

# Proposal for a Tax Rate Swap to Shield Against the Gap Between Statutory and Effective Tax Rates—A Boost for Entrepreneurship and a Motive for New Investments\*

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This paper focuses on a common problem for entrepreneurs and investors: the uncertainty around the actual tax rate, which is the percent of net income that a corporation pays in taxes. This uncertainty results from a difference (i.e., a gap) between the statutory and the effective tax rate, which is the actual tax rate. This gap results from the legal framework which provides that certain types of incomes and expenses are not considered income. This gap causes significant uncertainty and may hinder entrepreneurship. This paper studies this gap in seven OECD countries (Austria, Canada, France, Germany, Italy, UK, and USA) and Brazil. We selected the 10 top-listed companies of each country and calculated the gaps for the period 2016-2019. Our findings proved that these gaps are unstable and may differ between companies of the same country and between countries. In addition, gaps of specific companies may change over time. The key outcome of this paper is the proposal of a new derivative tax rate swap. Using this derivative, governments will be able to eliminate the gap of specific companies, attract new investment, and increase entrepreneurship.

*Keywords:* tax rate swap, corporate taxes, statutory tax rate, effective tax rate, investments, entrepreneurship

## Introduction

Taxation is unquestionably a critical variable that investors consider when deciding whether to invest in or expand an existing business in a country. Low tax rates, tax rate stability, and the existence of simple and clear legal frameworks are some of the most critical components of an attractive corporate taxation system. According to Goode (1949), taxation, as a determining factor of progress or elimination of entrepreneurship, is not a modern concept; scholars have referred to this correlation since the 1940s (Nadirov & Dehning, 2020).

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The most decisive factor is the tax rate, which determines the percentage of an investment's net income that is payable to the state. It is to be expected that investors prefer a "business-friendly" environment that offers a stable tax system and low tax rates.

The effect of corporate taxes on investment and entrepreneurship is a central question in the research fields of public finance and development (Djankov, Ganser, McLiesh, Ramalho, & Shleifer, 2010). A significant number of international scholars have laid the theoretical foundation for this topic by researching the impact of corporate taxes on a country's investment and entrepreneurship rates. They have also explained how corporate taxes affect a country's tax policy and economic growth (Auerbach, Aaron, & Hall, 1983; Auerbach, 2002; Auerbach & Hassett, 1992; Barro, 1991; Baumol, Litan, & Schramm, 2007; Cullen & Gordon, 2007; De Long & Summers, 1991; Desai, Foley, & Hines, 2004; Devereux, Griffith, & Klemm, 2002; Feldstein, Dicks-Mireaux, & Poterba, 1983; Gordon & Hines, 2002; Hall & Jorgenson, 1967; Hassett & Hubbard, 2002; Hines & Rice, 1994; Jorgenson, 1963; King & Fullerton, 2010; Slemrod, 1990; Summers, 1981).

Empirical and theoretical research has proved that entrepreneurship positively impacts the creation of new businesses, job opportunities, and a country's overall economic growth and prosperity (Acs, Audretsch, Braunerhjelm, & Carlsson, 2004; Acs, 2006; Audretsch & Keilbach, 2004; Carree & Thurik, 2003; Van Praag & Versloot, 2007). Entrepreneurship is considered a vital component of a healthy economy (Primo & Green, 2011) and the pillar of survival, prosperity, and economic growth (Baumol, 1990; 2002). It is also widely recognized as being essential to financial progress and sustaining economic growth (Acs & Szerb, 2007; Audretsch & Keilbach, 2004; S. Wennekers, A. Van Wennekers, Thurik, & Reynolds, 2005). Thus, governments that aim to benefit from the development that comes from entrepreneurship need to create tax policies that provide incentives for entrepreneurial activity. Unsurprisingly, entrepreneurship has held policymakers' attention and consistently considered a catalyst for economic growth (Nadirov & Dehning, 2020). Similarly, policymakers and scholars agree that corporate tax is the main means of leverage for growth and innovation (Curtis & Decker, 2018).

Hence, when policymakers make taxation strategy decisions, they should consider factors such as the quality of the country's accounting services and their prospective investors' risk profile, because these factors shape a country's business environment (Block, 2016). The challenge that policymakers face is that they need to balance tax policies that promote entrepreneurship and attract investment with avenues to generate income for the state.

Corporate tax rate is a multi-factor variable. The statutory tax rate (STR) imposed by a country's legislation and defined as a percentage of a taxable income often differs from the actual tax that investors need to pay, i.e., the effective tax rate (ETR). The gap between the statutory and the effective tax rates results from the different calculation methods applied: taxable income is calculated by the tax authority, whereas the net income is affected by the country's accounting standards (International Financial Reporting Standards (IFRS), US Generally Accepted Accounting Principles (US GAAP), etc.). Therefore, although most countries have adopted similar accounting standards (i.e. IFRS) and net income calculation methods, taxable income remains significantly different.

National particularities and tax collection problems further enhance the divide between effective and statutory tax rates. Additionally, significant differences between effective and statutory tax rates arise because of tax avoidance and tax collection complications. Countries with high levels of government corruption and highly politicized tax systems tend to have greater effective tax rate shortfalls than countries with robust legislative frameworks and implementation systems.

Even if the government takes the policy initiative to adopt legislation that provides a fixed statutory tax

rate for several years, the effective tax rate is unlikely to remain fixed even for two consecutive years. This variable depends on the nature of the firm's income and expenses, and the sector in which the firm operates. Even if the government maintains statutory tax rates, other factors—namely, tax deductibles, expenses, and tax exceptions—may significantly change the effective tax rate. Therefore, the government may indirectly create unclear tax conditions for companies.

In short, although the statutory tax rate is country-specific, the effective tax rate depends on a combination of factors, and mostly on how the national legal framework affects each firm. For example, although the statutory tax rate in the United States has remained stable and consistent for many years, some companies have managed to reduce their effective tax rates using tax planning strategies and taking advantage of specific provisions in the tax law (Drucker, 2010; Dyreng, Hanlon, Maydew, & Thornock, 2016; Gravelle, 2013; Senate, U.S., 2014). Thus, it is nearly impossible for a firm to make accurate, effective tax rate predictions, which may disincentivize investment decisions.

This study examines the gap between the statutory and effective tax rates in seven OECD countries (Austria, Canada, France, Germany, Italy, UK, and USA) and Brazil. We analyzed 10 top-listed companies (where data is available) based in these countries for the period 2016-2019. We show how this gap has changed over time by comparing these countries. Then, we propose a method that enables countries to attract investment and promote entrepreneurship, without changing their statutory tax rates, but rather by offering an actual fixed tax rate to prospective investors and businesses.

## Literature Review

### Tax Policy and Entrepreneurship

Numerous scholars have examined the theoretical relationship between tax policy and entrepreneurship (Bruce & Deskins, 2012; Cullen & Gordon, 2007; Da Rin, Di Giacomo, & Sembenelli, 2011; Curtis & Decker, 2018; Djankov et al., 2010; Garrett & Wall, 2006; Gentry & Hubbard, 2000; Georgellis & Wall, 2006; Primo & Green, 2011). Rusu and Roman (2017) argue that entrepreneurship is closely linked to taxation, directly impacting macroeconomic stability.

Bruce, Glass, and Harris (2019) indicate that governments stand by the principle that lowers taxes to attract new businesses and promote entrepreneurial activity. Rathelot and Sillard (2008) assess the effect of tax policies on entrepreneurship and conclude that corporate taxes affect businesses' entry rate by moderately lowering their pace of entry in the market, and Mukherjee, Singh, and Žaldokas (2017) discovered that corporate taxes decrease research activity and product development. Furthermore, Block (2016) noted that higher corporate income tax rates decrease entrepreneurship entry rates and a progressive tax system tends to increase the entry rates. He also found that countries with low-quality accounting standards need to reduce taxes to boost their entrepreneurship rates.

Furthermore, Rohlin, Rosenthal, and Ross (2014) examined the role of new establishments and reciprocal agreements on tax avoidance. Curtis and Decker (2018) showed that newly established firms tend to be more sensitive to tax policy changes than older firms. Fort, Haltiwanger, Jarmin, and Miranda (2013) also noted that newly established firms are susceptible to the country's credit conditions, demand shocks (Adelino, Ma, & Robinson, 2017), and productivity shocks (Decker, Haltiwanger, Jarmin, & Miranda, 2020). Naturally, such firms are highly sensitive to economic shocks (Adelino, Ma, & Robinson, 2017; Decker et al., 2020; Fort,

Haltiwanger, Jarmin, & Miranda, 2013).

Entrepreneurship promotes the establishment of new firms (Acs, 2006; Carree & Thurik, 2003) and creates additional job opportunities, which are always affected by corporate tax changes (Curtis & Decker, 2018). Similarly, Bacher and Brólhart (2013) noted that progressive tax systems encourage entrepreneurial growth. Kannianen and Panteghini (2013) found that tax rate analysis requires considering that entrepreneurial activity includes many simultaneous decision margins. Furthermore, Meh (2005) indicated that business decisions, such as business entry, savings, investment, and business scale changes, are significantly affected by tax rates.

**Results.** This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation as well as the experimental conclusions that can be drawn.

### **Corporate Taxation and Entrepreneurship**

Corporate income taxation affects entrepreneurship, which in turn influences economic development and investment. A global cross-sectional data set of 80 countries shows that high statutory and high effective corporate income tax rates minimize entrepreneurship entry rates (Djankov et al., 2010). The profits for businesses fall when corporate tax rates are high, which leads to a decrease in incentives for aspiring entrepreneurs (Block, 2016). Furthermore, Da Rin et al. (2011) showed that countries with high accounting standards respond more positively to corporate tax rate decreases.

In countries with low-quality accounting standards, policymakers must make sure that their initiatives combine a two-tier purpose—decreasing taxes and improving the quality of accounting standards—to boost entrepreneurial entry and activity. Moreover, higher effective corporate tax rates intensify the tax burden for firms, thus decreasing the profits from entrepreneurship (Block, 2016).

The fact that corporate tax legislation is relatively complex and not easily understood influences entrepreneurship entry rates and the development of entrepreneurial activities of established corporations (Braunerhjelm & Eklund, 2004). Similarly, Appelbaum and Katz (1996) investigated the relationship between corporate taxation and entrepreneurship, and developed a model that examined the impact of corporate income taxation on established businesses and new entrants to an oligopolistic business environment. The authors showed that corporate tax provisions tend to favor established companies compared to new entrants. Established companies benefit from corporate taxation by accumulating profits that enable them to develop their business, increase their output and, therefore, prevent other companies from entering the market.

### **Corporate Taxation and Investments**

Investors are increasingly pursuing strategies that consider environmental, social, and governance (ESG) factors. Sustainable investing requires a safe business environment and a stable tax system. The effect of corporate taxation on investment is a subject of substantial theoretical and empirical scrutiny. De Mooij and Ederveen (2003) and Hines (1999) note that high taxes have a negative impact on foreign direct investment (FDI).

Similarly, Djankov et al. (2010) explained that there is a negative relationship between corporate taxation, investments, and entrepreneurship, particularly on foreign direct investment (FDI). Where corporate taxes are high, investment and entrepreneurship tend to decrease. Davis and Henrekson (2005) showed that corporate income taxes have a different effect on various industries and impact resource allocation differently in the formal and informal sectors.

Rusu and Roman (2017) noted that entrepreneurship's main macroeconomic determinants are foreign

direct investment, the inflation rate, access to finance, and the total tax rate. Furthermore, Lawless (2013) indicated that tax complexity exerts a strong disincentive on FDI. By decreasing taxation complexity, governments could yield significant returns in the form of increased FDI rates, mainly in countries with higher levels of tax complexity. Aghion et al. (2016) explained that taxation is detrimental to growth because it impedes entrepreneurship and discourages investment, which are essential components of financial development.

### **Determinants of Effective Tax Rate and Gap**

Substantial academic literature exists regarding the factors that determine effective tax rates, how the tax rate changes over time, and the gaps between effective and statutory tax rates. Equally, several studies analyze the long-term impact of the effective tax rate, how this has changed over time, and the factors that influenced this evolution. Studies of the US market show that effective tax rates have fallen over time, even in cases in which the statutory tax rates have remained unchanged. This phenomenon is the product of companies' ability to manipulate their accounting results and take advantage of specific provisions of the tax law (Drucker, 2010; Dyreng, Hanlon, Maydew, & Thornock, 2016; Gravelle, 2013; Senate, U.S., 2014).

Dyreng et al. (2016) examined a sample of US multinational and domestic firms, and researched whether a decrease in the effective tax rate has a greater impact on multinational firms because of their advantageous position of benefiting from lower statutory rates offered in other jurisdictions. They found that there was an apparent reduction in the effective tax rates across a broad sample of US companies, which was almost the same for both domestic and multinational firms. Certain studies focus on how accounting frameworks can affect effective tax rates. Kim and Im (2017) examined a set of listed companies in Korea and concluded that the effective tax rate decreased after the national accounting framework changed from K-GAAP to K-IFRS.

The effective tax rate is also affected by firm-specific factors. It is clear that a firm's leverage affects the effective tax rate because interest expense is tax deductible. In addition, asset diversification may affect the effective tax rate because the greater the capital intensity of the firm, the larger its depreciable asset base. The firm's capital intensity also affects the firm's depreciable assets. Additionally, the ownership structure can affect the effective tax rate.

Rego (2003) focused on the manner in which multinational and US-based corporations are affected by the reduction of effective tax rates. He observed that by maintaining a steady income, large corporations (total net sales) pay more tax per dollar of income than smaller firms, whereas companies with higher income pay less tax per dollar of income than firms with less income. He then concluded that the income level is more closely associated with income tax avoidance rather than with the firm's size. He also found a negative correlation between income and ETRs by noting that multinational companies avoid more tax per dollar of income than US-based companies.

Stanfield (2011), in his research on US based companies over the period 1992-2009, discovered that companies with insufficient cash have a lower ETR. He also noted that companies that barely meet or beat the consensus cash flow forecast enjoy more tax exemptions. Liu and Cao (2007) studied the decisive components of ETRs for 425 companies listed in the Chinese stock market over the period 1998-2004. They found that firm size and capital intensity have no significant effect on the ETR. In contrast, leverage negatively relates to the ETR, and the ETR tends to be lower for firms with over-employment.

Wang, Campbell, and Johnson (2014) researched listed companies in China for the period 2007-2014 and

examined the effect of individual firm characteristics when determining the effective tax rate. They found that factors such as the firm's industrial sector, asset diversification, leverage, size, and state ownership affect ETRs. The real estate industry has significantly higher effective tax rates, whereas the agricultural sector has substantially lower effective tax rates. Effective tax rates have a positive impact on leverage. Asset diversification is also positively related to effective tax rates. Companies with significant capital concentrations have higher ETRs. Nevertheless, they did not prove that international ownership affects the ETR, which would have been an expected outcome due to the common absence of favorable tax treatment for international owners.

Heshmati, Johansson, and Bjuggren (2010) analyzed the effects of effective tax rates on Swedish firms' size distribution over the period 1973-2002. They also considered time and industry factors. They found that effective corporate tax rates differ, based on the firm's size, industrial sector, and over time. Smaller companies have a higher effective corporate tax rate than larger companies. In addition, there is a variance of effective corporate tax rates between industrial sectors: the services sector has a higher effective corporate tax rate than the production sector.

A particular factor that impacts the effective tax rate is the nationality of the firm. Rego (2003) focused on a set of US-based companies, both domestic and multinational, over the period 1990-1997. She examined the variables that make companies prone to avoiding income taxation, resulting in lower effective tax rates, and proved that multinational corporations, including those with extensive foreign operations, have lower global ETRs than purely domestic corporations.

In a sample of solely multinational corporations, she found that higher levels of US pre-taxed income were associated with lower US and foreign ETRs, whereas higher levels of foreign pre-tax income were associated with higher US and foreign ETRs. Thus, high foreign income is associated with higher corporate tax burdens. Stanfield (2011) focused on US firms from 1992 to 2009 and found a negative relationship between liquidity and effective tax rates.

Additionally, an insightful study explained how companies managed to reduce effective tax rates by hiring tax experts. McGuire, Omer, and Wang (2012) found that companies that procured the services of external auditing firms, especially those with tax expertise, had lower effective tax rates. This suggests that experts with combined auditing and tax expertise can effectively help their clients write their tax statements in a manner that produces positive outcomes in their taxes and financial statements. They conclude these benefits are even more significant if the external auditing firm specializes in advising for the specific industry in which the firm operates.

Sebastian (2011) focused on non-financial companies listed on the Bucharest Stock Exchange from 2000 to 2009 and studied the gap between the effective and the statutory tax. He found that the effective tax rate was below the statutory tax rate during this period, with the exception of 2009, when an alternative minimum tax was introduced. The differences have declined since 2005, when the government adopted a flat tax. They also proved that the difference between the effective and the statutory tax rate negatively impacts the return on assets (ROA) ratio. Finally, they found that commerce has the most favorable tax regime, whereas energy is the most heavily taxed.

In addition, Siroky, Kvicalova, and Valentova (2011) focused on EU countries' policies from 2004 to 2010. They concluded that the EU's depreciation policy changes did not affect the difference between the statutory corporate and the effective corporate tax rate. Furthermore, Schaffer and Turley (2001) studied the gap between the effective and statutory tax rate in transition economies (TEs). They found that tax collection is

less efficient in TEs than the EU average. Nonetheless, the leading TEs have effective and statutory ratios, which are similar to the EU average. In TEs, the effectiveness of tax collection depends on the extent of state control, and countries with robust state structures have better tax collection performances. They conclude that this raises several policy issues relating to the speed of transition, the impact of politics on economic reforms, the state's capacity to govern, and the need for market institutions to develop.

## **Research Methodology**

### **Methodology**

The methodology that we chose to follow is simple and clear because we aimed to address a typical problem that investors and entrepreneurs face, and to propose a viable solution. We chose 10 high-performing companies based on market capitalization, from eight countries: Australia, Brazil, Canada, France, Germany, Italy, UK, and USA. For each of these companies, we calculated the effective tax rates over the period 2016-2019. To examine the gap between statutory and effective tax rates, we first calculated the effective tax rate of companies and countries. Our study is based on the narrow time period of four years, because we aimed to focus on the problem currently faced by companies. For this reason, we expect that changes in the gaps between years will depend on factors other than the statutory tax rates. That is mainly because fiscal policies tend to change slowly and do not cause significant changes in statutory tax rates.

As described above, we decided not to use a highly sophisticated method or to compare already existing methods. Rather, we chose a simple method of effective tax calculation because we aimed to present an easily understandable concept to the public and potential investors. In addition, this method is based on the definition of tax rate. The effective tax rate is calculated by dividing the income tax expense by the accounting profit before tax. Both variables are based on the sample financial statements of the firm.

First, we found each country's statutory tax. Then, for each firm, we calculated the gap for each year and compared it to the gaps per country and per firm for the entire period. When calculating the effective tax rate, we excluded all negative values because there are no actual negative tax rates. Negative values of a year result from extreme circumstances (tax returns, for instance), which are not representative. We also excluded extreme values regarding the companies, namely values which were greater than 300% or lower than 33%, compared to the firm's average value over the period 2016-2019.

### **Data Analysis**

Our data sample covers the 2016-2019 period and includes 10 high-performing companies, based on market capitalization, in seven OECD countries (Australia, Brazil, Canada, France, Germany, Italy, UK, and USA) and Brazil. For each firm, we extracted the following accounting variables, for each year, using the Yahoo Finance database:

Profit before taxes for the period 1st January-31st December, for each firm, based on data from Yahoo Finance.

Income Tax expense for the period 1st January-31st December, for each firm, based on data from Yahoo Finance.

In addition, for each country, we extracted the statutory tax rate for public companies for each year, based on data from the KPMG web page<sup>1</sup>. According to the above variables, we calculated the effective tax rate for each firm, for each year, as follows:

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<sup>1</sup> <https://home.kpmg/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html>.

$$\text{Effective Tax Rate} = \frac{\text{Income Tax Expense}}{\text{Profit before taxes}}$$

Table 1 presents annual statutory tax rates for public companies for the period 2016-2019.

Table 1

*Public Companies' Annual Statutory Tax Rates*

	Australia	Brazil	Canada	France	Germany	Italy	United Kingdom	USA
<b>2016</b>	30%	34%	26.5%	33.30%	29.72%	31%	20%	40%
<b>2017</b>	30%	34%	26.5%	33.33%	29.79%	24%	19%	40%
<b>2018</b>	30%	34%	26.5%	33.00%	30%	24%	19%	27%
<b>2019</b>	30%	34%	26.5%	31.00%	30%	24%	19%	27%

Similarly, we calculated each firm's effective tax rate for each year. Next, we excluded all negative values because these values relate to extraordinary circumstances, and calculated the average ETR for each firm over the entire 2016-2019 period. Subsequently, we excluded extreme ETR values for each firm. We agreed that a value qualified as extreme if it was greater than 300% or lower than 33% of the average ETR. Based on the ETR values, we calculated each firm's gap for each year. The gap was defined as the value ETR-STR.

In our next step, we measured the average gap and standard deviation (STDEV) for each firm during the period 2016-2019. Additionally, based on these average values, we calculated the average and STDEV of these average values for each country. These values are the averages companies' values, rather than the values calculated based on a firm's specific characteristics (total assets, turnover, net gain for the year, etc.). These values are presented in Table 2.

Next, we focused on each country's ETR and gap. We calculated each country's total income tax expense and total profit before taxes for every firm. Based on these values, we calculated each firm's ETR and gap. These variables differ from the countries' gap averages because, according to the calculation method, they are weighted according to the firm's income tax expense and profit before taxes. These amounts are presented in Table 3.

## Findings

Our research produced the following findings:

The average gap and STDEV for each firm over the period 2016-2019 are presented in Table 2. Although the average gap for this sample is relatively small (2.32%), there is a significant variation, expressed as a STDEV of 13.48%. The maximum value is 45%, and the minimum value is -26.50%. In addition, there is a significant variation at the country level. The average gap (the average of the average gap of companies) for the UK is 13.24% (with a deviation of 8.54%), and that for the USA is 12.42% (STDEV 2.5%). Regardless of whether the companies' gap is negative or positive, variation exists between the years (which is represented by STDEV), which means that companies anticipated uncertainty regarding the tax rates.

According to our findings, UK companies tend to pay about 13% higher rates than the settled statutory rate. On the other hand, US companies tend to avoid taxes and pay significantly lower tax rates than statutory rates. This finding aligns with the studies mentioned above regarding US companies' ability to manipulate accounting results and take advantage of specific tax law provisions. Finally, Australia seems to have eliminated this problem because Australian companies pay the statutory tax rate.

Furthermore, Table 3 solely focuses on country-level data. We calculated the STR by adding the total amount of taxes that companies paid each year and dividing by the companies' total income. Then, we



calculated the gap by subtracting the STR. The country weighted averages closely resemble their simple averages, verifying that our findings regarding the gaps reflect the countries' tax conditions rather than the specific companies' particularities. The values of this table also confirm the findings from Table 1 show that UK and USA are the countries with the greatest gaps, and that Australia has an insignificant gap.

Table 2

*Average and Standard Deviation (STDEV) of Gaps Per Firm*

Country	Firm name	Average gap	Standard deviation (STDEV) of gap	Average of country	STDEV of country	Boundaries
Australia	ANZ Banking Group	0.00	0.02	0.00	0.05	
	BHP Billiton	0.05	0.14			
	Commonwealth Bank	-0.01	0.01			
	CSL	-0.05	0.09			
	Macquarie Group	-0.06	0.03			
	National Australian Bank	-0.01	0.00			
	RIO Tinto	-0.01	0.06			
	Wesfarmers	0.09	0.15			
	Westpac Banking Corp	0.00	0.00			
	Woolworths	0.02	0.04			
	AmBev	-0.24	0.05			
Brazil	B3	-0.18	0.04	-0.09	0.09	MAX
	Banco Bradesco	-0.06	0.15			0.2108
	Banco do Brasil	-0.10	0.02			
	Itaí Unibanco	-0.11	0.12			
	JBS	-0.22	0.02			
	Petrobras	0.21	0.32			MIN
	Santander Brasil	0.05	0.15			-0.2429
	Telefônica Brasil	-0.13	0.01			
	Vale	-0.09	0.08			
	Bank of Montreal	-0.05	0.03			
	Canada	Bank of Nova Scotia	-0.05			0.01
BCE		-0.01	0.01	-0.0068		
Brookfield Asset Management		-0.16	0.02			
Canadian National		-0.02	0.02			
Enbridge		-0.20	0.01			
Royal Bank of Canada		-0.06	0.01	MIN		
Shopify		-0.27	0.00	-0.2650		
TC Energy		-0.14	0.03			
Toronto-Dominion Bank		-0.06	0.02			
Airbus		-0.03	0.07			
France		AXA	-0.10	0.08	-0.06	0.04
	BNP Paribas	-0.07	0.03	0.0101		
	Hermes	0.01	0.01			
	Kering	-0.02	0.14			
	L'Oréal	-0.07	0.06			
	LVMH	-0.04	0.02	MIN		
	Safran	-0.09	0.06	-0.1141		
	Sanofi	-0.11	0.10			
	Total	-0.05	0.11			

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Country	Firm name	Average GAP	STDEV of ERT (= GAP)	Average of country	STDEV of country	Boundaries	
Germany	Allianz	-0.02	0.02				
	BASF	-0.09	0.02			MAX	
	Bayer	-0.07	0.06			0.0162	
	BMW	-0.04	0.05				
	Daimler	-0.02	0.03				
	Deutsche Telekom	0.02	0.04	-0.04	0.03		
	Linde	-0.01	0.12			MIN	
	SAP	-0.05	0.04			-0.0885	
	Siemens	-0.04	0.01				
	Volkswagen	-0.08	0.04				
	ASSICURAZIONI GENERALI	0.04	0.06				
	ATLANTIA	0.02	0.04			MAX	
	ENEL	-0.00	0.04			0.4501	
	ENI S.P.A.	0.45	0.25				
Italy	FERRARI	-0.01	0.04				
	INTESA SANPAOLO	0.02	0.02	0.07	0.07		
	POSTE ITALIANE SPA	0.08	0.04			MIN	
	SNAM	0.02	0.01			-0.0168	
	TERNA	0.04	0.02				
	UNICREDIT	-0.02	0.09				
	BP	0.43	0.30				
	Diageo	-0.00	0.03			MAX	
	AstraZeneca	n/a	n/a			0.4338	
	BHP	0.23	0.08				
UK	British American Tobacco	0.05	0.03				
	GlaxoSmithKline	0.09	0.15	0.1324	0.0854		
	HSBC	0.16	0.11			MIN	
	Rio Tinto	0.10	0.07			-0.0048	
	Royal Dutch Shell	0.08	0.10				
	Unilever	0.04	0.03				
	Alphabet	-0.16	0.04				
	Amazon	-0.12	0.07			MAX	
USA	Apple	-0.12	0.03			-0.0288	
	Berkshire Hathaway	-0.10	0.04				
	Facebook	-0.14	0.09				
	Johnson & Johnson	-0.17	0.06	-0.1242	0.0250		
	JPMorgan Chase	-0.09	0.02			MIN	
	Microsoft	-0.24	0.07			-0.2449	
	Visa	-0.07	0.07				
	Walmart	-0.03	0.09				
	<b>Average values for all companies</b>				<b>-0.0232</b>	<b>0.134843</b>	

Table 3

*Statutory Tax Rates (STRs) and Gaps Per Country*

<b>STR</b>					
<b>Country</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2016-2019</b>
<b>Australia</b>	0.30	0.30	0.30	0.30	0.3
<b>Brazil</b>	0.34	0.34	0.34	0.34	0.34
<b>Canada</b>	0.27	0.27	0.27	0.27	0.265
<b>France</b>	0.33	0.33	0.33	0.31	0.326575
<b>Germany</b>	0.30	0.30	0.30	0.30	0.298775
<b>Italy</b>	0.31	0.24	0.24	0.24	0.2585
<b>UK</b>	0.20	0.19	0.19	0.19	0.1925
<b>USA</b>	0.40	0.40	0.27	0.27	0.335
<b>GAP</b>					
<b>Country</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2016-2019</b>
<b>Australia</b>	0.02	0.01	0.01	0.02	0.01
<b>Brazil</b>	0.06	-0.07	-0.14	-0.16	-0.08
<b>Canada</b>	-0.05	-0.07	-0.05	-0.07	-0.06132
<b>France</b>	-0.08	-0.07	-0.06	0.00	-0.05184
<b>Germany</b>	-0.02	-0.07	-0.05	-0.05	-0.04662
<b>Italy</b>	0.01	0.09	0.13	0.17	0.099582
<b>UK</b>	0.04	0.11	0.12	0.15	0.102455
<b>USA</b>	-0.16	-0.15	-0.10	-0.09	-0.12375

The above results indicate there is a gap between the nominal tax rate and the actual tax rate, which determines the firms' tax. Regardless of whether the gap is negative or positive, companies anticipate actual tax rate instability and variations from one year to another. Companies can achieve a positive gap by incurring significant effort. A positive gap can be obtained when companies hire tax experts who advise on navigating the complex tax legal framework to achieve favorable tax rates. This effort requires a substantial financial investment and does not provide any guarantee of success.

### Discussion

This research analyses the existing gap between the ETR and the STR. This gap is formed when companies try to avoid income taxes by taking advantage of taxation regimes or existing tax legislation.

As a result, companies have uncertainty regarding their future tax cash outflows, and face difficulty making exact budget estimations. Equally, prospective investors are unable to make clear valuation decisions based on future flows. This issue escalates further when considering investing in a foreign country with an unfamiliar tax system and lack of advice from local tax experts. The gap between the ETR and the STR disincentivizes companies from continuing their business operations, leading to a decline in entrepreneurship rates.

Thus, governments find it challenging to attract foreign investors and create an environment that promotes entrepreneurial activity and growth. Even if a government wishes to maintain a fixed tax rate, it cannot provide guarantees to a potential investor that this will occur. This is because the firm's final tax depends on multiple factors, such as income and expenses. Additionally, most jurisdictions prohibit individual tax incentives. As a result, states are unable to provide an attractive tax environment for investors and entrepreneurs by promising investors specific fixed tax rates. This issue is even more common in countries with high levels of corruption in tax authorities and heated political debates on corporate taxation.

It is also common that attractive tax policies implemented by one administration are overturned when governments change. Thus, states cannot create an environment that sustainably promotes entrepreneurship and investments.

The proposition of this paper is the creation of a tax rate swap, a derivative financial product that consists of an agreement between the state and the firm: the firm will pay the state an amount that equals the nominal tax rate on its annual net profits as calculated according to International Financial Standards (IFRS) or Generally Accepted Accounting Principles (GAAP). At the same time, the firm will receive from the issuer of the derivative (the state) the real charged amount as tax according to its tax return.

#### Tax Rate Swap

Firm Pays: Net profit for the year as per IFRS  $\times$  statutory tax rate (Figure 1).

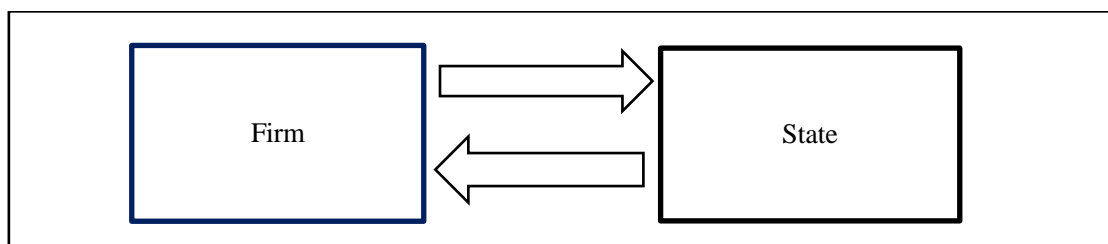


Figure 1. Tax Rate SWAP.

Firm Receives: Actual tax amount that has to be paid as per the tax return.

Hence, the net amount of tax is summarized as follows:

Net tax payment = net profit for the year as per IFRS  $\times$  statutory tax rate + actual tax amount that has to be paid as per tax return – actual tax amount that has to be paid as per tax return = net profit for the year as per IFRS  $\times$  statutory tax rate

The government will offer this derivative to companies that wish to invest for free or for a fixed rate, based on a predefined set of criteria; namely, this derivative can be granted to investors that commit to a minimum investment amount or operate in a specific business sector.

In light of the above, a reasonable question is the following: why is a firm unable to make a deal with the state to pay a tax equal to the net profit for the year as per IFRS  $\times$  the statutory tax rate rather than doing so via a tax rate swap? The reason is that such a scenario would likely face legislative barriers and political objections. Instead, the firm holding a tax rate swap is taxed similarly to all other corporate structures in the country and receives cash flows based on this derivative.

This derivative allows the state to guarantee to a potential investor or entrepreneur a stable actual (effective) tax rate for a given period. As a result, such a stable and predictable taxation treatment provides investors and businesses with the conditions that allow them to develop their business activities.

### Conclusions

This paper presents the gap in eight major economies between the actual (effective) tax rate and the nominal (statutory) tax rate, provided by the law. Regardless of its range between different firms and countries, the gap creates uncertainty regarding future net cash flows. This uncertainty can be a severe drawback for future additional investment in a specific country or future investment in a new country. Furthermore, this phenomenon is also a drawback for a government in its efforts to attract new investment.

A possible solution to this problematic situation is the tax rate swap, a new derivative instrument. By issuing this instrument, the state can guarantee potential investors a fixed tax rate for a certain period and encourage them to invest in these counties. This tool can be valuable to governments that wish to promote entrepreneurial activity and attract investment.

The holder of the derivative will need to pay a tax amount based on a fixed tax rate and net profit calculated according to generally accepted accounting standards (IFRS or GAAP) rather than standards set by a specific state's tax authorities. This will allow companies to better predict their cash flows, prepare more accurate business plans, and reduce their liquidity risk.

Such an instrument remains a proposal. Indeed, the state must conduct a multi-level evaluation of such a derivative's requirements, including possible legal reforms or financial implications.

The value of this derivative instrument relates to its duration, relevant limits, the statutory tax rate, the effective tax rate, interest rates, etc. An interesting area for future research is the valuation of such an instrument, which will allow us to assess and better understand the benefits for the state and the companies. Hence, future studies could examine whether governments could permit the trade of these derivatives. Specifically, researchers could explore the nature of such trading and analyze whether it should be performed over the counter, whether it shall be in the form of an exchange, and whether there is sufficient liquidity for such a market. Tax rate swaps will likely remain a topic of significant research interest.

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