

A 2017 UPDATE OF TAXATION OF OIL INVESTMENTS IN CANADA AND THE UNITED STATES: HOW U.S. TAX REFORM COULD AFFECT COMPETITIVENESS*

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SUMMARY

Canada could be about to lose its tax competitive advantage it currently enjoys in attracting investment to its oil sector: its low corporate tax and royalty rates compared to the U.S. While we will start to know better the details of a U.S. tax reform package in the next month or so, two reform plans provide a basis to analyze potential impacts: the tax-reform “Blueprint” put forward last year by the Republican-controlled House of Representatives, and President Donald Trump’s own reform proposals. Either one, or even a hybrid version of the two, would make tax and royalty effective tax rates on new investment in the U.S. oil industry significantly more attractive to investors. Combined with the lack of any plans for a U.S. carbon tax and the lightening U.S. regulatory environment, investing in American oil might soon look more compelling than investing in Canadian oil. And when the price of oil eventually rises again, the attractiveness of Canada to international investors will diminish even more.

As an investment destination, Canada’s popularity has already been fading. One key index, measuring foreign-direct-investment confidence, shows the U.S. at the top, while Canada has slid from third place to fifth place, behind even Britain, despite so much Brexit uncertainty. Amid Canada’s rising tax burden and its growing regulatory load, however, oil-producing provinces have nevertheless managed to retain a competitive advantage against oil-producing U.S. states in attracting international capital. That is primarily due to a lower corporate tax rate in Canada, as well as competitive royalty regimes and, in most oil-producing provinces, the absence of a retail sales tax on capital equipment.

Alberta, for example, which currently offers the lowest marginal effective tax and royalty rate (METRR) on conventional oil investments of all the Canadian provinces based on a \$50 per barrel West Texas Intermediate price, also offers a lower METRR than nearly all comparable U.S. states measured (except Pennsylvania). But if the Republicans succeed in passing a version of their tax-reform proposals — and as a major campaign promise, they are facing great pressure to do so — Alberta will slide quickly from one of the best North American destinations for oil investments

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to somewhere in the middle of the pack, and Saskatchewan will become one of the highest-taxed oil-producing jurisdictions. Should rising oil prices trigger higher royalty rates in both provinces, they will become even less competitive.

Even though the House plan proposes a less drastic cut to corporate income tax rates, it will actually do more than the president's proposed tax reforms to eliminate Canada's competitive edge and put the two countries METRRs virtually on par, due to the immediate deduction of capital expenditures.

While the prospect of the two countries ending up with roughly equal METRRs might sound less than worrisome, if it happens, Canada will lose the most significant advantages it has over the U.S. in attracting investment to its oil sector. The U.S. already enjoys the advantage of being a much larger market, and having a faster-growing economy, which is why it ranks as the most-preferred destination for foreign investment intentions. Investors also enjoy more regulatory certainty in the U.S., where the sector is being aggressively deregulated (as opposed to in Canada, where new and sometimes unexpected twists in the regulatory environment are becoming more common). And the U.S. still has no plans to implement a national carbon tax, while in Canada carbon taxes are expected to escalate over the next few years. With all these challenges to overcome, Canada's oil industry enjoyed one key edge to attract business - its lower tax burden, which soon it might lose as well.

MISE À JOUR DE 2017 SUR LA TAXATION DES INVESTISSEMENTS PÉTROLIERS AU CANADA ET AUX ÉTATS-UNIS : COMMENT LA RÉFORME FISCALE AUX ÉTATS-UNIS POURRAIT AFFECTER LA COMPÉTITIVITÉ*

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RÉSUMÉ

Le Canada pourrait être sur le point de perdre l'avantage fiscal concurrentiel qui lui permet d'attirer les investissements dans le secteur pétrolier : c'est-à-dire les faibles redevances et taux d'imposition pour les compagnies comparativement à ceux des États-Unis. Alors que nous prendrons connaissance dans les prochains mois des détails de la réforme fiscale aux États-Unis, deux plans de réforme permettent d'en analyser l'impact potentiel : le plan mis de l'avant l'année dernière par la Chambre des représentants contrôlée par les Républicains et les propositions de réformes présentées par le président Donald Trump. L'un ou l'autre, ou même une version hybride des deux, rendraient les redevances et taux d'imposition plus attrayants pour de nouveaux investissements dans l'industrie pétrolière aux États-Unis. À cela s'ajoutent l'absence de plan pour une taxe carbone et l'allègement du contexte réglementaire aux États-Unis; l'investissement dans le secteur pétrolier sera donc bientôt plus attrayant aux États-Unis qu'au Canada. Et quand le prix de pétrole sera en hausse, l'attrait du Canada pour les investisseurs étrangers s'amointrira davantage.

En tant que pays pour l'investissement, la popularité du Canada est déjà en train de s'estomper. Un des indicateurs clés en ce sens, qui mesure la confiance pour l'investissement direct étranger, montre que les États-Unis occupent le premier rang tandis que le Canada a glissé du troisième au cinquième rang, derrière le Royaume-Uni malgré l'incertitude du Brexit. Cependant, en dépit du fardeau fiscal à la hausse et des réglementations croissantes au Canada, les provinces productrices de pétrole ont su maintenir un avantage concurrentiel face aux États américains producteurs de pétrole, notamment pour attirer des capitaux étrangers. Cela s'explique principalement par un taux d'imposition plus bas au Canada, par un régime de redevances concurrentiel ainsi que par l'absence de taxe sur les ventes au détail pour le matériel d'équipement dans la plupart des provinces productrices de pétrole.

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L'Alberta, par exemple, qui de toutes les provinces du Canada offre actuellement les plus bas taux effectifs marginaux d'imposition et de redevances (TEMIR) pour les investissements pétroliers selon un prix de 50 \$ par baril West Texas Intermediate, offre aussi des TEMIR plus bas que tout État américain comparable (hormis la Pennsylvanie). Mais si les Républicains obtiennent le feu vert pour leurs propositions fiscales – et comme le laisse présager une imposante campagne, la pression est très forte en ce sens – l'Alberta passera rapidement d'une des meilleures destinations nord-américaines à une position en milieu de peloton, alors que la Saskatchewan deviendra l'un des territoires avec un des plus hauts taux d'imposition pour la production pétrolière. Et si la hausse des prix pétroliers engage une hausse des redevances dans ces deux provinces, elles en seront encore moins concurrentielles.

Même si le plan de la Chambre des représentants prévoit des coupures moins radicales pour les taux d'imposition du revenu des compagnies, elle ira plus loin que les propositions de réforme fiscale du président visant à éliminer l'avantage concurrentiel du Canada et à mettre pratiquement à égalité les TEMIR des deux pays, et ce, grâce à des déductions immédiates pour les dépenses en capital.

Bien que la perspective que les deux pays aient des TEMIR sensiblement égaux semble peu inquiétante, si cela arrive, le Canada perdra le plus grand avantage qu'il a sur les États-Unis dans l'attrait d'investissements pour le secteur pétrolier. Les États-Unis ont déjà l'avantage d'être un plus gros marché et d'avoir une croissance économique rapide, ce qui les place en position favorite pour les intentions d'investissements étrangers. Les investisseurs peuvent aussi compter sur une plus grande stabilité réglementaire aux États-Unis, où le secteur est vivement déréglementé (contrairement au Canada, où de nouvelles mesures, souvent inattendues, sont de plus en plus courantes). De plus, il n'y a toujours pas de plan aux États-Unis pour la mise en place d'une taxe nationale sur le carbone, alors qu'au Canada on s'attend à ce que les taxes sur le carbone s'accroissent dans les prochaines années. Devant tous ces défis à surmonter, l'industrie pétrolière au Canada présente encore un avantage décisif pour attirer le milieu des affaires : son faible fardeau fiscal, mais elle pourrait aussi le perdre bientôt.

With the election of Donald Trump and Republican control of the House of Representatives and the Senate, U.S. policy developments have created both major opportunities and concerns for many businesses operating in Canada. Republican promises to reduce costly regulations, to enact tax reform and to increase trade protection could make U.S. markets stronger for Canadian exports. On the other hand, U.S. policy developments could also make Canadian investments less competitive compared to those in the United States. The 2017 A.T. Kearney FDI Confidence Index shows that the United States remains the top destination for capital investment due to its size and growing economy, even amid the uncertainties regarding the opportunities and costs of potential policy developments. Canada, however, has fallen from third to fifth place, behind the Brexit-challenged United Kingdom.¹

In this paper we measure the impact of potential U.S. tax reforms on Canadian competitiveness for the oil industry as well as update our estimates of effective tax rates on new investment for 2017. As we reported in 2016, oil investments are taxed less heavily in Canada compared to the United States. This is primarily due to our lower corporate income tax rates (roughly 27 per cent) compared to the U.S. (about 38 per cent) and the absence of a retail sales tax on capital purchases in Canada, except in Saskatchewan and British Columbia (Manitoba, the only other province with a retail sales tax on capital purchases, does not have significant oil investment).² We also have a more competitive royalty structure compared to some U.S. states, such as Texas and North Dakota.

Should Republican tax reform result in a more competitive U.S. business structure, Canada will no longer enjoy its significant tax-competitive advantage in oil investments. If the U.S. corporate tax burden becomes similar to Canada's, its recent deregulation and its lighter carbon policies will make the United States a more attractive destination for oil investments than Canada for international investors.

The White House aspires to lower the U.S. federal corporate income tax rate to 15 per cent (roughly 21 per cent, with state taxes), which would be well below the federal-provincial rate in Canada. Some other measures to broaden the tax base could also be introduced, but these are unclear at this time.

The House of Representatives' "Blueprint" proposes a federal corporate cash flow tax. The tax rate would be 20 per cent (about 26 per cent with state tax rates) and capital expenditures would be expensed (written off at a 100-per-cent rate, but interest would not be deductible). With capital expensing, oil investments in the U.S. could become more tax competitive than in Canada. In its original form, the House plan also mandated a shift towards so-called destination-based taxation via border adjustment, with imports being taxed and export sales exempted from the business tax, similar to Canada's GST/HST. Under this proposal, this value-added tax (VAT) would be administered using the so-called subtraction method, by measuring value added on an accounts basis as the difference between revenues from sales minus purchases from other businesses. This is no different, in principle, than other VATs, including Canada's GST, that rely on the credit-invoice method: taxes are levied on revenues and a credit is given for purchases from other firms (under VATs such as Canada's GST/HST, imports are taxed at the border and exports are untaxed). Under the House proposal, labour compensation is expensed from the business tax base (unlike a VAT), but this would be similar to a subsidy or negative payroll tax for labour.³ The border-adjustment

¹ See <https://www.atkearney.com/gbpc/foreign-direct-investment-confidence-index>.

² Atlantic offshore oil (in Newfoundland and Labrador and Nova Scotia) enjoys an even lower tax burden compared to conventional oil in Western Canada due to the generous allowances for exploration and development under the Atlantic provinces' rent-based royalty systems.

³ See A. Auerbach et al (2017).

proposal has been abandoned recently and therefore does not enter into our calculations.⁴ Nonetheless, as seen below, U.S. competitiveness substantially improves because marginal investment would no longer be taxed with expensing, regardless of whether a border adjustment is made or not.

At this time, we do not know what will happen with the U.S. tax reform. Certainly, the president and the Republican party have made tax reform a major promise, so there will be significant pressure on politicians to deliver on this important election commitment. Many technical issues still need to be sorted out. Nonetheless, it is useful to understand the impact of U.S. policy changes on Canadian competitiveness if some configuration of the White House or House of Representatives plans are adopted.

BACKGROUND

In 2012, The School of Public Policy published a study (Mintz and Chen, 2012) comparing the fiscal treatment and the overall tax burden on the upstream oil sector in Canada, the United States and four other oil-producing countries, using as a yardstick the marginal effective tax and royalty rate (METRR). Intuitively, the METRR represents the percentage of the gross-of-tax rate of return on the marginal project that goes towards paying taxes, royalties and other fiscal dues, before the project generates the required net-of-tax rate of return for its investors.

We repeated this exercise in 2016 (Crisan and Mintz, 2016) when oil prices collapsed from US\$100 to US\$50 per barrel. The lower price of oil raised the METRRs in jurisdictions charging gross royalties in fixed percentages, since royalties decreased less than profit margins did. As a result, the METRR in the U.S. states increased by almost four percentage points compared to 2012. With significantly lower royalty rates in 2016 versus 2012 due to the lower oil prices, we found that the METRRs in both Alberta and Saskatchewan dropped by approximately five percentage points, significantly boosting their competitiveness.

The decrease in the METRR for conventional oil in Alberta from 40.3 per cent in 2012 to 35.0 per cent in 2016 was particularly remarkable, given that the newly elected NDP government had just raised the provincial corporate income tax rate by two percentage points, from 10 to 12 per cent, effective July 1, 2015, increasing the tax burden on all economic sectors.⁵

A second electoral promise that Alberta's NDP government followed through on was to undertake a comprehensive review of the royalties paid by the oil industry. Against what was perhaps the public's expectation that this review would result in higher royalties to be paid by the oil industry, the review panel actually concluded that the royalty system in Alberta was not under-taxing the industry, given the increased competition that Alberta oil faced from other jurisdictions, in particular the U.S. Thus, instead of increasing royalties, the review panel recommended new, simplified formulas for calculating the royalties on conventional oil, which by and large resulted in lower royalties and lower METRRs for a wide range of economic scenarios. We found that the change in royalties was significant enough that it further decreased the METRR projected for 2017 (when the new formulas would have taken full effect) by more than eight percentage points, to 26.7 per cent, making Alberta one of the most competitive jurisdictions for conventional oil in North America, second only to Pennsylvania.

⁴ The border-adjustment proposal faced intense resistance in net-importing states, as well as from consumer groups. Their opposition was based on their anticipation of increased prices, and the expectation that the U.S. dollar would not appreciate enough to fully offset the higher price of imports.

⁵ See Philip Bazel and Jack Mintz (2016), for the impact of the increased corporate income tax in Alberta on the marginal effective tax rate in the manufacturing sector.

Not much has happened since 2016 in the oil market or the fiscal regime for oil in Canada and U.S. The main change in the fiscal treatment of oil in Canada comes from the federal government, as announced in its 2017 budget. Citing the increased success in oil and gas exploratory drilling since the 1990s, the government announced a change in the fiscal treatment of expenses associated with successful oil and gas discovery wells. Rather than being immediately deducted as Canadian exploration expenses, they will be treated as Canadian development expenses, which means they are capitalized and amortized at a rate of 30 per cent per year. What this implies is that costs incurred with successful exploration cannot be deducted immediately and fully, but only gradually, resulting in total deductions in present value terms of only around 88 cents per dollar spent, thereby increasing the METRR on oil.

At provincial level, the most significant change is the decrease in Saskatchewan's corporate income tax rate from 12 per cent to 11.5 per cent effective July 1, 2017, with a further decrease to 11 per cent announced for July 1, 2019. We include the lower rate of 11 per cent in our 2017 model, as firms' investment generates income with a lag, which will be taxed at the low rate that has now been legislated.

The House Republican Blueprint

As discussed above, the House Republicans' "Blueprint" released in June 2016 recommends substantial changes to business taxation. In essence, it proposes a move towards cash-flow taxation by allowing immediate expensing of all capital spending (except land) while eliminating interest deductibility. The federal corporate tax rate would be set at 20 per cent, a significant drop from the present federal tax rate of 35 per cent.⁶

The Trump Plan

President Trump's tax-reform plan was launched in September 2015 during the presidential campaign as a set of principles intended to provide "tax relief for middle class Americans," "simplify the tax code" and "grow the American economy." In terms of business taxation, it proposed to cut the federal corporate income tax to 15 per cent. Although reference was made to broadening the tax base, no such measure has been proposed in detail, especially with respect to business income.⁷ Since then, president Trump has restated his general principles for tax reform in a series of speeches and a new outline released in April 2017. Although specific details remain unknown, the reduction of the corporate income tax rate to 15 per cent remains a key element of his plan.⁸

Currently, state corporate income taxes in the U.S. are generally lower than provincial rates in Canada. Only 43 states plus the District of Columbia levy corporate income taxes, ranging from 4 per cent in North Carolina to 12 per cent in Iowa.⁹ And only four states and the District of Columbia levy corporate income taxes above 9 per cent. Another four states, including Texas, impose gross-receipts taxes on business instead of corporate income taxes, but at very low rates.¹⁰

⁶ Based on PwC (2017).

⁷ Donald J. Trump website, "Trump Tax Reform That Will Make America Great Again," available at <https://assets.donaldjtrump.com/trump-tax-reform.pdf>.

⁸ See Tax Policy Centre (2017).

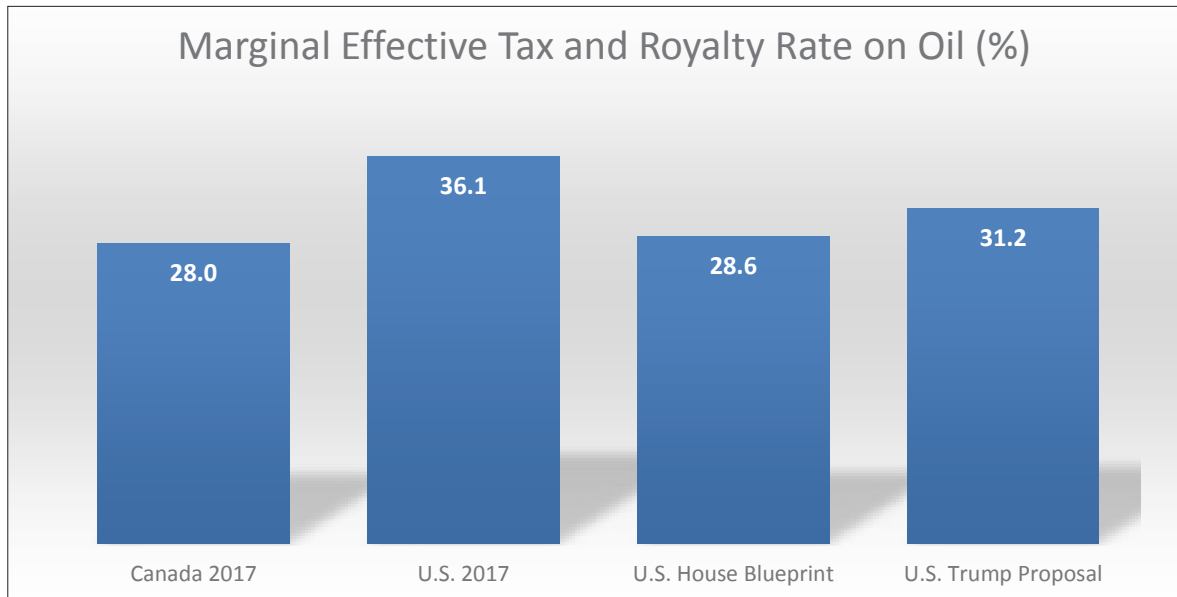
⁹ See Tax Foundation (2017).

¹⁰ Nevada's commerce tax in the mining sector is 0.051 per cent of a business' gross tax receipts; Ohio's commercial-activity tax top-tier rate is 0.26 per cent on gross receipts exceeding US\$4 million; Texas's franchise tax is 0.75 per cent of a taxable entity's margin (which can be calculated in several ways, including as 70 per cent of total revenues or total revenues minus US\$1 million); Washington's business and occupation tax is 0.00484 per cent of gross receipts in the extracting sector.

With the new federal rate at the same level as in Canada, Trump’s plan implies that combined corporate income tax rates will be lower in all states compared to the Canadian provinces.

Figure 1 below summarizes our main findings for the current METRRs in Canada and the U.S. and the rates that would result under the two business reform plans currently under discussion in the U.S. Detailed results for the five Canadian provinces and five U.S. states considered are provided in the appendix.

FIGURE 1 MARGINAL EFFECTIVE TAX AND ROYALTY RATE BY JURISDICTION (IN PER CENT)



Note: Bonus depreciation for eligible plant and equipment is not included in estimating the METRR for U.S. in 2017 since it is being phased out. However, its impact would reduce the METRR by 0.7 percentage points.

The METRR in Canada has increased slightly from 27.7 per cent in 2016 (including the new royalty formulas for conventional oil in Alberta) to 28.0 per cent in 2017, primarily due to the change in the treatment of exploration expenses announced by the federal government. The Canadian METRR is still considerably lower than the current METRR for oil in the U.S., but it is worth remembering that the low rate is in part due to the lower royalty rates payable in the largest two oil-producing provinces, Alberta and Saskatchewan, at the current depressed oil prices. If and when oil prices start to increase, the royalty rates and the METRRs in these provinces will adjust upward and the competitiveness of the Canadian oil will be affected.

More concerning, any of the two tax reform proposals in the U.S., or a hybrid formula between the two, will considerably reduce the METRR advantage that Canada currently enjoys, even at today’s low oil price. With the GOP “Blueprint” proposal in particular, the METRRs in Canada and U.S. will almost be at par.

It is perhaps surprising that the METRR in the U.S. will be lower under the House “Blueprint” than under the Trump plan, even though the latter entails the 15-per-cent corporate income tax versus the 20-per-cent tax proposed under the House plan. Despite the elimination of interest deduction and the higher corporate income tax rate compared to the Trump plan, the immediate deductibility of capital expenses under the House plan would result in a much more competitive tax regime in the United States. In fact, the move toward capital expensing together with the change in interest deductibility, even without the proposed corporate income tax cut from 35 to 20 per cent, would decrease the METRR in the U.S. by almost seven percentage points, to 29.2 per cent, below the proposed Trump plan. This shows that focusing solely on changes in statutory corporate income

tax rates can be misleading and comprehensive indicators like the marginal effective tax and royalty rate are necessary in order to assess the overall impact of complex tax changes.

At the provincial level in Canada, METRRs have generally increased slightly compared to 2016, by less than half of one percentage point, due to the new federal treatment of successful exploration expenses. The exceptions are Saskatchewan, where the announced decrease in the provincial corporate income tax rate exactly compensates for the federal change, and Nova Scotia, where the METRR was negative prior to the federal change. Conventional oil in Alberta remains the most competitive conventional oil in Canada, and more competitive than in Texas, North Dakota, Colorado, and Arkansas, but behind Pennsylvania. Under any of the two reform plans in the U.S., Alberta will lose its competitiveness against Colorado and Arkansas. Saskatchewan currently enjoys a tax advantage over Texas and neighbouring North Dakota, but this advantage would be lost under both the Trump reform plan and the House “blueprint.”

While the new federal tax treatment of successful exploration expenses in Canada reduces economic distortions with respect to the choice of assets, the timing might be inopportune. Given the uncertainties with respect to the U.S. tax reform, especially with respect to capital expensing, Canada might have to provide a far different response, perhaps reversing the 2017 budget changes. It was unfortunate that base broadening was primarily selected for the oil and gas industry in the last budget while other sectors were left unaffected.

Our model does not include carbon taxes and regulations that impact the competitiveness of the oil sector in Canada. This will require going beyond measurements of the effective tax rate on investments, since carbon taxes and regulations affect other business costs. Further work will focus on the impact of taxes and regulations on the cost of production (including capital, labour and energy).

CONCLUSIONS

Under the current tax policies affecting the upstream oil industry, Canadian oil extraction enjoys a considerably lighter tax burden versus the United States, with a marginal effective tax and royalty rate approximately eight-percentage-points lower. Alberta in particular currently offers the lowest METRR for conventional oil in the three Western provinces and four of the five U.S. states examined. But this comparative advantage is under threat given the tax-reform proposals advanced by the Republican party currently in power.

Since the election campaign leading to the U.S. election in November 2016, President Trump has announced his intention of slashing the corporate income tax rate from 35 to 15 per cent, while potentially expanding the tax base. If his plan comes to fruition, the METRR in the U.S. would fall by almost five percentage points, from 36.1 to 31.2 per cent, still above the average Canadian METRR, but much closer than it is now.

Under the House Republicans’ “Blueprint,” the corporate income tax rate would be reduced to a more conservative 20 per cent, but combined with the proposal for immediate deductibility of capital expenses while eliminating the interest deductibility, the impact on the capital-intensive oil industry would be substantial. The average METRR in U.S. would fall to 28.6 per cent, less than one percentage point above the Canadian METRR of 28.0 per cent.

More importantly, under both tax reform plans, the competitiveness of the two largest Canadian oil-producing provinces, Alberta and Saskatchewan, would significantly diminish. From one of the least taxed at current market prices, Alberta’s conventional oil would fall behind to somewhere in the middle of the pack, while Saskatchewan oil would go from the middle of the pack to becoming more taxed than in any of the five U.S. states considered.

The current results are derived using a benchmark oil price of US\$50 per barrel. Any increase in the price of oil would further erode the competitiveness of Alberta and Saskatchewan through the automatic adjustment of the royalty rates.

It is unclear at the moment what will be the final shape and form of the corporate tax reform in the U.S., but Republican politicians are under intense pressure to fulfil one of their most significant campaign promises. At the same time, a recent change introduced by the Canadian federal government that treats successful exploratory wells as development spending rather than exploration spending has already raised the METRR in Canada by close to half of one percentage point. Add in the lower regulatory burden on the oil industry in the U.S. and the absence there of any firm intentions to tax carbon, and the Canadian oil industry has significant reason to follow very closely the changes about to happen south of the border.

APPENDIX

TABLE 1 MARGINAL EFFECTIVE TAX AND ROYALTY RATE BY JURISDICTION (IN PER CENT), 2017

	Exploration	Development	Depreciable	Inventory	Aggregate
	(A)	(B)	(C)	(D)	(E)
Canada	13.7	18.8	31.9	31.1	28.0
British Columbia	24.3	28.2	33.1	26.0	28.9
Alberta (Conventional Oil)	25.2	29.1	25.6	27.0	27.1
Alberta (Oil Sands)	-1.0	5.6	34.8	34.9	29.6
Saskatchewan	28.5	32.1	36.1	27.3	32.6
Newfoundland & Labrador	-3.0	3.9	50.4	N/A	12.1
Nova Scotia	-6.1	-18.5	36.7	N/A	-3.6
U.S. 2017 Actual	36.3	37.2	35.5	24.7	36.1
Arkansas	23.8	24.9	39.3	27.3	29.5
Colorado	28.4	29.4	36.5	26.3	31.5
North Dakota	35.7	36.6	35.4	26.1	35.8
Pennsylvania	18.9	20.1	38.0	29.3	26.0
Texas	37.4	38.2	35.4	24.1	36.8
U.S. "Blueprint" Proposal	34.4	34.5	17.5	26.5	28.6
Arkansas	21.5	21.6	22.6	29.1	22.1
Colorado	26.3	26.4	18.6	28.0	23.8
North Dakota	33.8	33.9	16.9	27.8	28.1
Pennsylvania	16.3	16.5	20.0	31.0	18.0
Texas	35.6	35.6	17.5	25.9	29.4
U.S. Trump Proposal	35.0	35.5	24.6	11.2	31.2
Arkansas	22.2	22.8	29.0	14.0	24.6
Colorado	27.0	27.5	25.6	12.9	26.4
North Dakota	34.4	34.9	24.2	12.7	30.7
Pennsylvania	17.0	17.8	26.8	16.3	20.6
Texas	36.2	36.6	24.7	10.5	32.0

Source: Authors' calculations.

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Daria Crisan is a Research Associate at The School of Public Policy, specializing in public finance and fiscal federalism. She has worked on projects related to horizontal and vertical tax competition in effective taxes in Canada, and the tax treatment of R&D across provinces. She was also involved in a study regarding the oil market diversification potential for Canada. Daria has taught numerous undergraduate courses in economics and is currently working toward completing her PhD in economics at the University of Calgary.

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