

2017 TAX COMPETITIVENESS REPORT: THE CALM BEFORE THE STORM*

Philip Bazel, Jack Mintz and Austin Thompson†

SUMMARY

Canada stands to lose a major competitive edge unless it responds to the challenges of the 2018 U.S. tax reforms by instituting reforms of its own. At 20.9 per cent, Canada's tax burden on new investment (measured by the marginal effective tax rate or METR), is competitive when compared to countries in the Americas and Asia-Oceania, and it's the second lowest among the G7 countries. However, the rules of the game are about to change with U.S. tax reform.

Among the reforms the U.S. is bringing in are a drop in the federal corporate income tax rate from 35 per cent to 21 per cent, a ten-year window for full and partial expensing machinery and equipment, and other various rules that will incent companies to push profits into the U.S. and interest and other expenses into foreign jurisdictions. The result of this and other reforms will be a sharp drop in the U.S. METR by almost half – from 34.6 per cent to 18.8 per cent. This means Canada will have a higher tax burden on capital than the U.S.

Put simply, Canada and other countries will face a drop in revenue while the U.S. gains revenue. Alarm bells should be ringing among public policy-makers in Canada and elsewhere, since research shows that taxes are a significant factor in multinationals' decisions on where to invest globally and how to finance it.

The dramatic U.S. reforms will put Canada at a distinct disadvantage, dragged down further by its small market size, energy levies and regulatory burden. This paper examines the corporate tax-rate situation in 92 countries, with many either having reduced their rates recently or are planning to in the next few years. In Canada, the only movement has been in several provinces, entailing a small increase in British Columbia and small decreases in Saskatchewan and Quebec. And while the average METR among OECD countries has dropped

* This research was financially supported by the Government of Canada via a partnership with Western Economic Diversification.

† Research Associate, President's Fellow and Master of Public Policy graduate respectively, School of Public Policy, University of Calgary and Master of Public Policy graduate. We thank two anonymous referees and the editor, Bev Dahlby, for helpful suggestions to improve the analysis.

in the past few years, Canada's in 2017 was approximately the same as it was in 2010, climbing upward from a nadir in 2012 on the backs of provincial corporate tax hikes.

Reforms in the U.S. are going to make that country a much more attractive place for investment than Canada because of the new tax advantages. However, Canada doesn't have to accept this diminished status. Federal and provincial governments can do a number of things to offset the U.S. reforms. Corporate tax rates should be reduced so as to achieve a more neutral corporate tax structure. By doing things like scaling back the small business deduction and accelerated depreciation, Canada can reduce its corporate tax rate to 23 per cent, which would be just a bit below the U.S.'s combined federal-state figure without losing revenue. Sales taxes on capital purchases could be eliminated in some provinces, reforms could be made to the taxation of international income and incentives for debt financing reduced. Carbon revenues could be used to provide an offset for higher energy taxes businesses face in Canada.

The U.S.'s tax reforms are going to affect the economies of all 92 countries studied in this report. Global policy-makers will likely respond with lower corporate rates putting even more pressure on Canada to respond if it wishes to continue to attract investment and remain competitive.

RAPPORT 2017 SUR LA COMPÉTITIVITÉ FISCALE : LE CALME AVANT LA TEMPÊTE*

Philip Bazel, Jack Mintz et Austin Thompson[†]

RÉSUMÉ

Le Canada est sur le point de perdre un avantage compétitif majeur s'il ne répond pas au défi posé par les réformes fiscales américaines de 2018 en instituant ses propres réformes. À 20,9 pour cent, le fardeau fiscal imposé sur les nouveaux investissements au Canada (mesuré par le taux effectif marginal d'imposition, ou TEMI) est actuellement compétitif comparativement aux pays des Amériques ou de l'Asie et de l'Océanie; c'est le deuxième plus bas des pays du G7. Par contre, les règles du jeu sont sur le point de changer avec la réforme fiscale aux États-Unis.

Avec leurs réformes, les États-Unis entendent implanter une baisse du taux d'imposition fédéral des sociétés de 35 à 21 pour cent, la comptabilisation en charge du montant intégral ou partiel des investissements en matériel et équipement sur une période de 10 ans et divers autres règlements qui inciteront les sociétés à transférer leurs bénéfices aux États-Unis tout en reléguant intérêts et dépenses en territoires étrangers. Le résultat de ceci et d'autres réformes se traduira en une baisse marquée du TEMI aux États-Unis de 34,6 pour cent à 18,8 pour cent, soit près de la moitié. Ce qui veut dire que le Canada se retrouvera avec un fardeau fiscal sur le capital plus élevé qu'aux États-Unis.

En termes simples, le Canada et d'autres pays feront face à une baisse de revenus tandis que les États-Unis en engrangeront. La sonnette d'alarme devrait retentir aux oreilles des responsables politiques du Canada et d'ailleurs, d'autant que la recherche démontre que les taux d'imposition constituent un facteur déterminant pour les multinationales quand vient le temps de décider où investir globalement et suivant quel mode de financement.

La réforme radicale aux États-Unis placera le Canada dans une position de désavantage manifeste, aggravé du fait de la petite taille de son marché, de ses taxes sur l'énergie et de son fardeau réglementaire. Ce document examine

* Cette recherche a été soutenue financièrement en partie par le gouvernement du Canada via Diversification de l'économie de l'Ouest Canada.

[†] Chercheur associé, boursier du président et diplômé de maîtrise en politique publique, respectivement, à l'École de politiques publiques et au programme de politique publique de l'Université de Calgary. Nous tenons à remercier les deux examinateurs anonymes et le rédacteur en chef, Bev Dahlby, dont les suggestions ont permis d'améliorer notre analyse.

le taux d'imposition des sociétés dans 92 pays, dont plusieurs ont réduit leur taux récemment ou prévoient de le faire au cours des prochaines années. Au Canada, les seules initiatives ont été constatées dans les provinces, avec une légère augmentation en Colombie-Britannique et une légère diminution en Saskatchewan et au Québec. Tandis que le TEMI moyen dans les pays de l'OCDE a baissé au cours des dernières années, il était sensiblement le même au Canada en 2017 qu'en 2010, grimpant depuis un nadir en 2012 au rythme des augmentations provinciales sur les taux d'imposition des sociétés.

Les réformes aux États-Unis feront de ce pays un marché bien plus attrayant pour l'investissement que le Canada en raison des nouveaux avantages fiscaux. Le Canada n'a cependant pas à se résigner à un statut ainsi diminué. Les gouvernements fédéral et provinciaux peuvent prendre un certain nombre de mesures pour contrer les réformes américaines. Le taux d'imposition des sociétés devrait être réduit pour tendre vers une structure d'imposition ayant un impact plus neutre. En mettant en place des mesures comme une diminution des déductions accordées à la petite entreprise et à des amortissements accélérés, le Canada pourrait réduire le taux d'imposition aux sociétés de 23 pour cent, ce qui le placerait juste en dessous du taux américain fédéral-États combiné, sans perte de revenus. La taxe de vente sur les investissements pourrait être éliminée dans certaines provinces, des réformes pourraient porter sur l'imposition des revenus internationaux et la réduction des incitatifs sur le financement par l'emprunt. Les revenus du carbone pourraient être utilisés pour compenser les taxes sur l'énergie plus élevées auxquelles les entreprises font face au Canada.

Les réformes fiscales des États-Unis vont affecter les économies des 92 pays couverts par cette étude. Les décideurs politiques vont probablement y répondre par une réduction du taux d'imposition pour les sociétés, mettant encore plus de pression sur le Canada, s'il entend continuer à attirer les investissements et rester compétitif.

In 2017, most countries continued to keep stable or reduce taxes on business capital with only a few, including Canada, raising taxes on capital. As the year ends, however, the tax reform storm clouds are about to burst as the United States moves ahead with its first major reform in three decades with a focus on economic growth and tax competitiveness. As a result, 2018 promises to be a challenge for many countries closely linked to the world's biggest economy, especially Canada whose largest trading partner is America.

In this 2017 tax competitiveness report, we highlight significant business tax changes across countries and their plans for reform. We review the business tax structures of 92 countries and we provide a regional breakdown for the first time in our report. Of note, Canada's current tax burden on new investment (as measured by the marginal effective tax rate (METR)¹ is competitive at 20.9 per cent with respect to the Americas and Asia-Oceania. Canada has a higher tax burden on capital compared to Africa, Europe and the Middle East and northern Africa regions. Canada has the sixth highest METR on capital among the G7 countries, 14th highest among the G20 countries and 12th highest among 33 OECD countries.

Much will change as the United States, which accounts for about one-fifth of the world economy, implements its path-breaking tax reform for 2018. Of greatest interest are the corporate income tax changes that will substantially affect U.S. growth and tax competitiveness. The federal corporate income tax rate will be reduced from 35 per cent to 21 per cent (including state corporate income taxes the 2018 U.S. average corporate income tax rate falls from 39.1 per cent to 26 per cent). Expensing for machinery and equipment is introduced for five years (2018-2022) and phased out thereafter for five years. The corporate alternative minimum tax is eliminated. U.S. companies will be able to bring dividends from foreign affiliates back to the parent on an exempt basis. Several important tightening measures are introduced, particularly with respect to interest, intangible income and loss deductions. Overall, the U.S. METR will fall sharply from 34.6 per cent² to 18.8 per cent. As a result, Canada will now have a higher tax burden on capital compared to the United States by about a tenth.

With the sharply lower corporate income tax rate, dividend exemption system and new limitations on deductible interest, companies operating in the United States will push debt to foreign countries to the extent possible, reducing corporate taxes elsewhere. Under the dividend exemption system, U.S. parent companies can bring money home from abroad without paying additional tax to the U.S. government. The funds could then be used to reduce U.S. debt if interest expense is not deductible. Overall, the U.S. gains corporate tax revenue while foreign countries lose revenue due to financial policy changes.

Why have countries continued to reduce corporate tax rates in the past decade? While political polling often shows that the public supports higher taxes on businesses,³ governments of all political stripes have, for two reasons, continued to reduce corporate income tax rates, often accompanied by scaling back tax preferences. First, lower corporate taxes encourage greater

¹ The METR is equal to corporate income taxes, sales taxes on capital purchases, capital taxes and transfer taxes paid as a percentage of the gross rate of return on capital for the marginal project that earns sufficient profits to cover costs to obtain financing from bond and stock owners. See Mintz (1995a) and Box A below for further discussion. Readers can review the theoretical model described in an appendix provided in Bazel and Mintz (2016a) that will not be repeated in this paper.

² The U.S. METR was to be 29.7 per cent with 2018 bonus depreciation (partial expensing for qualifying machinery and equipment) and 31.0 per cent with 2019 bonus depreciation. Beginning in 2020, bonus depreciation was to be eliminated altogether.

³ A recent Canadian poll suggests 68 per cent would support raising corporate taxes. <https://canada.isidewith.com/poll/360580593>.

investment and job creation. Second, lower rates and base broadening counter multinational profit shifting through transfer pricing and financing decisions to help preserve revenues (Mintz and Weichenrieder, 2010a).⁴

Indeed, with deregulation especially in the financial and resource sectors, U.S. tax reform and increased U.S. protection potentially culminated by a collapse in NAFTA negotiations, the tax-competitive outlook for Canada is no longer an advantage as we enter 2018, exposing ourselves to disadvantages such as a small market, energy levies and regulatory burdens. Canadian governments will need to put competitiveness on the front burner for public policy initiatives.

This paper is divided into four parts. In the first part, we provide our assessment of global tax policy in 2017 and its implications for Canadian competitiveness. The second part provides a breakdown of METRs by province and industry. The third part provides our empirical assessment as to whether tax policies matter to investment. The fourth part discusses tax reform in light of U.S. tax reform.

TAXES AS AN INVESTMENT COST

We focus on tax costs directly affecting capital allocation and hence economic growth and living standards in a country. Globally, capital investment is mobile among countries with open markets. Multinationals decide whether or not to invest in a country by gauging the tax costs compared to those in other countries where the non-tax investment conditions are similar to each other.

Further, corporations do not bear the burden of the taxes they pay – people do. Any taxes on large businesses in a small open economy will be significantly borne by the less mobile factors domestically through higher prices on consumer goods and/or lower real wages paid to workers and rents to landowners, contributing to a less progressive tax structure. Therefore, lower corporate tax costs allow for higher compensation to be paid to workers and allow for lower prices for consumer goods, both of which directly contribute to a higher living standard. Reducing the tax cost to business will help increase the nation's wellbeing in the long run.

Not all economies can be characterized as “small open economies”. Capital mobility may be restricted due to regulations or shareholders' reluctance to invest in foreign markets which are less known to them. Also, some economies such as the United States and China are sufficiently large that their corporate taxes could reduce investment demand and the returns on capital earned by global investors. In these instances, both labour and capital owners will share the corporate tax burden. For Canada, the corporate tax on large firms falls heavily on labour in part due to productivity losses (McKenzie and Ferede, 2017).

There is no easy moving target in ranking countries according to their tax competitiveness because the world is constantly changing. The word “changing” is of concern from two perspectives.

Concerns have also been expressed that taxes do not affect business investment, even though most scholarly work has concluded that reductions in effective corporate tax rates encourage

⁴ On average, studies estimate that a point reduction in the corporate income tax rate results in an increase in reported pre-tax profits of 1.55 per cent (Heckemeyer and Overesch, 2013). Isolating tax-planning shifts from economic changes, the authors suggest that a one-point reduction in the corporate income tax rate increases profits by 0.8 per cent.

more capital investment. Along with taxes, other factors such as the strength of the economy and the quality of the workforce influence investment. Nonetheless, taxes make a difference, all else being equal.

BOX A: MEASURING TAX COMPETITIVENESS

To evaluate tax competitiveness, a summary measure is provided that takes into account the various taxes that directly impact on profitability. The effective tax rate on new investment – also called the marginal effective tax rate (METR) on corporate investments – is commonly used in public policy analysis to understand how the tax structure affects capital investment.

A business invests in capital until the return on capital net of taxes and risk costs is equal to the cost of holding capital. At the margin, the investment decision will be affected by taxes paid on capital investments. If taxes increase, the business will earn after-tax returns that are lower than financing costs. The business will then cut back investment, accepting only those projects with a sufficiently high rate of return to cover both financing costs and taxes. Thus, the effective tax rate on new investment, or *tax wedge*, is a good indicator of how investment is affected by taxation – the higher the tax wedge, the lower investment will be, and vice versa.

For example, suppose companies must pay out in after-tax profits a return (net of risk and taxes) equal to five per cent to attract financing from equity and bondholders for a new investment project. If the tax wedge is 50 per cent, it means that the company must earn a 10 per cent net-of-risk rate of return to cover taxes and cost of financing. If the project earns less than 10 per cent as a pre-tax rate of return, the project will not move forward. Of course, some projects might earn more than a 10 per cent rate of return on capital, but as long as the minimal rate of return is earned, a project will be profitable to undertake. Therefore, if the tax wedge decreases, more investment projects become profitable since a lower rate of return is acceptable to cover both tax and financing costs.

Briefly, the effective tax rate, or tax wedge, is the portion of capital-related taxes paid as a share of the pre-tax rate of return on capital for marginal investments (on the assumption that businesses invest in capital until the after-tax return on capital is equal to the cost of financing capital). Included are corporate income taxes, sales taxes on capital purchases, and other capital-related taxes such as real estate transfer taxes, financial transaction taxes and asset-based taxes. Municipal property taxes are excluded since effective tax rates are not observable by industry or across countries. To measure municipal tax effects on investment exactly, the cost of municipal services that are directly funded by property levies should also be subtracted to arrive at the effective property tax rate.

To compare across 92 countries, this analysis includes manufacturing and service industries (services include construction, utilities, transportation, communications, trade, and other business and household services). Companies invest in structures, machinery, inventory and land to develop their various projects. They use retained earnings, new share issues and debt to fund their projects. Capital structures and financial ratios are equalized across countries to isolate tax effects. Inflation rates vary across countries to take into account their interaction with the tax system with some countries such as Chile and Mexico indexing taxable profits for inflation.

THE 2018 GLOBAL TAX BURDEN ON CAPITAL INVESTMENT

In 2017, most countries made technical changes to their corporate tax rates with few major reforms in the offing. Eleven of the 92 countries we surveyed have reduced corporate income tax rates in 2017. Most have done so by a point (Israel, Norway, Pakistan, Peru, Slovak Republic, and the United Kingdom). Luxembourg reduced its corporate income tax rate by two points and Italy by 2.9 percentage points in its federal and regional tax. Two countries raised corporate income tax rates (one point in Chile and two points in Slovenia).

Several countries have also announced further rate reductions after 2017. The United Kingdom plans to reduce its corporate income tax rate to 17 per cent by 2020, Luxembourg to 18 per cent by 2018 and Norway to 22 per cent by 2018. Pakistan will also be reducing its corporate rate in 2018 to 30 per cent. France plans a five-point reduction in its corporate income tax rate but this is slated for after 2019.

In Canada, the corporate income tax rate was changed only at the provincial level – a one-point increase in British Columbia slated for 2018, a one-point reduction in Saskatchewan staged over 2017 and 2018, and a 0.1-point reduction to 11.8 per cent in Quebec as part of its five-year plan to reduce the corporate income tax rate to 11.5 per cent by 2020.

Several countries did adjust their tax bases by, for example, changing the rules governing depreciation; tax credits, especially in relation to energy investments; international income and profit-insensitive taxes on capital. The most significant reform took place in Georgia, which has adopted the Estonian system of exempting retained earnings (corporate taxes apply to distributions paid to residents and non-residents).

Thus, “all is quiet on the Western front” to quote the German book describing the rather ill-fated life of a soldier during the First World War. That is about to change as the United States embarks on implementing its tax reform in 2018, which will be reviewed below.

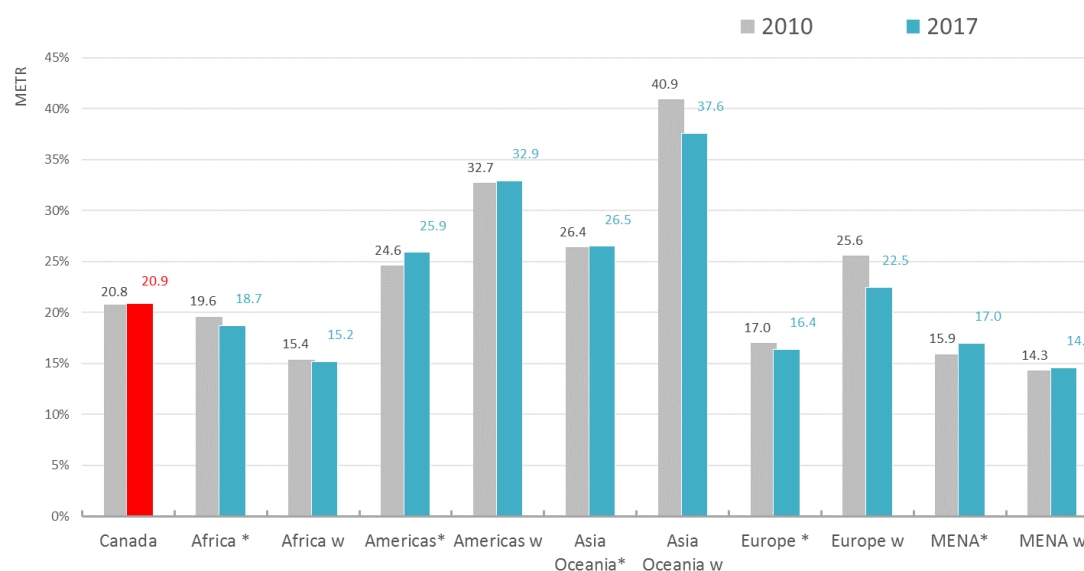
HOW DOES CANADA GLOBALLY PLACE IN 2017?

Since 2012, Canada’s METR on capital has been increasing due to provincial corporate income tax hikes, some reduction in tax preferences and British Columbia’s re-adoption of a retail sales tax with its substantial tax on capital purchases. The 2017 METR on capital in Canada is 20.9 per cent, about the same as 2010 (after reaching a lowest point in 2012).

Canada’s record in the past seven years has gone somewhat against the grain around the world, although it still remains in the middle of the pack. The simple average METR among OECD countries has dropped from 20.0 per cent in 2010 to 19.1 per cent in 2017 (or 31.1 per cent to 29.2 per cent on a GDP-weighted average basis). For the 92 countries considered in this study, the METR on a simple average basis has changed little – 20.6 per cent in 2010 and 20.7 per cent in 2017. On a GDP-weighted average basis, it has fallen from 30.4 per cent to 28.8 per cent.

We also provide a comparison to G7, BRIC (Brazil, Russia, India and China) and G20 (see Appendix) and among various regions in the world for 2017 (Figure 1). Canada’s METR is competitive relative to other G7 countries except Italy, which has a lower METR, especially due to its nominal deduction for new equity financing costs.

**FIGURE 1 MARGINAL EFFECTIVE TAX RATES FOR 2010 AND 2017:
CANADA IN COMPARISON WITH VARIOUS SUB-GROUPS**

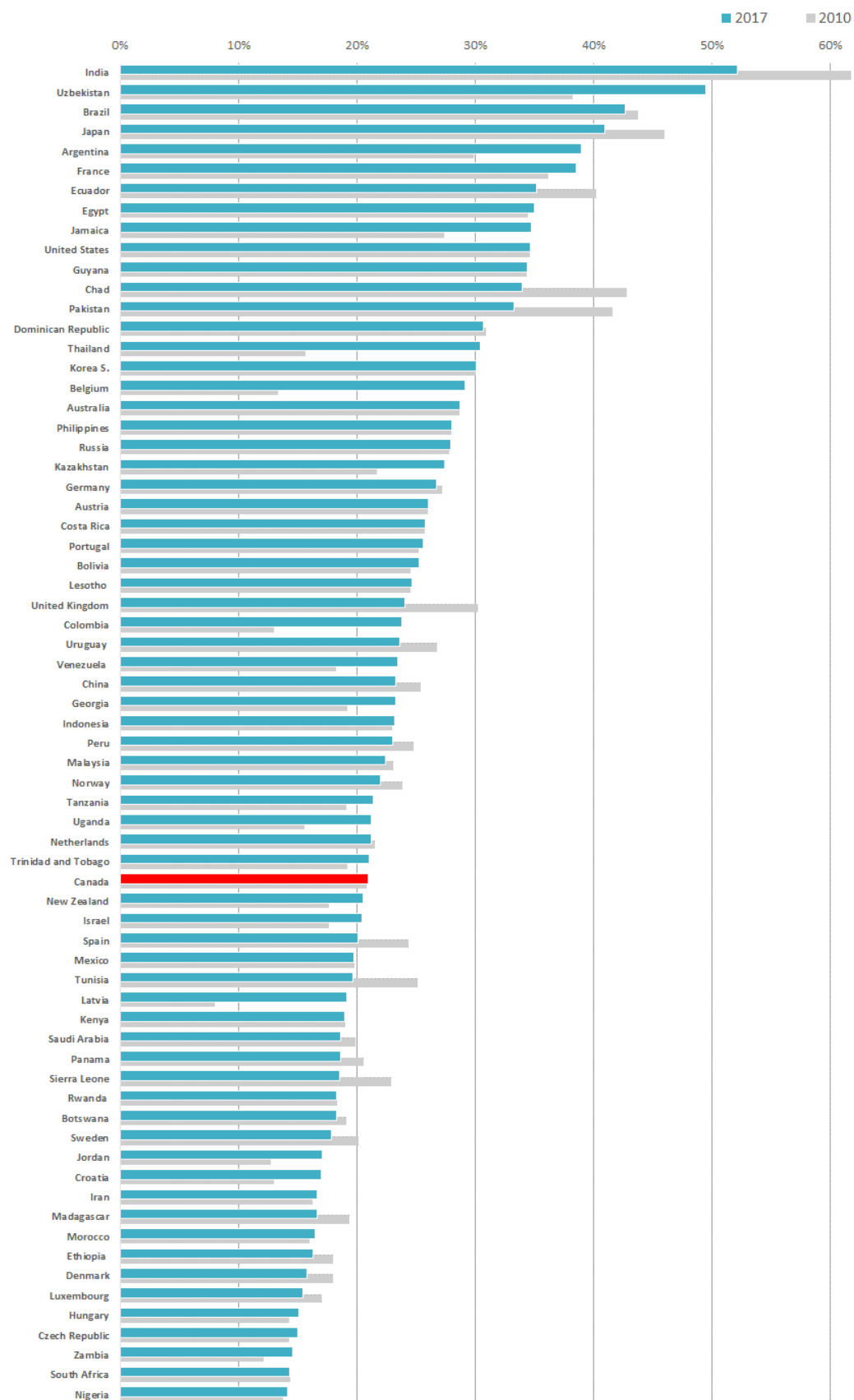


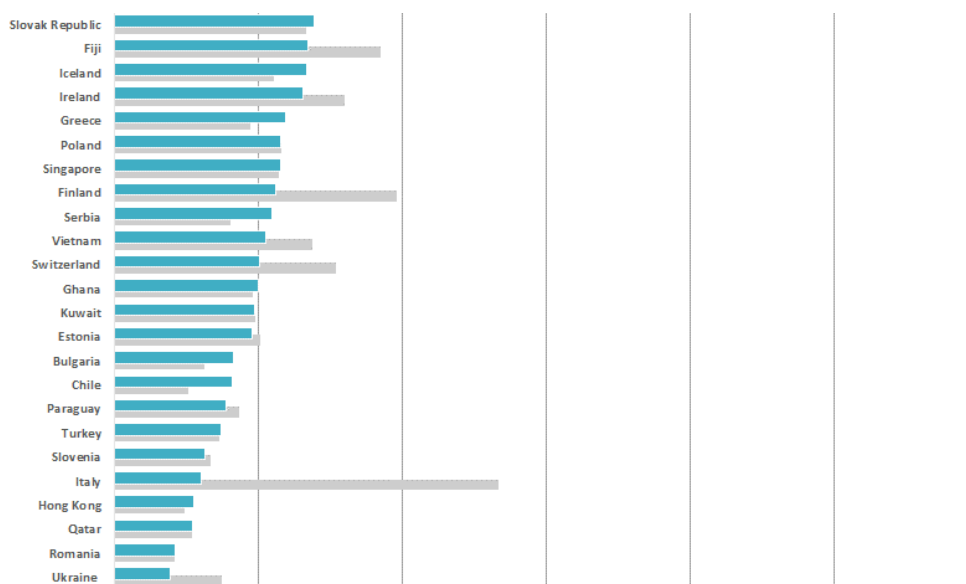
Note: * refers to a simple average and w refers to GDP-weighted average. MENA refers to the Middle East and North Africa region.

Generally, most European countries levy lower taxes on capital compared to Canada (on a GDP-weighted average basis, Europe's METR is higher than Canada's given the size of the French and German economies, which have higher tax burdens on capital compared to Canada). METRs in countries located in the African, Middle East and northern African regions are on average lower than Canada's. On the other hand, Canada's METR is below the average METR in the Americas and Asia-Pacific, at least on average. Further regional analysis is provided below.

On a country-by-country analysis, Canada's METR on capital is in the middle of the pack as shown in Figure 2. Canada now has the 12th highest METR among 34 OECD countries in 2017 compared to 14th highest in 2010. Among 92 countries, Canada has the 38th highest METR on capital in 2017 (37th highest in 2010). Many of the largest economies, including the United States, Brazil, France, Germany, India and the United Kingdom have METRs that are higher than Canada's. On the other hand, smaller countries including Denmark, Finland, Ireland, Mexico, Singapore, Spain, Switzerland and Sweden tax capital less heavily than Canada, and several of them attracted significant foreign direct investment inflows as a share of their GDP in past years (Mintz and Weichenrieder, 2010b).

FIGURE 2 MARGINAL EFFECTIVE TAX RATES ON CAPITAL BY COUNTRY FOR 2010 AND 2017





Source: Authors' calculations.

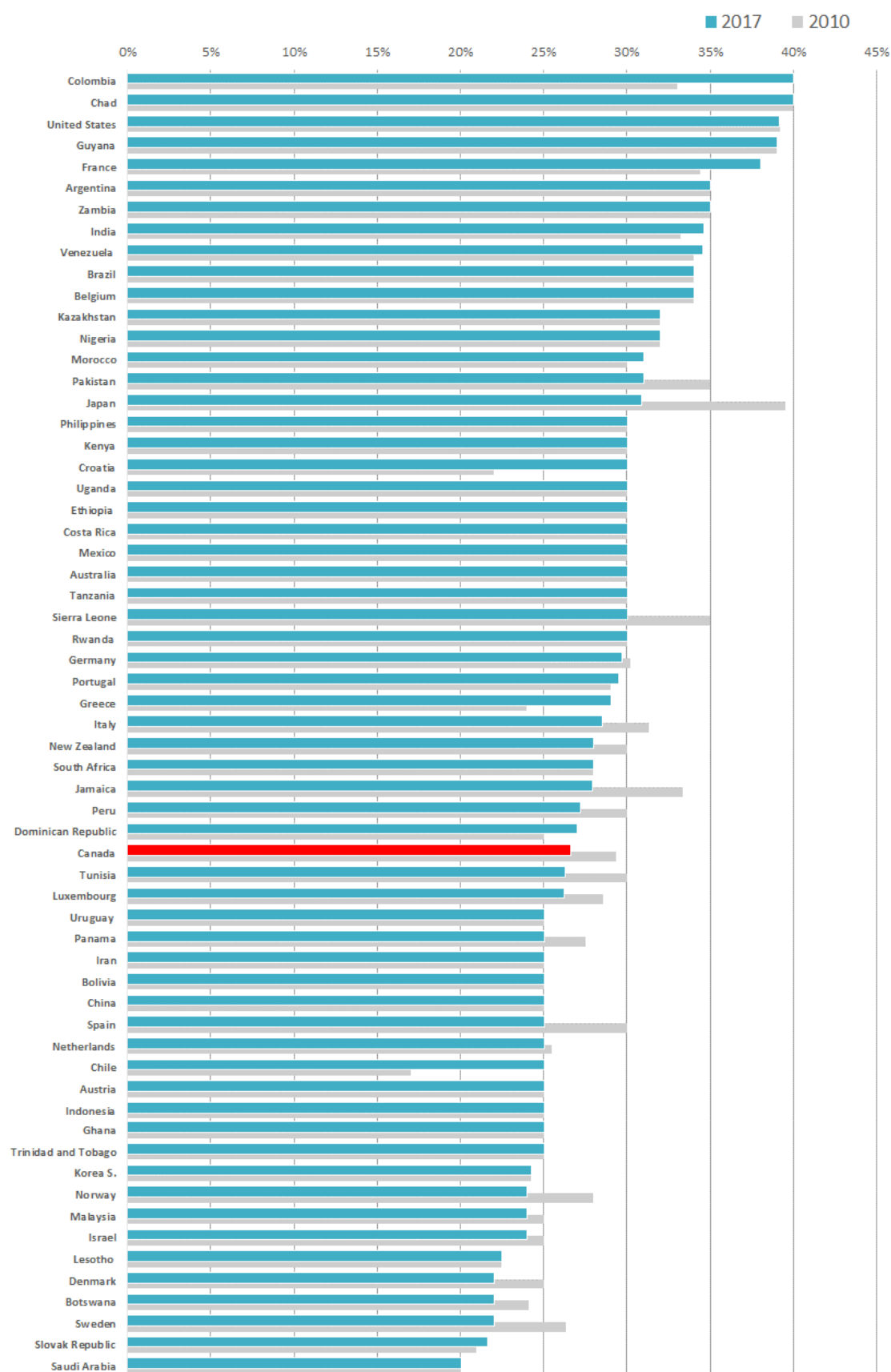
One of the reasons countries vary in terms of tax burden on capital investment is the statutory corporate income tax rate on profits, including surtaxes, subnational statutory tax rates and deductibility (Figure 3). In our analysis of 92 countries, we find that the correlation between the METR and statutory corporate income tax rates is 47 per cent. Statutory tax rates are not the only source of variation of METRs across countries. Some countries have a high sales tax on capital purchases (such as Brazil) or high real estate transfer taxes (China abolished one of its three transfer taxes in 2016). Some countries have high taxes on corporate distributions to resident and non-resident shareholders (e.g., India). Others provide a deduction for the cost of equity financing (Brazil, Belgium and Italy), an exemption for taxes on retained earnings (Estonia and Georgia), or accelerated depreciation and other cost deductions that result in lower METRs (e.g., Slovenia).

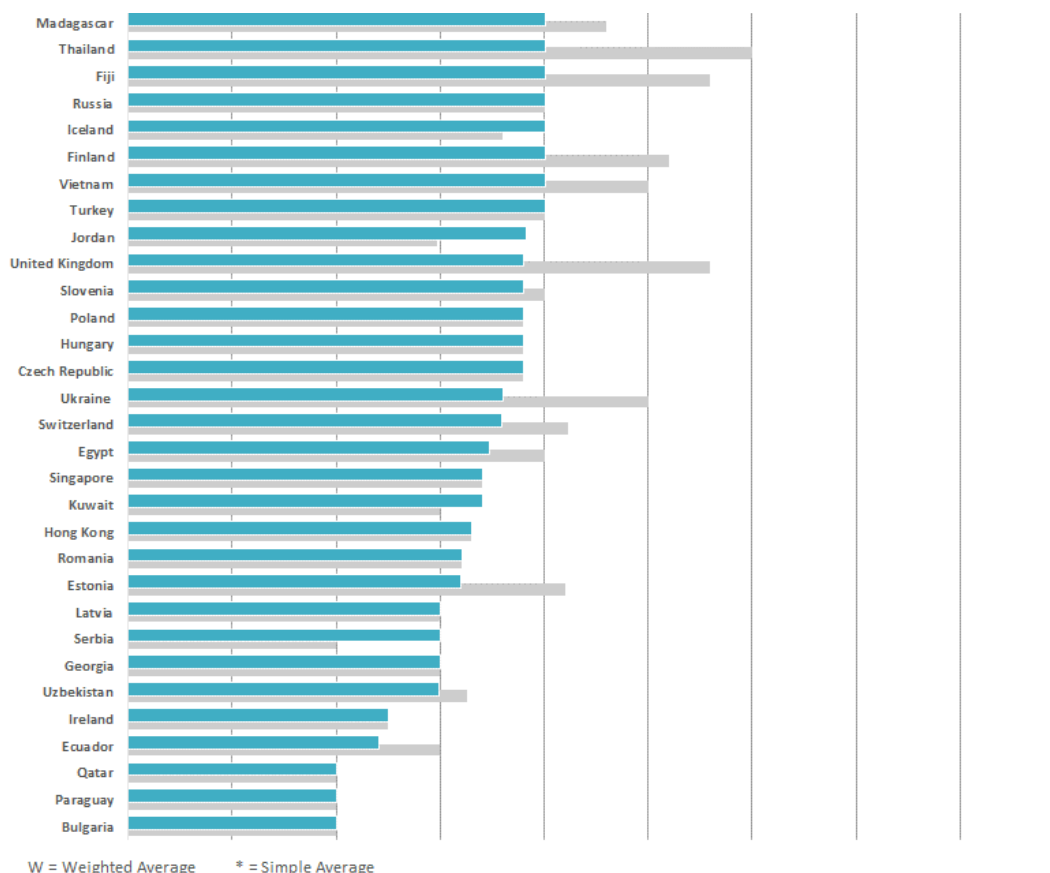
Statutory corporate income tax rates can therefore be misleading as a barometer of tax burdens. Chile has a 25 per cent corporate income tax rate, has relatively fast write-offs for machinery and indexes profits for inflation. With two-fifths of capital financed by debt, the METR on capital is only 8.2 per cent since interest payments are deductible and therefore it shelters profits from corporate income taxation.

As shown in Figure 3, most countries have reduced or kept the same corporate income tax rates since 2010. Some important exceptions include Colombia, which now has the highest corporate income tax rate in the world at 40 per cent, along with Chad. In 2017, the United States follows with a combined federal-state corporate income tax rate of 39.1 per cent – but that is now “trumped” by the 2018 reform to be discussed more fully later. France has also increased its corporate income tax since 2010 from 36.2 per cent to 38.5 per cent in 2017, although the Macron government has proposed reducing the corporate rate by five points in 2020.⁵ Canada’s corporate income tax rate has fallen about 2.8 percentage points since 2010, although it has slightly risen by a half point since 2012.

⁵ <http://www.cfe-eutax.org/sites/default/files/FRper cent20Nationalper cent20Reportper cent20Marchper cent202017.pdf>.

FIGURE 3 CENTRAL SUB-NATIONAL CORPORATE INCOME TAX RATES BY COUNTRY 2010 AND 2017





Source: OECD, KPMG, EY, PWC and other sources used to estimate combined central and sub-national corporate income tax rates.

Tax rates presented above include sur-taxes which effectively increase the income tax burden.

REGIONAL ANALYSIS

Countries within a region are more likely to mimic the tax policies of their neighbours due to their proximity as well as having similar economies and historical backgrounds. Below, we provide a review of Canada's competitiveness with regions in the global economy. Tax competitiveness is especially relevant to trading relationships as businesses export goods and services or invest in other countries to develop markets. Detailed computations of METR by country and region for manufacturing and services are provided in Appendix A.

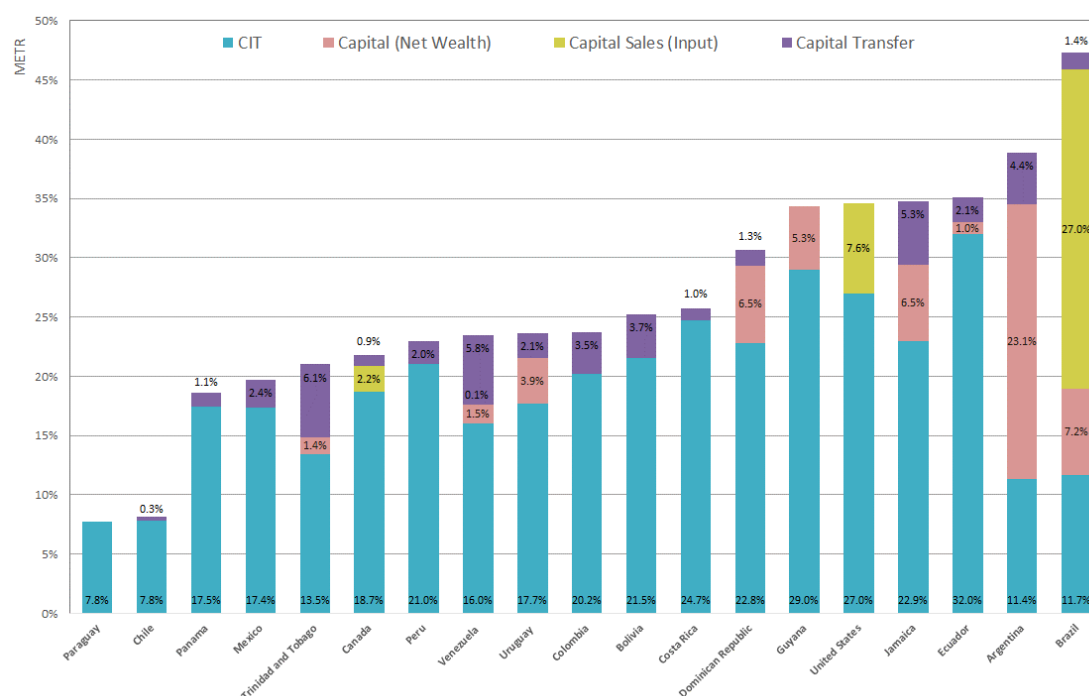
Canada has a regional trade agreement in North America (the North American Free Trade Agreement with the United States and Mexico) and Europe (Canada-Europe Free Trade Association with Iceland, Norway, Liechtenstein and Switzerland and the Comprehensive Economic and Trade Agreement with the European Union). It also has several bilateral trade agreements including with Latin American countries (Chile, Colombia, Costa Rica, Honduras, Panama and Peru), the Middle East and northern Africa (Israel and Jordan) and Ukraine. Thirty-seven foreign investment agreements have been developed. Several other trade and investment agreements have been in negotiation for some time. Canada also has 97 bilateral tax treaties with countries throughout the world.

THE AMERICAS

The Americas represent an historical relationship among countries in the Western hemisphere conquered by British, French, Spanish and Portuguese colonial powers largely since the 16th century. Today, trade and investment link the Americas even though the countries' tax systems differ in accordance with their colonial influence. Latin American countries have levied corporate income taxes sometimes with rates varying between distributed and undistributed profits (e.g., Mexico and Chile). Some have used minimum or presumptive taxes based on asset value to ensure taxes are collected (e.g., Colombia). Historically, Latin American countries have encountered bouts of high inflation – Chile, Mexico, Uruguay and Venezuela, for example, have indexed profits for inflations for tax purposes.

Countries with high taxes on capital include Brazil at 42.6 per cent (over half due to high non-refundable VAT rates on capital purchases), Argentina at 38.9 per cent (due to a significant capital tax) and Jamaica at 34.7 per cent in part due to a real estate transfer tax and capital tax (Figure 4). On the other hand, Paraguay has the lowest METR at 7.8 per cent, supported by its low corporate income tax rate of 10 per cent. Chile has the second lowest METR at 8.2 per cent, largely in part due to some accelerated cost recoveries for machinery and inflation-indexed provisions as mentioned above.

FIGURE 4 METRS BY COUNTRY IN THE AMERICAS REGION 2017



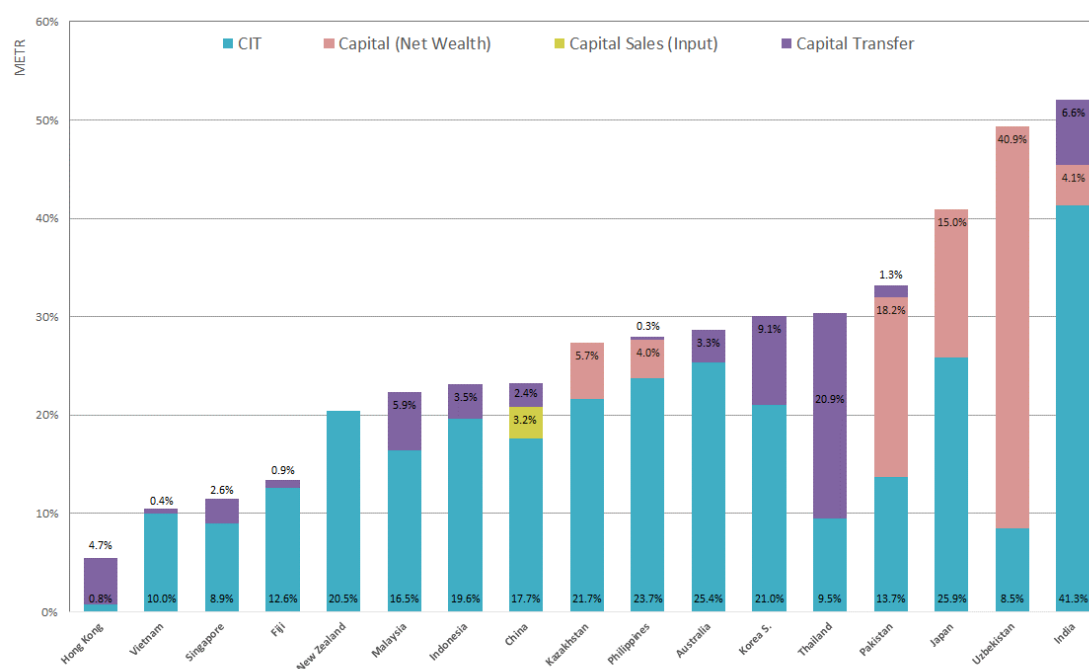
Canada's METR is the sixth lowest in the Americas (with U.S. tax reform, it will be seventh lowest in 2018 as discussed later). Without provincial land transfer taxes and retail sales taxes in the western provinces (except Alberta), the Canadian METR would be 18.7 per cent instead of 20.9 per cent. Its tax burden on capital is somewhat above its NAFTA partner, Mexico, which has a METR of 19.7 per cent. Mexico's corporate income tax rate is 30 per cent, about

3.3 points higher than Canada's, but it indexes profits for inflation, which provides some tax relief. Both Mexico and Canada have a 2017 METR well below their most important trading partner, the United States, but that is dramatically changing in 2018.

ASIA-OCEANIA

The largest populated region of the world is Asia-Oceania, which includes China, India and other countries in South and Southeast Asia, as well as Australia and New Zealand. While most countries keep their corporate income tax rates below 30 per cent and some provide investment incentives for capital (such as Indonesia, Korea and Japan) or tax holidays (e.g., Malaysia and Vietnam), they also tend to levy other taxes on businesses that increase the METR on capital (Figure 5).

FIGURE 5 METRS BY COUNTRY IN THE ASIA-OCEANIA REGION 2017



India has the highest global METR of 52.1 per cent in large part due to a relatively high corporate income tax rate of 34.6 per cent, a capital tax, a real estate transfer tax and a general dividend distribution tax (included in the corporate income tax burden).⁶ Nonetheless, this is a significant reduction of 8.1 points from 2016 as a result of the VAT reform that enabled taxes paid on input purchases to be refundable. Uzbekistan follows with the second highest METR, at 49.4 per cent, resulting from a significant tax on assets despite having a relatively low corporate tax burden (the corporate income tax rate is 14.9 per cent).

⁶ Ghosh and Mintz (2017) find lower METR on capital for India based on public corporate financial statements. Using these data, the METR in their analysis is lower primarily due to the use of higher leverage assumptions (close to 60 per cent) a higher weight of manufacturing, and lower economic depreciation rates in Indian financial accounts.

Japan imposes a tax on fixed assets resulting in a tax burden of capital of 40.9 per cent instead of 25.9 per cent, if only corporate income taxes are considered. China has a METR that is roughly in the middle of the pack at 23.2 per cent. Two significant non-profit levies include real estate transfer taxes (one of three was cancelled in 2016) and some non-refundable sales taxes on capital purchases.

The lowest METRs on capital are in Hong Kong at 5.5 per cent (of which stamp duties as transfer taxes have the most important impact), Vietnam at 10.4 per cent and Singapore at 11.5 per cent. All three have low corporate income tax rates: Hong Kong (16.5 per cent), Singapore (17 per cent) and Vietnam (20 per cent). Singapore and Hong Kong direct their tax policies toward making their jurisdictions regional financial and headquarters centres. Vietnam provides investment incentives to attract capital that would otherwise go to other Asian countries, including China.

Canada is quite competitive in 2017 relative to the Asia-Oceania region. Canada's tax burden cuts just above New Zealand and is well below the major economies including China, India, Indonesia, Korea and Japan.

EUROPE AND RUSSIA

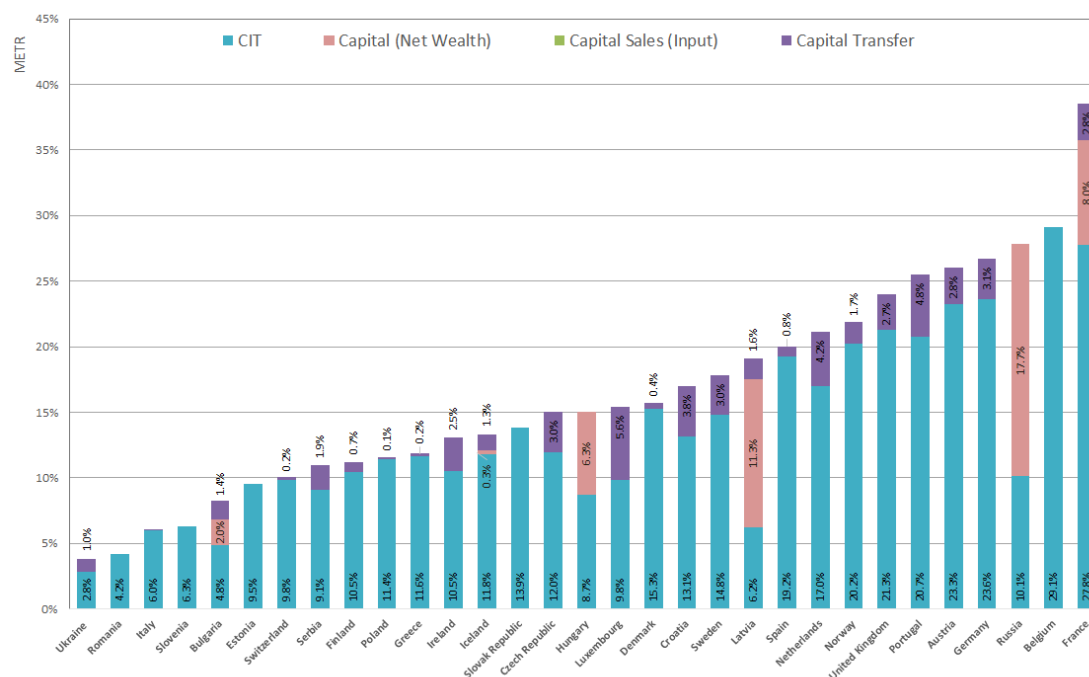
The most disparate region is comprised of 31 countries in Europe and ex-Communist countries with widely different cultural and historical backgrounds (Figure 6). Their corporate tax systems differ in important ways as countries experiment with innovative systems.

The largest economies tend to tax capital most – France (38.5 per cent), Russia (27.9 per cent), Germany (26.7 per cent), the United Kingdom (24 per cent) and Spain (20.0 per cent) with conventional corporate tax structures. As a large European country, Italy is an important exception with a METR of only six per cent, one of the lowest in the world due to its deduction for the imputed cost of new equity financing. Russia has a relatively low corporate income tax burden on investment due to a low corporate income tax rate of 20 per cent, but it has a significant tax on fixed assets.

Although not a general rule, smaller countries tend to have lower METRs on capital. A significant factor is an ultra-low corporate income tax rate including in Bulgaria (10 per cent), Ireland (12.5 per cent), Latvia (15 per cent), Estonia (16 per cent) and Romania (16 per cent). Some countries, such as Slovenia and Romania, have investment allowances that reduce the METR.

A unique corporate income tax is found in Estonia (and was recently adopted by Georgia), which only applies to distributed profits and exempts reinvested profits. The Scandinavian countries have adopted dual income taxes that result in a low flat tax on capital and corporate income compared to the much higher personal income taxes on labour earnings. The corporate income tax rates have been reduced to 22 per cent in Denmark, 20 per cent in Finland, 24 per cent in Norway and 22 per cent in Sweden.

FIGURE 6 METRS BY COUNTRY IN EUROPE AND RUSSIA REGION 2017



Relative to Europe, Canada's tax burden on capital would be near the top quartile of European countries and Russia. Most of the large countries tax capital more heavily than Canada except for Italy, and all the Scandinavian countries levy a lower tax on new capital investments compared to Canada. As the free trade agreement moves ahead with the European Union, corporate taxes, which increase the cost of doing business, provide tax advantages to many European economies compared to Canada.

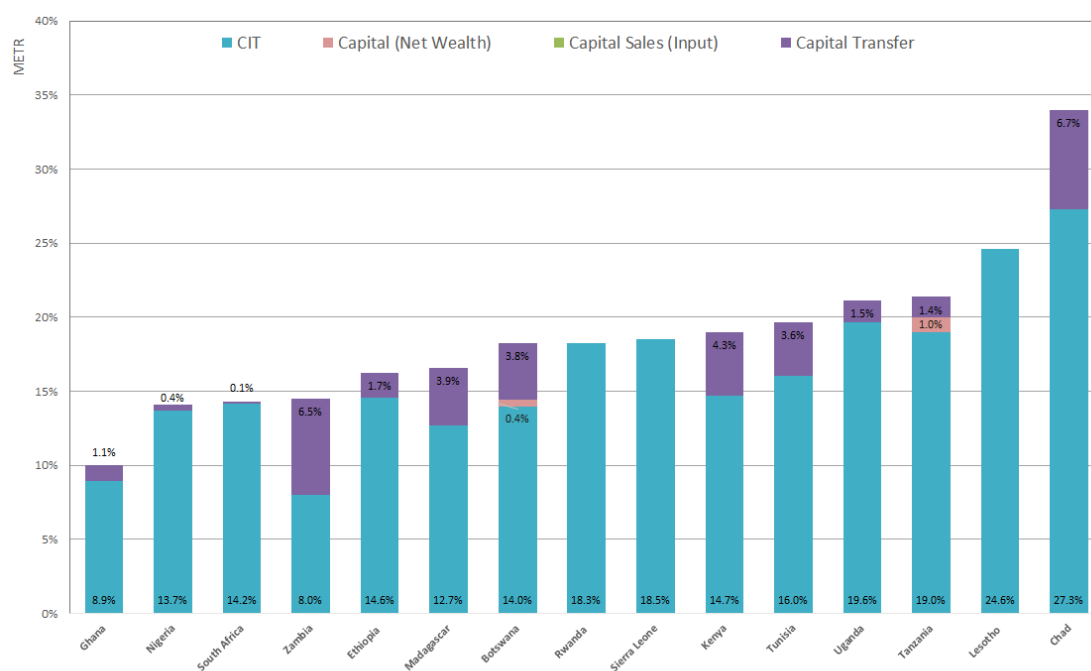
AFRICA

Africa has some of the fastest growing populations, but also some of the poorest with low per capita incomes especially in the sub-Saharan area. Along with the VAT, the corporate tax is an important source of revenue in many African countries since governments cannot easily administer broad personal taxes to fund public services.

The highest METR on capital is Chad (34 per cent), reflecting its corporate income tax rate at 40 per cent, the highest among the 92 countries in this study along with Colombia. Chad also imposes a significant real estate transfer tax. Lesotho follows with the second highest METR in Africa at 24.6 per cent. The lowest tax burdens on capital are in Ghana (10 per cent), Nigeria (14.1 per cent) and South Africa (14.3 per cent), largely due to investment incentives. The two largest countries, Nigeria and South Africa, have corporate income tax rates above the global and African averages.

Real estate transfer taxes are quite common in African countries with 11 of the 15 countries having them. As will be discussed below, these pernicious taxes impose quite large economic costs for the revenue earned.

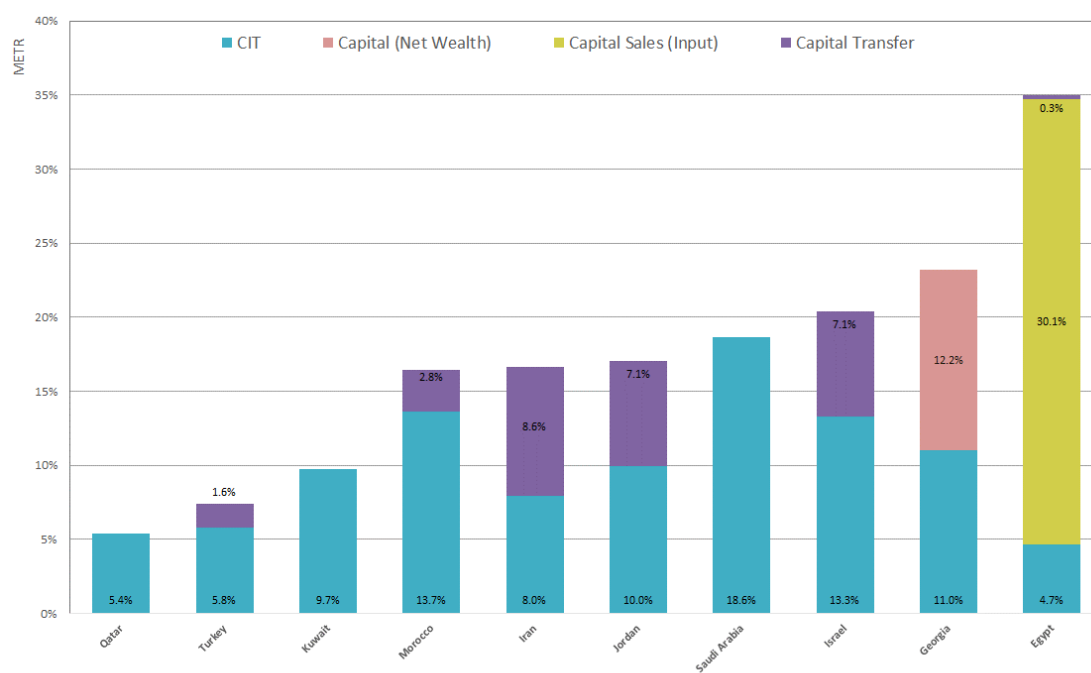
FIGURE 7 METR BY COUNTRY IN THE AFRICAN REGION 2017



MIDDLE EAST AND NORTHERN AFRICA (MENA)

The MENA countries are dominant in resource production, which distinguishes them as an economic region (besides having common historical and cultural roots). The importance of the petroleum industry in particular has led to some countries levying high corporate income tax rates to collect resource rents instead of levying separate resource taxes. Lower tax burdens often apply to manufacturing and service industries to encourage diversification. For example, Saudi Arabia levies a corporate income tax rate of 85 per cent on companies engaged in oil extraction (and high rates on natural gas producers), with a rate of only 20 per cent applying to other industries.

FIGURE 8 METR BY COUNTRY IN THE MIDDLE EAST AND NORTHERN AFRICAN REGION



Egypt has the highest METR on capital at 35 per cent, not as a result of its corporate income tax burden, but largely due to a significant tax on capital purchases. Georgia follows with a METR on capital of 23.2 per cent, of which over half of the METR is due to a capital tax. Transfer taxes are also common in the MENA region including in Israel, Jordan, Iran, Morocco and Turkey. The lowest METR on capital is in Qatar with its low corporate income tax rate of 10 per cent (petroleum companies are taxed much more heavily through production-sharing agreements).

HOW ARE CANADIAN PROVINCES DOING?

In 2017, only a few changes occurred in business taxation across the provinces. The federal government focused its efforts on raising taxes on private corporations, which is not a focus of this study. Little changed otherwise in the taxation of investments except in the oil and gas sector (see Crisan and Mintz, 2017a).

As shown below, British Columbia has the highest tax burden on capital due to its re-adoption of the retail sales tax and a hike to its corporate income tax rate from 11 per cent to 12 per cent effective Jan. 1, 2018. Saskatchewan is lowering its corporate income tax rate from 12 per cent to 11 per cent (via half-point reductions in 2017 and 2019), but raising its provincial retail sales tax rate from five per cent to six per cent as well as expanding the sales tax base to include, for example, construction services. Quebec is slowly reducing its corporate income tax rate by 0.1 per cent each year – 11.8 per cent in 2017, falling to 11.5 per cent by 2020. These changes, anticipated by investors, are incorporated in our estimates of effective tax rates.

The biggest taxation changes in 2017 are with respect to energy taxes that can feed through higher costs including capital good prices. Alberta has introduced a carbon tax at \$20 per tonne

in 2017 that will increase to \$30 per tonne in 2018. British Columbia is increasing its carbon tax rate by \$5 per tonne beginning in 2018 from \$30 per tonne in 2017. Ontario has joined Quebec and California in entering into a cap-and-trade market beginning in 2017. A number of provinces have imposed regulations such as coal phase-outs and renewable energy standards. Similar to fuel excise, carbon taxes and regulations raise energy costs that indirectly affect business production costs, including the construction of capital. To incorporate carbon policy impacts, a broader cost competitiveness study is needed to estimate the “marginal effective tax rate on costs” to incorporate various policies on capital, labour and energy costs (see McKenzie, Mintz and Scharf, 1997 for a further explanation).

Tables 1 and 2 provide the 2017 METRs by province, industry and asset, including agriculture and forest sectors (oil and gas and mining are analyzed in Crisan and Mintz, 2017b and Mintz, Bazel, Chen and Crisan, 2017a). These calculations do not include transfer taxes to provide a historical series (see Appendix A). Thus, the average METR for Canada is 20.3 per cent for 2017 (somewhat less than the 20.9 per cent estimated for manufacturing and services with transfer taxes).

Due to the retail sales tax on capital purchases, British Columbia (27.7 per cent), followed by Manitoba (26.1 per cent) and Saskatchewan (24.2 per cent), have the highest METRs on capital, which would be roughly on par with Australia, Russia and Germany. On the other hand, the Atlantic Provinces have the lowest METRs due to the 10 per cent federal Atlantic Investment Tax Credit for qualifying primary and manufacturing investment. Overall, the Canadian tax structure is biased against services and investments in structures and inventory compared to other business investments.

TABLE 1 METR BY PROVINCE AND INDUSTRY 2017 (EXCLUDES TRANSFER TAXES)

2017	Agriculture	Forestry	Electrical Power, Gas & Water	Construction	Manufacturing	Wholesale Trade	Retail Trade	Transportation and Storage	Communications	Other services	Aggregate
Canada**	18.0%	15.3%	18.9%	23.7%	15.8%	23.5%	24.2%	17.9%	22.4%	24.7%	20.3%
Newfoundland	12.2%	-4.8%	18.5%	24.9%	-6.0%	25.3%	25.5%	17.1%	21.3%	23.7%	11.4%
Prince Edward Island	1.6%	-23.1%	19.2%	25.8%	-36.7%	26.4%	26.5%	21.4%	21.4%	26.4%	13.9%
Nova Scotia	13.3%	3.1%	19.2%	25.8%	2.1%	26.2%	26.5%	18.0%	22.2%	24.8%	18.7%
New Brunswick	3.5%	-6.5%	17.7%	24.0%	-6.3%	24.4%	24.6%	17.9%	20.5%	22.9%	12.9%
Quebec	16.9%	12.6%	16.2%	22.1%	14.5%	22.6%	22.8%	15.2%	18.9%	23.2%	18.2%
Ontario	16.7%	15.6%	15.8%	21.7%	17.1%	21.9%	22.4%	15.8%	18.6%	22.1%	19.0%
Manitoba	23.5%	12.1%	29.0%	30.5%	11.3%	28.6%	29.4%	25.1%	34.6%	35.6%	26.1%
Saskatchewan	22.1%	17.9%	26.9%	28.5%	19.0%	28.7%	28.3%	21.6%	34.3%	32.4%	24.2%
Alberta	17.2%	17.1%	16.3%	22.2%	20.0%	22.6%	22.8%	14.9%	19.0%	21.6%	19.1%
British Columbia	22.1%	22.9%	27.6%	29.5%	22.8%	27.9%	28.6%	23.1%	34.5%	33.0%	27.7%

* Canadian model is distinct from average

TABLE 2 METR BY PROVINCE AND ASSET CATEGORY 2017 (EXCLUDES TRANSFER TAXES)

2017	Buildings	M&E	Land	Inventory	Aggregate
Canada*	22.7%	19.5%	10.9%	24.8%	20.3%
Newfoundland	15.0%	-5.2%	12.5%	27.8%	11.4%
Prince Edward Island	20.4%	-6.7%	13.0%	28.6%	13.9%
Nova Scotia	22.3%	11.8%	13.0%	28.7%	18.7%
New Brunswick	17.0%	-0.3%	12.0%	27.0%	12.9%
Quebec	21.8%	13.6%	10.9%	24.9%	18.2%
Ontario	21.4%	17.3%	10.6%	24.1%	19.0%
Manitoba	23.9%	32.5%	11.0%	24.9%	26.1%
Saskatchewan	24.3%	27.9%	10.6%	23.9%	24.2%
Alberta	22.7%	16.5%	11.0%	25.0%	19.1%
British Columbia	27.8%	33.7%	11.0%	25.1%	27.7%

* Candian model is distinct from average

DO THESE METRS EXPLAIN VARIATIONS IN INVESTMENT?

So far, we have reported differences across countries with respect to tax burdens on capital, as measured by our marginal effective tax rates. A crucial question is whether they explain investment patterns at all.

A useful Canadian study examining the corporate tax reductions from 2001 to 2004 found that a 10 per cent reduction in the user cost of capital adjusted for taxes (as done with METR calculations) led to a seven per cent increase in the capital stock (Parsons, 2008). A more recent survey on the relationship between effective tax rates and foreign direct investment estimated that a one-point reduction in the corporate income tax rate results in an increase in foreign direct investment by 2.49 per cent (Feld and Heckemeyer, 2011).

Our estimates vary from others in the literature, notably by incorporating other taxes besides the corporate income tax as well as our explicit characterization of international markets whereby multinationals raise capital from international marginal investors reflected by G7 tax rates.⁷ An earlier marginal effective tax rate series was used in a study that showed that foreign direct investment was significantly deterred by corporate taxes (Krzepkowski, 2013).⁸

U.S. TAX REFORM

The hallmark of U.S. tax reform is with respect to the corporate income tax. The U.S. *Tax Cuts and Jobs Act* includes a large number of amendments to the U.S. tax code that will have a profound impact on the U.S. and global economy. The changes will cause a significant shift, especially in international tax planning, that is highlighted below.

⁷ For example, in the seminal work by Devereux and Griffiths (1998), estimates are made of both effective average and marginal corporate income tax rates (average tax rates are based on a value of *economic rent* or the rate of return to capital in excess of the marginal rate of return on capital. Calculating average rates of return across 92 countries, correcting for risk, is not possible and would only be pure guesswork. Even if there are fixed costs involved, companies can vary the size of projects with the marginal investment project determining the aggregate size from an industry-wide perspective (Mintz, 1995b).

⁸ We have begun some preliminary analysis of investment by OECD country and its sensitivity to our estimates of METRs for manufacturing and services. So far, we find that our estimates of METRs explain investment intensity across countries along with other variables such as growth in demand, the business cycle and risk.

The key elements of the tax reform are the following:

- i) A reduction in the federal corporate income tax rate from 35 per cent to 21 per cent (39.1 per cent to 26.6 per cent including state income taxes, and deductibility of federal income taxes from state income taxes) beginning Jan. 1, 2018.
- ii) A reduction in percentage deductions for dividends received from other corporations. The general exemption for dividends received from other corporations is being reduced from 70 per cent to 50 per cent. For subsidiaries with at least 20 per cent ownership, the exemption is being reduced from 80 per cent to 65 per cent. Dividends remain fully exempt if the affiliate is part of the group of companies.
- iii) Expensing of investment in assets with a recovery of less than 20 years (primarily machinery and equipment) except companies not subject to the interest limitation rule (construction, real estate and regulated public utilities). This is effectively an increase in bonus depreciation that was being phased out by 2020 (40 per cent in 2018 and 30 per cent in 2019). Expensing is to be phased out after 2022 by a fifth each year (and therefore no longer available after Jan. 1, 2027). Unlike bonus depreciation, expensing also applies to used property.
- iv) Research and development expenditures incurred in tax years after 2025 will be amortized over a five-year period (15 years for expenditures attributable to research conducted outside the United States).
- v) A general limitation on the deductibility of interest expense to be no more than 30 per cent of adjusted profits (regulated public utilities and finance would be largely exempt). The act limits, until Jan. 1, 2022, the deduction of net interest expense to 30 per cent of the business's adjusted taxable income, not taking into account interest, depreciation, amortization, depletion or net operating losses. After 2022, the limit will be based on 30 per cent of the business's adjusted taxable income, not taking into account any item of income, gain, deduction or loss which is not properly allocable to a trade or business, business interest expense or income, the deduction for certain pass-through income and net operating losses (disallowed amounts may be carried forward indefinitely).
- vi) Limitation in the use of non-operating losses deductions taken after 2017 to be no more than 80 per cent of profits.
- vii) The elimination of the corporate minimum tax as of Jan. 1, 2018.
- viii) An exemption for dividends received from foreign affiliates with at least 10 per cent ownership by the U.S. parent according to value (voting shares shall no longer be relevant in determining the ownership test). New anti-abuse rules are introduced.
- ix) As a transitional measure, existing foreign earnings accumulated abroad since 1986 would be subject to a mandatory toll (transitional tax) payable over eight years – 15.5 per cent for earnings held in cash and eight per cent for the remainder.
- x) The introduction of a tax on accrued intangible income earned by U.S. multinational in foreign affiliates as well as a concessionary tax rate on exported intangible income for property used outside of the United States.

Investment

Taking into account the corporate rate and expensing provisions⁹, the impact of the U.S. tax reform is to sharply reduce the tax burden on domestic-owned investment in the United States by almost a half with METR on capital falling from 34.6 per cent¹⁰ to 18.8 per cent.¹¹ This reduction in taxation of capital in United States is both good and bad news for other trading partners including Canada.

The corporate income tax reform in the *Tax Cuts and Jobs Act* will result in higher GDP and wages in the United States. Using our global METR calculations, Benzell, Kotlikoff and LaGarda (2017) model the impact of U.S. tax reform using a dynamic model that includes capital flows across 17 regions of the world over 90 years. They predict that U.S. GDP will rise 4.0 per cent and real wages by 5.2 per cent (low-skilled) and six per cent (high-skilled) by 2025, estimates that are larger than those provided by the Joint Committee on Taxation (2017), which uses a closed economy model. They also estimate that the average American working household will benefit by \$3,500 annually. The growth in incomes in the United States should spill over into higher demand for foreign products.

On the other hand, the U.S. tax reform will make it more attractive for businesses to invest in the United States rather than in Canada to serve the North American market. Canada will lose its business tax advantage as a result of the U.S. tax reform, since the U.S. METR declines from three-quarters above the Canadian METR of 20.9 per cent to about a tenth below.¹² For some sectors the differences will be even greater, especially in construction, transportation and communications, although Canada will have some advantage in the “other services” and oil and gas sectors.

Taking national averages, however, masks some of the differences in tax burdens by province and states. The U.S. tax reform will provide a larger business tax advantage for U.S. states with corporate tax rates below the average U.S. rate and less so for states with relatively high corporate income tax rates. For example, Ontario’s federal-provincial corporate income tax rate is 26.5 per cent – this is lower than the combined federal-state corporate income tax rates in 39 U.S. states with a top corporate income tax rate above 6.33 per cent (e.g., California, Pennsylvania and New York), but higher than 11 other states with lower corporate tax rates (e.g., Michigan and Washington), five of which have no corporate income tax at all (e.g., Ohio and Texas). Thus, Ontario’s corporate income tax rate would be less competitive compared to, for example, Michigan and Ohio, but more competitive than New York.

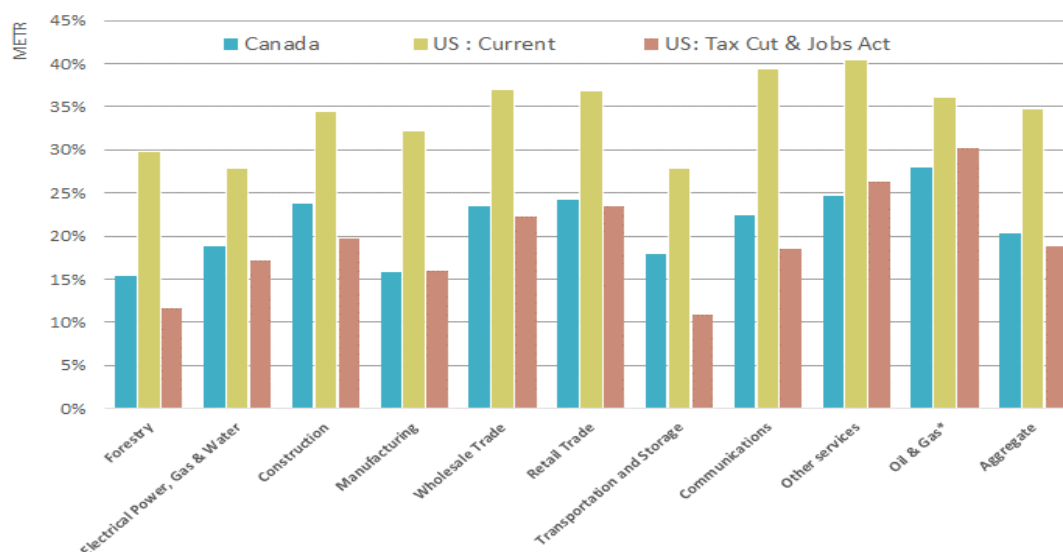
⁹ We assume in these calculations that state governments do not adopt the federal base changes nor change their tax laws. This is obviously not the case since some states conform to the federal base although they may possibly negate federal changes if they choose to do so. In 2018, many states will likely revise the corporate income tax rates and bases, depending on which features of the federal law are adopted.

¹⁰ Taking the 2018 bonus depreciation into account that was being phased out after 2019, the METR falls from 29.7 per cent to 18.8 per cent, which is still a significant reduction.

¹¹ We have recently made some adjustments to the U.S. model in light of some new data. These changes offset each other, resulting in a U.S. tax reform METR of 18.9 per cent. Note that new provisions related to intangible income and base-erosion are not included in these estimates as they are specific to investments by foreign companies in the U.S. or investments by U.S. companies made abroad.

¹² As we use a debt-asset ratio of 40 per cent for international comparisons, the new interest limitations based on earnings before depreciation, amortization and depletion would not be binding, based on aggregate data. Further work would be required to analyze the overall impact by examining firm-level data with variations in leverage.

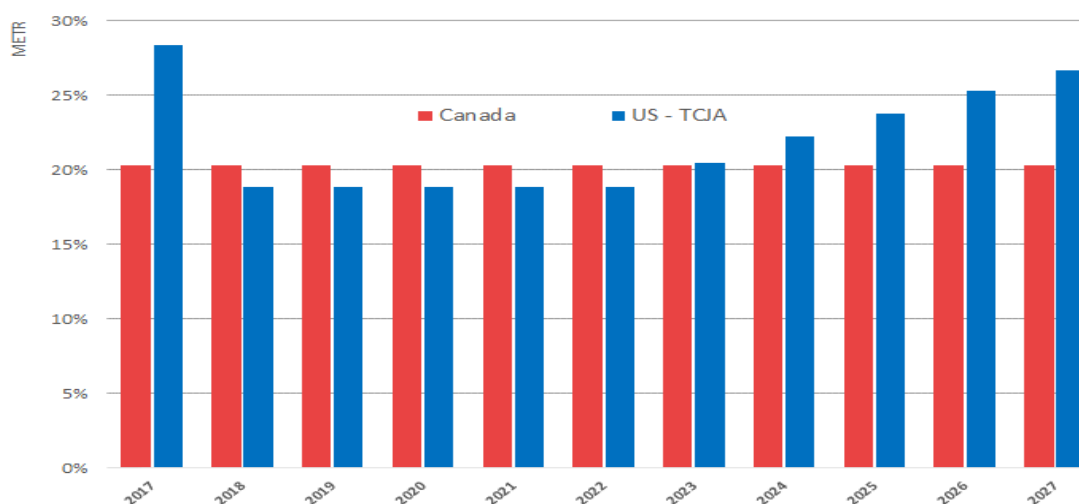
FIGURE 9 IMPACT OF U.S. TAX REFORM ON METRS ON CAPITAL FOR U.S. AND CANADA BY INDUSTRY AS OF 2018



*Oil and gas is not included in the aggregated METR.

The U.S. reform reverses the investment tax advantage that otherwise favoured Canada since 2007 (see 2005-2017 METR historical comparisons without transfer taxes in Appendix A). However, due to Senate budgetary rules that require balanced budgets after a decade, several amendments are limited in time such as in the case of expensing provisions. Further, as mentioned above, bonus depreciation was to be phased out by 2020.¹³ In Figure 10, we show that the U.S. tax reform results in a roller coaster effect whereby the METR first declines in 2018 and then eventually rises to 26.7 per cent by 2028, which is about eight points lower had the previous system continued as legislated.

FIGURE 10 METR BY YEAR IN THE UNITED STATES ACCOUNTING FOR SHIFTS IN EXPENSING PROVISIONS: CURRENT AND TAX CUTS AND JOBS ACT



¹³ Bonus depreciation allows for the expensing of capital in the first year with the undepreciated capital based subject to annual depreciation allowances in following years.

It is far too difficult to predict expensing provisions in the United States that Congress is willing to change frequently. Bonus depreciation began in 2002 at 30 per cent of qualifying expenditures and was eliminated in 2004-2007 when the economy was doing well. It was reintroduced at 50 per cent in the 2008 recession, raised to full expensing in 2010, reduced to 50 per cent in 2012 and 40 per cent in 2018, 30 per cent in 2019 and eliminated altogether in 2020. Expensing under the *Tax Cuts and Jobs Act* replaced bonus depreciation but is phased out beginning in 2022. Canada regains its business tax advantage by 2024, although it would not be possible to predict corporate tax changes by 2026 either in the U.S. or Canada – eight years is a long time in politics!

Corporate tax base erosion in Canada

Also problematical for Canada is the possibility of corporate tax base erosion as companies operating in North America move profits to the United States from foreign jurisdictions by restructuring their financing and transfer prices. Canada, as well as other countries, may face a loss in corporate tax revenues even if workers and fixed assets do not move across boundaries.

Debt placement

The sharp reduction of 14 points in the corporate income tax rate in the United States will encourage companies to put less debt in the United States to fund their investment. This will also be the case for many companies with U.S. operations who wish to avoid the new interest and loss limitation rules that could bite over time.

The interest limitation is an earnings-stripping rule whereby interest deductions in excess of 30 per cent for adjusted earnings will not be deductible in the current year. While companies with stable incomes and low leverage will not be affected, many companies with cyclical profits and higher debt loads will face the possibility of losing the tax value of their interest deductions even if written off in future years.

The new U.S. law will also limit post-2017 loss deductions to 80 per cent of profits earned in a year. This will encourage companies located in the U.S. to shift costs, including interest, to foreign related parties to make better use of loss deductions. Countries with a more liberal treatment of losses are likely to bear these costs.

As U.S. parents will be able to repatriate dividends without additional payment of tax, they will be able to use foreign profits to retire U.S. debt. In a recent poll, 65 per cent of companies listed debt reduction as a priority for repatriated profits.¹⁴ However, to replace undistributed foreign profits in other countries, multinationals could have their affiliates take on more debt from the parent or third parties, subject to the effectiveness of thin-capitalization rules in the foreign jurisdiction. In other words, foreign governments could lose corporate tax revenues to the U.S. government with new financial structures.

Other provisions in U.S. tax reform will impact Canada-U.S. financing structures, such as the use of hybrids or tower structures to achieve double-dip interest deductions for investments by Canadian companies in the United States (see Mintz and Weichenrieder, 2010c). As discussed

¹⁴ <https://www.cnbc.com/2017/07/13/companies-have-big-plans-for-overseas-cash--if-tax-reform-ever-happens.html>.

below, debt will also be discouraged to the extent that new anti-abuse rules are effective in discouraging debt placement in the United States.

Base erosion and anti-abuse rules

New anti-abuse rules shall limit deductions or imposed additional taxes for certain payments (e.g. interest, royalties and management fees) to related foreign parties when companies have gross receipts in excess of \$500 million of the U.S. taxpayer. The intent of these rules is to make it more difficult for companies to shift profits to low-tax countries by using techniques such as licensing arrangements with Irish subsidiaries.

The base erosion and anti-abuse tax (BEAT) applies to certain base erosion deductions¹⁵ when higher than three per cent of total deductions. The cost of goods sold and certain service cost deductions (such as those subject to no mark-up values) are not included as a deduction. The BEAT is a minimum tax of 10 per cent (5 per cent in 2018), later to be increased to 12.5 per cent beginning Jan. 1, 2026 on taxable income gross of base erosion payments (a one point higher tax rate applies to registered security dealers).

The BEAT is paid if the amount is greater than the regular corporate income tax paid at the rate of 21 per cent on income paid by the U.S. subsidiary (tax liabilities gross of tax credits and 80 per cent of Section 38 business tax credits). This will arise if the tax value of denied deductions is large enough. Let Y be regular taxable income, u the corporate income tax rate, X business tax credits, t the BEAT rate and B equal base erosion payments. The BEAT is paid if:

$$t(Y+B) > (uY - .8X) \text{ or } tB > (u-t)Y - .8X.$$

Ignoring business tax credits, many of which are targeted to energy, a corporate income tax rate of 21 per cent and the BEAT tax of 10 per cent would result in the BEAT being paid when $B > 1.1Y$. At a BEAT tax of 12.5 per cent from 2026 onwards, the BEAT is paid if $.125(Y+B) > .21Y$ or $B > .68Y$.

Potentially, the BEAT would impact Canadian-U.S. cross-border investments and technology transfers, ultimately resulting in lower reported profits in Canada to avoid the BEAT. The BEAT may be avoided in certain circumstances if structuring transactions as profit-sharing contracts or being related to the cost of goods sold.

Intangible Income

The other important provisions are related to mobile and passive income as mentioned above. The intent of these rules is to discourage multinationals from shifting mobile income to foreign low-taxed jurisdictions, such as in the case of intellectual property and marketing. A U.S. parent of a controlled-foreign corporation will include GILTI in the parent's income similar to (Sub-Part F) passive income. GILTI is the excess of income over a deemed tangible income return, the latter measured as a 10 per cent return on tangible assets and does not include passive income, foreign oil and gas income and certain related party payments. GILTI is taxed at a rate of 10.5 per cent until Jan. 1, 2026 when it becomes 13.125 per cent thereafter. A tax

¹⁵ The new rules do not apply to a regulated corporation or a real estate investment trust. See Explanation of the *Tax Act and Jobs Act*, p. 532.

credit is given for 80 per cent of foreign taxes without a carry-back or forward to other years. A U.S. multinational could be liable for tax on intangible income in Canada if 80 per cent of Canadian taxes are less than 10 per cent of GILTI, which could arise in the case of Canada's research and development tax credits.

Further, the new U.S. tax provides domestic corporations a reduced tax rate on foreign-derived intangible income (FDII) by providing a deduction equal to 37.5 per cent of FDII prior to Jan. 1, 2026 and 21.875 per cent thereafter. The effective tax rates on FDII will therefore be equal to 13.125 per cent prior to Jan. 1, 2026 and 16.406 per cent thereafter.¹⁶ This provision provides a concessionary rate of tax on intangible income for property sold to any unrelated foreign person for foreign use or services provided for use outside of the United States. Intangible income is measured by taking the difference between eligible income and 10 per cent of qualified business assets.

Under the previous system, a U.S. multinational would not be taxed on intangible income so long as the income was not repatriated to the United States. The GILTI tax, on the other hand, is an accrual tax that will claw back incentives in foreign jurisdictions, whether income is repatriated or not, similar to passive income rules. A U.S. multinational would be liable for tax on intangible income in a foreign jurisdiction if 80 per cent of foreign taxes were less than 10.5 per cent (or 13.125 per cent after 2025) of GILTI, which could arise in the case with research and development tax credits or marketing expenses.

While much of the impact of the GILTI tax will be on intangible income from intellectual property, it will also affect intangible income from foreign mining investment (oil and gas is exempt). It is really quite hard to understand differential taxation in this case.

The GILTI will also encourage U.S. companies to hold depreciable assets in foreign jurisdictions. Indeed, for each dollar invested in tangible assets, the U.S. company earns a present value of exempt intangible income equal to the exempt rate of return divided by the nominal discount rate plus the (declining balance) economic depreciation rate on the asset. Thus, for example, a dollar of investment in machinery with a 10 per cent declining-balance depreciation rate and a five per cent nominal discount rate generates a present value of deductions relief of two-thirds of the expenditure ($1/((.10+.05))$). As I have noted in earlier work on resource companies, exempt return can result in a negative METR for investments due to capital base broadening (Mintz, 2016a).

Further, the new U.S. tax provides domestic corporations with a reduced tax rate on foreign-derived intangible income (FDII) by providing a deduction equal to 37.5 per cent of FDII prior to Jan. 1, 2026 and 21.875 per cent thereafter. The effective tax rates on FDII will therefore be equal to 13.125 per cent prior to Jan. 1, 2026 and 16.406 per cent thereafter.¹⁷ This provision provides a concessionary rate of tax on intangible income for property sold to unrelated foreign persons for foreign use or services provided for use outside of the United States based on the share of foreign-derived income to domestic and foreign-derived income. Intangible income is measured by taking the difference between eligible income and 10 per cent of qualified

¹⁶ FDII does not include Sub-Part F income, GILTI, financial services income, dividends received from a controlled-foreign corporation, domestic oil and gas extraction income from a domestic corporation and foreign branch income. See the Explanation of the *Tax Cuts and Jobs Act*, page 495.

¹⁷ FDII does not include Sub-Part F income, GILTI, financial services income, dividends received from a controlled-foreign corporation, domestic oil and gas extraction income from a domestic corporation and foreign branch income. See the Explanation of the *Tax Cuts and Jobs Act*, page 495.

business assets. FDII also excludes oil and gas income but not mining (therefore providing an incentive for mining investments in the United States to the extent output is exported).

The FDII could be challenged as an export subsidy given that its concessionary rate is only provided for foreign-derived income. Opposite to the GILTI tax, companies will also have an incentive to invest less in tangible property in the United States to increase the concessionary rate for exported intangible income.

The U.S. corporate tax reform will lead to fundamental reshaping of tax planning by corporations with U.S. operations. Instead of keeping profits out of the United States, as in the past, the goal will be to move profits there. Overall, U.S. tax reform will not only affect investment decisions but also the distribution of corporate profits and taxes between Canada and the United States.

PROSPECTS FOR CORPORATE TAX REFORM IN CANADA

Without U.S. tax reform, we would argue that further corporate tax reform would be appropriate for Canada. Specifically, in our last report (Bazel and Mintz, 2016b), we suggested:

Canada's corporate tax system could be further reformed to improve competitiveness and neutrality. Some substantial reforms have been suggested, such as moving the corporate income tax to a rent-based tax, although there are difficult challenges with this, especially from an international perspective as well as with regard to ensuring consistency with the personal income tax system. Other levies could be considered to replace the corporate income tax, such as introducing transfer and capital taxes, but these would make the business tax system worse rather than better.

The Economic Advisory Council (2017a) reporting to the federal minister of finance in December 2017 also argued that tax reform should be one of the priorities for the government to improve Canada's lacklustre private sector performance.

The government must review Canada's tax system to ensure it spurs investment and competitiveness. When the country last conducted such reform decades ago, investments in physical assets were more important and global trade less so than they are today. Our tax system must be updated for the modern economic era— to safeguard Canada's status as a globally competitive tax jurisdiction and to ensure that it incentivizes investments in innovative technologies and intellectual capital.

With U.S. tax reform, Canadian tax reform has become even more imperative to ensure economic growth. The Canadian economy is strengthened when resources are put aside to purchase capital embodies with the latest technology to generate goods and services in later years. While federal, provincial and municipal governments have rightly put more emphasis on public infrastructure spending especially since the 2008 recession, it is private sector investment that accounts for almost two-thirds of 2017 non-residential expenditure on machinery, equipment and structures in Canada.¹⁸ Three particularly important trends are worth noting.

¹⁸ <http://www.statcan.gc.ca/daily-quotidien/170228/t001c-eng.htm>.

First, Canada's private investment performance has slowed down since 2011 after an investment boom from 2000-2011. As we noted in an early Australian report, Canada's investment performance is especially low in the service sector compared to other OECD countries (Mintz, Bazel, Chen and Crisan, 2017b). The Economic Advisory Council (2017b) also notes that Canadian businesses have not performed well with respect to investments in innovation and technology adoption of which service industries would be the majority component.

Canada's private non-residential investment is now lower in 2017 at \$195.7 billion compared to \$207.9 billion in 2011 (in 2014 it peaked at \$235.7). This contrasts with the 2000-2011 period when private investment grew by 46.5 per cent from \$141.9 to \$207.9 billion. In contrast, U.S. private investment grew by only 20 per cent from \$1.510 trillion in 2000 to \$1.802 billion in 2011 but more strongly by 28 per cent to \$2.3116 trillion by 2017.¹⁹ While the decline in resource sector investment after 2014 partly explains Canada's worsening performance, we note that Canada shifted from reducing the corporate tax burden to raising it after 2012.

Second, the U.S. 2018 reform is dramatically reducing taxes on both corporate and non-corporate forms, resulting in a lower tax burden on capital compared to Canada. With a view that Canada is raising rather than reducing taxes, Canada is viewed as less attractive for business investment (see also the survey by the Economic Advisory Council, 2017c). The potential withdrawal from the North American Free Trade Agreement will also increase political risk, should it happen.

Third, our corporate income tax rate is now somewhat higher, not vastly lower, than the U.S. corporate income tax rate beginning in 2018. Combined with the anti-avoidance measures in the United States surveyed above, it can be expected that Canada will experience base erosion as multinationals operating in North America shift profits to the United States.

In 2018, Canadian federal and provincial government should focus on tax reform. The aim should be to put a priority on taxes that create the most harm to the economy: corporate and transfer taxes having the highest cost.

Corporate income taxes are especially harmful to the economy since they discourage private sector investment, tend to distort the allocation of capital across industries and assets and result in loss of tax revenues as companies shift profits to other jurisdictions even if they do not make change-location decisions for investment. The highest economic cost of taxation is associated with corporate income taxation. Dahlby (2012) estimates the marginal cost of raising a dollar of corporate revenues, including economic distortionary costs, to be \$1.45 for the federal government. For the provinces, the marginal cost of taxation is even higher because provincial tax increases cause much bigger losses in the provincial tax base: \$4.72, \$5.29 and \$3.54 for corporate taxation; \$1.77, \$6.76 and \$3.05 for personal taxes in Alberta, Ontario and Quebec respectively; and \$1.69 and \$1.31 for sales taxes in Quebec and Ontario.²⁰

¹⁹ <http://stats.oecd.org/index.aspx?queryid=61366#>.

²⁰ Updated calculations, based on 2017 tax rates, of the marginal cost of public funds using Dahlby and Ferede (forthcoming) estimates of the tax sensitivities of provincial tax bases.

Transfer taxes, especially on commercial property, can also impose high financial costs on an economy by increasing the cost of supplying infrastructure, housing and other urban projects.²¹ They encourage a lock-in effect whereby owners are less willing to sell their property to avoid triggering additional transfer taxes. Even the mobility of labour and capital in an urban centre can be affected if businesses and households are less willing to move for economic reasons. Moreover, transfer taxes on the resale of commercial property are highly distortionary since it is not easy to identify a change in ownership given the joint ownership of property through corporations, trusts and partnerships and the ability of companies to avoid the tax altogether.

Given low business investment performance and a more competitive U.S. tax system, Canada should reduce taxes on capital without creating new distortions. While U.S. tax reform has resulted in a lower tax burden on capital, some provisions are potentially distortionary, such as expensing capital targeted for machinery and investment. Federal and provincial authorities might succumb to introducing more accelerated depreciation and investment tax credits to respond to U.S. reform. While investment incentives limit revenue cost to increases in investment, they distort the allocation of capital in the economy by favouring asset expenditures with shorter lives compared to others and encourage capital suppliers to raise prices. Investment incentives also have less effect when companies are unable to use them when incurring losses.

Corporate rate reductions are more neutral across business activities as they reduce inter-asset and inter-industry distortions as well as the differential tax burdens between large, medium and small businesses. On the other hand, they have higher revenue costs since owners of old capital benefit from a windfall reduction in corporate taxes (this can be ameliorated somewhat by staging rate reductions over time). If anything, Canadian business investment has been particularly poor in service sectors compared to other countries – and these sectors tend to bear the brunt of tax burdens. Corporate rate reductions also counter potential base erosion arising from U.S. tax reform as discussed above.

We would suggest that Canada's best corporate tax response would incorporate three features: reduce corporate income tax rates, improve neutrality by base-broadening measures, reduce the incentive for debt finance and improve the taxation of international income to protect the Canadian tax base while ensuring that Canadian businesses are more competitive.

Provinces should also examine the competitiveness of their business tax structures. British Columbia, Manitoba and Saskatchewan should aim to eliminate sales taxes on capital purchases (such as harmonization with the federal GST or rebating taxes on business inputs). Provinces should also use carbon revenues to provide an offset for higher energy taxes faced by businesses by reducing corporate income and commercial land transfer taxes.

In Bazel and Mintz (2016c), we have estimated that base-broadening measures, including scaling back investment incentives and the small business deduction (the latter unfortunately raised by the federal and some provincial governments), would enable Canada to reduce its

²¹ Some recent international studies have suggested that the transfer tax (stamp duties and real estate transfer taxes) have high economic costs, almost as much as the corporate income tax although none examines real estate impacts on commercial property. For example, Buettner (2017) estimates the welfare cost to be EU\$1.67 in Germany. An Australian Treasury (2015) study estimates stamp duties to have a welfare cost of AU\$1.72, even higher than the Australian corporate income tax. Dachis, Duranton and Turner (2012) estimate a marginal cost of the Toronto land transfer tax to be \$1.29, more than for a property tax increase.

corporate tax rate to 23 per cent, slightly below the U.S. combined federal-state rate. Other reform measures should be contemplated such as stronger limitations on the deductibility of debt to finance capital expansion.

CONCLUSIONS

This 2017 tax competitiveness report reviews the business tax structures of 92 countries. Canada's existing tax burden on new investment, as measured by the marginal effective tax rate (METR), is competitive at 20.9 per cent with respect to Africa, the Americas and Asia-Oceania. Canada has a higher tax burden on capital compared to Africa, Europe and the Middle East and northern Africa regions. Canada has the sixth lowest METR on capital among the G7 countries, 14th lowest among the G20 countries and 12th lowest among 33 OECD countries.

Much will change as the United States adopts its path-breaking tax reform for 2018. Of most interest are the corporate tax changes that will substantially affect U.S. tax competitiveness. The federal corporate income tax rate will fall by 14 points as of Jan. 1, 2018. Taking into account other provisions, the U.S. METR will fall sharply from 34.6 per cent to 18.8 per cent. Canada will now have a higher tax burden on capital compared to the United States by about a fifth.

With the sharply lower corporate income dividend exemption system and a new limitation on deductible interest and losses, companies operating in the United States will push debt and other costs to foreign countries, reducing corporate taxes elsewhere. Under the dividend exemption system, a U.S. parent can bring money home from abroad to retire debt without paying additional tax to the U.S. government. Overall, the U.S. gains corporate tax revenue while foreign countries lose revenue due to financial policy changes. This alone could spark reforms in other countries in order to protect both competitiveness and their tax bases.

Given that the U.S. is Canada's most important trading partner, corporate tax reform in Canada is now more urgent. The goal should be some reduction in corporate rates while achieving a more neutral corporate tax structure. Provinces should ensure other business tax burdens, including sales taxes on input purchases and commercial land transfer taxes, are also reformed to ensure competitiveness in the wake of U.S. tax reform.

REFERENCES

- Australia Treasury. 2015. Cao, L., A. Hosking, M. Kouparitsas, D. Mullaly, X. Rimmer, Q. Shi, W. Stark, and S. Wende, *Understanding the Economy-Wide Efficiency and Incidence of Major Australian Taxes*, Treasury Working Paper, April.
- Bazel P. and J. Mintz. 2016. “2015 Tax Competitiveness Report: Canada is Losing its Attractiveness,” *SPP Research Papers*, 9(37), School of Public Policy, University of Calgary.
- Benzell, S. G., L. J. Kotlikoff, and G. LaGarda. 2017. “Stimulating the Republican ‘Unified Framework’ Tax Plan,” Oct. 16. Unpublished.
- Buettner, T. 2017. “Welfare Cost of the Real Estate Transfer Tax,” CESifo Working Paper No. 6321, Munich, Germany.
- Crisan, D. and J. Mintz. 2017. “A 2017 Update of Taxation of Oil Investments: How U.S. Tax Reform Could Affect Competitiveness,” *SPP Research Papers*, 10(21), School of Public Policy, University of Calgary.
- Dachis, B., G. Duranton, and M. Turner. 2012. “The Effects of Land Transfer Taxes on Real Estate Markets: Evidence from a Natural Experiment in Toronto,” *Journal of Economic Geography* 12(2), 327-354.
- Economic Advisory Council. 2017. “Investing in a Resilient Canadian Economy,” Finance Canada, Ottawa. <https://www.budget.gc.ca/aceg-ccce/pdf/investing-in-a-resilient-canadian-economy-eng.pdf>.
- Feld, L. P. and J. H. Heckemeyer. 2011. “FDI and Taxation: A Meta-Study,” *Journal of Economic Surveys*, 25(2) 233-272.
- Ghosh, G. and J. Mintz. 2017. *Investment and the Indian Tax Regime: Measuring Tax Impacts on the Incentive to Invest in India*, Bangalore: EY.
- Heckemeyer, J. and M. Overesch. 2013. “Multinational’s Profit Response to Tax Differentials: Effect Size and Shifting Channels,” Discussion Paper 13-045, ZEW Center for European Economic Research.
- Krzepkowski, Matt. 2013. “Marginal versus Average Effective Tax Rates and Foreign Direct Investment,” in *Three Essays on Investment and Taxation*, Calgary: University of Calgary, Chapter 1.
- McKenzie, K. J. and E. Ferde. 2017. “Who Pays the Corporate Income Tax? Insights from the Literature and Evidence for Canadian Provinces,” *SPP Research Papers*, 10(6), School of Public Policy, University of Calgary.
- McKenzie, K., J. Mintz, and K. Scharf. 1997. “Measuring Effective Tax Rates in the Presence of Multiple Inputs: A Production Based Approach,” *International Tax and Public Finance*, 4(3), 337-359.
- Mintz, J. 1995. “The Corporation Tax: A Survey,” *Fiscal Studies*, vol. 16. no. 4, 23-68.
- Mintz, J. 2016. “Taxes, Royalties and Cross-Border Investments,” in *International Taxation and the Extractive Industries*, eds. P. Daniel et al., Washington, D.C.: International Monetary Fund, Routledge, New York and London.

- Mintz, J., P. Bazel, D. Chen, and D. Crisan. 2017. "With Global Company Tax Reform in the Air, Will Australia Finally Respond?" Minerals Council of Australia, Melbourne, Australia, March.
- Mintz, J. and V. B. Venkatachalam. 2017. "Small Business Tax Cut Not Enough: U.S. Tax Reform Will Make U.S. More Attractive for Start-ups," *Tax Policy Trends*, School of Public Policy, University of Calgary, October.
- Mintz J. and A. Weichenrieder. 2010. *The Indirect Side of Direct Investment*, (MIT Press).
- Parsons, M. 2008. "The Effect of Corporate Taxes on Canadian Investment: An Empirical Investigation," Finance Canada, Working Paper 2008-01, Ottawa.

APPENDIX A: CORPORATE INCOME TAX RATES AND METRS BY COUNTRY AND TIME

TABLE A.1 CORPORATE INCOME TAX RATES BY COUNTRY 2005-2017.

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	Trend
Australia	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Austria	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
Belgium	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	
Canada	26.6	26.6	26.6	26.3	26.3	26.1	27.6	29.4	31.0	31.4	34.0	33.9	34.2	
Chile	25.0	24.0	22.5	21.0	20.0	17.5	20.0	17.0	17.0	17.0	17.0	17.0	17.0	
Czech Republic	19.0	19.0	19.0	19.0	19.0	19.7	19.0	19.0	20.0	21.0	24.0	24.0	26.0	
Denmark	22.0	22.0	23.5	24.5	25.0	25.0	25.0	25.0	25.0	25.0	25.0	28.0	28.0	
Estonia	16.0	16.0	20.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	22.0	23.0	24.0	
Finland	20.0	20.0	20.0	20.0	24.5	25.7	26.0	26.0	26.0	26.0	26.0	26.0	26.0	
France	38.0	38.0	38.0	36.9	36.1	34.7	36.1	34.4	34.4	34.4	34.4	34.4	35.0	
Germany	29.7	29.7	29.7	30.2	30.2	30.2	30.2	30.2	30.2	30.2	38.9	38.9	38.9	
Greece	29.0	29.0	29.0	26.0	26.0	24.6	20.0	24.0	25.0	25.0	25.0	29.0	32.0	
Hungary	19.0	19.0	19.0	19.0	19.0	19.8	19.0	19.0	20.0	20.0	20.0	17.3	16.0	
Iceland	20.0	20.0	20.0	20.0	20.0	15.7	20.0	18.0	15.0	15.0	18.0	18.0	18.0	
Ireland	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	
Israel	24.0	25.0	26.5	26.5	25.0	25.8	24.0	25.0	26.0	27.0	29.0	31.0	31.0	
Italy	28.5	31.4	31.4	31.4	31.4	31.3	31.3	31.3	31.3	31.4	37.3	37.3	37.3	
Japan	30.9	30.9	33.1	37.0	37.0	39.5	39.5	39.5	39.5	39.5	39.5	39.5	39.5	
Korea S.	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	24.2	27.5	27.5	27.5	27.5	
Luxembourg	26.2	29.2	30.0	29.2	29.2	28.6	28.8	28.6	28.6	29.6	29.6	29.6	30.4	
Mexico	30.0	30.0	30.0	30.0	30.0	28.4	30.0	30.0	28.0	28.0	28.0	29.0	30.0	
Netherlands	25.0	25.0	25.0	25.0	25.5	25.5	25.5	25.5	25.5	25.5	25.5	29.6	31.5	
New Zealand	28.0	28.0	28.0	28.0	28.0	29.7	28.0	30.0	30.0	30.0	33.0	33.0	33.0	
Norway	24.0	25.0	27.0	27.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	
Poland	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	
Portugal	29.5	29.5	29.5	31.5	31.5	27.2	29.0	29.0	26.5	26.5	26.5	27.5	27.5	
Slovak Republic	21.6	21.6	24.0	24.0	23.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	20.4	
Slovenia	19.0	17.0	17.0	17.0	17.0	20.3	20.0	20.0	21.0	22.0	23.0	24.0	25.0	
Spain	25.0	25.0	28.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	32.5	35.0	35.0	
Sweden	22.0	22.0	22.0	22.0	22.0	26.3	26.3	26.3	26.3	28.0	28.0	28.0	28.0	
Switzerland	17.9	17.9	17.9	21.1	21.2	21.2	21.2	21.2	21.2	21.2	21.3	21.3	21.3	
Turkey	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	30.0	
United Kingdom	19.0	20.0	20.0	21.0	23.0	27.6	26.0	28.0	28.0	28.0	30.0	30.0	30.0	
United States	39.1	39.1	39.1	39.1	39.1	39.1	39.2	39.2	39.1	39.3	39.3	39.3	39.3	
Brazil	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	28.1	
China	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
India	34.6	34.6	34.6	34.0	34.0	33.6	32.4	33.2	34.0	34.0	34.0	33.7	36.6	
Russia	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	22.0	22.0	22.0	22.0	
Argentina	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	
Bolivia	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
Botswana	22.0	22.0	21.4	21.4	21.4	24.1	24.1	24.1	24.1	24.1	24.1	24.1	24.1	
Bulgaria	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	15.0	15.0	
Chad	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	45.0	
Colombia	40.0	40.0	34.5	34.0	34.0	33.0	33.0	33.0	33.0	33.0	34.0	35.0	35.0	
Costa Rica	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Croatia	30.0	30.0	30.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	
Dominican Republic	27.0	27.0	27.0	28.0	29.0	25.7	29.0	25.0	25.0	25.0	25.0	30.0	25.0	
Ecuador	12.0	12.0	12.0	12.0	12.0	14.7	14.0	15.0	15.0	15.0	15.0	15.0	15.0	
Egypt	17.4	17.4	17.4	25.0	25.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	34.0	
Ethiopia	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Fiji	20.0	20.0	20.0	20.0	20.0	27.7	28.0	28.0	29.0	31.0	31.0	31.0	31.0	
Georgia	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	20.0	20.0	20.0	
Ghana	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	
Guyana	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	39.0	
Hong Kong	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	17.5	
Indonesia	25.0	25.0	25.0	25.0	25.0	27.2	25.0	25.0	28.0	30.0	30.0	30.0	30.0	
Iran	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	

Jamaica	27.9	27.9	27.9	25.0	30.0	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	
Jordan	19.1	19.1	19.1	14.9	14.9	21.6	14.9	14.9	21.8	21.8	21.8	21.8	21.8	
Kazakhstan	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	40.5	40.5	40.5	40.5	
Kenya	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Kuwait	17.0	17.0	17.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	55.0	55.0	55.0	
Latvia	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.0	
Lesotho	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	31.6	
Madagascar	20.0	20.0	20.0	20.0	20.0	23.4	22.0	23.0	24.0	25.0	30.0	30.0	30.0	
Malaysia	24.0	24.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	26.0	27.0	28.0	28.0	
Morocco	31.0	31.0	31.4	30.0	30.0	30.0	30.0	30.0	30.0	30.0	35.0	35.0	35.0	
Nigeria	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0	
Pakistan	31.0	32.0	33.0	34.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	
Panama	25.0	25.0	25.0	25.0	25.0	29.7	25.0	27.5	30.0	30.0	30.0	30.0	30.0	
Paraguay	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	30.0	
Peru	27.2	27.2	28.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Philippines	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0	
Qatar	10.0	10.0	10.0	10.0	10.0	31.5	10.0	10.0	35.0	35.0	35.0	35.0	35.0	
Romania	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	
Rwanda	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Saudi Arabia	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	
Serbia	15.0	15.0	15.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Sierra Leone	30.0	30.0	30.0	30.0	30.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	
Singapore	17.0	17.0	17.0	17.0	17.0	17.7	17.0	17.0	18.0	18.0	18.0	18.0	20.0	
South Africa	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	29.0	29.0	30.0	
Tanzania	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Thailand	20.0	20.0	20.0	20.0	20.0	27.6	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Trinidad and Tobago	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	30.0	30.0	
Tunisia	26.2	26.2	26.2	25.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	35.0	35.0	
Uganda	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	
Ukraine	18.0	18.0	18.0	19.0	19.0	24.1	23.0	25.0	25.0	25.0	25.0	25.0	25.0	
Uruguay	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	30.0	30.0	
Uzbekistan	14.9	14.9	14.9	15.4	16.3	17.0	16.3	16.3	17.2	17.2	17.2	19.0	19.0	
Venezuela	34.5	34.5	34.5	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	34.0	
Vietnam	20.0	22.0	22.0	22.0	25.0	25.0	25.0	25.0	25.0	28.0	28.0	28.0	28.0	
Zambia	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	
G7*	30.2	30.8	31.1	31.7	31.9	32.6	32.8	33.1	33.4	33.5	36.2	36.2	36.3	
G7 w	33.9	34.2	34.5	35.3	35.4	36.1	36.1	36.2	36.3	36.4	37.8	37.8	37.9	
BRIC*	28.4	28.4	28.4	28.2	28.2	28.2	27.9	28.1	28.2	28.7	28.7	28.7	27.9	
BRIC w	27.1	27.1	27.1	27.0	27.0	27.0	26.8	26.9	27.0	27.2	27.2	27.2	26.9	
G20*	28.3	28.5	28.6	28.8	28.9	29.2	29.1	29.3	29.5	29.9	30.9	31.0	31.5	
G20 w	31.9	32.1	32.3	32.8	32.9	33.4	33.4	33.5	33.5	33.8	34.8	34.8	35.0	
OECD*	24.7	24.8	25.3	25.5	25.7	25.7	25.8	25.9	25.9	26.1	27.2	27.7	28.2	
OECD w	31.7	31.9	32.3	32.9	33.0	33.6	33.6	33.7	33.7	33.9	35.1	35.3	35.6	
Africa *	28.7	28.7	28.7	28.6	28.9	29.7	29.6	29.6	29.7	29.8	30.2	30.5	31.5	
Africa w	29.5	29.5	29.5	29.5	29.7	29.8	29.8	29.8	29.8	29.8	30.2	30.5	31.0	
Americas*	28.3	28.2	27.9	27.8	28.0	28.1	28.3	28.2	28.3	28.4	28.8	29.5	30.0	
Americas w	37.2	37.1	37.1	37.1	37.1	37.0	37.2	37.3	37.2	37.4	37.6	37.7	37.4	
Asia Oceania*	24.9	25.1	25.3	25.6	25.9	27.2	27.0	27.2	27.6	29.0	29.2	29.4	29.7	
Asia Oceania w	29.1	29.1	29.8	30.7	30.7	31.6	31.2	31.5	31.8	32.9	33.1	33.1	33.8	
Europe *	22.1	22.3	22.7	22.7	22.9	22.9	22.9	23.0	23.0	23.2	24.1	24.7	25.0	
Europe w	26.1	26.6	26.9	27.2	27.5	28.1	28.0	28.2	28.2	28.3	31.1	31.6	31.8	
MENA*	19.8	19.9	20.1	20.1	20.0	22.4	19.4	19.5	22.8	22.9	28.1	28.3	30.7	
MENA w	20.8	20.9	21.1	21.4	21.3	22.1	20.8	20.9	22.3	22.4	24.5	24.8	29.1	
92 Country*	24.7	24.8	25.0	25.0	25.2	25.8	25.5	25.6	26.0	26.4	27.4	27.9	28.6	
92 Country W	30.4	30.6	30.9	31.4	31.5	32.0	31.9	32.0	32.1	32.3	33.4	33.5	33.7	

W = Weighted Average * = Simple Average

TABLE A.2 MARGINAL EFFECTIVE TAX RATES BY COUNTRY FOR MANUFACTURING AND SERVICES FOR 2010, 2015, 2016 AND 2017





















	Overall				Manufacturing				Service				Difference				Ranking	
	Overall				Manufacturing				Service				Difference				Competitiveness	
	Overall				Manufacturing				Service				Difference				Overall METR	
	2017				2016				2015				2010				2017	2010
Australia	28.7	29.9	28.6	1.3	28.7	29.9	28.6	1.3	28.7	29.9	28.6	1.3	28.7	29.9	28.6	1.3	75	77
Austria	26.0	25.7	26.1	0.4	26.0	25.7	26.1	0.4	26.0	25.7	26.1	0.4	26.0	25.7	26.0	0.3	70	70
Belgium	29.1	28.1	29.3	1.2	25.0	24.0	25.2	1.2	16.5	15.8	16.7	0.9	13.4	12.8	13.5	0.7	76	24
Canada	20.9	16.2	22.5	6.3	20.9	15.7	22.7	7.0	21.1	15.7	22.9	7.2	20.8	15.0	24.1	9.1	51	55
Chile	8.2	9.0	8.0	1.0	7.8	8.5	7.6	0.9	7.1	7.8	6.9	0.9	5.2	5.7	5.1	0.6	9	3
Czech Republic	15.0	14.9	15.1	0.2	15.0	14.9	15.1	0.2	15.0	14.9	15.1	0.2	14.3	14.2	14.3	0.1	28	28
Denmark	15.7	17.1	15.5	1.6	15.7	17.1	15.5	1.6	16.8	18.3	16.6	1.7	18.0	19.5	17.7	1.8	31	40
Estonia	9.5	9.5	9.5	0.0	9.5	9.5	9.5	0.0	9.5	9.5	9.5	0.0	10.1	10.1	10.1	0.0	11	15
Finland	11.2	16.9	9.5	7.4	11.2	16.9	9.5	7.4	15.7	16.9	15.3	1.6	19.6	21.0	19.2	1.8	17	50
France	38.5	39.8	38.3	1.5	38.5	39.8	38.3	1.5	38.5	39.8	38.3	1.5	36.2	37.4	36.0	1.4	87	85
Germany	26.7	28.5	26.2	2.3	26.7	28.5	26.2	2.3	26.7	28.5	26.2	2.3	27.2	29.0	26.6	2.4	71	73
Greece	11.9	10.4	12.0	1.6	11.9	10.4	12.0	1.6	11.9	10.4	12.0	1.6	9.5	8.3	9.6	1.3	20	12
Hungary	15.0	15.7	14.8	0.9	15.0	15.7	14.8	0.9	15.0	15.7	14.8	0.9	14.3	14.9	14.1	0.8	29	27
Iceland	13.3	9.2	14.0	4.8	13.3	9.2	14.0	4.8	13.3	9.2	14.0	4.8	11.1	7.4	11.7	4.3	22	16
Ireland	13.0	12.2	13.3	1.1	13.0	12.2	13.3	1.1	13.0	12.2	13.3	1.1	16.0	15.1	16.3	1.2	21	33
Israel	20.4	18.7	20.7	2.0	21.0	19.2	21.3	2.1	21.9	20.0	22.2	2.2	17.7	15.9	18.0	2.1	49	38
Italy	6.0	6.3	6.0	0.3	6.0	6.3	6.0	0.3	6.0	6.3	6.0	0.3	26.7	24.7	27.1	2.4	5	71
Japan	40.9	40.3	41.1	0.8	40.9	40.3	41.1	0.8	42.2	41.6	42.3	0.7	46.0	45.6	46.1	0.5	89	91
Korea S.	30.0	31.7	29.2	2.5	30.0	31.7	29.2	2.5	30.0	31.7	29.2	2.5	30.0	31.7	29.2	2.5	77	79
Luxembourg	15.4	18.0	15.3	2.7	17.4	18.0	17.4	0.6	17.9	18.5	17.9	0.6	17.0	17.5	17.0	0.5	30	36
Mexico	19.7	21.0	19.4	1.6	19.7	21.0	19.4	1.6	19.7	21.0	19.4	1.6	19.8	21.1	19.4	1.7	47	51
Netherlands	21.1	19.9	21.3	1.4	21.1	19.9	21.3	1.4	21.1	19.9	21.3	1.4	21.5	20.2	21.7	1.5	53	56
New Zealand	20.5	20.9	20.4	0.5	20.5	20.9	20.4	0.5	20.5	20.9	20.4	0.5	17.7	15.5	18.0	2.5	50	37
Norway	21.9	20.5	22.1	1.6	22.8	21.3	23.0	1.7	24.5	23.0	24.7	1.7	23.8	22.4	24.0	1.6	56	61
Poland	11.6	10.4	12.0	1.6	11.6	10.4	12.0	1.6	11.6	10.4	12.0	1.6	11.6	10.4	12.0	1.6	19	18
Portugal	25.5	23.1	25.9	2.8	25.5	23.1	25.9	2.8	25.5	23.1	25.9	2.8	25.2	22.8	25.6	2.8	68	67
Slovak Republic	13.9	18.3	11.9	6.4	13.9	18.3	11.9	6.4	15.5	19.1	13.9	5.2	13.4	16.6	11.9	4.7	24	23
Slovenia	6.3	5.9	6.4	0.5	5.5	5.1	5.6	0.5	5.5	5.1	5.6	0.5	6.7	6.3	6.9	0.6	6	6
Spain	20.0	18.8	20.2	1.4	20.0	18.8	20.2	1.4	22.5	21.2	22.7	1.5	24.3	23.0	24.6	1.6	48	62
Sweden	17.9	16.4	18.2	1.8	17.9	16.4	18.2	1.8	17.9	16.4	18.2	1.8	20.1	18.5	20.5	2.0	38	53
Switzerland	10.0	9.2	10.3	1.1	10.0	9.2	10.3	1.1	10.0	9.2	10.3	1.1	15.4	14.5	15.7	1.2	14	30
Turkey	7.4	6.6	7.6	1.0	7.4	6.6	7.6	1.0	7.3	6.4	7.6	1.2	7.3	6.4	7.5	1.1	7	7
United Kingdom	24.0	23.0	24.1	1.1	25.0	24.0	25.1	1.1	25.0	24.0	25.1	1.1	30.2	27.9	30.4	2.5	65	80
United States	34.6	32.1	36.0	3.9	34.6	39.9	43.8	3.9	34.6	32.1	36.0	3.9	34.6	32.1	36.0	3.9	83	84
Brazil	42.6	20.1	47.3	27.2	42.6	20.1	47.3	27.2	42.6	20.1	47.3	27.2	43.7	22.2	48.2	26.0	90	90
China	23.2	26.0	21.2	4.8	23.2	26.0	21.2	4.8	25.4	27.9	23.5	4.4	25.4	27.9	23.5	4.4	61	68
India	52.1	44.6	54.4	9.8	60.2	44.6	65.0	20.4	60.5	44.6	65.5	20.9	61.7	51.0	65.1	14.1	92	92
Russia	27.9	31.2	27.0	4.2	27.9	31.2	27.0	4.2	27.9	31.2	27.0	4.2	27.8	31.1	27.0	4.1	73	75
Argentina	38.9	44.8	37.0	7.8	38.9	44.8	37.0	7.8	30.7	37.7	28.4	9.3	29.9	34.6	28.4	6.2	88	78
Bolivia	25.2	32.0	23.7	8.3	25.2	32.0	23.7	8.3	24.6	31.5	22.9	8.6	24.6	31.4	23.0	8.4	67	63
Botswana	18.2	18.1	18.2	0.1	18.2	18.1	18.2	0.1	27.5	24.1	27.8	3.7	19.1	13.5	19.7	6.2	39	46
Bulgaria	8.3	7.9	8.3	0.4	8.3	7.9	8.3	0.4	8.3	7.9	8.3	0.4	6.3	6.3	6.2	0.1	10	5
Chad	34.0	37.8	33.3	4.5	34.0	37.8	33.3	4.5	36.3	39.9	35.7	4.2	42.8	46.0	42.2	3.8	81	89
Colombia	23.7	27.4	23.0	4.4	23.7	27.4	23.0	4.4	20.0	23.3	19.4	3.9	13.0	15.9	12.4	3.5	64	22
Costa Rica	25.7	31.0	24.7	6.3	25.7	31.0	24.7	6.3	25.7	31.0	24.7	6.3	25.7	31.0	24.7	6.3	69	69
Croatia	17.0	19.6	16.5	3.1	17.0	19.6	16.5	3.1	17.0	19.6	16.5	3.1	12.9	14.9	12.6	2.3	36	21
Dominican Republic	30.7	33.3	30.1	3.2	30.7	33.3	30.1	3.2	30.7	33.3	30.1	3.2	30.9	31.7	30.7	1.0	79	81
Ecuador	35.1	36.5	34.8	1.7	35.1	36.5	34.8	1.7	35.1	36.5	34.8	1.7	40.2	41.7	39.9	1.8	86	87
Egypt	35.0	39.5	33.7	5.8	35.0	39.5	33.7	5.8	35.0	39.5	33.7	5.8	34.4	38.5	33.2	5.3	85	83
Ethiopia	16.2	29.1	15.0	14.1	16.2	29.1	15.0	14.1	16.2	29.1	15.0	14.1	18.0	30.2	16.8	13.4	32	39
Fiji	13.5	16.5	12.9	3.6	13.5	16.5	12.9	3.6	12.7	16.5	12.0	4.5	18.5	22.5	17.9	4.6	23	43
Georgia	23.2	24.1	23.1	1.0	23.2	24.1	23.1	1.0	23.2	24.1	23.1	1.0	19.1	20.8	18.8	2.0	60	47
Ghana	10.0	15.1	9.3	5.8	10.0	15.1	9.3	5.8	10.0	15.1	9.3	5.8	9.6	14.7	8.9	5.8	13	13
Guyana	34.3	28.1	35.0	6.9	34.3	28.1	35.0	6.9	34.3	28.1	35.0	6.9	34.3	28.1	35.0	6.9	82	82
Hong Kong	5.5	2.5	5.6	3.1	5.5	2.5	5.6	3.1	5.5	2.5	5.6	3.1	4.9	1.9	4.9	3.0	4	2
Indonesia	23.1	26.2	22.0	4.2	23.1	26.2	22.0	4.2	23.1	26.2	22.0	4.2	23.0	26.1	21.8	4.3	59	59
Iran	16.6	29.4	13.7	15.7	16.6	29.4	13.7	15.7	16.6	29.4	13.7	15.7	16.3	28.9	13.4	15.5	35	35
Jamaica	34.7	37.7	34.4	3.3	34.7	37.7	34.4	3.3	34.7	37.7	34.4	3.3	27.3	19.5	28.1	8.6	84	74
Jordan	17.0	15.8	17.3	1.5	17.0	15.8	17.3	1.5	17.0	15.8	17.3	1.5	12.8	14.1	12.5	1.6	37	20
Kazakhstan	27.4	29.7	27.0	2.7	27.4	29.7	27.0	2.7	26.2	20.8	27.0	6.2	21.7	25.3	21.1	4.2	72	57
Kenya	19.0	-3.1	23.4	26.5	19.0	-3.1	23.4	26.5	19.0	-3.1	23.4	26.5	19.0	-2.8	23.4	26.2	44	44

	Overall Manufacturing Service Difference				Overall Manufacturing Service Difference				Overall Manufacturing Service Difference				Overall Manufacturing Service Difference				Ranking Competitiveness Overall METR	
	2017				2016				2015				2010				2017	2010
Kuwait	9.7	10.5	9.6	0.9	9.7	10.5	9.6	0.9	9.7	10.5	9.6	0.9	9.8	10.5	9.7	0.8	12	14
Latvia	19.1	17.5	19.3	1.8	19.1	17.5	19.3	1.8	19.1	17.5	19.3	1.8	8.0	8.7	7.9	0.8	45	9
Lesotho	24.6	12.3	27.0	14.7	24.6	12.3	27.0	14.7	24.6	12.3	27.0	14.7	24.6	12.3	27.0	14.7	66	64
Madagascar	16.6	20.1	15.8	4.3	16.6	20.1	15.8	4.3	16.6	20.1	15.8	4.3	19.4	23.2	18.5	4.7	34	49
Malaysia	22.4	24.1	21.6	2.5	22.4	24.1	21.6	2.5	23.1	24.8	22.3	2.5	23.1	24.8	22.3	2.5	57	60
Morocco	16.4	20.2	15.4	4.8	16.4	20.2	15.4	4.8	16.7	20.5	15.7	4.8	16.0	19.7	15.0	4.7	33	34
Nigeria	14.1	20.7	13.3	7.4	14.1	20.7	13.3	7.4	14.1	20.7	13.3	7.4	13.8	20.3	12.9	7.4	25	26
Pakistan	33.2	32.3	33.4	1.1	33.6	32.6	33.8	1.2	34.0	33.0	34.3	1.3	41.6	43.8	41.1	2.7	80	88
Panama	18.6	19.4	18.5	0.9	18.6	19.4	18.5	0.9	18.6	19.4	18.5	0.9	20.6	21.4	20.5	0.9	42	54
Paraguay	7.8	10.3	7.3	3.0	7.8	10.3	7.3	3.0	7.8	10.3	7.3	3.0	8.7	10.3	8.4	1.9	8	11
Peru	23.0	24.0	22.7	1.3	23.0	24.0	22.7	1.3	23.6	24.0	23.5	0.5	24.8	31.6	23.2	8.4	58	65
Philippines	28.0	28.9	27.7	1.2	28.0	28.9	27.7	1.2	28.0	28.9	27.7	1.2	28.0	28.9	27.7	1.2	74	76
Qatar	5.4	7.8	5.0	2.8	5.4	7.8	5.0	2.8	5.4	7.8	5.0	2.8	5.4	7.8	5.0	2.8	3	4
Romania	4.2	5.2	3.9	1.3	4.2	5.2	3.9	1.3	4.2	5.2	3.9	1.3	4.2	5.3	3.9	1.4	2	1
Rwanda	18.3	25.3	17.6	7.7	18.3	25.3	17.6	7.7	18.3	25.3	17.6	7.7	18.3	25.4	17.7	7.7	40	42
Saudi Arabia	18.6	17.4	18.9	1.5	18.6	17.4	18.9	1.5	18.6	17.4	18.9	1.5	19.9	17.4	20.4	3.0	43	52
Serbia	10.9	12.1	10.6	1.5	10.9	12.1	10.6	1.5	10.9	12.1	10.6	1.5	8.0	8.9	7.8	1.1	16	10
Sierra Leone	18.5	13.1	18.8	5.7	18.5	13.1	18.8	5.7	18.5	13.1	18.8	5.7	22.9	17.1	23.3	6.2	41	58
Singapore	11.5	9.2	12.4	3.2	11.5	9.2	12.4	3.2	11.5	9.1	12.3	3.2	11.5	9.2	12.3	3.1	18	17
South Africa	14.3	15.6	14.0	1.6	14.3	15.6	14.0	1.6	14.3	15.6	14.0	1.6	14.3	15.6	14.1	1.5	26	29
Tanzania	21.4	17.0	22.0	5.0	21.4	17.0	22.0	5.0	21.4	17.0	22.0	5.0	19.1	14.4	19.7	5.3	55	45
Thailand	30.4	32.1	29.5	2.6	30.4	32.1	29.5	2.6	30.4	32.1	29.5	2.6	15.6	19.2	13.8	5.4	78	32
Trinidad and Tobago	21.0	15.0	24.0	9.0	21.0	15.0	24.0	9.0	20.2	14.1	23.3	9.2	19.2	13.0	22.3	9.3	52	48
Tunisia	19.6	21.0	19.4	1.6	19.6	21.0	19.4	1.6	19.6	21.0	19.4	1.6	25.1	27.6	24.6	3.0	46	66
Uganda	21.1	26.7	20.4	6.3	21.1	26.7	20.4	6.3	21.1	26.7	20.4	6.3	15.6	10.9	16.2	5.3	54	31
Ukraine	3.8	9.6	2.2	7.4	3.8	9.6	2.2	7.4	3.8	9.6	2.2	7.4	7.5	15.3	5.3	10.0	1	8
Uruguay	23.6	21.9	24.0	2.1	23.6	21.9	24.0	2.1	23.6	21.9	24.0	2.1	26.7	28.6	26.4	2.2	63	72
Uzbekistan	49.4	50.2	49.2	1.0	49.4	50.2	49.2	1.0	49.4	50.2	49.2	1.0	38.2	40.7	37.6	3.1	91	86
Venezuela	23.4	19.6	24.4	4.8	23.4	19.6	24.4	4.8	19.9	19.6	20.0	0.4	18.2	18.4	18.2	0.2	62	41
Vietnam	10.5	16.0	8.8	7.2	11.7	17.7	9.9	7.8	11.7	17.7	9.9	7.8	13.8	20.4	11.7	8.7	15	25
Zambia	14.5	19.1	13.9	5.2	14.5	19.1	13.9	5.2	20.2	24.5	19.7	4.8	12.2	16.9	11.6	5.3	27	19

**TABLE A.3 MARGINAL EFFECTIVE TAX RATES BY COUNTRY 2005-2017
(EXCLUDES TRANSFER TAXES)**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Australia	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	25.4	
Austria	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	23.3	
Belgium	22.5	12.5	12.5	13.4	13.4	13.4	13.4	13.4	13.4	13.3	16.5	25.0	25.0	
Canada	38.8	35.5	31.0	28.5	27.8	20.9	19.7	18.3	19.6	19.7	20.4	20.3	20.2	
Chile	4.8	4.8	4.8	4.8	4.8	4.8	5.9	5.0	5.9	6.2	6.8	7.4	7.4	
Czech Republic	17.0	15.5	15.5	13.4	12.7	12.0	12.0	12.4	12.0	12.0	12.0	12.0	12.0	
Denmark	20.0	20.0	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.2	16.4	15.3	15.3	
Estonia	12.0	11.4	10.7	10.1	10.1	10.1	10.1	10.1	10.1	10.1	9.5	10.1	10.1	
Finland	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.4	15.5	12.3	12.3	12.3	12.3	
France	34.7	33.4	34.4	34.4	34.4	33.3	34.4	34.4	34.4	35.0	35.7	35.7	35.7	
Germany	33.6	33.6	33.6	24.1	24.1	24.1	24.1	24.1	24.1	24.1	23.6	23.6	23.6	
Greece	13.5	11.8	9.7	9.7	9.7	9.2	7.4	9.5	10.2	10.2	11.6	11.6	11.6	
Hungary	13.1	14.2	14.7	14.7	14.7	14.3	14.3	14.6	14.3	14.3	15.0	15.0	15.0	
Iceland	10.8	10.8	10.8	8.9	8.9	10.8	12.1	9.2	12.1	12.1	12.1	12.1	12.1	
Ireland	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	
Israel	18.1	18.1	16.7	15.4	14.7	14.0	13.4	14.6	14.0	15.0	15.0	14.0	14.0	
Italy	31.9	31.9	31.9	26.7	26.6	26.6	26.6	26.0	19.2	10.7	6.0	6.0	6.0	
Japan	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	44.5	44.5	42.2	40.9	40.9	
Korea S.	24.0	24.0	24.0	24.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	
Luxembourg	14.9	14.4	14.4	13.4	11.6	11.6	11.7	11.6	12.1	12.0	12.6	12.0	12.0	
Mexico	17.4	16.7	16.0	16.0	16.0	17.4	17.4	16.3	17.4	17.4	17.4	17.4	17.4	
Netherlands	22.1	20.6	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.0	17.0	17.0	17.0	
New Zealand	19.9	19.9	19.9	17.7	17.7	17.7	20.5	18.4	20.5	20.5	20.5	20.5	20.5	
Norway	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	23.8	22.9	22.9	21.1	21.1	
Poland	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.4	11.4	11.4	11.4	
Portugal	19.2	19.2	18.4	18.4	18.4	20.4	20.4	18.9	22.4	22.3	20.7	20.7	20.7	
Slovak Republic	12.9	13.4	13.4	13.4	13.4	13.4	13.4	13.4	14.8	15.5	15.5	13.9	13.9	
Slovenia	14.4	13.7	13.0	7.6	7.2	6.7	6.7	6.9	5.5	5.5	5.5	5.5	5.5	
Spain	27.8	27.8	25.6	23.5	23.5	23.5	23.5	23.5	23.5	23.4	21.7	19.2	19.2	
Sweden	19.4	19.4	19.4	19.4	18.1	18.1	18.1	18.1	14.8	14.8	14.8	14.8	14.8	
Switzerland	15.8	15.8	15.8	15.2	15.2	15.2	15.2	15.2	15.2	15.2	9.8	9.8	9.8	
Turkey	11.1	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.8	5.8	5.8	5.8	
United Kingdom	28.8	28.8	28.8	27.6	27.7	27.8	26.0	27.5	24.8	22.7	22.4	22.4	22.4	
United States	35.2	35.2	34.9	34.9	34.9	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	
Brazil	42.9	42.9	42.9	40.8	42.0	42.2	42.7	42.7	43.6	42.4	40.9	40.9	40.9	
China	46.1	46.1	46.1	46.1	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.8	20.8	
India	56.6	54.9	57.9	57.9	57.9	57.5	57.1	57.6	57.9	55.8	55.5	55.5	55.5	
Russia	34.3	31.9	31.9	31.9	27.8	27.8	27.8	27.8	27.8	27.9	27.9	27.9	27.9	
Argentina	30.0	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.4	24.2	25.2	34.5	34.5	
Bolivia	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	24.4	21.5	21.5	
Botswana	15.0	15.0	15.0	15.0	15.0	15.4	16.2	15.1	14.2	14.2	14.8	14.4	14.4	
Bulgaria	7.5	7.5	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	6.8	6.8	6.8	
Chad	39.1	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	35.5	27.3	27.3	27.3	
Colombia	26.4	26.4	34.3	32.8	31.7	31.3	35.8	32.4	36.4	33.9	16.3	20.2	20.2	
Costa Rica	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.7	24.7	24.7	24.7	
Croatia	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	8.8	13.1	13.1	13.1	
Dominican Republic	22.6	27.3	22.6	22.6	22.6	22.6	26.4	23.3	24.6	23.7	22.8	29.4	29.4	

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Ecuador	38.3	38.3	38.3	38.3	38.3	38.3	37.6	38.1	36.1	30.0	33.0	33.0	33.0	
Egypt	37.7	34.2	34.2	34.2	34.2	34.2	34.2	34.2	35.2	35.3	34.7	34.7	34.7	
Ethiopia	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.6	14.6	14.6	14.6	
Fiji	20.9	20.9	20.9	20.9	19.3	18.5	18.5	18.2	12.6	12.6	12.6	12.6	12.6	
Georgia	22.4	22.4	22.4	19.1	19.1	19.1	19.1	19.1	19.1	19.2	23.2	23.2	23.2	
Ghana	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	8.9	8.9	8.9	8.9	
Guyana	37.8	37.8	37.8	37.8	34.7	34.3	37.5	34.7	34.3	34.3	34.3	34.3	34.3	
Hong Kong	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	
Indonesia	24.0	24.0	24.0	24.0	22.3	19.6	19.6	21.5	19.6	19.6	19.6	19.6	19.6	
Iran	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.2	8.0	8.0	8.0	
Jamaica	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	18.3	14.5	29.4	29.4	29.4	
Jordan	16.8	16.8	16.8	16.8	16.8	8.6	8.6	16.5	8.6	8.6	10.0	10.0	10.0	
Kazakhstan	29.2	29.2	29.2	29.2	21.7	21.7	21.7	21.7	21.7	21.7	27.4	27.4	27.4	
Kenya	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.7	14.7	14.7	14.7	
Kuwait	44.6	44.6	44.6	8.5	8.5	8.5	8.5	8.5	8.5	8.5	9.7	9.7	9.7	
Latvia	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.2	17.6	17.6	17.6	
Lesotho	34.2	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	24.6	
Madagascar	20.6	20.6	20.6	16.5	15.8	15.0	14.2	15.2	12.8	12.7	12.7	12.7	12.7	
Malaysia	19.6	19.6	18.8	18.0	17.3	17.3	17.3	17.3	17.3	17.2	17.2	16.5	16.5	
Morocco	16.2	16.2	16.2	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.9	13.7	13.7	
Nigeria	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.7	13.7	13.7	13.7	
Pakistan	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	26.8	32.8	32.4	32.4	
Panama	21.5	21.5	21.5	21.5	21.5	19.5	17.5	21.3	17.5	17.5	17.5	17.5	17.5	
Paraguay	24.8	8.7	8.7	8.7	8.7	8.7	8.7	8.7	7.8	7.8	7.8	7.8	7.8	
Peru	24.6	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	24.8	21.7	21.0	21.0	
Philippines	28.6	28.2	28.2	28.2	23.8	23.8	23.8	23.8	23.8	23.7	27.7	27.7	27.7	
Qatar	22.4	22.4	22.4	22.4	22.4	5.4	5.4	19.4	5.4	5.4	5.4	5.4	5.4	
Romania	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	
Rwanda	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	
Saudi Arabia	19.9	19.9	19.9	19.9	19.9	19.9	19.9	19.9	18.6	18.6	18.6	18.6	18.6	
Serbia	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	9.1	9.1	9.1	9.1	9.1	
Sierra Leone	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	18.6	18.5	18.5	18.5	18.5	
Singapore	10.8	9.6	9.6	9.6	9.6	9.0	9.0	9.4	9.0	8.9	8.9	8.9	8.9	
South Africa	15.6	14.9	14.9	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2	
Tanzania	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.0	20.0	20.0	20.0	
Thailand	15.6	15.6	15.6	15.6	15.6	15.6	15.6	13.9	9.5	9.5	9.5	9.5	9.5	
Trinidad and Tobago	17.4	17.4	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.8	13.9	14.9	14.9	
Tunisia	25.7	25.7	21.9	21.9	21.9	21.9	21.9	21.9	21.9	18.4	16.0	16.0	16.0	
Uganda	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.7	19.6	19.6	19.6	
Ukraine	5.6	5.6	5.6	5.6	5.6	5.6	4.8	5.0	3.3	3.1	2.8	2.8	2.8	
Uruguay	28.4	28.4	28.4	24.8	24.8	24.8	24.8	24.5	23.1	23.1	21.5	21.5	21.5	
Uzbekistan	39.1	39.1	38.5	38.5	38.5	38.2	38.2	38.5	38.2	38.0	49.4	49.4	49.4	
Venezuela	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	17.6	17.6	17.6	
Vietnam	15.5	15.5	15.5	15.5	13.3	13.3	13.3	13.3	13.3	11.3	11.3	11.3	11.3	
Zambia	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.0	8.0	8.0	8.0	

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
G7*	35.6	34.9	34.4	31.7	31.6	30.5	30.2	30.1	28.7	27.3	26.4	26.2	26.2	
G7 w	36.3	36.0	35.8	34.4	34.3	33.9	33.7	33.8	33.0	32.4	31.7	31.5	31.5	
BRIC*	45.0	43.9	44.7	44.2	36.9	36.9	36.9	37.0	37.3	36.5	36.1	36.3	36.3	
BRIC w	46.2	45.6	46.1	45.8	29.6	29.6	29.5	29.6	29.8	29.3	29.1	29.6	29.6	
G20*	31.4	30.3	30.2	29.1	27.3	26.8	26.7	26.7	26.2	25.4	25.1	25.5	25.5	
G20 w	36.3	35.9	35.8	34.8	31.8	31.4	31.3	31.4	30.8	30.3	29.8	29.8	29.8	
OECD*	20.9	20.2	19.6	18.6	18.4	18.2	18.2	18.1	18.0	17.6	17.3	17.3	17.3	
OECD w	32.4	32.0	31.6	30.4	30.3	30.0	29.9	29.9	29.3	28.8	28.2	28.0	28.0	
Africa*	19.1	18.1	17.9	17.6	17.5	17.5	17.5	17.5	17.0	16.7	16.4	16.4	16.4	
Africa w	15.5	15.2	15.0	14.7	14.7	14.7	14.7	14.7	14.7	14.4	14.3	14.3	14.3	
Americas*	26.0	24.9	24.6	24.1	23.9	23.5	23.9	23.5	23.4	22.6	22.6	23.6	23.6	
Americas w	34.3	34.0	33.5	33.2	33.2	32.6	32.6	32.4	32.6	32.5	32.3	32.5	32.5	
Asia Oceana*	26.5	26.3	26.4	26.2	23.4	23.1	23.3	23.2	22.5	22.2	23.6	23.5	23.5	
Asia Oceana w	40.6	40.5	40.7	40.7	32.1	32.0	32.0	32.1	31.4	31.2	30.6	30.4	30.4	
Europe*	17.5	16.9	16.5	15.6	15.3	15.3	15.2	15.2	15.1	14.6	14.9	14.9	14.9	
Europe w	27.6	27.0	26.8	24.1	23.8	23.7	23.6	23.7	22.6	21.3	20.6	20.6	20.6	
MENA*	21.8	20.9	20.8	16.4	16.3	13.7	13.7	16.0	13.7	13.8	14.4	14.3	14.3	
MENA w	17.1	15.1	14.9	13.2	13.1	12.1	12.0	12.9	11.9	12.0	12.0	11.9	11.9	
92 Country*	21.6	20.9	20.7	19.7	19.0	18.6	18.7	18.9	18.3	17.9	18.3	18.5	18.5	
92 Country W	33.2	32.8	32.6	31.6	29.1	28.8	28.7	28.7	28.2	27.8	27.3	27.3	27.3	

APPENDIX B: DATA PARAMETERS

	Effective QT Rate		Inflation	Tax Depreciation Range	Inventory Accounting	Asset	Capital Input Sale	Capital Transfer	Financial Transfer
	2017	2010	2017	2017		Model Parameters - Average Tax Rates			
Australia	30.0	30.0	2.3%	2.6% - 22.1%	Optional		5.6%		
Austria	25.0	25.0	2.1%	3.1% - 10.6%	Optional		4.6%		
Belgium	34.0	34.0	1.7%	7.0% - 32.9%	LIFO				
Canada	26.6	29.4	2.0%	4.0% - 55.0%	FIFO		1.5%		
Chile	25.0	17.0	3.4%	7.5% - 39.7%	LIFO				▶
Czech Republic	19.0	19.0	1.5%	3.1% - 20.8%	Optional		4.0%		
Denmark	22.0	25.0	1.4%	5.1% - 22.7%	FIFO		0.6%		
Estonia	16.0	21.0	2.2%	9.9% - 21.6%	LIFO				
Finland	20.0	26.0	1.7%	8.2% - 28.7%	FIFO		4.0%		▶
France	38.0	34.4	1.1%	3.1% - 26.5%	Optional		5.1%		▶
Germany	29.7	30.2	1.3%	3.1% - 14.4%	LIFO		5.1%		
Greece	29.0	24.0	0.2%	5.3% - 39.2%	LIFO				▶
Hungary	19.0	19.0	2.2%	3.3% - 48.1%	Optional				
Iceland	20.0	18.0	3.3%	3.3% - 30.5%	FIFO		1.6%		
Ireland	12.5	12.5	0.9%	2.0% - 12.4%	FIFO		2.0%		▶
Israel	24.0	25.0	1.3%	4.2% - 29.8%	Optional		10.0%		
Italy	28.5	31.3	1.5%	5.1% - 15.3%	LIFO				▶
Japan	30.9	39.5	0.7%	2.0% - 21.3%	Optional	1.6%			
Korea S.	24.2	24.2	1.9%	2.6% - 20.1%	LIFO		3.5%		▶
Luxembourg	26.2	28.6	1.8%	4.1% - 21.0%	Optional		7.0%		
Mexico	30.0	30.0	3.6%	5.1% - 15.4%	LIFO		3.5%		
Netherlands	25.0	25.5	1.8%	2.9% - 20.9%	Optional		6.0%		
New Zealand	28.0	30.0	1.5%	6.5% - 22.1%	Optional				
Norway	24.0	28.0	1.7%	3.6% - 24.5%	FIFO		2.5%		
Poland	19.0	19.0	1.6%	2.6% - 25.8%	LIFO				▶
Portugal	29.5	29.0	1.4%	2.2% - 19.8%	Optional		7.3%		▶
Slovak Republic	21.6	21.0	1.7%	5.0% - 17.3%	Optional				
Slovenia	19.0	20.0	1.2%	3.5% - 21.6%	Optional				
Spain	25.0	30.0	1.3%	2.1% - 29.2%	Optional		1.1%		
Sweden	22.0	26.3	0.7%	3.2% - 19.5%	FIFO		4.3%		
Switzerland	17.9	21.2	-0.4%	5.7% - 31.9%	LIFO				▶
Turkey	20.0	20.0	7.9%	12.5% - 48.8%	Optional				▶
United Kingdom	19.0	28.0	2.3%	1.4% - 17.7%	FIFO		4.0%		▶
United States	39.1	39.2	2.0%	4.0% - 55.0%	Optional				
Brazil	34.0	34.0	6.7%	4.1% - 11.7%	Optional		12.5%	4.0%	▶
China	25.0	25.0	2.8%	7.0% - 14.6%	Optional		1.0%	4.0%	
India	34.6	33.2	8.3%	5.1% - 35.0%	Optional	0.6%		6.0%	▶
Russia	20.0	20.0	8.7%	3.1% - 20.8%	Optional	1.3%			
Argentina	35.0	35.0	17.2%	4.1% - 11.7%	LIFO	0.3%			▶
Bolivia	25.0	25.0	6.0%	2.6% - 16.9%	FIFO			3.0%	▶
Botswana	22.0	24.1	5.9%	2.5% - 24.5%	Optional			5.0%	
Bulgaria	10.0	10.0	1.3%	4.0% - 30.2%	Optional	0.2%		1.6%	
Chad	40.0	40.0	2.4%	5.1% - 16.2%	Optional			10.0%	▶
Colombia	40.0	33.0	3.3%	5.0% - 19.4%	LIFO	0.7%			▶
Costa Rica	30.0	30.0	4.0%	2.1% - 14.0%	LIFO			1.5%	
Croatia	30.0	22.0	1.4%	5.0% - 29.8%	Optional			5.0%	
Dominican Republic	27.0	25.0	4.2%	6.8% - 17.7%	LIFO	0.5%		3.0%	
Ecuador	12.0	15.0	4.0%	5.0% - 15.0%	LIFO	0.1%		4.0%	
Egypt	17.4	20.0	9.4%	5.1% - 26.8%	Optional		10.0%		▶
Ethiopia	30.0	30.0	16.3%	5.0% - 21.0%	Optional				▶
Fiji	20.0	28.0	3.1%	5.0% - 17.8%	FIFO				▶
Georgia	15.0	15.0	2.8%	7.0% - 21.8%	Optional	1.0%			
Ghana	25.0	25.0	12.4%	10.0% - 29.6%	Optional			0.6%	▶
Guyana	39.0	39.0	2.0%	2.8% - 35.1%	Optional	0.5%			

	Effective QT Rate		Inflation	Tax Depreciation Range	Inventory Accounting	Asset	Capital Input Sale	Capital Transfer	Financial Transfer
	2017	2010	2017	2017		Model Parameters - Average Tax Rates			
Hong Kong	16.5	16.5	4.2%	3.6% - 92.9%	Optional		5.0%		
Indonesia	25.0	25.0	5.8%	5.1% - 14.0%	Optional		5.3%		
Iran	25.0	25.0	23.6%	5.0% - 10.4%	Optional		10.0%		▶
Jamaica	27.9	33.3	7.1%	3.8% - 12.8%	Optional	2.0%	9.0%		▶
Jordan	19.1	14.9	3.3%	4.0% - 23.9%	Optional		9.0%		
Kazakhstan	32.0	32.0	5.2%	10.0% - 26.0%	Optional	1.5%			
Kenya	30.0	30.0	8.5%	2.5% - 28.5%	Optional		4.8%		▶
Kuwait	17.0	15.0	3.4%	4.2% - 20.4%	Optional				
Latvia	15.0	15.0	1.5%	10.0% - 40.8%	Optional	1.5%	2.0%		
Lesotho	22.5	22.5	4.9%	5.0% - 20.0%	FIFO				
Madagascar	20.0	23.0	7.0%	5.0% - 16.5%	Optional		5.0%		
Malaysia	24.0	25.0	2.4%	2.8% - 16.7%	FIFO		2.0%		▶
Morocco	31.0	30.0	1.2%	7.6% - 33.1%	Optional		3.5%		▶
Nigeria	32.0	32.0	9.7%	10.0% - 24.8%	FIFO				▶
Pakistan	31.0	35.0	7.8%	10.0% - 25.2%	Optional	1.5%	2.5%		
Panama	25.0	27.5	3.7%	6.5% - 22.1%	LIFO		2.0%		
Paraguay	10.0	10.0	4.6%	3.3% - 15.9%	Optional				
Peru	27.2	30.0	3.3%	4.6% - 20.0%	Optional		3.0%		
Philippines	30.0	30.0	3.3%	6.5% - 22.1%	Optional				▶
Qatar	10.0	10.0	2.4%	5.0% - 19.4%	Optional				
Romania	16.0	16.0	2.7%	3.4% - 24.7%	LIFO				
Rwanda	30.0	30.0	4.8%	4.1% - 19.7%	Optional				
Saudi Arabia	20.0	20.0	3.4%	5.0% - 24.3%	Optional				
Serbia	15.0	10.0	5.9%	2.5% - 14.8%	Optional		2.5%		
Sierra Leone	30.0	35.0	10.9%	11.0% - 37.1%	Optional				
Singapore	17.0	17.0	2.5%	3.1% - 24.6%	FIFO		3.0%		▶
South Africa	28.0	28.0	5.4%	5.0% - 25.0%	Optional				▶
Tanzania	30.0	30.0	9.7%	5.0% - 25.3%	Optional				▶
Thailand	20.0	30.0	2.0%	5.0% - 21.0%	Optional				▶
Trinidad and Tobago	25.0	25.0	6.0%	10.0% - 24.9%	Optional		7.0%		▶
Tunisia	26.2	30.0	4.9%	5.0% - 20.3%	Optional		5.0%		
Uganda	30.0	30.0	9.5%	5.0% - 29.7%	Optional		1.0%		▶
Ukraine	18.0	25.0	13.8%	8.0% - 37.2%	Optional		1.0%		
Uruguay	25.0	25.0	8.5%	2.8% - 10.0%	LIFO	0.3%	4.0%		
Uzbekistan	14.9	16.3	3.7%	5.0% - 18.7%	Optional	4.0%			
Venezuela	34.5	34.0	54.3%	6.5% - 22.1%	LIFO				▶
Vietnam	20.0	25.0	7.8%	3.4% - 25.1%	Optional		0.5%		
Zambia	35.0	35.0	7.6%	5.1% - 47.3%	Optional		5.0%		▶
G7*	30.2	33.1							
G7 w	33.9	36.2							
BRIC*	28.4	28.1							
BRIC w	27.1	26.9							
G20*	28.3	29.3							
G20 w	31.9	33.5							
OECD*	24.7	25.9							
OECD w	31.7	33.7							
Africa*	28.7	29.6							
Africa w	29.5	29.8							
Americas*	28.3	28.2							
Americas w	37.2	37.3							
Asia Oceania*	24.9	27.2							
Asia Oceania w	29.1	31.5							
Europe*	22.1	23.0							
Europe w	26.1	28.2							
MENA*	19.8	19.5							
MENA w	20.8	20.9							
92 Country*	24.7	25.6							
92 Country W	30.4	32.0							

* Simple average
w Weighted average

About the Authors

Philip Bazel is a Research Associate at The School of Public Policy at the University of Calgary. In addition to publishing through The School of Public Policy, Philip has also played a role in a number of projects consulting for both governments and private organisations in the area of taxation and public finance.

Jack Mintz became the President's Fellow of The School of Public Policy at the University of Calgary on July 1, 2015, after serving as the founding Director and Palmer Chair in Public Policy since January 2008. He serves on the boards of Imperial Oil Limited and Morneau Shepell, and is Chair and Vice-President of the Social Sciences and Humanities Research Council of Canada. He also serves as an Associate Editor of *International Tax and Public Finance* and the *Canadian Tax Journal*, and is a Research Fellow of CESifo, Munich, Germany, and the Centre for Business Taxation Institute, Oxford University.

Dr. Mintz has consulted widely with the World Bank, the International Monetary Fund, the Organization for Economic Co-operation and Development, federal and provincial governments in Canada, and various businesses and non-profit organizations. Dr. Mintz became a member of the Order of Canada in 2015 in addition to receiving the Queen Elizabeth Diamond Jubilee Medal in 2012. Widely published in the field of public economics, he was touted in a 2004 U.K. magazine publication as one of the world's most influential tax experts. The *Financial Post* named him one of the five most influential Canadians in regulation in 2012. In the 2015 Who's Who Legal, he was named one of the top experts in the world and the Public Policy Forum honored him for his contribution to public policy in 2015 at its annual dinner.

Austin Thompson is a recent 2017 graduate of the Master of Public Policy Program at the University of Calgary and currently works at the federal Department of Finance.

ABOUT THE SCHOOL OF PUBLIC POLICY

The School of Public Policy has become the flagship school of its kind in Canada by providing a practical, global and focused perspective on public policy analysis and practice in areas of energy and environmental policy, international policy and economic and social policy that is unique in Canada.

The mission of The School of Public Policy is to strengthen Canada's public service, institutions and economic performance for the betterment of our families, communities and country. We do this by:

- *Building capacity in Government* through the formal training of public servants in degree and non-degree programs, giving the people charged with making public policy work for Canada the hands-on expertise to represent our vital interests both here and abroad;
- *Improving Public Policy Discourse outside Government* through executive and strategic assessment programs, building a stronger understanding of what makes public policy work for those outside of the public sector and helps everyday Canadians make informed decisions on the politics that will shape their futures;
- *Providing a Global Perspective on Public Policy Research* through international collaborations, education, and community outreach programs, bringing global best practices to bear on Canadian public policy, resulting in decisions that benefit all people for the long term, not a few people for the short term.

The School of Public Policy relies on industry experts and practitioners, as well as academics, to conduct research in their areas of expertise. Using experts and practitioners is what makes our research especially relevant and applicable. Authors may produce research in an area which they have a personal or professional stake. That is why The School subjects all Research Papers to a double anonymous peer review. Then, once reviewers comments have been reflected, the work is reviewed again by one of our Scientific Directors to ensure the accuracy and validity of analysis and data.

The School of Public Policy

University of Calgary, Downtown Campus
906 8th Avenue S.W., 5th Floor
Calgary, Alberta T2P 1H9
Phone: 403 210 3802

DISTRIBUTION

Our publications are available online at www.policyschool.ca.

DISCLAIMER

The opinions expressed in these publications are the authors' alone and therefore do not necessarily reflect the opinions of the supporters, staff, or boards of The School of Public Policy.

COPYRIGHT

Copyright © Bazal, Mintz and Thompson 2018. This is an open-access paper distributed under the terms of the Creative Commons license [CC BY-NC 4.0](https://creativecommons.org/licenses/by-nc/4.0/), which allows non-commercial sharing and redistribution so long as the original author and publisher are credited.

ISSN

ISSN 2560-8312 The School of Public Policy Publications (Print)
ISSN 2560-8320 The School of Public Policy Publications (Online)

DATE OF ISSUE

February 2018

MEDIA INQUIRIES AND INFORMATION

For media inquiries, please contact Morten Paulsen at 403-220-2540. Our web site, www.policyschool.ca, contains more information about The School's events, publications, and staff.

DEVELOPMENT

For information about contributing to The School of Public Policy, please contact Jessika Anderson by telephone at 403-210-7968 or by e-mail at jessika.anderson@ucalgary.ca.

RECENT PUBLICATIONS BY THE SCHOOL OF PUBLIC POLICY

RECENT CHANGES TO PROVINCIAL GOVERNMENT BUDGET REPORTING IN ALBERTA

<https://www.policyschool.ca/wp-content/uploads/2018/02/AB-Budget-Reporting-Kneebone-Wilkins.pdf>
Ronald Kneebone and Margarita Gres Wilkins | February 2018

HAS THE CITY-RURAL TAX BASE AND LAND-USE BALANCE CHANGED IN ALBERTA? EXPLORATIONS INTO THE DISTRIBUTION OF EQUALIZED PROPERTY ASSESSMENTS AMONG MUNICIPALITY CLASSES

https://www.policyschool.ca/wp-content/uploads/2018/02/Final_City-Rural-Tax-Base-McMillan.pdf
Melville McMillan | February 2018

REDUCING GREENHOUSE GAS EMISSIONS IN TRANSPORT: ALL IN ONE BASKET?

<https://www.policyschool.ca/wp-content/uploads/2018/01/GHG-Emissions-Rivers-Wigle.pdf>
Nicholas Rivers and Randall Wigle | February 2018

CANADA AND ASSOCIATE MEMBERSHIP IN THE PACIFIC ALLIANCE: AN IMPORTANT PART OF A GLOBAL TRADE STRATEGY

<https://www.policyschool.ca/wp-content/uploads/2018/01/Pacific-Alliance-Stephens-Navarro-Jan2018.pdf>
Hugh Stephens and Juan Navarro | January 2018

ALBERTA'S CHANGING INDUSTRIAL STRUCTURE: IMPLICATIONS FOR OUTPUT AND INCOME VOLATILITY

<https://www.policyschool.ca/wp-content/uploads/2018/01/AB-Industrial-Structure-Dahlby-Khanal.pdf>
Bev Dahlby and Mukesh Khanal | January 2018

SOCIAL POLICY TRENDS: THE ENERGY BOOM AND INCOME

<https://www.policyschool.ca/wp-content/uploads/2018/01/Social-Trends-Deciles-January-Final.pdf>
Margarita Gres Wilkins and Ronald Kneebone | January 2018

POLICY BRIEF - WHY IS UPTAKE OF THE DISABILITY TAX CREDIT LOW IN CANADA? EXPLORING POSSIBLE BARRIERS TO ACCESS

<https://www.policyschool.ca/wp-content/uploads/2018/01/Disability-Tax-Credit-Dunn-Zwicker.pdf>
Stephanie Dunn and Jennifer Zwicker | January 2018

BUSINESS SUBSIDIES IN CANADA: COMPREHENSIVE ESTIMATES FOR THE GOVERNMENT OF CANADA AND THE FOUR LARGEST PROVINCES

<https://www.policyschool.ca/wp-content/uploads/2018/01/Business-Subsidies-in-Canada-Lester.pdf>
John Lester | January 2018

SOCIAL POLICY TRENDS: CALGARY FOOD BANK CLIENTS AND SOCIAL ASSISTANCE CASELOADS

<https://www.policyschool.ca/wp-content/uploads/2017/12/Social-Trends-Food-Bank-December-2017.pdf>
Margarita Gres Wilkins and Ronald Kneebone | December 2017

SOCIAL POLICY TRENDS- LABOUR FORCE PARTICIPATION RATE OF WOMEN WITH YOUNG CHILDREN

<https://www.policyschool.ca/wp-content/uploads/2017/11/Social-Policy-Trends-Womens-LF-Participation.pdf>
Margarita Gres Wilkins and Ronald Kneebone | November 2017

IMPROVING OUR UNDERSTANDING OF UNMET NEEDS AMONG ADULTS WITH A DEVELOPMENTAL DISABILITY

<https://www.policyschool.ca/wp-content/uploads/2017/11/Developmental-Disability-Lai-Dunn-Zwicker.pdf>
Jonathan Lai, Stephanie Dunn and Jennifer Zwicker | November 2017

WHETHER IT IS THE U.S. HOUSE OR SENATE TAX CUT PLAN - IT'S TROUBLE FOR CANADIAN COMPETITIVENESS

<https://www.policyschool.ca/wp-content/uploads/2017/11/Final-Tax-Policy-Trends-Tax-Cuts-and-Jobs-Act.pdf>
Philip Bazel and Jack Mintz | November 2017

BUSINESS CASES FOR MAJOR PUBLIC INFRASTRUCTURE PROJECTS IN CANADA

<https://www.policyschool.ca/wp-content/uploads/2017/12/Public-Infrastructure-Projects-Iacobacci-final.pdf>
Mario Iacobacci | November 2017