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Appreciating a Country's Fiscal Attractiveness: Combining Theoretical Data and Empirical Results Through the ETR/STR Ratio

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Abstract

Objective: This paper investigates different methodologies for assessing a country's attractiveness in terms of Corporate Income Tax. More precisely, it aims to compare the ranking proposed by the Tax Foundation's International Tax Competitiveness Index with its own methodology.

Methods: The proposed methodology assesses a country's attractiveness based on the ratio of the Effective Tax Rate (ETR) to the Statutory Tax Rate (STR) and its variance. A ratio below or close to 1 indicates an efficient, stable, and predictable tax administration system. To evaluate the impact of this ratio, firm-level data from four countries (Austria, France, Poland, and Spain) from the BACH database were analyzed over five years, from 2018 to 2022.

Results: Except for France, which consistently ranks as the least attractive country, significant differences are observed between the two rankings. The resulting fiscal picture differs from that presented by the Index.

Conclusions: The ratio of the ETR to the STR and its variance can be a valuable tool for assessing a fiscal system and its attractiveness. It highlights the importance of understanding the interplay between statutory and effective tax rates. Moreover, it emphasizes the need for stability and predictability in the tax treatment of investments and operations.

Keywords: Corporate Income tax, effective tax rate, statutory tax rate, tax rates and rankings, average statutory corporate income tax, pre-tax profits, Corporate tax rate by country

Introduction

The Tax Foundation has published its annual International Tax Competitiveness Index¹. The index measures the attractiveness of a country's tax system based on two criteria: competitiveness and neutrality. To do this, the index considers over 40 tax policy variables, including both tax rates and tax structure. It examines corporate, individual, consumption, and property taxes, as well as the taxation of foreign-source income. This article will focus solely on corporate income tax (CIT).

A direct tax on corporate profits, CIT is levied by all OECD countries, though rates and bases vary significantly. Despite generating relatively little revenue for most governments (averaging 11.8% of total revenue in 2022²), CIT remains a critical component of tax systems. Key elements of CIT examined in this article include:

- Rate Rank: the statutory corporate income tax (CIT) rate.
- Cost Recovery Rank: The extent to which businesses can deduct expenses and recover costs.
- Incentives/Complexity Rank: The complexity of the tax system and the availability of tax incentives. The latter two ranks are derived from the ratio of the effective tax rate (ETR) to the statutory tax rate (STR).

A significant aspect of CIT is the disparity between statutory and effective tax rates. The statutory tax rate, as defined by law, is the nominal rate applied to taxable income. However, the effective tax rate, the actual tax paid as a percentage of taxable income, can be significantly lower. Several factors, such as tax deductions, exemptions, and credits, can influence the gap between these rates. As the European Commission noted in 2018³, “*tax provisions may limit the rate effectively applied*”. For instance, interest on loans, while often computed annually, may be treated as a tax-deductible expense or taxable income only when they are actually paid, not when they are merely recorded in accounting statements. Similarly, temporary exchange rate differences can create hypothetical income or expense items that are not immediately taxable or deductible. The ETR/STR ratio provides insight into the extent of tax complexity and the impact of tax incentives. A ratio significantly different from 1 suggests a more complex tax system with numerous exemptions and deductions, which can affect the effective tax rate. The goal of this article is to determine whether the rate rank, cost recovery rank, and incentives/complexity rank, derived from the ETR/STR ratio, align with the country's corporate tax rank. This analysis aims to identify relevant indicators for estimating a country's fiscal attractiveness.

Literature review

The purpose of a tax system is to ensure the financing of public expenditure. It also enables the functioning of the State. De Mooij and Klemm (2021⁴) argue that there are two main reasons for corporate income tax (CIT):

1. Corporations serve as “*collection agents for governments*”, facilitating the transfer of financial resources to the public administration in a relatively straightforward manner.
2. CIT ensures that rents earned by international businesses are taxed within the borders of the state where the ultimate owner resides, even if the company itself is located elsewhere. Since the introduction of the first modern CIT in the United States in 1909, with a 1% tax on corporate profits exceeding \$5,000, CIT has become increasingly popular globally as a fiscal tool for governments to tax firms.

How CIT is computed? Companies pay taxes on net profits. This means they pay taxes on total revenues minus total costs. Governments set specific rules for allowable deductions in their tax codes. These rules help determine the tax base, which can vary significantly between countries. The tax base is the total amount of income, property, assets, or economic activity subject to taxation. Every country has a different tax base, reflecting its lawmakers' priorities and philosophies.

The CIT is not neutral. In fact, economists at the Organisation for Economic Co-operation and Development (OECD⁵) demonstrate that the corporate income tax is the most harmful tax for economic growth. Capital is the most mobile factor in the economy. Thus, it is most sensitive to high tax rates. As evidence in this study suggests, “*lowering statutory corporate tax rates can lead to particularly large productivity gains in dynamic and profitable firms, which are those that can make the largest contribution to GDP growth*”. Lowering CIT can encourage investment⁶. In this way, CIT is a very sensitive tool for a State in the worldwide competition.

Within the context of corporate income tax, two primary rates are typically distinguished. The first is the statutory corporate income tax rate (STR), the official tax rate imposed on a corporation's taxable income. However, the amount effectively paid by companies is different, reflected in the effective tax rate (ETR). ETR can be calculated in two ways: either as the ratio of actual corporate income tax payments to actual profits (accounting profits) or as the product of the statutory tax rate and taxable profits (fiscal profits).

¹Mengden, A., (Tax Foundation, (2024)). “*International Tax Competitiveness Index 2024*”. Published on 21.10.2024. <https://taxfoundation.org/research/all/global/2024-international-tax-competitiveness-index/> accessed on 27.10.2024.

²Bunn, D., Perez Weigel, C., (Tax foundation, 2024)). “*Sources of Government Revenue in the OECD, 2024 Update*”. Published on 18.03.2024. <https://taxfoundation.org/data/all/global/oecd-tax-revenue-by-country-2024/> accessed on 27.10.2024.

³European Commission, (2018). “*Taxation trends in the European Union*”. https://ec.europa.eu/taxation_customs/business/economic-analysis-taxation/taxation-trends-eu-union_en. accessed on 27.10.2024.

⁴De Mooij, R., Klemm, A. D., (2021). “*Chapter 2 Why and How to Tax Corporate Income*”. In Corporate Income Taxes under Pressure. USA: International Monetary Fund. Retrieved Nov 1, 2024, from <https://doi.org/10.5089/9781513511771.071.ch002>.

⁵Johansson, A., Heady, C., Arnold, J., Brys, B., and Vartia, L., (2008). “*Taxation and Economic Growth*”. Organization for Economic Cooperation and Development, Economics Department Working Paper No. 620, July 3, 2008.

⁶Devereux, M.P., Maffini, G., and Xing, J., (2019). “*Corporate tax incentives and capital structure: new evidence from UK tax returns*”. American Economic Journal: Economic Policy 11.3, 361-89.

Two primary conceptions of ETR exist in the literature. The first is a forward-looking ETR (ex-ante or law-based), derived from legal provisions and modeling assumptions. The second is a backward-looking ETR (ex-post or data-based), calculated from actual data on companies' economic activities.

The first approach is quite popular in the literature. For example, Hanappi et al. (2023⁷) recently estimated forward-looking effective tax rates for 21 *Latin American and Caribbean (LAC)* countries. This approach is also used by the Organisation for Economic Co-operation and Development (OECD) in the CTS database, which is based on the work of Hanappi (2018⁸). In turn, Hanappi's work is based on the theoretical model initially developed by Devereux and Griffith (1998⁹; 2003¹⁰). It is also used in the European Union, for instance by the Centre for European Economic Research (ZEW, 2016¹¹). While forward-looking ETRs are useful for assessing potential tax burdens, they may not accurately reflect the actual tax burden experienced by firms. This is due to factors like tax avoidance strategies, tax rulings, and specific country-level tax incentives. For instance, Egger and Stimmelmayer (2017¹²) argue that forward-looking ETRs may not be the best tool for explaining multinational firms' behavior, as they are often calculated for domestic firms and may not capture the complexities of cross-border operations. As stated by Egger et al. (2009¹³), forward-looking ETRs are crucial for assessing a country's economic response to profit taxation, often using "hypothetical investment projects".

However, this article focuses on a different scope, and backward-looking ETRs are more appropriate. Backward-looking ETRs are calculated using historical firm-level data on actual corporate income taxes paid. They reflect the combined effects of many different factors, such as the statutory tax rate (STR), the tax base, the types of projects, and the tax-planning strategies that firms undertook. Backward-looking ETRs reflect past tax codes and behaviors. This makes them useful for mapping the level of

⁷Hanappi, T., Orozco, J.R., Parra, S.N., Rasteletti, A., (2023). "Corporate Effective Tax Rates in Latin America and the Caribbean". Inter-American Development Bank, Institutions for Development Sector, October 2023. <http://dx.doi.org/10.18235/0005168>.

⁸Hanappi, T., (2018). "Corporate Effective Tax Rates: Model Description and Results from 36 OECD and Non-OECD Countries". OECD Taxation Working Papers No. 38. Paris, France: OECD Publishing.

⁹Devereux, M., Griffith, R., (1998). "The Taxation of Discrete Investment Choices". IFS Working Papers No. W98/16. London, United Kingdom: Institute for Fiscal Studies.

¹⁰Devereux, M., Griffith, R., (2003). "Evaluating Tax Policy for Location Decisions". International Tax and Public Finance 10: 107–126.

¹¹Centre for European Economic Research (ZEW), (2016). "The Impact of Tax Planning on Forward-Looking Effective Tax Rates". Taxation Papers 64, Directorate General Taxation and Customs Union, European Commission.

¹²Egger, P., and Stimmelmayer, M., (2017). "Taxation and the Multinational Firm". Working Paper No. 6384. CESifo Working Paper.

¹³Egger, P., Loretz, S., Pfaffermayer, M. & Winner, H., (2009). "Firm-specific forward-looking effective tax rates". International Tax and Public Finance, Springer; International Institute of Public Finance, vol. 16(6), pages 850-870, December.

backward-looking ETRs and the attractive rank of a country. Maffini (2017¹⁴) argues that backward-looking ETRs are more precise as they reflect what firms actually pay in tax returns and are endogenous. Wawrzyniak (2011¹⁵) underlines their simplicity, as they only require access to data available from most statistical institutes. They also incorporate the entire tax code, including the combined effects of statutory tax rates, tax deductions, and tax credits. Nicodeme (2001¹⁶) highlights the different measures encountered in the literature, ranging from the ratio of taxes on profits, incomes, and capital gains of corporations, on the gross operating surplus of companies, to the ratio of taxes on corporations, including taxes on their net wealth, on the gross operating surplus of corporations computed as the difference between the gross operating surplus of all companies and the gross operating surplus of unincorporated companies. That explains why backward-looking ETRs are used in this article.

Research method

The current article aims to check whether the STR and the ETR/STR ratio, based on reported data, align with a country's Corporate Tax Rank. The goal is to determine if these indicators are relevant for estimating a country's fiscal attractiveness. The novelty of this article is to propose a complementary tool to existing methods for assessing a country's fiscal attractiveness. To test the hypothesis that the ETR/STR ratio is a relevant fiscal tool, empirical tests are conducted for five years, from 2018 to 2022, for four countries: Austria, France, Poland, and Spain.

- The STR

The statutory rate is taken from the website <https://tradingeconomics.com/poland/corporate-tax-rate> accessed on 05.11.2024.

- The ETR/STR ratio

Data are taken from the BACH database (www.bach.banque-france.fr). As the website states, "the data are based on the annual statistical financial statements collected by Central Statistical Office. The survey comprises enterprises of more than 9 employees".

The database provides a 'tax paid on profit (or loss)' figure. This amount is corrected by the change in deferred tax to isolate the 'corporate income tax of the year (CITY)'. The calculated CITY is then compared to the profit before tax (PBT) to obtain the ETR. The statutory tax rate (STR) is multiplied by the PBT to get the STR amount. Finally, the ETR/STR ratio is calculated.

The analysis is further narrowed by firm size. Small firms (turnover < €10 million) are distinguished from medium-sized firms (€10 million ≤ turnover < €50 million) and large firms (turnover ≥ €50 million). Small and medium-sized enterprises

¹⁴Maffini, G., (2017). "Effective tax rates: forward and backward looking measures". OECD, Centre for Tax Policy and Administration. Ministero delle Finanze, Rome, 12 April 2017. https://www.finanze.gov.it/export/sites/finanze/galleries/Documenti/Varie/GMaffini_MoF_12April-17.pdf accessed on 03.11.2024.

¹⁵Wawrzyniak D., (2011). "Company Taxation in the European Union". *Comparative Economic Research, Sciendo*, vol. 14(3), pages 119-136, January.

¹⁶Nicodème, G., (2001). "Computing effective corporate tax rates: comparisons and results". *European Economy - Economic Papers 2008 - 2015 153*, Directorate General Economic and Financial Affairs (DG ECFIN), European Commission.

(SMEs) encompass firms with a turnover below €50 million. Only firms with a positive CIT and a positive PBT for each year in each country are considered. Concerning the ETR/STR ratio, a ratio higher than 1 indicates that the reported tax (ETR) for the year is higher than the STR. This suggests that the tax law limits some tax deductions or adds additional taxable income. A ratio below 1 indicates the opposite. Ideally, the ratio should be below or close to 1, showing that existing tax incentives favor firms and encourage investment. Additionally, the variance of the ETR/STR ratio is analyzed as an indicator of the volatility of the tax law. A smaller variance indicates a more stable tax law, which is beneficial for firms as it allows them to better predict their tax liabilities.

The relationship between ETR and STR is crucial. Increasing the STR can reduce a country's tax code competitiveness by creating a significant gap between the statutory rate and the effective rate. This discrepancy may incentivize companies and individuals to engage in tax avoidance, aggressive tax planning, or shifting operations to lower-tax jurisdictions. As shows by the OECD¹⁷, high marginal corporate tax rates tend to discourage capital formation and thus slow economic growth. Conversely, when ETRs are significantly higher than the STR, the tax system can distort economic decisions and hinder investment. Therefore, policymakers must carefully consider both the direct and indirect effects of tax rate increases to maintain competitiveness and avoid negative economic consequences.

- The Corporate Tax Rank of the country

The ranking is taken from the Tax Foundation and its annual International Tax Competitiveness Index: <https://taxfoundation.org/research/all/global/2024-international-tax-competitiveness-index/#previous-versions> accessed on 05.11.2024.

Research result

The base of the analysis is the ranking of the 4 countries based on the International Tax Competitiveness Index. The Index considers key elements of CIT, including the rate rank (the statutory tax rate), the Cost Recovery Rank, and the Incentives/Complexity Rank.

¹⁷OECD, (2010). "Tax Policy Reform and Economic Growth". OECD Tax Policy Studies, No. 20, Nov. 3, 2010, <https://oecd.org/ctp/tax-policy/tax-policy-reform-and-economic-growth-9789264091085-en.htm> accessed on 17.11.2024.

Table 1: Ranking of countries according to their CIT in the International Tax Competitiveness Index from 2018 to 2022

Corporate Tax Rank								
Country	2018	2019	2020	2021	2022	Min	Max	Average
Poland	9	13	9	14	12	9	14	11.4
Austria	15	17	21	21	23	15	23	19.4
Spain	26	22	28	32	31	22	32	27.8
France	34	35	35	34	35	34	35	34.6

Source: prepared by the author

It looks like that Poland is the most attractive country in terms of Corporate Tax rank. Poland is followed by Austria, Spain and France. Over the five years, no change in the ranking is observed. The purpose of the following tests is to check if the STR and the ETR/STR ratio confirm such observation.

- The STR

The STR partially confirms the ranking. Poland is the most attractive country, and France is the least attractive. However, no discernible difference is observed between Austria and Spain, even though Austria should be more attractive than Spain.

Table 2: STR per country from 2018 to 2022

STR					
Country	2018	2019	2020	2021	2022
Poland	19.00%	19.00%	19.00%	19.00%	19.00%
Austria	25.00%	25.00%	25.00%	25.00%	25.00%
Spain	25.00%	25.00%	25.00%	25.00%	25.00%
France	33.00%	31.00%	28.00%	26.50%	25.00%

Source: prepared by the author

Table 3: Ranking STR per country from 2018 to 2022

RANKING STR					
Country	2018	2019	2020	2021	2022
Poland	1	1	1	1	1
Austria	2	2	2	2	2
Spain	2	2	2	2	2
France	3	3	3	3	2

Source: prepared by the author

Importantly, since 2019, Poland has a special 9% CIT rate for small firms that meet certain criteria. Only small companies in the sample are subject to this rate. In Spain, new businesses with positive taxable income in their first two tax periods are taxed at a rate of 15%, unless they qualify for a lower rate. As this information is not available in the database, it is not considered in the analysis. For financial years beginning on or after January 1, 2021, France extended the reduced CIT rate of 15% to corporations with a turnover of up to €10 million (previously €7.63 million). This rate applies to the first €38,120 of taxable profits, as defined by French tax law. Only small companies in the sample are subject to this rate.

- The ETR

The ETR confirms the previous observation. In two of the five years (2018 and 2021), the ranking aligns with the Index. In two other years (2018 and 2020), the ranking is close to the Index, with only two countries (Austria and Spain in 2018, and Austria and Poland in 2020) interchanging positions. The year 2022 presents a significantly different pattern.

Table 4: ETR per country from 2018 to 2022

ETR		Austria	France	Poland	Spain
2018	Sum	20.84%	29.28%	18.66%	20.31%
2019	Sum	21.18%	32.97%	17.62%	21.45%

2020	Sum	21.92%	56.25%	22.05%	30.38%
2021	Sum	22.55%	29.14%	21.24%	24.66%
2022	Sum	23.45%	24.76%	28.77%	28.82%

Source: prepared by the author

Table 5: Ranking ETR per country from 2018 to 2022

Ranking ETR		Austria	France	Poland	Spain
2018	Sum	3	4	1	2
2019	Sum	2	4	1	3
2020	Sum	1	4	2	3
2021	Sum	2	4	1	3
2022	Sum	1	2	3	4

Source: prepared by the author

- The ETR/STR ratio

An ETR/STR ratio less than 1 indicates that the ETR is lower than the STR. This suggests that firms have used tax deductions to reduce their CIT liability. A higher ratio means that the tax law limits tax deductions or imposes taxes on non-taxable income. A ratio closer to 1 suggests that the tax law is relatively simple, with fewer exceptions and differences between accounting and tax treatments for income and expenses.

Table 6: Ranking ETR/STR ratio per country from 2018 to 2022

ETR / STR		Austria	France	Poland	Spain
2018	Sum	83.36%	88.73%	98.20%	81.25%
2019	Sum	84.74%	106.36%	99.63%	85.80%
2020	Sum	87.67%	200.90%	124.63%	121.51%
2021	Sum	90.20%	117.10%	118.13%	98.64%
2022	Sum	93.80%	105.15%	158.34%	115.29%
Average		87.95%	123.65%	119.79%	100.50%
Difference to 1		0.1205	-0.2365	-0.1979	-0.0050
Variance		0.0018	0.1968	0.0596	0.0313

Source: prepared by the author

France confirms the previous observation as the worst-performing country in terms of the difference from 1 and its variance. However, the situation for the other countries is different. Austria should be more attractive, with a significantly lower ETR compared to the STR and a low variance between years, indicating stability and continuity in the fiscal law. Spain is also interesting, as its ETR is closer to the STR compared to other countries. Poland does not align with the previous observations, with a ratio greater than 1. This suggests significant changes in the calculation of the fiscal result and a relatively high variance.

As a summary, the following result is observed:

Table 6: Ranking of country according to the ETR/STR ratio from 2018 to 2022

ETR / STR		Austria	France	Poland	Spain
Summary		1	4	3	2

Source: prepared by the author

Looking at the picture based on firm size, some small differences emerge. Poland performs better for medium-sized firms and SMEs in terms of the difference between the ETR and STR. The variance in these categories for Poland confirms this trend. For large firms, Spain appears slightly more attractive than Austria. However, overall, Austria remains the most attractive country.

Table 7: Ranking of country according to the ETR/STR ratio from 2018 to 2022 per firms' size

ETR / STR		Austria	France	Poland	Spain
Average	SME	94.49%	126.46%	81.21%	126.59%
Average	LARGE	76.68%	117.71%	155.84%	73.78%
Average	SMALL	103.86%	140.83%	135.58%	132.45%
Average	MEDIUM	85.73%	152.56%	91.53%	118.79%
Variance	SME	0.0011	0.1347	0.0504	0.0186
Variance	LARGE	0.0148	0.3510	0.1154	0.0245
Variance	SMALL	0.0014	0.2447	0.2986	0.0265
Variance	MEDIUM	0.0056	0.2767	0.0568	0.0217

Source: prepared by the author

- Discussion of the results

The purpose of this analysis was to compare the International Tax Competitiveness Index¹⁸ and the ETR/STR ratio for four countries (Austria, France, Poland, and Spain) from 2018 to 2022, focusing on Corporate Income Tax attractiveness. The ETR/STR ratio confirms the Index's ranking only for France, which is consistently the least attractive country. However, for the other countries, the ratio and its variance paint a different picture. Austria, not Poland, emerges as the most attractive country.

Table 8: Summary of the comparison of the Index and the ratio for 4 countries from 2018 to 2022

Country	INDEX	ETR/STR
	2018-2022	
Poland	1	3
Austria	2	1
Spain	3	2
France	4	4

Source: prepared by the author

Importantly, the index focuses more on the presence or absence of certain tax features, while the ratio is based on concrete data. This highlights that certain fiscal tools, such as Poland's allowance of corporate equity (ACE), may exist but may not be widely used due to complexity or limitations. As Cathala (2023¹⁹) notes that “due to the reform, Polish firms have not increased neither their equity nor their debt. It seems that the reform does not have a real effect on Polish firms. The level of the Threshold of PLN 250 000 is certainly too small to be really attractive to firms”. This example demonstrates how a country might appear attractive in the Index but, upon closer examination of firm-level data, a more nuanced picture emerges.

Fiscal implications and further studies

The fiscal attractiveness of a country in terms of Corporate Income Tax (CIT) is a popular topic, as evidenced by the global demand for a minimum CIT²⁰. The purpose of this article is to examine how countries compare when CIT is assessed based on firm-level information. The Tax Foundation's International Tax Competitiveness Index provides a valuable framework for assessing a country's tax system. However, this article challenges the Index's ranking by comparing it to a ranking based on the ETR/STR ratio and its variance. The results present a different picture than that of the Index. The discrepancy between the two rankings may arise from the detailed complexities and limitations of fiscal laws. For instance, an interesting tax incentive might exist but be so limited in scope that only a few firms can benefit from it. Additionally, specific tax provisions might lower the STR for certain firms, which may not be reflected in the sample used in this article. This analysis opens the way for future research sequencing companies and utilizing data directly from state authorities to gain a more accurate understanding of a country's fiscal attractiveness.

¹⁸Mengden, A., (Tax Foudation, (2024)). “International Tax Competitiveness Index 2024”. Published on 21.10. 2024. <https://taxfoundation.org/research/all/global/2024-international-tax-competitiveness-index/> accessed on 27.10.2024.

¹⁹Cathala, C., (2023). “More equity for firms – Poland ACE versus Italian/Belgium ACE – too small to be relevant?”. *International Journal of Advances in Engineering and Management (IJAEM) Volume 5, Issue 10 Oct 2023, pp: 217-233* www.ijaem.net ISSN: 2395-5252.

²⁰Cf. *The Global Minimum Tax agreed by more than 140 members of the Inclusive Framework on Base Erosion and Profit Shifting* <https://www.oecd.org/en/topics/base-erosion-and-profit-shifting-beps.html> accessed on 17.11.2024.

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