

**An Analysis of  
Canadian Oil Expansion Economics**

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# An Analysis of Canadian Oil Expansion Economics

## Executive Summary

A number of studies have been written in an attempt to extol the economic benefits of continued rapid expansion and export of Canada's crude oil resources. These studies follow a similar methodology and use similar exchange rate, price and supply assumptions.

Each of these studies allege vast benefits without due recognition of costs and promise enormous economic gains from new pipeline access to the U.S. Gulf Coast and B.C.'s West Coast. The benefit figures developed in these studies are misleading and misrepresentative of economic reality.

The reports are used by industry proponents as quantitative billy-clubs to beat back public inquiry and drive the discussion away from a thorough examination of macroeconomic implications and full discussion of costs and benefits. Instead, we have a forced narrative. We are told industry financial gain must take precedence over environmental risk and First Nations' rights. This is a false dichotomy and not a trade-off we should have to make.

The reports include Enbridge's Application to the National Energy Board in support of Northern Gateway pipeline; Canadian Energy Research Institute's (CERI) studies No. 122, 124, 125 and 128; the School of Public Policy at the University of Calgary's Catching the Brass Ring; and the Wood Mackenzie Report prepared for the Government of Alberta in support of Northern Gateway pipeline.

After extensive analysis of the underlying assumptions and methodology used in these studies, it is clear they suffer from serious weaknesses which render the results not only unreliable, but unusable. The three main weaknesses in the studies are:

1. **Input-Output Model:** The inappropriate use of an Input Output model to measure macroeconomic impact.
2. **Exchange Rate:** A reliance on a fixed and artificially low Canadian dollar over long time periods.
3. **Oil Prices:** No recognition of the negative impact higher oil prices have on the Canadian economy.

### Input Output Models

All the studies calculate an industry benefit without any sensitivity analysis on important variables and, hence, develop a single, optimistic long-term scenario to derive results. All but Wood Mackenzie use this information as input into an Input Output (IO) model.

An IO model provides output in the form of Gross Domestic Product (GDP), person years of employment, labour income and government revenues. Presenting the information in this manner gives the illusion that the model has measured the impact of resource expansion on commonly used indicators of economic well being, when the model has not—because it cannot.

It is widely understood among professionals that IO models have severe limitations, exaggerate benefits and ignore economic costs. They are static, partial equilibrium, linear representations of a sector of the economy. The models have no feedback mechanism and as such do not incorporate exchange rate, price, interest rate, or input cost changes on production decisions within the oil industry or the macroeconomy.

An IO model will not recognize the dependence of the Canadian economy on foreign crude oil imports to meet half its needs, nor the affect higher oil prices have on consumers and businesses. Consumers cut back on spending and saving as they try to adjust to higher oil prices, while businesses postpone investment and cut back on wages or layoff employees when their expenses rise and their profit margins decline.

Not only does IO analysis fail to incorporate important economic costs to the Canadian economy arising from the current course of oil resource development, the IO models used in the studies do not recognize any environmental costs and hence important externalities are absent.

IO analysis is an inappropriate and misleading methodology for assessing macroeconomic impact on the Canadian economy, particularly over extended time horizons. The output from these models, when proported to do so, is bogus.

### **Exchange Rate**

It is generally understood that rising oil prices lead to an appreciation of the Canadian dollar, but all the studies ignore this relationship and assume a fixed and relatively low exchange rate over the forecast period. As a result, the studies are able to exaggerate the benefit.

U.S. dollar denominated revenues from crude oil sales are translated into Canadian dollars in order to report them in the studies as Canadian dollar denominated benefits. The lower the value of the Canadian dollar assumed—the more exaggerated the benefits. For example, Enbridge and Wood Mackenzie assume an 85 cent Canadian dollar. The benefit they calculate automatically receives a minimum 18 per cent increase for no reason other than the exchange rate assumption.

An appreciating dollar also has a negative impact on the performance of the Canadian economy. When the Canadian dollar rises, the cost of our exports increase and demand falls, leading to slower growth and job losses. This phenomenon—when due to the rapid expansion of the resource sector—is symptomatic of the Dutch disease. There is a large body of empirical research that ties the appreciation of the Canadian dollar to resource expansion. What portion of the dollar's rise is attributable to resource exports is a matter of debate, but the correlation is undeniable.

When the Dutch disease is discussed, the oil industry and its proponents get defensive. However, even the oil sands are not immune to petro-fever. A rising dollar fundamentally affects profit performance of oil producers.

Crude oil sales are denominated in U.S. dollars while production costs are in Canadian dollars. When the Canadian dollar is appreciating, and high, relative to the U.S. dollar, this squeezes profitability. For example, if the dollar is at par and oil sells for \$100 U.S. per barrel, gross revenue is \$100 CDN per barrel. If the dollar rises to \$1.05, that same barrel is worth \$95.24 Canadian—a

decline in gross revenue of 4.76 per cent.

Unless this reality is incorporated into all analyses of oil industry performance, estimates of financial returns, investment, and future supply, will be exaggerated—as will the benefits cases they are based on. These exaggerated supply forecasts are then used to support the need for new pipelines to access the U.S. Gulf Coast and China.

The oil industry, and the Alberta government are aware of the negative impact an appreciating dollar has on corporate profits and public revenues. They clearly identify their exchange rate risk exposure in their annual reports and budgets. It is time that the development of supply forecasts to predict transportation needs, and industry benefits, reflect this understanding. The false benefits arising from the conveniently fixed exchange rate assumption underlying these studies does not serve any sector of the Canadian economy, including the oil industry.

### **Oil Prices**

Each of the studies reviewed depend on rapidly rising oil prices to predict benefits. A number of studies also assume higher oil prices in Canada with new export pipelines than without them. This perverse market outcome occurs because oil producers believe increased access to the U.S. Gulf Coast and Asia will allow them to capture higher prices currently available in those markets. If higher prices are not captured, the industry benefits evaporate.

Enbridge assumes the additional price lift because of Northern Gateway is \$2 - \$3 U.S. per barrel, on every barrel from the sweetest of conventional to the heaviest of bitumen, every year for 30 years. The Brass Ring assumes a price lift of \$7.20 U.S. to \$13.60 U.S. because of Keystone XL and Northern Gateway and it appears they apply this on every barrel produced in Canada from 2016 – 2030. The Wood Mackenzie Report assumes an \$8 U.S. per barrel price increase because of Northern Gateway on all heavy oil sands production from 2017 – 2025.

Refineries pass these higher prices onto consumers and non-oil producing businesses—and if they can't pass it on, they suffer reduced margins and may shut down. When refineries close, the price on petroleum products rises because of reduced supply. Either way, consumers and businesses in Canada and the U.S. pay more if new pipelines lead to higher crude oil prices. The negative impact of these higher prices needs to be incorporated into a macroeconomic impact discussion.

In summary, the studies under review suffer from numerous weaknesses including:

1. The specification of a fixed, and relatively low, exchange rate assumption when empirical evidence clearly indicates increasing oil prices lead to an appreciation of the Canadian dollar;
2. The failure to recognize the impact an appreciation of the Canadian dollar has on oil producer profitability and investment decisions of firms and how this will lead to fewer projects and less production than suggested in the supply projections. As a result, crude oil supply projections are exaggerated and pipeline capacity needs are overstated;
3. The failure to recognize the appreciation of the Canadian dollar on the royalty revenues for Alberta's treasury and other sources of federal and provincial government revenues and hence

overstatement of public sector benefits;

4. No recognition of the negative impact an appreciating Canadian dollar has on the economic prospects for non-oil producing exporting sectors and how this leads to job losses and reduced GDP;
5. No recognition of the negative impact higher oil prices have on Canadian refineries and how those are passed onto consumers and non-oil producing businesses leading to a decline in consumer spending and savings as well as a decline in business investment and increase in layoffs and job losses;
6. No sensitivity analysis related to changes in key assumptions such as crude oil price, demand, exchange rates or production costs, and the reliance on one scenario based on favourable market conditions over extensive time horizons; and
7. The use of an Input Output (IO) framework to predict aggregate gains for GDP, employment, labour income and revenues when IO models are inappropriate tools for measuring macroeconomic impact because they are linear, static, short-term, and present all impacts as benefits while ignoring important costs.

There are three questions to ask when presented with a study that purports to measure the impact crude oil resource development has on the Canadian economy:

1. Is an IO model applied? If so—walk away. The study is not going to tell you what you want to know, no matter how well it is researched or how professionally it is developed. IO models have a limited use and a purpose—assessing the public interest and macroeconomic impact on the Canadian economy from oil sector expansion is not among them.
2. Is the value of the Canadian dollar fixed in the face of rising oil prices and expanding resource exports? If so—so are the results of the report.
3. What is the oil price assumption? If the price of crude oil is expected to rise, the negative consequence on Canada's economy needs to be incorporated into the analysis. If the price of crude oil is expected to rise more with access to new markets than without it, then much of the benefit from new pipelines will be a transfer of income from Canadians to oil producers and not real economic growth. This additional negative impact must find its way into the analysis.

Numerous deficiencies and bias in the studies reviewed render them unusable as evidence of the macroeconomic consequence of rapid resource expansion on the Canadian economy. The results should not be cited as a reason to expedite the environmental review process of major projects, demonize concerned citizens, or silence discussion on public policy and economic development challenges facing the Canadian economy.

Economic growth in all parts of Canada is needed to ensure national progress. In order to realize this progress requires a courageous look at reality along with sound analysis—not a reliance on studies that enable the economics of deception.

# An Analysis of Canadian Oil Expansion Economics

## 1. Overview

In the past two years there has been a chorus of players singing the praises of the oil industry and its vast economic benefits. They advocate the rapid expansion and export of western Canada's crude oil resources as a panacea for our economic future. They cite big numbers from numerous studies prepared by research institutes and consulting firms.

First the government of Canada with Prime Minister Harper front and centre touting Canada as an energy superpower while rushing to solve the energy security needs of the U.S. and then China. “We are an emerging energy superpower. We want to sell our energy to people who want to buy our energy.”<sup>1</sup>

To assist in justifying the transportation infrastructure necessary to get our land locked crude to foreign markets, Natural Resources Minister Joe Oliver has been effusive in his support for expeditiously building Northern Gateway and getting crude oil to Asia.

“Canada has huge oil and gas reserves. The time to capitalize on these resources and diversify our energy resources is now. It is in our national interest...we are talking about \$3.3 trillion in economic activity over the next 25 years, up to 700,000 jobs on an annual basis for Canadians and hundreds of billions of dollars in revenues to governments in the form of taxation that will fund our social programs like health, like education and pensions.”<sup>2</sup>

Premier Redford of Alberta, in attempts to encourage her provincial colleagues to come on board the oil expansion train has stated that Ontario, in particular, should be a more vocal advocate for oil sands development. She points to oil sands related business that is estimated to benefit Ontario with \$63 billion in economic spinoffs and 65,520 person years of employment between 2010 and 2035.<sup>3</sup>

Various industry organizations, business commentators and energy essayists quote the economic statistics as if they were written in stone. Momentum has taken hold and too few pause with curiosity as to whether the benefit numbers actually make sense.

Finance Minister Jim Flaherty cited estimates in the 2012 Federal Budget documents. “The contribution is increasing...in the next 25 years, oil sands growth will support, on average 480,000 jobs per year in Canada and will add \$2.3 trillion to our gross domestic product.”<sup>4</sup>

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1 PM Pitches Canadian energy. Toronto Sun, February 10, 2012.

2 <http://www.vancouversun.com/business/Oliver+sells+benefits+oilsands+development/6039796/story.html> These numbers are from the Canadian Energy Research Institute's (CERI) Study No. 125. Mr. Oliver does not say is that fully 69 per cent of the study's estimates will occur regardless of whether or not new markets are accessed or new pipelines built. More details are provided in Section 3.2, below.

3 Redford's energy vision clashes with McGuinty's, Globe and Mail, February 27, 2012. These numbers are from CERI's Study No. 124, examined in detail in Section 3.2 below.

4 Budget 2012, page 3. [www.budget.gc.ca/2012/plan/chap3-2-eng.html](http://www.budget.gc.ca/2012/plan/chap3-2-eng.html) The Budget cites Study No. 125 Case 1. All the expansion in this scenario will occur regardless of a revised regulatory process since this scenario includes existing oil sands operations and those under construction and thus they have already gone through the regulatory and investment decision making process (See CERI No. 125, page ix and xiii and Section 3.2, below).

Adopting and reciting any of the numerous studies seem to be a ticket to board the bitumen express and join the business savvy ride to economic prosperity. As Premier McGuinty discovered when he raised a yellow flag on rapid resource expansion and how it affects the appreciation of the Canadian dollar—you're either on the train or under it.

Canadians are being railroaded into accepting a resource strategy which would meet the energy security needs of the U.S. and China before addressing the energy security needs of Canadians. We are being bombarded with studies based on the promise of irrefutable economic benefits when an examination of their underlying assumptions show the results are rigged.

Still, we are repeatedly told by the oil industry—in harmony with political leaders—that pipelines must be built and tanker traffic increased in order to supply foreign markets irrespective of environmental risks or land right infringements. If new pipelines aren't built, and these vast benefits go unrealized, it will be the fault of foreign funded environmentalists, or radical First Nations, getting in the way of economic prosperity for everyone else.

Let's speed this train up. The Chinese are getting impatient with our democratic process. Pat Daniel, CEO of Enbridge, sent home a message to Canadians while on Harper's recent trade mission. The Chinese oil companies—all state owned and active in Canada—are “frustrated...in the length of time it takes (to obtain approval). They're very anxious to diversify their supply, they're very dependent on the Middle East for crude.”<sup>5</sup> Mr. Daniel failed to mention that nearly half of Canadian crude oil consumption is imported at world market prices and a significant portion comes from the Middle East.

It is time to carefully examine whether or not the vast economic benefits being served up in these reports make sense. Economic growth in all parts of Canada is needed to ensure progress. Crude oil upgrading and refining should occur in Canada under our environmental and labour laws and standards. Raw, rapid resource extraction and export of crude oil, with complete disregard to the economic needs and environmental aspirations of the rest of the country is like—well, watching a cannibal eat with a knife and fork and being told its progress.<sup>6</sup>

## **2. The Reports**

The figures publicly cited by industry proponents and government supporters are sourced from:

1. Enbridge's Application to the National Energy Board (NEB) in support of Northern Gateway;
2. Canadian Energy Research Institute (CERI) studies Numbers 122, 124, 125 and 128;
3. University of Alberta's School of Public Policy “Catching the Brass Ring: Oil Market Diversification Potential for Canada; and
4. The Wood Mackenzie Report, A Netback Impact Analysis of West coast Export Capacity, prepared for the government of Alberta and submitted as evidence to the NEB.

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5 <http://www.theglobeandmail.com/report-on-business/industry-news/energy-and-resources/chinese-frustrated-by-northern-gateway-regulatory-delays/article2331921/>

6 I would like to acknowledge Stanislaw J. Lec for insight into this aphorism.

The purpose of this study is to examine each of these reports. Major underlying assumptions and methodological approaches are assessed to determine reliability—indeed believability—of the results. In particular, the Canadian/U.S. Dollar exchange rate, underlying oil price and supply assumptions and the appropriateness of an IO framework for estimating the impact of crude oil expansion on the economy, are discussed.

Armed with a clearer understanding of what goes into these reports, it can then be decided whether they provide any meaningful contribution to an informed discussion of the economic implications of rapid oil sands development and raw resource export for Canada.

### **3. Report Analyses**

#### **3.1 Enbridge Application to the National Energy Board:**

Volume 2, Economics, Commercial and Financing, as well as Appendix A, Market Prospects and Benefit Analysis for the Northern Gateway Project, Muse Stancil (The Muse Report), May 2010, and Appendix B, Public Interest Benefits of the Enbridge Northern Gateway Pipeline Project, Wright Mansell Research Ltd. (The Wright Mansell Report), June 2010.<sup>7</sup>

Enbridge commissioned two research reports for its public interest case in support of the Northern Gateway pipeline: the Muse Report to estimate the net benefit to the oil industry from 2016 - 2025 and the Wright Mansell Report to estimate the benefit to the Canadian economy from 2016 - 2046. The results are summarized by Enbridge in Section 1.6 “Project Need and the Public Interest”.

**Table 1**

**Estimated Economic Impact of Northern Gateway**

|  |               |
|--|---------------|
| Gross Domestic Product (GDP) for first 30 years            | \$270 billion |
| Additional Labour Income for first 30 years                | \$48 billion  |
| Employment (person years) for first 30 years               | 558000        |
| Government Revenue (federal and provincial) first 30 years | \$81 billion  |
| Oil Industry Net Incremental Revenue first 10 years        | \$28 billion  |

Source: Enbridge Application 52, Volume 2, page 1-14 Table 1-5.

Enbridge concludes the project “meets new markets and expanded transportation needs in a way that maximizes the public interest benefit that Canadians can obtain from producing their energy resources...Canadian oil producers would substantially increase the netback price for all Canadian production.”<sup>8</sup>

Under scrutiny, more than 80 per cent of the value of these figures disappears from Enbridge's benefits case. This is due to double counting benefits, inappropriate exchange rate assumptions

<sup>7</sup> [http://www.northerngateway.ca/assets/pdf/application/Master\\_Vol%202\\_Final\\_11May10.pdf](http://www.northerngateway.ca/assets/pdf/application/Master_Vol%202_Final_11May10.pdf) Volume 2, Enbridge Application to the National Energy Board.

<sup>8</sup> Ibid., page 1-13.

and calculation errors. Since the analysis has also excluded important economic costs, when these are considered Northern Gateway very likely represents a negative impact on the Canadian economy.

Enbridge's benefit numbers are widely cited by industry associations and commercial groups, such as the Canadian Manufacturers and Exporters association<sup>9</sup>, and the Canadian Chamber of Commerce,<sup>10</sup> in their public presentations and submissions to the Joint Review Panel in support of the project.

As well, a Macdonald Laurier Institute report—pressing for no banned tanker traffic activity on B.C.'s coastal waters because of lost economic benefits—relies on figures presented in the Enbridge submission in order to make its case.<sup>11</sup> The essay written by Roland Priddle, former chairman of the NEB, uses Enbridge's numbers to argue that the economic benefits are so substantive, the risk of environmental spill should be over-ridden because “a ban on West Coast tanker traffic would inhibit Canada’s large-volume entry into the crucial and valuable Northeast Asia crude oil market.”<sup>12</sup>

Enbridge assumes the price for all crude oil produced in Canada will increase by \$2 - \$3 U.S. more per barrel “than if the Project were not to proceed.” It is this assumption that leads to a figure of \$28 billion cited as the net benefit to the oil and gas industry because of Northern Gateway.<sup>13</sup> This price increase means that crude oil purchased by Canadian and U.S. refineries will be more expensive because of Northern Gateway. Higher prices will be passed onto consumers and non-oil producing businesses.<sup>14</sup>

By including the construction and operation of the pipeline, along with the higher oil prices over a 30 year period, Wright Mansell estimates “Canadian Gross Domestic Product (GDP) would increase by \$270 billion. Additional labour income would be \$48 billion, as a result of an additional 558,000 person years of employment. Finally, the federal and provincial governments would collect an additional \$81 billion in revenue.”<sup>15</sup>

Unrealistic exchange rate assumptions, calculation errors, and inappropriate application of an IO model underlie the Enbridge analysis and give rise to the numbers. Even the most bullish oil industry executive would give pause if they knew how the Enbridge business case was developed.

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9 <http://www.cme-mec.ca/?lid=JCKNC-E742G-1W6JA&comaction=show&cid=IKQE4-UY8Z7-D2K6N>

10 Perrin Beatty CEO Canadian Chamber of Commerce, Letter of Comment filed with the NEB, February 113, 2012.

11 Making Oil and Water Mix: Tanker Traffic on Canada's West Coast, March 2012, <http://www.macdonaldlaurier.ca/files/pdf/OilTankerBan-FINAL.pdf>

12 Ibid., p. 3

13 Since my report “An Economic Assessment of Northern Gateway” was filed with the NEB, Enbridge has confirmed the project's intention to raise the price of crude oil for all Canadian crude produced—not just crude oil shipped to Asia. Enbridge asserts in Volume 2, Appendix A, Table A-18 cross referenced with Table A-1, and Appendix B of their filing, that Northern Gateway will bring about an increase in the price of every barrel of oil produced in Canada by \$2 - \$3 U.S., every year, for 30 years, over and above what it would be without Northern Gateway. Without this price increase, Enbridge does not have a benefits case since 90% of the value in their numbers depend on higher prices for all crude.

14 Response by Enbridge to J. Wier No. 5

15 Wright Mansell, op. cit, page 1-13.

The report assumes the Canadian dollar depreciates to 85 cents U.S. by 2016 and remains there until 2046, while the price of crude oil almost doubles from just above \$75 U.S. to \$150 U.S. per barrel.<sup>16</sup> An 85 cent dollar with such an oil price increase is unrealistic—a large portion of our dollar's value is dependent upon the price of oil since our's is a petro-currency.<sup>17</sup>

By assuming an 85 cent dollar, the Muse Report benefits are increased 18 per cent (\$1/.85) by Wright Mansell. This benefit is extended an additional 20 years under the same fixed, and depreciated rate, without explanation.

The Canadian dollar increased from 64 cents U.S. in 2002 to \$1.01 in 2011—6 per cent per year. If we assume the generous assumption that the dollar is at par in 2016, and increase it 5 per cent per year until 2025, the benefit falls from \$28 billion to \$18.7 billion—a full 33 per cent. This decline in the benefit is without any change to the oil price or production forecasts used by the consultants.

Using the Muse Report data, an example has been developed to reflect what occurs when price and supply fall shy of the target. If production declines by an average of 350,000 barrels per day—about 10 per cent—and the price lift anticipated falls by 20 – 30 cents per barrel—about 10 per cent—along with a 5 per cent appreciation of the Canadian dollar, the benefits decline to \$14 billion. This relatively modest change in underlying assumptions represents a 50 per cent decline in the oil industry's projected benefits.<sup>18</sup>

Significant sensitivity to important underlying variables exists in the benefits case. At no time do either of the consultants refer to this sensitivity or provide the reader with an understanding of the vulnerability of the benefits case to changes in economic and business conditions. Only one set of assumptions and one scenario are provided.

This lack of sensitivity analysis for an industry dependent on volatile and changing market conditions is surprising. Certainly no executive committee or board of directors, when making important business decisions, would be expected to rely on an analysis with one scenario and no sensitivity analysis—particularly when the returns are projected over such an extensive time horizon—30 years.

The exchange rate used in the study is important for another reason. Crude oil is traded in U.S. dollars. When oil revenues become Canadian dollars—and the Canadian dollar appreciates—the benefits received by producers erode. Reduced profitability affects corporate investment plans and impacts the supply forecast. For example, a \$100 U.S. barrel is worth \$118 when the Canadian dollar is 85 cents—a full 18% greater than when the Canadian dollar is at par. For the oil industry, the appreciation of the Canadian dollar reduces profitability and squeezes margins.

Oil producers discuss their exchange rate sensitivity and risk exposure to the Canadian/U.S. dollar exchange rate in their annual reports and many of them provide sensitivity tables. Since

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16 Exchange rates, real and nominal WTI oil price assumptions from Wright Mansell, Table A-5, page 25 and IR 1.3.

17 See for example “What Drives Exchange Rates”, Bank of Canada. The two most important long term drivers of the Canadian dollar are commodity prices and the debt to GDP ratio in the U.S. economy.  
<http://www.bankofcanada.ca/wp-content/uploads/2010/05/wp10-5.pdf>

18 A 50 percent decline from \$28 billion to \$14 billion with the dollar at par in 2016, rising 5% per year.

most commodity sales are benchmarked in U.S. dollars, an appreciating Canadian dollar presents a risk to earnings and cash flow, and hence investment decisions.

Although most companies engage in sophisticated hedging techniques and attempt to limit their exposure by sourcing U.S. dollar denominated debt, even major oil companies are not immune to the negative impact on earnings when the dollar appreciates.

*“As our commodity sales are generally priced in U.S. dollars and our capital expenditures and expenses are paid in both U.S. and Canadian dollars, fluctuations in the exchange rate between the U.S. and Canadian dollar can have a significant effect on our financial results which are reported in Canadian dollars”--Cenovus Energy Inc., 2011 MD&A.*

*“If the value of the Canadian dollar against the U.S. dollar increases, the financial results of Legacy may be negatively affected.”--Legacy Oil + Gas Ltd., Quarterly Report Q4/2011.*

*“An increase in the value of the Canadian dollar relative to the U.S. dollar will decrease revenue received from the sale of commodities. Conversely, many of Suncor's assets and liabilities are denominated in U.S. dollars...an increase in the value of the Canadian dollar from the previous balance sheet date results in unrealized translation gains.”--Suncor Energy Inc. 2011 Annual Report.*

*“In recent years and months, the Canadian dollar has increased materially in value against the United States dollar. Material increases in the value of the Canadian dollar negatively impact commodity prices valued in United States dollars thereby reducing the Company's production revenues. Future Canadian/U.S. Dollar exchange rates could accordingly impact the future value of the Company's resources as determined by independent evaluators.”--Athabasca Oil Sands Corp. 2011 Annual Report*

Table 2 quantifies the negative impact an appreciation in the value of the Canadian dollar has on the net earnings of selected oil producers. These five producers were chosen because they include sensitivity tables in their annual reports. Between them, they represent more than 40 per cent of the crude oil produced in Canada.<sup>19</sup>

All these producers have refineries which suggests their sensitivity to exchange rate volatility would be less than that experienced by crude oil producers that do not have downstream operations—the majority of intermediate and small producers in Canada.

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<sup>19</sup> 2010 100 Top Performing Oil and Gas Companies in Canada provided information on output by company. In 2010 CAPP reports 2,717 kbb/d while the four companies combined produced ~1,030 kbb/d or 38 per cent. Information on Shell's Canadian production was unavailable.

Refinery operations provide a natural hedge when the Canadian dollar appreciates—the relative cost of U.S. denominated crude oil goes down. Even so, large, vertically integrated Canadian oil producers are impacted by an appreciating, and appreciated, dollar, as shown in Table 2.

**Table 2**

**Selected Oil Companies  
Exchange Rate Sensitivity Analysis**

| Company                                     | Canadian Dollar         | Net Earnings Impact<br>(\$millions) CDN |
|---|-------------------------|---|
| Suncor Energy Inc. 2011 Annual Report       | 1 cent increase         | -37                                     |
| Shell 2011 Annual Report                    | 10% appreciation in CDN | -360                                    |
| Imperial 2010 Annual Report                 | 10 cent increase        | -480                                    |
| Nexen Inc. 2011 Annual Report <sup>20</sup> | 1 cent increase         | -14                                     |
| Husky 2011 Annual Report <sup>21</sup>      | 1 cent increase         | -36                                     |

The supply forecast used to build the benefits cases by Muse, and adopted explicitly by Wright Mansell, does not incorporate any recognition of the impact an appreciating dollar might have on the investment decision of firms. They take as given the Canadian Association of Petroleum Producer's (CAPP) 2009 Growth Forecast which is a summation of industry intentions from 2009 - 2025. The analyses assume the same supply forecast with or without Northern Gateway.

The ability of the oil industry to achieve the rapid expansion of oil sands production as predicted in the CAPP forecast, and expanded to 2035 by Wright Mansell, is examined by David Hughes in his report to the NEB. The absence of an energy security strategy for Canada, and the threat to Canadians that a rapid rate of extraction and export implies—and as contemplated by the CAPP forecast—are discussed.<sup>22</sup>

This review limits itself to addressing the exchange rate assumed in the Enbridge documents to show how it relates to the achievability of the aggressive supply projections. Ignoring the dynamic impact of our dollar on the profitability and rate of expansion of the oil sands overstates supply, and unrealistically exaggerates the benefits case. This is misleading and irresponsible. To hold the Canadian dollar artificially low, and fixed, for 30 years, is ridiculous.

The next steps taken by Enbridge to develop their numbers are fraught with problems. As

<sup>20</sup> Approximately 70% of Nexen's production is priced off Brent. Annual Report 2011, page 73.

<sup>21</sup> Includes impacts related to Brent based production.

<sup>22</sup> See David Hughes evidence to the NEB Hearings into Northern Gateway [https://www.neb-one.gc.ca/ll-eng/livelihood.exe/fetch/2000/90464/90552/384192/620327/624910/695692/775718/ForestEthics\\_-\\_Attachment\\_E\\_-\\_Affront\\_to\\_Public\\_Interest\\_Report\\_-\\_A2K2C9.pdf?nodeid=775621&vernum=0](https://www.neb-one.gc.ca/ll-eng/livelihood.exe/fetch/2000/90464/90552/384192/620327/624910/695692/775718/ForestEthics_-_Attachment_E_-_Affront_to_Public_Interest_Report_-_A2K2C9.pdf?nodeid=775621&vernum=0) Northern Gateway: An Affront to the Public Interest and Long Term Energy Security for Canadians.

mentioned, the case is developed by projecting a \$2 - \$3 U.S. per barrel increase in the price of oil for all crude oil produced in Canada, every year, for 30 years because the pipeline is built. There is no recognition in the Wright Mansell analysis of the impact these price increases will have on Canadian consumers and non-oil producing businesses or how the economy contracts when this income transfer takes place. These price increases are on top of the ongoing anticipated oil price increases emanating from international demand and supply factors which Enbridge assumes will lead to almost a doubling of oil prices over the forecast period.

Wright Mansell takes \$28 billion—which represents the Muse Stancil analysis increased 18 per cent by virtue of the exchange rate assumption—and extrapolates the analysis another 20 years. At this stage they engage in translation errors, so instead of \$84 billion, the number becomes \$107.6 billion.

Wright Mansell assumes \$44 billion of the \$107.6 billion is reinvested “in some combination of energy projects across the country.” Presumably this investment would expand oil sands production—except the forecast has already done so. This reinvested \$44 billion is double counting. CAPP's supply forecast already assumes the industry has invested in projects in order to generate an annual increase in output of about 4.4 per cent—this is the industry's most aggressive forecast.

Even assuming new investment opportunities would emerge, this would create increased supply and alter the price scenario used in the benefits case. Hence, the price lift would diminish and the investment monies in ensuing years would disappear. Either way, this reinvestment component in the analysis leads to double counting.<sup>23</sup>

Wright Mansell runs the \$44 billion reinvestment figure through an IO model to generate an additional level of production of \$112.5 billion which must also be excluded from the analysis, since the reinvestment it's based upon must be excluded.

In addition to all the benefits from higher oil prices outlined above, the consultants include Enbridge's \$5.5 billion construction budget and \$20.2 billion in operating revenues over 30 years. The capital and operating budget figures have numerous questionable elements including double counting of Enbridge's corporate overhead, inclusion of contingencies, double counting of labour, no information on the costs of condensate or related toll rates and under-representation of increased toll rates on other crude oil pipelines when Enbridge redirects supply from Canadian and U.S. markets to Asia.

Detailed discussion of the capital and operating portions of Enbridge's input figure are dealt with more extensively in “An Economic Assessment of Northern Gateway”.<sup>24</sup> Due to specification errors, the capital and operating budgets can not be considered as input to the model without appropriate re-estimation.<sup>25</sup>

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23 Wright Mansell, op. cit., page 29.

24 [www.robynallan.com](http://www.robynallan.com) An Economic Assessment of Northern Gateway, pp. 71 -74.

25 The key point with respect to the capital and operating portions of the analysis is that any portion of the expenditure that would occur in the absence of the project, or any displacement of other expenditures because of the project, must be acknowledged and netted off the benefit. For example, Enbridge includes corporate overhead in its construction and operating budget that would exist in the absence of Northern Gateway. As well, if rail transport of crude oil to the west coast is displaced by Northern Gateway, that lost activity must be incorporated into the analysis and netted off the

By the time we arrive at an input figure for the IO model which includes all these additions, Wright Mansell has calculated \$290 billion in total. It is this highly suspect figure they put into the model to predict \$270 billion in GDP growth, which triggers the 558,000 person years of employment, \$48 billion in labour income and \$81 billion in government revenues.

As has been identified, the input number under an exchange rate scenario that reflects recent trends, and addresses the calculation errors and double counting of benefits, would be closer to \$56 billion than \$290 billion as calculated by Wright Mansell—an 80 per cent reduction in the benefit.<sup>26</sup> This does not account for a reduction in supply which would likely occur because of the impact a higher Canadian dollar would have on corporate investment decisions.

There is still a critical problem, however, as a more accurate specification of the benefits does not identify any costs. What has been developed by Enbridge is a benefits case—not a cost-benefit analysis.<sup>27</sup> There is no estimation of the impact higher oil prices have on the Canadian economy or how an appreciation of the Canadian dollar affects our exports.

But, even if the input number was reliable, and incorporated a more complete array of the costs and benefits, the use of an IO framework, as employed by Wright Mansell, is inappropriate. “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).”<sup>28</sup> These potential shocks do not exist in the Enbridge analysis.

The benefit derived by Muse, and augmented by Wright Mansell in order to shock the model, is based on an increase in price, not quantity. This is a very important distinction because the model is designed to deal with production, not prices. The same amount of crude oil is assumed to be produced with or without Northern Gateway so essentially there is nothing to shock the model.

Even with an appropriate supply shock, an IO model is not capable of measuring the macroeconomic impact of a region or a sector on the Canadian economy because of its inherent limitations.

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benefit. In aggregate, the capital and operating portions account for less than 10 per cent of the input figure, and hence play a relatively unimportant role in the overall understanding of how exaggerated the benefits case is. Having said that, even these figures are overstated by a significant amount and would have to be re-estimated in order to be considered appropriate input into an IO model. Although an IO framework is inappropriate for the larger analysis Wright Mansell has undertaken, restricting an IO model to capital and operating, accurately specified, could be a useful application of IO analysis.

26 This is taking the Muse benefit, allowing an annual 5% exchange rate appreciation which results in \$18.7 billion and multiplying that by 3 to equate to 30 years, as Wright Mansell has done. Without the errors and reinvestment of the benefit, the final figure is \$56 billion, not \$290 billion.

27 It should also be noted that it is not just economic costs that have been ignored. None of the costs related to environmental consequences of oil sands development, or environmental costs related to construction and operation of new pipelines have been included in any of the analysis undertaken in the research reports reviewed in this paper, notwithstanding the ability of IO analysis to include many of these costs under an IO Lifecycle framework.

28 Wright Mansell, op. cit., footnote 22.

The Wright Mansell Report uses Statistics Canada 2005 Inter provincial Input Output tables. In 2005 the average price of crude was \$50 a barrel<sup>29</sup> and the exchange rate was 83 cents U.S. The Wright Mansell analysis assumes the price of oil is going to increase over the 30 year period and a premium is applied to that because Northern Gateway is built. Using a static IO model exposes a significant flaw in logic—that is, increasing the relative price of oil and assuming the structure of the economy remains unchanged.

The model assumes all economic relationships in 2005 continue to exist until 2046—no new technology, no efficiencies, no price changes, no interest rate changes, no financial crisis. The model basically says, “if you spend \$290 billion in 2005 you can generate an additional \$270 billion over 30 years—as long as nothing changes.” It becomes obvious that for IO models, the size of the input number is critical to the size of the output number. As we have seen, most of that input number is phony.

Because IO models are static they have no feedback mechanism to allow markets, businesses and consumers to adjust. They are partial equilibrium models and only present part of the picture. Consumers with limited budgets will pull back on other spending when faced with higher oil prices. Businesses faced with higher input prices contract production, restrict investment and layoff workers.

The model certainly does not reflect the negative impact on manufacturing, agriculture, forestry, tourism, and other sectors when the Canadian dollar appreciates and international competitiveness suffers, leading to further layoffs and job losses.

Canada's unique form of Dutch disease<sup>30</sup> is not recognized in IO analysis—in fact the model behaves as if the manufacturing sector has not been hollowed by currency appreciation. The relatively desirable exchange rate for Canada's exporting sectors in 2005 of 83 cents U.S. is assumed, by the model, to continue into 2045.

The relative costs of production do not change in IO models, so heavy oil is assumed to be as cost efficient to extract from 2016 to 2046 as reserves were in 2005. The CAPP forecast shows a growing reliance on higher cost oil sands production over its forecast period. The IO model behaves as if it these increased costs do not occur.

The absence of a necessary feedback mechanism that can incorporate dynamic relationships that exist in a macroeconomy is a reason why IO models are generally used over very short time periods—the inherent bias of their static nature is not so detrimental to the reliability of the output. Extending the analysis 40 years from the date of the IO tables is irresponsible.

One of the greatest flaws with IO models is that they treat all impacts as if they were benefits. For example, the Suncor fire in Fort McMurray in 2005, with an estimated claims cost of \$1.5 billion<sup>31</sup> would be seen by the model as economic growth—not remediation. An IO model

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29 [http://inflationdata.com/inflation/inflation\\_rate/historical\\_oil\\_prices\\_table.asp](http://inflationdata.com/inflation/inflation_rate/historical_oil_prices_table.asp) This is the average price of U.S. crude in U.S. dollars. Adjusted to real 2011 figures, the value is \$57.50 \U.S.

30 The Dutch disease is discussed in more detail in Section 3.2.

31 Putting Together the Puzzle: Oil Risks Pose Unique Challenge, Canadian Insurance, March 2008.

would tell us that a couple of new fires would be just as good at generating GDP growth as the construction phase of the Northern Gateway pipeline.

An IO model would also tell us that the Vancouver Canuck Riot was a growth generating event for BC's economy and that, if jobs are really what matter—more person years of employment are created—per dollar—spilling oil than safely transporting it. An IO model would suggest spill prevention is not a good investment.

A more appropriate way to measure the macroeconomic impact of Northern Gateway, as presented by Enbridge, would be to incorporate the assumptions into a dynamic general equilibrium framework.

A dynamic model, unlike a static model, is capable of weighing the gains and losses over a given time period and deals with sensitivities among important variables. A general equilibrium framework allows us to see what occurs in all sectors of the economy as important key economic variables adjust.

Using a dynamic stochastic general equilibrium model (DSGE) the Organization for Economic Cooperation and Development (OECD) has concluded that the “strong and sustained rise in oil prices observed in recent years poses a challenge to monetary policy and its ability to simultaneously achieve low inflation and stable output.” It also concludes that a “sustained rise in oil prices has the potential to push inflation above its explicit or implicit target for some time, prompting central banks to react” by increasing interest rates.<sup>32</sup>

Employing a small scale macro model (SSMM)<sup>33</sup> that attempts to provide a limited general equilibrium framework to assess the response of the Canadian economy to an oil price shock, the Bank of Canada finds that oil price shocks are seen to result in a permanent decline in real GDP and tend to elicit a response from the Bank of Canada to raise interest rates. “First, we find that higher oil prices have only small (but still statistically significant) effects on trend growth, but they lower the level of GDP permanently...oil price fluctuations have substantial macroeconomic effects....monetary policy reacts to higher inflation by raising interest rates..”<sup>34</sup>

Research undertaken by the Canadian Imperial Bank of Commerce using vector autoregression which is a “dynamic system that lets us take into account the historic interrelationships between GDP, resource prices, interest rates, exchange rates and inflation,” finds that an oil price shock is a net negative impact on the Canadian economy because of sharp currency appreciation and weaker consumption from within Canada and abroad.<sup>35</sup>

One of the significant factors leading to the negative impact on the Canadian economy from an increase in the price of crude oil is Canada's continued reliance of foreign crude oil imports.

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32 [http://www.oecd.org/officialdocuments/displaydocumentpdf/?cote=eco/wkp\(2008\)11&doclanguage=en](http://www.oecd.org/officialdocuments/displaydocumentpdf/?cote=eco/wkp(2008)11&doclanguage=en) page 2 and 5

33 See <http://www.bankofengland.co.uk/publications/other/beqm/1999/chapter4.pdf> for discussion of SSMM's and their applications.

34 <http://www.bankofcanada.ca/wp-content/uploads/2010/02/wp09-33.pdf> How Changes in Oil Prices Affect the Macroeconomy, page 25. The authors point out some adjustment they see as necessary to better identify the Canadian economy's response to higher oil prices, but the results confirm the thesis that given Canada's unique import-export dynamic, oil price increases do more harm than good.

35 Economic Insights, March 27, 2012, COBC, page 4 The Biggest Loser when Oil Prices Spike: Not Canada

Almost 50 per cent of the crude oil Canada needs is imported from volatile and uncertain OPEC countries and declining markets in Venezuela and Mexico.

By undertaking static IO analysis, Enbridge has utilized a misrepresentative methodology in their macroeconomic case for the proposed pipeline. They have therefore exaggerated outcomes from the development of the project without adequately acknowledging or incorporating economic costs. We need to be able to see how the Canadian economy reacts in a complete and dynamic way. An IO model, even with an appropriately specified input, can not provide us with that picture.

### **3.2 Canadian Energy Research Institute (CERI):**

Economic Impacts of New Oil Sands Projects [2010 - 2035], Study No. 124, May 2011<sup>36</sup>, Canadian Oil Sands Supply Costs and Development Projects [2010 – 2044], Study No. 122, May 2011<sup>37</sup>, Economic Impacts of Staged Oil Sands Projects in Alberta [2010 - 2035] , Study No. 125, June 2011<sup>38</sup>, and Canadian Oil Sands Supply Costs and Development Projects [2011 – 2045], March 2012.<sup>39</sup>

CERI is a non-profit research organization established in 1975 and located in Calgary. The institute is funded by the Alberta and Canadian governments and private sector oil companies.

CERI's stated mission “is to provide relevant, independent and objective research in energy and environmental issues to benefit business, government, academia and the public.”<sup>40</sup> Although it has operated for more than 35 years, it undertakes little research on the impact of oil development on greenhouse gas emissions, carbon and pollution trading, national and international efforts to curtail emissions, or any other area of crossover between business activity and environmental responsibility.

According to Jon Rozhan, CERI's senior researcher and editor of the Institute's publication, *Geopolitics of Energy*, “arguments can be made, and are made every day, that there are social and environmental costs to hydrocarbon development. It is presently outside of CERI's realm of expertise to speak directly to these issues.”<sup>41</sup>

The reports reviewed are well written and sufficient information is provided to enable the reader to follow the discussion and assess the research. It is easy to understand the methodological approach and the assumptions used.

CERI's studies seem to have impressed Alberta's political leaders and are often cited by federal Minister Joe Oliver, particularly Study No. 125. which examines four scenarios of possible outcomes from oil sand resources. Mr. Oliver promotes Case 3 from Study No. 125 which includes all existing and under construction projects, plus new projects due to the construction

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36 <http://www.ceri.ca/images/stories/CERI%20Study%20124.pdf>

37 <http://www.ceri.ca/images/stories/CERI%20Study%20122.pdf>

38 [http://www.ceri.ca/images/stories/2011-08-24\\_CERI\\_Study\\_125\\_Section\\_1.pdf](http://www.ceri.ca/images/stories/2011-08-24_CERI_Study_125_Section_1.pdf)

39 [http://www.ceri.ca/images/stories/2012-03-22\\_CERI\\_Study\\_128.pdf](http://www.ceri.ca/images/stories/2012-03-22_CERI_Study_128.pdf)

40 [www.ceri.ca/index.php/about-ceri](http://www.ceri.ca/index.php/about-ceri)

41 Jon Rozhan, “Is this Pipeline in the US National Interest”, *Geopolitics of Energy*, November-December 2011, page 30.

of Keystone XL and Northern Gateway. “The time to capitalize on these resources and diversify our energy resources is now...we are talking about \$3.3 trillion in economic activity over the next 25 years, up to 700,000 jobs on an annual basis for Canadians and hundreds of billions of dollars in revenues to governments”.<sup>42</sup>

When Mr. Oliver cites trillions of dollars of benefits and hundreds of thousands of jobs because of new market access, he is misrepresenting CERI's findings. If the oil industry did nothing but continued to operate existing and under construction projects, and no new pipelines were built, fully 69 per cent of the benefits Oliver talks about—according to CERI—would occur anyway. CERI very clearly outlines this distinction in its report.

If Keystone XL goes ahead, or the industry is successful in reversing existing pipelines to service the Gulf Coast market, then the net impact of Northern Gateway is only 11 per cent of the numbers claimed by Oliver. To hear the Minister speak, his inference is that all the benefits will be lost if we don't speed up the NEB approval process and build Northern Gateway. His economic benefits claims in support of new pipelines, and Northern Gateway in particular, are often excessive.

Finance Minister Flaherty, in the 2012 Federal Budget, also inappropriately draws on CERI's Study No. 125. After citing CERI's estimates of a \$2.3 trillion increase in GDP and an average of 480,000 jobs over the next 25 years, the Finance document warns that unless the regulatory system is revamped to rid it of a “complicated web of rules and bureaucratic reviews that have grown over time, adding costs and delays that can deter investors and undermine the economic viability of major projects” investors will be scared off, and these benefits will be unrealized.

This is not so. The numbers Mr. Flaherty cites were developed in CERI's Study No. 125, Case 1. They rely on existing and under construction oil sands projects that have already passed the regulatory review process and met with investor approval. These benefits, according to CERI, do not require any new pipelines either. So despite Mr. Flaherty's warning that “Canadians will only reap the benefits that come from our natural resources if investments are made by the private sector to bring the resources to market”<sup>43</sup> the vast benefits numbers he cites, do not require investments to get the resources to market—existing pipelines are sufficient.

Notwithstanding the misrepresentation of the incremental value of Northern Gateway to the overall measured benefits as presented by Mr. Oliver, or the erroneous application of a business as usual scenario to imply the need for a new regulatory process and more pipelines, as presented by Mr. Flaherty, there are additional problems with CERI's Study No. 125. Before exploring these, we need to briefly discuss two other studies: Study No. 124 Economic Impacts of New Oil Sands Projects in Alberta (2010 – 2035) and Study No. 122 Canadian Oil Sands Supply Costs and Development Projects (2010 – 2044). They are all linked.

CERI's study No. 125 uses a production scenario to estimate benefits and refers the reader to Study No. 122 for additional information. It turns out that understanding the assumptions and methodology of Study No. 122 is necessary to gain a full appreciation of the benefits case in Study No. 125 and Study No. 124.

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42 Vancouver Sun, op cit.

43 Budget, 2012, page 3 and CERI No. 125 page ix.

Study No. 122 predicts operating costs, returns and supply potential to create different scenarios in order to predict economic impacts which are used in the IO models employed in Study No. 124 and 125. Remember, Study No. 125 talks about all activity in the oil sands including existing and potential, while Study No. 124 only talks about new projects including “under construction, approved, suspended, awaiting approval and announced”.<sup>44</sup>

It is CERI's Study No. 124 that Alberta Premier Redford recently pointed to in support of her wish that other Canadian provinces, such as Ontario and Quebec, jump at the chance to support western Canada's oil resource development.

In an unofficial public debate Premier McGuinty of Ontario, concerned over Canada's petro-dollar, squared off against Premier Redford who admonished his failure to recognize real benefits from Alberta's resource wealth by pointing to CERI's numbers. The study suggests the Ontario economy is second to Alberta's in terms of provincial benefits from resource development. These benefits are said to trickle into the Ontario economy through the demand Alberta's resource sector provides to Ontario companies.<sup>45</sup>

Ms. Redford maintains that if Ontario will come to Alberta's aid and support continued rapid oil sands expansion, Ontario will get as many as 65,520 person years of employment and \$63 billion in second hand economic benefits. These gains, its suggested, will be realized between 2010 and 2035.

It is understandable that Ms. Redford would be excited about garnering support for continued oil sands production when CERI's study suggests the overall benefits from planned projects represents \$2.6 trillion between 2010 – 2035 for North America—76 per cent of which flow to Alberta. These numbers, however, include a veritable wish list of projects, including those not yet approved by corporate boards or regulatory authorities.

What Ms. Redford didn't say is that according to the same CERI study, the U.S. economy will benefit more from Canadian resource development than all other provinces combined. The report also assumes Keystone XL is operational by 2012.

Twenty per cent of the benefits in CERI's study flow to the U.S. while 4 per cent of the benefits are estimated to accrue to other Canadian provinces including 2.4 per cent to Ontario. This may explain why Premier Redford elected to send her message to Mr. McGuinty while drumming up support for Keystone XL in Chicago.

Pinning an energy strategy on the findings of a report is a pretty big deal. Ms. Redford believes that “we can grow a Canadian economy around energy that benefits Canadians across the country”.<sup>46</sup> CERI's study No. 124 never mentions the results are fundamentally tied to a fixed exchange rate assumption with the Canadian dollar at par with the U.S. dollar for 35 years, or

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44 Study No. 124 p. 5.

45 Investigative journalistic research by Globe and Mail Reporters Shawn McCarthy and Nathan Vanderklipp suggests that Ontario is attempting to respond to the needs of the Alberta economy and although some benefits are materializing, not nearly to the extent being suggested by the economic reports. “Canada's growing divide in riches”, Shawn McCarthy March 3, 2012 and “Ontario has a big part in oil sands work—as middleman,” Nathan Vanderklipp, March 3, 2012.

46 Redford's energy vision clashes with McGuinty's view of oil-sands benefits. Globe and Mail, Karen Howlett and Dawn Walton, March 2, 2012.

that such an assumption, if relaxed, would impact the input data for the IO model.

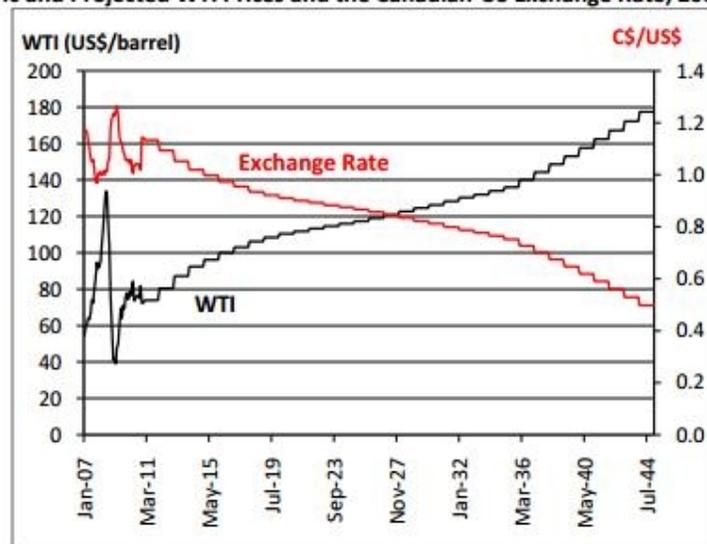
This makes Mr. McGuinty's concerns about the negative impact the appreciation of the Canadian dollar has on Ontario's economy more interesting. Premier McGuinty told Premier Redford he was concerned about rapid petro-returns putting continued upward pressure on our dollar. Given the dependency of Canadian export competitiveness to the value of our dollar, petro-pressure will continue to depress manufacturing and other industrial activity and lead to even more job losses. Premier McGuinty doesn't believe that Ontario will benefit from the rapid development of Alberta's resources and would prefer a lower dollar.

Ms. Redford called Mr. McGuinty's approach to Ontario's economic woes “simplistic” while calling on other provincial leaders to support Alberta's oil sands expansion, facilitated by new pipelines such as Keystone and Northern Gateway.<sup>47</sup>

It turns out CERI shares a concern about rapid expansion of oil sands production because of its impact on our dollar and negative consequence for exports. This concern is clearly pointed out in CERI's study No. 122 which Study No. 124 and No. 125 are based on. It is also reconfirmed in Study No. 128. “(T)here is one factor that has had an undeniable influence on the Canadian-US exchange rate, and has become more important over time. This factor is the price of crude oil.”<sup>48</sup> Graph 1, from CERI's Study No. 122, illustrates this relationship.

## Graph 1

Figure 3.8  
Historic and Projected WTI Prices and the Canadian-US Exchange Rate, 2007-2044



Source: CERI, US EIA, Statistics Canada

Study No. 122 states that “there is a negative and statistically significant relationship between the Canadian-US exchange rate and the price of crude oil...78 percent of the variations in the exchange rate can be explained by changes in the price of crude oil.”<sup>49</sup>

47 <http://www.calgaryherald.com/business/McGuinty+oilsands+assertions+simplistic+Redford/6219983/story.html>

48 No. 128, page 24.

49 Study No. 122, Page 21.

The report goes on to explain that because of our appreciating dollar, “Canadian goods and services become relatively more expensive to purchase with US dollars, and Canadian exports to the US decline correspondingly.”<sup>50</sup> The report states that between 2004 – 2009 exports to the US declined by 23 percent while the Canadian dollar appreciated 14 percent.

What CERI is describing is the Dutch disease. The Dutch disease is the undesirable economic condition whereby a rapid, prolonged and undisciplined expansion of natural resources—in our case crude oil—causes the country's currency to appreciate.

For some time Canada's unique case of the Dutch Disease has been acknowledged by many economists and its existence and consequence supported by independent research.<sup>51</sup> Internationally, this appreciation acts as a market signal telling the world that the price for our other goods and services, including manufacturing, agriculture, forestry and tourism, have gone up.

When prices for our exports rise, foreign demand falls and contraction in domestic industries occurs. Declining profitability leads to significant job losses. Because 75 percent of Canada's manufacturing output comes from eastern Canada and 95 per of our crude oil comes from Alberta, the major impact of this unfortunate situation hits Quebec and Ontario the hardest.

A renewed interest in the causes and potential cure for Canada's version of the Dutch disease surfaced during the recent McGuinty-Redford debate. Very quickly resource industry proponents dismissed the problem and countered with dismissive arguments—the most often cited that the benefit of an appreciating dollar is the promise of cheaper imports for consumers and business. Lower priced imports help stem inflationary pressures. This relationship no longer appears to exist.

Since 2009, even while the Canadian dollar continued to appreciate, the cost of imports steadily rose. This has contributed to inflationary pressures throughout the economy. If this trend continues it will make it increasingly difficult for all sectors, including the oil industry, to keep production costs in check. It's time to seriously address the exchange equation and understand that petro-fever represents much more downside, than up.

The following graph illustrates the relationship between Canada's currency and import prices from 2000 – 2009. The Canadian/U.S. dollar trend line is graphed to show that when the line is going down the Canadian dollar is appreciating and when the line is going up the value of the Canadian dollar is falling as compared with the U.S. This is to make it easier to see the relationship between the value of the Canadian dollar and import prices. The trend line for import prices is intuitive: as the line goes up so do import prices.

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50 Ibid.

51 <http://www.michelbeine.be/pdf/BBC2012.pdf> , Does Canada Suffer from the Dutch Disease, also see <http://www.republicofmining.com/2012/02/26/ottawa's-focus-on-alberta-oilsands-is-killing-manufacturing-jobs-in-eastern-canada-economists-say-by-antonia-zerbis> and Andrew Nikiforuk, Finally Canada Goes to School on the Dutch Disease, Tye, <http://thetyee.ca/Opinion/2012/02/29/Canadian-Dutch-Disease/>

**Graph 2**

**Canadian Dollar and Import Prices  
2000 - 2011**



Source: NBF Economy & Strategy (data Global Insight)

The graph illustrates the historical relationship between the value of the Canadian dollar and import prices. From 2000 to early 2008 as the Canadian dollar appreciated, the cost of imports fell. During the financial crisis, as our dollar weakened, the cost of imports went up. Post financial crisis, however, the relationship decoupled and beginning in late 2009—as is shown by the two lines diverging—a new reality is observed whereby an appreciating Canadian dollar does not result in lower import prices, or provide a natural hedge against inflation.

CERI predicts that by 2030 the value of the Canadian dollar will be \$1.23 U.S. and by 2044 it will take two U.S. dollars to buy one Canadian dollar—a 50 cent U.S. dollar.<sup>52</sup> This is because CERI anticipates a significant rise in oil prices over the period, reaching \$200 per barrel U.S., in real dollars, by 2044. When the price of oil goes up, so does the value of our petro-dollar.

The way CERI deals with this very undesirable outcome is to call on the Bank of Canada to implement monetary policy and the Canadian government to implement fiscal policy to “prevent excessive appreciation of the Canadian dollar against the US dollar”.<sup>53</sup> Assuming government policy makers rush to the aid of the oil industry, CERI then adopts the assumption that exchange rate parity will be maintained throughout the projection period—that is, the Canadian dollar will stay at a dollar U.S., and not rise for 35 years. This is an unreasonable assumption.

52 In CERI's latest supply cost forecast, the Canadian dollar appreciates much more quickly such that by 2030 it will only take 48 cents Canadian to buy a dollar US. Study No. 128, page 26.

53 Ibid., page 23

Exchange rate management policy measures are usually introduced only during extreme circumstances. Regardless, The Bank of Canada or the federal government cannot implement policy to fix the exchange rate, especially over long periods.

The Bank of Canada has as its priority the stabilization of inflation within a predetermined bound. As well, the usual policy tools for dampening an appreciating dollar are lower interest rates or the sale of Canadian dollars. Both are unlikely. Under current conditions there is very little downside room for interest rates, and selling Canadian dollars expands the money supply. In the face of rising oil prices and their pressure on inflation, this would be in conflict with the Bank's stated goal.

CERI's analysis should be conducted with their exchange rate forecast—not a fixed one—so the impact on the cost of production and how that feeds into the supply projection can be included in the analysis. If the production forecast doesn't hold up—neither do the projected benefits presented in Study No. 124 or No. 125.

On the face of it, CERI's unrestrained currency appreciation, along with its oil price forecast, suggest that there will be little improvement in profitability because as oil prices rise, so does the dollar. (See Graph 1). Therefore, other factors unchanged, this suggests only those oil fields that are economically viable today would continue to be developed over the next 35 years. Under such conditions, CERI's expansion forecast would be lower and new pipeline capacity likely not required.

Based on the production forecast from Study No. 122, CERI develops input for use in their US-Canada Multi-Regional Input Output Model (UCMRIO 2.0). This IO model is used to predict the results for Study No. 124 and Study No. 125.

Even assuming the input is valid, the use of an IO model to try to represent the macroeconomic impact of resource expansion on the Canadian and U.S. economies over a 25 year time horizon is inappropriate. Similar weaknesses from relying on this framework, as explained in the discussion regarding the Enbridge Application, also exist with the CERI model. However, CERI is much more professional in laying out the details of the model's limitations for the reader whereas Enbridge's consultants are silent on the issue.

The main difference between the Enbridge's analysis and CERI's is in how future supply is treated. Enbridge's analysis holds supply constant in two scenarios—with and without Northern Gateway—and raises the price of crude oil due to restricting Canadian and US supply, and accessing Northeast Asian markets.

CERI measures the impact of new production on the economy while allowing price to be determined internationally, and as such develops more appropriate, although incorrectly specified, input to shock an IO model.

CERI examines potential expansion from the point of view of production costs and how higher international prices will stimulate exploration and development under that cost scenario. In order to do this though, all significant costs, including the impact of an appreciating Canadian dollar, as mentioned, must be included in the development of the benefit input.

CERI explains that an “IO model is incapable of representing the feedback mechanism among price change, investment, and production”. A “main assumption in any I/O analysis is that the economy is in equilibrium” and that “these (IO) models are primarily used over a short-run time horizon, where relative prices and productivity are expected to remain relatively constant”<sup>54</sup>. But then CERI uses the model based on tables from 2006 to predict what might happen between 2010 - 2035. As well, with oil prices rising to \$200 U.S. per barrel, a model with an appropriate feedback mechanism is important.

Recently CERI released Study No. 128—its seventh edition of oil sands supply costs and development projects which updated information in Study No. 122. The media coverage on this report focused on predictions of government revenues and royalties. By 2016, annual royalties are expected to double to \$10 billion. However, what was not mentioned is that the exchange rate is assumed fixed at par with the U.S. Any appreciation in the Canadian dollar will negatively impact this projection.

The Alberta government includes sensitivity analysis in its Budget documents. Every time the Canadian dollar increases by 1 cent over a 12 month period, revenues to Alberta's treasury fall by \$247 million.<sup>55</sup> The revenue projections are clearly vulnerable to an increase in the Canadian dollar, but revenue estimates are predicted as if the risk did not exist. The budget assumes oil prices continue to rise, while the value of the Canadian dollar is held at 99 cents U.S.

A deeper look at Study No. 125, No. 124, No. 122 and No. 128 reveals that the Canadian economy could face a very undesirable future. The continued appreciation of the Canadian dollar—brought about because of rising oil prices—continues to hollow manufacturing and other export sectors, while failing to deliver on the promise of expanded resource activity because of the exchange rate's impact on the oil industry itself. None of this is apparent from the studies because the direct relationship between oil prices and the exchange rate are assumed away.

CERI's reliance on an IO framework to predict economic impact not only includes an exaggerated input based on a false exchange rate reality, the use of an IO model to measure macroeconomic implications is misleading and inappropriate.

### **3.3 Catching the Brass Ring: Oil Market Diversification Potential for Canada:**

School of Public Policy, University of Calgary, M. C. Moore, D. Hackett, S. Grissom, D. Crisan, A. Honarvar, December 2011.<sup>56</sup>

Catching the Brass Ring “examines the nature and structure of the Canadian oil export market in the context of world prices for heavy crude oil and the potential price differential available to Canadian producers gaining access to new overseas markets. Success in this arena will allow Canada to reap incredible economic benefits.”<sup>57</sup> The report does not provide adequate information to properly assess its underlying assumptions or methodology and presents vague and often confusing information.

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54 Study No. 124 page 57

55 <http://www.finance.alberta.ca/publications/budget/budget2012/fiscal-plan-economic-outlook.pdf> page 88.

56 <http://policyschool.ucalgary.ca/?q=content/catching-brass-ring-oil-market-diversification-potential-canada>

57 Ibid., Summary.

Catching the Brass Ring is premised on the assumption that because western Canadian crude oil is trapped in the Midwest, the construction of pipelines to the Gulf Coast and the West Coast of British Columbia will enable crude oil producers to capture an increase in price. It is this price lift—ranging from \$7.20 U.S. per barrel to \$13.60 U.S. per barrel, depending upon the market and year—that is applied to production to generate a benefit used as input into an IO model.

The price tables provided in the Muse Report from the Enbridge Application to the NEB are used. The authors postulate that much greater price increases are possible than the \$2 - \$3 U.S. predicted by Muse because they assume that access to the Gulf Coast will allow Canadian oil producers to change their pricing benchmark for Western Canadian Select (WCS) from West Texas Intermediate (WTI) to Light Louisiana Sweet (LLS) using Maya as a proxy.

The report notes that these price increases are “based on a scenario rather than a forecast, and represent maximum expected additional value available to Canadian producers during this period. These figures do not estimate the likely returns, only the maximum potential.”<sup>58</sup> Not until the end of the report are we told the authors believe the more appropriate benefit capture is “approximately one-third of the full value.”<sup>59</sup> This means the prices the author's believe are likely range from \$2.40 U.S. to \$4.53 U.S., but they use the higher prices to calculate the benefit.

The benefits derived using the maximum potential price increase times supply are added to estimates of investment and reinvestment and input into an IO model to arrive at \$132 billion GDP, additional employment of 649,000 person years, and \$27 billion in government revenues. There is no additional information given as to what investment rate is assumed, or actual figure derived from the price-lift-times-production calculation. As a result there is no identification of the figure developed for input into the model.

It is not clear from the report if the price lift was applied to all heavy crude production, or only the incremental production exported to the U.S. and Asia. It is also not clear if the authors held production constant, or increased it because of greater market access and re-investment of revenues.

Both seem possible in the analysis as there is not a clear discussion of how the calculations were developed. The author's include the CAPP 2009 Growth Forecast as Table 3 in their report, but do not clarify how and when it was used. Elsewhere in the report they imply other forecasts of supply were accessed.

If the same supply forecast is assumed with and without the price lift, then the reinvestment of revenues is double counting. If a new supply volume was assumed based on higher net backs and their reinvestment, then it should be readily identified for the reader. Under this approach new supply would create a price dampening effect which would need to be adjusted for somewhere in the analysis.<sup>60</sup>

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58 Ibid., page 2.

59 Ibid., page 62.

60 If the Brass Ring used the same supply forecast and estimated higher prices then they suffer the same problem as the Enbridge analysis—nothing to shock the IO model with since there is no new supply. It is interesting to note that the

What is surprising is that the benefits the Brass Ring Report attributes to Northern Gateway are relatively small. Only 13 percent of the predicted growth in GDP is due to the west coast pipeline route.<sup>61</sup> As well, the benefits attributable to Northern Gateway in the Brass Ring are significantly less than either Muse (38 percent less) or Wright Mansell (81 percent less on a similar time horizon of 10 years) predict. There is no mention in the Brass Ring of the relative insignificance of Northern Gateway to the overall results from the study—it is tucked away in Tables 26-28.<sup>62</sup>

The obfuscation of this information is open for easy misrepresentation of the report's findings. In January, Mr. Oliver spoke to the BC Chamber of Commerce citing the Brass Ring as evidence that “opening the Asia and California markets to Canadian oil through the West Coast could add as much as \$132 billion to Canada's GDP between 2016 and 2030 as a result of higher international prices compared to U.S. prices.”<sup>63</sup> This is not what the study estimates. The most likely outcome from Northern Gateway, according to the authors, is one-third of \$17.3 billion—or \$5.2 billion—not \$132 billion as Mr. Oliver stated.

Access to Asian markets only provides limited benefits to the Canadian economy according to the findings of the Brass Ring. Still the authors conclude that “Diversifying...to address these future markets (US Gulf Coast and Asia) is certainly in the national interest, a fact that is recognized by pipeline producers in current applications.”<sup>64</sup>

The Brass Ring Report does not present a consistent picture of the methodology applied, or the assumptions employed. It is hard to follow the narrative through to its conclusions. Much greater disclosure is needed regarding the source and use of data in order to evaluate the relevance of the findings.

In an effort to better understand the Brass Ring Report, a series of questions were submitted to the School of Public Policy on March 5, 2012. I was not permitted to speak with any of the report's authors directly, but was assured my questions would be answered. More than a month later, no response had been received.

The Brass Ring Report does not identify the exchange rate assumption used to translate U.S. denominated crude oil sales figures into a Canadian dollar equivalent for use as input into the IO model. Hence, there is no opportunity to identify how the exchange rate might affect the benefits case. Without an understanding of the exchange rate assumption, a sense of the reliability of the benefits figure is even more difficult to obtain.

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Brass Ring utilizes an IO framework and predicts \$132 billion increase in GDP over a 15 year period and 649,000 person years of employment. It is not clear why, in undertaking a similar IO analysis for half the time period as that undertaken by Wright Mansell, that they arrive at a roughly equivalent GDP figure (\$132 for 15 years versus \$270 for 30 years) but more than twice the employment impact (649,000 for 15 years versus 558,000 for 30 years).

61 The Brass Ring assumes a 15 year benefit scenario for US markets and a 10 year benefit scenario for Asian and Californian market access.

62 Ibid., page 60.

63 Notes for Remarks, Honourable Joe Oliver to the British Columbia Chamber of Commerce, January 23, 2012, page 3.

64 Ibid., page 64.

The IO model used in the study is USCMRIO 2.0 which appears to be similar to the model used by CERI, although CERI's study mentions the model is proprietary to them and the Brass Ring Report says the model is publicly available. There is no mention in the study of the results related to the U.S. portion of that IO model, although by adopting cross border tables, it is likely the multiplier—and hence the benefits—are larger than if the analysis was restricted to Canadian IO tables because there are fewer leakages from the model with cross border activity.

The data tables are updated from base year 2006, although it is not clear which year has been used to predict benefits. The model is shocked with “injections of revenues from new purchases of Canadian products” but as has been stated, it is not clear which supply figures are being used, or which products are being affected by the higher prices. If the same supply forecast is used with and without the new pipelines, the input itself invalidates the model.

It is interesting to note that the report acknowledges that an expansion of supply to these markets will likely dampen the higher prices available in those markets since “prices reflect overall supply/demand dynamics, the world price can be expected to adjust accordingly. This effect is not modeled in this report although in the short term, benchmark prices for LLS...are likely to fall.” If the authors know the price differential will fall with increased supply, then that reduction should be built into their revenue estimates, not ignored.

In their closing remarks, the authors state that prices may in fact be driven lower, not higher, and that “in the Pacific Region, the attraction of the Asian market will draw competition from the Middle East, which combined with falling demand in portions of North America may drive prices towards the cost of production for Canadian products.” This caution comes out of nowhere and is not dealt with further.

The reader of the Brass Ring can not help but be left with the feeling that the benefit calculations, derived using maximum potential prices, and rapidly expanding supply forecasts, are knowingly overstated, but the fine print provided in the body of the text provides the authors safe harbour. The Brass Ring seems more like propaganda for resource expansion than a reliable independent research report.

The limitations of an IO framework to try to estimate the impact on the Canadian economy of access to markets in the Gulf Coast and Asia are essentially the same as those addressed in both the Enbridge and CERI reports. In a 64 page report the Brass Ring's authors spend less than two pages explaining the methodology and development of the information it uses to claim its benefits case. A paragraph is dedicated to explaining the limitations of the model.

“I/O multipliers...are not dynamic, and produce a snapshot of the economy at a given point in time...these models do not explicitly consider alternatives and tend to emphasize the benefits of expenditures as opposed to costs...the economy as so modeled is assumed to have limitless amounts of all the inputs it requires and produces.”<sup>65</sup>

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65 Catching the Brass Ring, page 57.

### 3.4 A Netback Impact Analysis of West Coast Export Capacity:

Wood Mackenzie, December 2011, prepared for the Alberta Department of Energy. <sup>66</sup>

The government of Alberta commissioned Wood Mackenzie to assess the impact of additional crude oil export capacity to the west coast as its submission to the NEB. The report extends over the period 2016 – 2025.

There is no IO analysis in the report since its mandate is to estimate the price discount western Canadian heavy oil producers could face if they do not have access to new markets. The only market considered in order to predict the price differential is one with or without market access to Asia facilitated by Northern Gateway.

Wood Mackenzie concludes the lack of a west coast pipeline to serve Asian markets could cost producers \$8 U.S. for every barrel of heavy crude oil they produce—\$8 billion CDN every year from 2017 – 2025, or a total of \$72 billion. “If this difference were limited to the heavy crude oil flowing in to the cracking configuration (~325 kbd) –this discount would represent a loss of nearly US\$1 billion per year. However, in a competitive market the value of crude oil in marginal configuration sets the price for all barrels of similar crude oils, the potential value loss of a US\$8/bbl discount across every barrel of Canadian heavy crude oil supply (just over 2,300 kbd in 2018) could approach US\$6-7 billion per year.”<sup>67</sup>

Wood Mackenzie is assuming that all heavy crude produced in western Canada will attract higher prices—an average of \$8 U.S. per barrel more—with Northern Gateway than without it. Wood Mackenzie assumes the same crude oil supply forecast under both situations. The impact of these higher prices on Canadian and U.S. refineries, and how that affects petroleum product prices, consumers and business, should be addressed, but isn't. If we are being asked to accept an industry benefit as an economy wide benefit, we need to include all the costs—otherwise the gains are deceptive.

Based on crude oil supply numbers provided in the Muse Report, this price increase represents roughly \$770 U.S. million per year more as a burden on the Canadian economy and a \$4.8 U.S. billion per year more burden on the U.S. economy.

There is no identification in the Wood Mackenzie Report of the exchange rate assumption used throughout the period of the analysis although reference to \$8 U.S. per barrel leading to \$6 - \$7 U.S. billion per year but “averaging C\$8 billion per year”<sup>68</sup> equates to about an 85 cent Canadian dollar. This fixed, and relatively low, exchange rate assumption means the reliability of the report's estimate of benefits suffers from the same weaknesses as identified in the Enbridge case, including how the value of the benefit erodes as the Canadian dollar appreciates.

Wood Mackenzie does not provide a sensitivity analysis or a discussion of the factors which could reduce the \$8 U.S. per barrel price lift or threaten the level of forecast supply. A change in these variables would have a significant impact on the benefits advanced.

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66 <http://www.energy.alberta.ca/Org/pdfs/WoodMackenzieWestCoastExport.pdf>

67 Ibid, page 20.

68 Ibid.,page 2.

Wood Mackenzie assumes that part of the reason western Canadian crude could capture higher prices in Asia is because of predatory and discriminating pricing practices driven by Saudi Aramco—Saudi Arabia's national oil company (NOC). “Saudi Aramco are able to do this because they contractually restrict resale or redirection of cargoes loaded in Saudi Arabia through a “destination clause” in the contract. The pricing premium is more a function of pricing crude in Asia at what the market will bear rather than an adjustment for transportation differentials.”<sup>69</sup>

It is useful to note, that the Muse Report filed as part of Enbridge's case also assumed that western Canada would benefit from the Asia premium as fully \$1.60 U.S. per barrel of the price lift (\$2 - \$3 U.S. per barrel) is predicated on western Canadian producers being able to piggyback on the Asia premium. It is not clear what portion of the \$8 U.S. per barrel lift the Wood Mackenzie study attributes to the continued existence of the Asia premium.

The Asia premium is evidence that price discrimination through non-market forces are at work in Asia. It is difficult to understand how the oil industry and government proponents argue that the need for Northern Gateway is driven by market forces, when access to Asian markets is desired by producers in order to capture higher prices that are not determined by market forces, but price discrimination. Both the Wood Mackenzie and the Muse Report explain this discriminatory pricing phenomenon, but do not address the contradiction.

It would be one thing to argue that by supplying Canadian crude oil to Asian markets we are going to help free market forces to determine price through supply and demand, and hence our supply would allow oil prices to fall—but oil producers actually need the continuation of the Asia premium in order for the benefits case of Northern Gateway to be substantiated—in both the Wood Mackenzie and the Enbridge benefits case.

The Asia premium will not likely exist into the long term as these consultants' studies suggest—and hence their cases are significantly compromised. The Asia premium will likely cease to exist for a variety of reasons including expanded supply from other countries, like Russia. More importantly, it is unlikely that National Oil Companies (NOCs) from China, owned by the Chinese Communist Party, will price-gouge themselves. The mandate of China's NOCs is to enhance the Chinese economy by accessing secure, affordable energy for the benefit of China's citizens.

Two of China's NOCs—Sinopec and the Chinese National Offshore Oil Company (CNOOC), through its 17 percent ownership of MEG Energy—have invested in the Northern Gateway pipeline process and have a right to ship crude oil along the pipeline, as well as obtain ownership in the pipeline and marine terminal. Through their ownership in exploration and production companies, such as Syncrude, Daylight Energy and OPTI, they also have access to crude oil they can ship along the pipeline.

CNOOC also has a 50 per cent ownership of Northern Lights along with its partner, Total E&P Canada, another investor in the pipeline approval process. It would make sense for CNOOC to fulfill its mandate by shipping crude from Northern Lights along Northern Gateway to China.

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<sup>69</sup> Ibid., page 19.

PetroChina has expressed interest in building the Northern Gateway pipeline and becoming an owner.<sup>70</sup> Earlier this year PetroChina completed its purchase of the Mackay River Project from Athabasca Oil Sands.<sup>71</sup> Mackay River is expected to produce 150,000 barrels per day when fully operational. PetroChina and Enbridge's relationship goes back to 2005, when PetroChina backed the original request for regulatory review of Northern Gateway and, its believed, committed to 50 per cent of the system's capacity. PetroChina pulled out in 2007 because the process was taking too long.<sup>72</sup>

Not only is it unlikely that we will see market determined prices for NOC crude oil shipments, even if we did—and it was priced with an Asia premium—it would be smoke and mirrors. Sinopec, for example, owns a fleet of tankers, is China's largest refinery company, as well as its major petroleum product distributor. Sinopec is unlikely to price its crude through market transactions—and if it did, it wouldn't pay the Asia premium. It is also unlikely that CNOOC and PetroChina will price gouge themselves. The extent of vertical integration, at each stage of the process, is going to render price transparency extremely difficult to monitor.

The construction of Northern Gateway might guarantee, as Enbridge and Wood Mackenzie predict, that Canadian crude oil, for use in the Canadian market, will be priced as if it was produced in China for the Asian market—except the irony is ours may be the only market that actually ends up paying prices that reflect the Asia premium.

Meanwhile, Asian importers—who are also Asian oil producers operating in Canada—will pay whatever price they pay. Currently, China subsidizes refineries to keep them running and protects their consumers from higher prices with price controls—the incentive for Chinese NOCs is to get those prices down so subsidies and price controls can be reduced or removed altogether.

Given Alberta's royalty structure and its application to earnings rather than as a cost, there is an additional incentive for Chinese NOCs to record the lowest benchmarked price possible and get the crude to China as cheaply as possible—it reduces royalties.

Either way we could lose. Prices go up and western Canadian refineries pay more which is passed onto Canadian consumers and businesses—or prices don't rise and supply that could have fed eastern Canadian refineries is flowing to China at deep discounts—while eastern Canada continues to pay higher priced Brent and government revenues take a beating.

#### **4. Conclusion**

A number of studies have been written in an attempt to extol the economic benefits of continued rapid expansion and export of Canada's crude oil resources on the Canadian economy. These studies follow a similar methodology and use similar exchange rate, price and supply scenarios. Each of these studies allege benefits—without due recognition of costs—and promise vast economic gains from new

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70 <http://business.financialpost.com/2012/03/28/petrochina-bids-to-help-build-5-5-billion-northern-gateway-pipeline/>

71 <http://www.cbc.ca/news/business/story/2012/01/03/athabasca-petrochina-mackay-oil.html>

72 <http://www.cbc.ca/news/canada/calgary/story/2007/07/13/enbridge-gateway.html>

pipelines to the U.S. Gulf Coast and Asia.

These studies are deficient due to a lack of sensitivity analysis on important variables, such as exchange rates, price and supply. The studies generally suffer from a lack of alternative scenarios which recognize international economic conditions, and in cases where alternatives have been considered, choose an optimistic case to prop-up enhanced benefits.

All the studies rely on an IO model to predict economic gains, except the Wood Mackenzie Report which does not purport to address the macroeconomic consequence of oil producer benefits from higher netback prices. An IO framework is an inappropriate methodology for addressing the impact of western Canada's oil sector on the Canadian macroeconomy because of numerous limitations.

IO models are partial equilibrium, not general equilibrium, models. They are static not dynamic, and are incapable of incorporating adjustments within the economy to price, exchange rate, interest rate, or other changes that dramatically impact Canada's economic performance. IO models treat all impacts as benefits without regard to costs, and any costs implicit in the IO tables—such as a refinery fire—are impacts that end up being treated as benefits.

Each of the studies suffer from an additional weakness because they do not recognize the relationship between our petro-dollar and its impact on resource company profits or investment intentions. They assume a fixed and relatively low exchange rate given their underlying price forecasts. This ignores the dynamic relationship between oil industry returns and the value of the Canadian dollar, and how that might impact future investment, and hence, crude oil production expansion plans. Without due recognition of this relationship, supply projections are likely overly ambitious and will predict the need for new pipeline infrastructure well before it is economically viable.

The absence of an identification of the impact of the Canadian dollar on oil industry expansion intentions, as well as its impact on government revenues, also overstates the predicted contribution of the industry's growth to royalties and government revenues.

The exaggerated and erroneous quantitative analysis arising from these studies have been extensively used in the media to communicate to the Canadian public that the economic benefits are real when they are not. The public is being denied one of their basic democratic rights—access to accurate and reliable information.

A continued obfuscation of the economic reality and advancement of vast benefits based on false foundations will lead to an entrenchment of inflated and unreasonable public expectations. When the promised benefits fail to materialize, not only will regional tensions and sectoral struggles heighten, we will have missed an opportunity to develop and implement meaningful strategies to secure economic growth and progress for Canadians in all sectors of the economy in an environmentally sustainable manner. Continued misrepresentation of the benefits and excessive claims of gains, without recognizing losses, by industry proponents and government leaders, is divisive and detrimental.

None of the studies reviewed examine economic benefits if western Canadian crude was to gain access to eastern Canadian markets where almost 50 per cent of Canada's crude oil needs are imported from volatile and uncertain international suppliers, including the Middle East. The only time our political leaders discuss the undesirable consequence of this dependence on foreign markets is when they are

rallying support for building pipelines to meet the energy security needs of the U.S. or China. Canada's vulnerability is ignored.

It is understandable that the Enbridge and Wood Mackenzie reports address only the issues surrounding the construction of a pipeline to BC's west coast as this is the proposal before the NEB. However, the focus is Northern Gateway or nothing. There is no consideration in the determination of the price lift or calculation of benefits of what could be achieved if appropriate investment in upgrading and refining was undertaken in Canada and western Canadian crude oil—conventional and heavy—made its way to eastern Canadian refineries that currently pay much higher, Brent based, prices. It is not clear why CERI or the Brass Ring did not entertain the economics of access to eastern Canada when preparing their analysis.

If eastern Canadian energy needs were met, there would be a positive impact on Canada's economic growth and development. A made in Canada energy security policy would allow continued development of environmental standards that reflect the public interest concern for the environment and would create value added and meaningful jobs in Canada.

At the very least, it is time to stop using unrealistic and exaggerated economic benefits claims from various studies as a method to avoid an identification and discussion of the real and important economic, social and environmental issues that face Canada.