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Low Crude Oil Prices and Their Impact on the Canadian Economy

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Executive Summary

The decline in crude oil prices over the last year and a half is one of the most complex shocks for any economy and one that is important to measure and understand. This report attempts to measure potential impacts on the Canadian economy if low oil prices persist into the future. The modelling results indicate that the net effect of low crude oil prices on Canada is negative; as a rule of thumb, for every Canadian dollar gain in WTI price, Canadian GDP would gain almost $1.7 billion, on average.

At the global macro level, the positive effects of a decrease in crude oil price on energy-importing countries will likely more than offset the negative effects on exporting countries resulting in a net positive impact on global growth. For exporting countries, like Canada, however, the real complexity appears beneath the surface, where the drop in commodity prices mobilizes sectoral and regional forces that can take years to play out. These include higher consumer spending in response to lower energy costs, lower spending due to higher prices on imported goods and services (as a result of the falling Canadian dollar), falling investment and employment in the economy's resource sector, and rising investment and employment in the non-resource sectors.

The purpose of this report is to present economic impacts on the Canadian economy stemming from two short-term scenarios, spanning 7 years, starting in 2015: a Reference Case, where the oil prices are forecasted to grow from current levels to almost $73.00 per barrel (in 2014 dollars) and a Low Case, where oil prices reach only $51.00 per barrel by 2021. The modelling of these impacts is done using CERI's US-Canada Multi-Regional Input/Output Model (UCMRIO 3.0) to measure the impacts on major macroeconomic variables such as GDP, employment and tax revenues. The economic analysis involves establishing the economic impacts of low crude prices on the Canadian economy and comparing them with those stemming from a Reference Case.[1]

The basic assumptions are outlined in Table E.1.

Table E.1: Economic and Financial Assumptions

Parameter	Unit of Measurement	Reference Case	Low Case
Time Frame	Years	7	7
First Year of Forecast	Year	2015	2015
US/CDN exchange rate	US$/CDN$	0.85	0.75
WTI price	2014 $/bbl	$53.25(2015)-$72.88(2021)	$46.26(2015)-$51.52(2021)
Oil Sands Production	MMBPD	2.1(2015)-3.1(2021)	2.0(2015)-2.9(2021)
Capital Investment	CDN Mln $/year (avg)	19,575.64	13,702.95
Change in Non-Energy Exports	CDN Mln $(7-yr avg)	No Change	7,557.6

Source: CERI.

[1] The cases are described in Chapter 2.

The two cases present two alternative outlooks that could emerge into the near future depending on the level of crude oil prices, level of investment, production, exchange rate and exports, to name a few. In comparison, the Reference Case shows larger contributions to the Canadian economy than the Low Case, echoing the opinion of many analysts and central banks that, on a net basis, lower crude prices impact Canada's economy in a negative way.

Table E.2 shows the annual average impacts over the forecast period, Figures E.1-E.4 present year by year impacts.

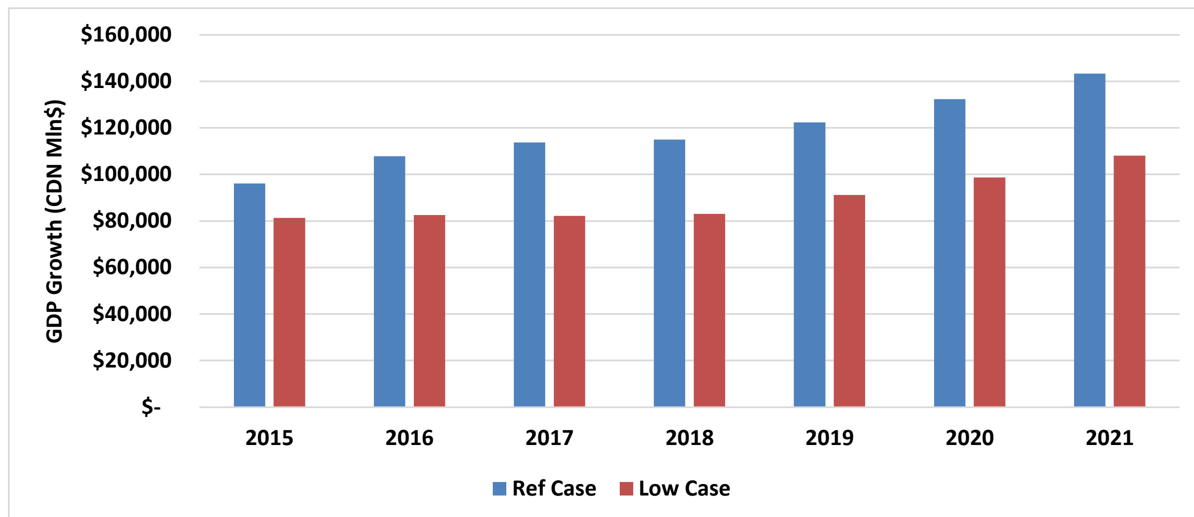
Table E.2: Comparison of Two Cases

2015-2021	Unit of Measure	Ref.Case	Low Case	Low vs. Ref. Case	% Change
GDP	Mlin CDN$	$ 118,619	$ 89,555	($29,064)	-24.5%
Compensation	Mlin CDN$	$ 54,940	$ 42,526	($12,414)	-22.6%
Employment	Jobs/year	587,006	471,118	(115,888)	-19.7%
Federal Taxes	Mlin CDN$	$ 13,580	$ 10,187	($3,394)	-25.0%
Provincial Taxes	Mlin CDN$	$ 8,363	$ 6,494	($1,870)	-22.4%

Source: CERI

Canada's GDP will be reduced by lower oil prices. This will cut into Canadian national incomes and spending power. On a cumulative basis, GDP growth will be 24.5 percent lower in the Low Case versus the Reference Case. Figure E.1 shows annual GDP impacts for both cases. The annual average GDP growth under the Reference Case is $118.6 billion in comparison to an annual average of $89.6 billion in the Low Case.

Figure E.1: GDP Impacts (2015-2021)



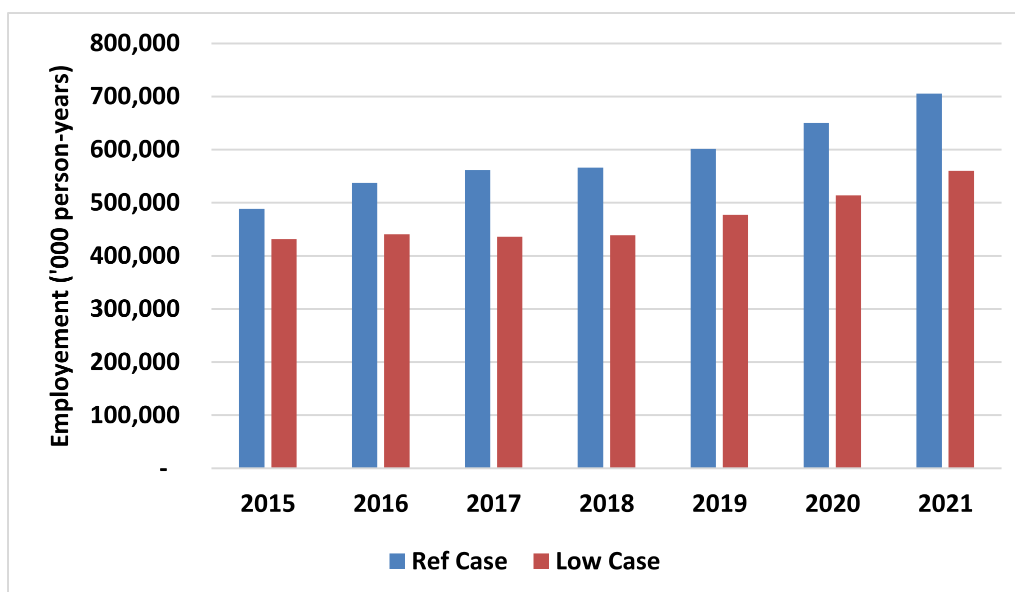
Source: CERI

The fall in oil prices will have a mixture of positive and negative effects on employment. Thousands of jobs have been lost already as a result of the recent price collapse, and more will be lost (if prices continue to fall) in the energy sector[2] – especially on new drilling and construction projects. Meanwhile, new jobs will be created in sectors which benefit from lower energy costs (such as transportation and some manufacturing), as well as for those sectors that would benefit from the low exchange rate.

There will be a net negative impact on overall employment levels as a result of low crude oil prices, however, it is the least impacted variable among other measured variables, such as GDP, compensation and tax revenues. Over the 7-year period, employment will be 19.7 percent lower in the Low Case than that under the Reference Case. The oil industry is very capital-intensive, but one of the least labour-intensive sectors in Canada's whole economy.

Other sectors such as manufacturing create more jobs per unit of investment than the energy sector. So while petroleum industry revenues and profits will fall sharply in coming years, the impact on overall employment will be less severe. It is important to note that while the job lay-offs are immediate in the energy sector, employment growth in non-energy related sectors might take a few years to materialize, but given the linear and static nature of the input-output modelling, it is impossible to incorporate the time lag feature. Figure E.2 illustrates annual changes in employment for both cases. Over the forecast period, it is estimated that, on average, there will be almost 116,000 fewer jobs (direct, indirect and induced) in Canada if crude oil prices remain low.

Figure E.2: Employment Impacts (2015-2021)

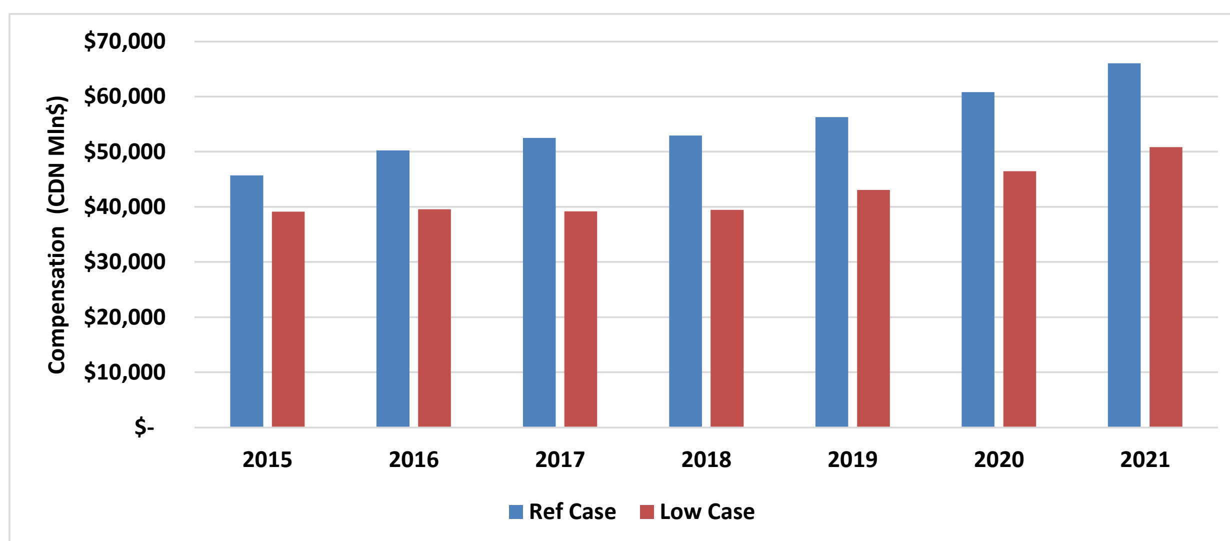


Source: CERI

[2] http://business.financialpost.com/news/energy/one-third-of-canadian-oil-and-gas-firms-expect-more-painful-job-losses-in-2016-survey

Even though the oil industry is less labour-intensive than other industries in Canada, it requires very skilled workers who are well compensated. The difference between the two cases in terms of compensation amounts to almost 23 percent, indicating that losing highly-skilled and higher paid jobs in the oil industry will have a larger impact than creating more less-skilled and lower paid jobs among other industries that are more labour-intensive.[3] Over the forecast period, the overall impact on compensation in the Canadian economy is estimated to be about $54.9 billion on an annual average basis in the Reference Case compared to $42.5 billion in the lower oil price scenario, for a decline of over $12 billion on an annual average basis (Figure E.3).

Figure E.3: Compensation Impacts (2015-2021)



Source: CERI

With decreases in employment, employee compensation and profitability of the oil sector, government tax revenues will also be lower in the Low Case scenario. In fact, federally-collected tax revenues are the most impacted variable, with 25 percent difference between the Reference and Low cases. The federal government's tax revenues depend on corporate oil revenues as well as personal taxes paid by employees, hence with lower prices, production and labour, it is not surprising that federal tax revenues are highly impacted. On an annual average basis, the impact on federal tax revenues amounts to $13.6 billion in the Reference Case and $10.2 billion in the Low Case. As for provincial taxes, under the Low Case, the cumulative impact will be 22.4 percent lower than under the Reference Case. An annual average adds up to $8.4 billion under the Reference Case and $6.5 billion under the Low Case (Figure E.4).

[3] One model limitation is its static nature, hence, the model does not account for wage decreases associated with slower activity in the sector.

Figure E.4: Federal and Provincial Tax Revenues (2015-2021)

Source: CERI

In conclusion, Canadian economic growth could be on *average 23 percent* lower if low oil prices persist over the next seven years. The regional differences suggest that some provinces will hurt and some will benefit from lower crude prices, but on the national level, Canadian economic growth will suffer as a result of low crude prices.

Despite some mitigating factors, lower oil prices are, on the whole, not favourable for Canada. For this report, there are two main takeaways from the drop in oil prices. First, the drop in price has an immediate and temporary negative effect on the oil industry and other service-oriented sectors that aid the upstream oil industry in Canada. Second, the broader impact of low oil prices on Canadian economic growth is on a net basis negative.