In the analysis the assumption is that whatever the future carbon price, the revenue impact for governments will be neutral. That is, it is assumed that any incremental government revenue as a result of CO<sub>2</sub> emissions policies will be used to reduce other taxes or charges such that there will be no net change in overall government revenues.

In light of the numerous variables at play, different modelers will make different (yet plausible) assumptions, and this is another source of variation in their results.

Yet another major methodological difference between the CERI and Wright Mansell studies is how many “rounds” of spending are included in the analysis. The Wright Mansell study explains (pp. 19-20):

The modeling of Canadian crude oil market allocation and price/netback impacts associated with the introduction of Northern Gateway was undertaken by Muse Stancil & Co. The details can be found in the report hereafter referred to as the ‘Muse report’. The economic impact modeling outlined below uses these estimates of oil price benefits to calculate the national and regional macroeconomic benefits associated with Northern Gateway.

The modeling of the macro-economic impacts associated with Northern Gateway focuses on estimates of selected economic measures, such as investment, labour income, output (GDP), employment and government revenues, taking into account the ‘multiplier’ or direct plus indirect effects. To illustrate, a given expenditure on construction in Canada will involve an increase in purchases of labour, steel, concrete and so on. These are referred to as **Direct** impacts. However, this expenditure will also cause those industries or sectors providing the increased inputs to the construction project to increase their purchases from other industries or sectors. These **Indirect** impacts will be more significant the greater the backward and forward linkages in the economy. Direct and indirect impacts are typically estimated using an Input-Output Model.

Then in a footnote the Wright Mansell study elaborates:

The standard method of measuring the net impacts after all complex actions and reactions are complete involves the use of an interregional input-output model. An input-output model simulates the effect on the economy when overall output of an industry changes in a specific region or when final demand for a particular commodity changes in a specific region (these changes are referred to as shocks). It can be noted there will also be **Induced** impacts as the larger labour income translates into increases in consumer expenditures and as additional government revenues translate into increased expenditures by government on goods and services. In this analysis, the induced impacts have not been included in the estimates.

In contrast, the CERI models *do* include “induced” impacts, as well as the direct and indirect ones.<sup>13</sup> This difference is yet another reason for the variability in forecasts between the two approaches.

# About the authors

## Robert P. Murphy



Robert P. Murphy has a Ph.D. in economics from New York University. After teaching for three years at Hillsdale College, Murphy entered the financial sector to work as an analyst and portfolio manager for Laffer & Associates. He currently runs Consulting By RPM and is the Senior Economist for the Institute for Energy Research, a D.C.-based think tank. Murphy has published several books for the layperson on economics, including *The Politically Incorrect Guide to Capitalism* (Regnery, 2007) and *Lessons for the Young Economist* (Mises Institute, 2011). He is also the author of numerous studies and peer-reviewed articles, including *Taxifornia: California's tax system, comparisons with other states, and the path to reform for the Golden State* (with Jason Clemens, Pacific Research Institute, 2010).

## Brian Lee Crowley



Brian Lee Crowley has headed up the Macdonald-Laurier Institute (MLI) in Ottawa since its inception in March of 2010, coming to the role after a long and distinguished record in the think tank world. He was the founder of the Atlantic Institute for Market Studies (AIMS) in Halifax, one of the country's leading regional think tanks. He is a former Salvatori Fellow at the Heritage Foundation in Washington DC and is a Senior Fellow at the Galen Institute in Washington. In addition, he advises several think tanks in Canada, France and Nigeria.

Crowley has published numerous books, including two bestsellers: *Fearful Symmetry: the fall and rise of Canada's founding values* (2009) and MLI's first book, *The Canadian Century; Moving Out of America's Shadow*, which he co-authored with Jason Clemens and Niels Veldhuis.

Crowley twice won the Sir Antony Fisher Award for excellence in think tank publications for his health care work and in 2011 accepted the award for a third time for MLI's book, *The Canadian Century*.

From 2006-08 Crowley was the Clifford Clark Visiting Economist with the federal Department of Finance. He has also headed the Atlantic Provinces Economic Council (APEC), and has taught politics, economics and philosophy at various universities in Canada and Europe.

Crowley is a frequent commentator on political and economic issues across all media. He holds degrees from McGill and the London School of Economics, including a doctorate in political economy from the latter.



# Endnotes

- 1 An early paper in this literature is: Corden, W. Max and J. Peter Neary. 1982. "Booming Sector and De-industrialization in a Small Open Economy." *The Economic Journal* 92 (December): 825-848.
- 2 Hutchison, Michael. 1994. "Manufacturing Sector Resiliency to Energy Booms: Empirical Evidence from Norway, the Netherlands and the United Kingdom." *Oxford Economic Papers* 46 (2): 311-329.
- 3 Honarvar, Afshin, Dinara Millington, Jon Rozhon, Thorn Walden, and Carlos A. Murillo. 2011. *Economic Impacts of Staged Development of Oil Sands Projects in Alberta (2010-2035)*. Canadian Energy Research Institute, Study No. 125. Available at: [http://www.ceri.ca/images/stories/CERI\\_IO\\_Conventional\\_Report\\_June\\_2011.pdf](http://www.ceri.ca/images/stories/CERI_IO_Conventional_Report_June_2011.pdf).
- 4 Howard, Peter, et al. 2009. *Economic Impacts of the Petroleum Industry in Canada*. Canadian Energy Research Institute, Study No. 120. Available at: <http://www.ceri.ca/docs/CERIIOSummaryReport.pdf>.
- 5 Wright Mansell Research Ltd. 2010. Public Interest Benefits of the Enbridge Northern Gateway Pipeline Project. Canadian Environmental Assessment Agency. Available at: [http://www.ceaa.gc.ca/050/documents\\_staticpost/cearref\\_21799/4234/Attachment\\_02.pdf](http://www.ceaa.gc.ca/050/documents_staticpost/cearref_21799/4234/Attachment_02.pdf).
- 6 The study also considers benefits from diversifying the Canadian export market, but these are not quantified. See page 6 of: Wright Mansell Research Ltd. 2010. Public Interest Benefits of the Enbridge Northern Gateway Pipeline Project. Canadian Environmental Assessment Agency. Available at: [http://www.ceaa.gc.ca/050/documents\\_staticpost/cearref\\_21799/4234/Attachment\\_02.pdf](http://www.ceaa.gc.ca/050/documents_staticpost/cearref_21799/4234/Attachment_02.pdf).
- 7 The study "assumes that total Canadian oil sands production remains the same as in a benchmark forecast (the CAPP 'Expected' forecast). However, in the Northern Gateway Case some Canadian oil exports that would otherwise go into US markets are sent to Asian markets. While total Canadian oil sands production volumes are unchanged, there is an increase in the value of this production which would benefit Canadian oil producers. The incremental net revenues from this would in part be reinvested and generate further gains to output, employment, incomes and government revenues in Canada." See page 7 of: Wright Mansell Research Ltd. 2010. Public Interest Benefits of the Enbridge Northern Gateway Pipeline Project. Canadian Environmental Assessment Agency. Available at: [http://www.ceaa.gc.ca/050/documents\\_staticpost/cearref\\_21799/4234/Attachment\\_02.pdf](http://www.ceaa.gc.ca/050/documents_staticpost/cearref_21799/4234/Attachment_02.pdf).
- 8 The arguments of Section III rely on Brian Lee Crowley and Bobby O'Keefe. 2006. "The 100% solution: How to handle natural resource revenues under equalization." *AIMS Special Equalization Series*, Commentary No. 3. Available at: <http://www.aims.ca/site/media/aims/Equalization3.pdf>.
- 9 A reviewer of an early draft of this paper raised the question of capital gains. Since provincial governments never had to "pay for" the nonrenewable natural resources in their jurisdiction, then one might plausibly argue that any revenues obtained from their sale should be treated as taxable income *not* because an asset sale is income per se, but rather because the transaction is the only practical occasion on which to assess the owner for the realized capital gain on the asset. (Since the province paid \$0 for the asset, the market value at time of sale is the realized gain.) From a theoretical perspective there is some validity to this criticism. However, we note that such an approach is not used with any other asset that generates income flows. For example, if a brain surgeon moves from one province to another, there is nothing in the equalization formula that would capture the capital gain or loss to the respective provinces in terms of their "human capital." The only impact would occur through changes in the flow of income and sales tax receipts, etc.
- 10 Boessenkool, Kenneth. 2002. *Ten Reasons to Remove Nonrenewable Resources from Equalization*. Speaking Notes for Remarks at the Montreal Conference on Regional Equalization: 5.
- 11 Strictly speaking, revenues from the sale of nonrenewable natural resources aren't income, whether the provincial government invests the funds (in a heritage fund or for debt repayment) or whether the provincial government spends the funds on current services. It would therefore be plausible to argue that such revenues should be excluded from equalization, period. However, as a concession to other perspectives and also because equalization relates to a provincial government's provision of services, in this paper we make the more modest suggestion that nonrenewable resource revenues be excluded from equalization *only* if they are invested (rather than spent on current services).
- 12 Note that our proposal would reduce the volatility in equalization payments to the net recipient provinces, encouraging more responsible budgeting for them as well. This observation turns back one criticism of our idea, namely that whether a given amount of nonrenewable natural resource revenue is counted in fiscal capacity upfront as a lump sum, or as a flow of future earnings (if it were placed in a heritage fund, for example), the NPV of the two items will be the same at the time of receipt. Hence, this criticism alleges that our proposal would have no real impact on the provinces. Yet even on its own terms, the criticism acknowledges that our proposal would take a large lump-sum equalization payment that would initially flow to the net recipient provinces, and would essentially convert it into an annuity of the same initial market value. With just a slight reliance on the real world nature of the political process, and the tendency of provincial governments to err on the side of overconsuming rather than overinvesting for future citizens, our proposal is clearly the more likely to encourage fiscal prudence on the part of recipient provinces.
- 13 For example, see page 2 of: Howard, Peter, et al. 2009. *Economic Impacts of the Petroleum Industry in Canada*. Canadian Energy Research Institute, Study No. 120. Available at: <http://www.ceri.ca/docs/CERIIOSummaryReport.pdf>.

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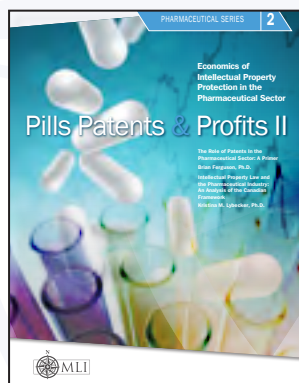
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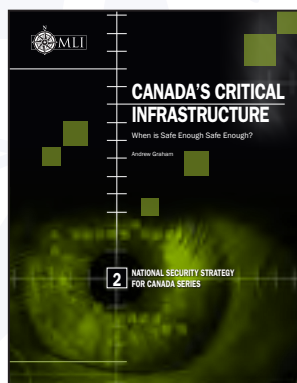
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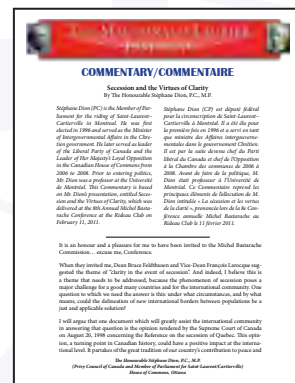
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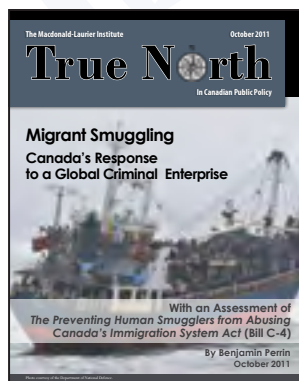
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