

REM WORKING PAPER SERIES

**Rethinking corporate taxation in the European Union: how
and where to tax Multinational Enterprises**

Joana Andrade Vicente

REM Working Paper 0286-2023

August 2023

REM – Research in Economics and Mathematics

Rua Miguel Lúpi 20,
1249-078 Lisboa,
Portugal

ISSN 2184-108X

Any opinions expressed are those of the authors and not those of REM. Short, up to two paragraphs can be cited provided that full credit is given to the authors.





REM – Research in Economics and Mathematics

Rua Miguel Lupi, 20
1249-078 LISBOA
Portugal

Telephone: +351 - 213 925 912

E-mail: rem@iseg.ulisboa.pt

<https://rem.rc.iseg.ulisboa.pt/>



<https://twitter.com/ResearchRem>

<https://www.linkedin.com/company/researchrem/>

<https://www.facebook.com/researchrem/>

Rethinking corporate taxation in the European Union: how and where to tax Multinational Enterprises?

Joana Andrade Vicente*

Abstract

In this paper we conduct an empirical analysis to assess the redistributive impact of implementing a Formulary Apportionment approach in the European Union, compared to the current system based on the separate entity approach, aiming to contribute with databased evidence to the ongoing sensitive political debate about the much-needed change in the international (and, specifically, European) corporate tax regime. We update and extend prior research to estimate which Member States will likely gain and lose in terms of corporate tax base and revenues from the implementation of the ‘*Business in Europe: Framework for Income Taxation*’ (BEFIT) initiative, planned to be soon launched by the European Commission. Using recently published Country-by-Country Reporting data released by the Internal Revenue Service, our findings show that the redistributive impact among Member States would be significant. Results are in line with international tax literature: larger economies with higher tax rates (such as Germany and France) would experience a considerable tax base increase, transferred from smaller countries with lower tax rates (like the Netherlands and Ireland), as multinational enterprises would have more restricted opportunities to engage in artificial profit shifting activities.

Keywords: Country-by-Country Reporting; European Union; Formulary Apportionment; profit shifting; United States multinational enterprises.

JEL classification: F23, H25, H26

Table of Contents

1	Introduction.....	1
2	Formulary Apportionment in the European Union: two decades of proposals.....	3
3	An assessment of a Formulary Apportionment in the European Union.....	5
3.1	Data.....	5
3.2	Tax base (re)allocation.....	7
3.3	Revenue (re)allocation.....	12
4	Discussion and policy efficiency assessment.....	17
4.1	Comparative results analysis.....	17
4.2	Discussion in light of behavioural responses.....	18
4.3	Policy efficiency assessment.....	20
5	Final considerations.....	22
	References.....	24

* ISEG – Lisbon School of Economics and Management, University of Lisbon.

Contact details: jvicente@iseg.ulisboa.pt. ORCID: 0000-0002-2064-8299

This work was supported by the FCT – Fundação para a Ciência e a Tecnologia [grant number SFRH/BD/129307/2017].

1 Introduction

It has become increasingly common to hear about Multinational Enterprises (MNE) paying lower average effective tax rates (ETR) compared to domestic companies, by shifting profits to lower tax countries and parking cash in tax havens. MNEs employ various strategies to accomplish this, including income shifting channels, the use of intricate tax structures, exploiting weaknesses in national legal systems and taking advantage of loopholes in transfer pricing regulations (Dharmapala & Riedel, 2013; Mooij & Liu, 2018). The globalization of supply chains, the scale of MNEs' economic integration, the wider adoption of transfer pricing legislation (based on guidelines that require experience to be correctly applied) and the low capacity to deal with the increasing number of tax disputes by local tax authorities, are making the current system increasingly difficult to apply. Also, the taxpayers' obligation to file a growing number of tax forms is raising compliance costs and tax uncertainty (Devereux, 2022).

The separate entity approach¹ – and the arm's length standard (ALS) on which it is based – has proven increasingly inadequate to reflect the aforementioned challenges, failing to effectively enforce and oversee international tax rules that protect countries from MNEs' aggressive tax planning schemes (Avi-Yonah, 2007; International Monetary Fund, 2019). By acknowledging this problem, the European Commission (EC) has been leading several reform initiatives over the past two decades, proposing alternatives capable of delivering a more effective and transparent taxation system. Of these, the EC's *Business in Europe: Framework for Income Taxation* (BEFIT) initiative (European Commission, 2021) – integrated in the European Union's (EU) tax agenda for business taxation in the 21st century – is the latest (renewed) attempt to propose an alternative way to allocate income among different jurisdictions. It aims to overhaul the previous *Common Consolidated Corporate Tax Base* (CCCTB) proposals, despite keeping its goals: to align taxation with economic substance, to enhance international tax transparency and to fight European tax havens.

The BEFIT initiative is currently under public consultation, and it is planned that the EC will present a proposal for a directive in the third quarter of 2023. If adopted, it will mean a comprehensive solution for business taxation in the EU, creating a coherent framework to corporate taxation within the Single Market under a Formulary Apportionment (FA) approach². It will introduce a common set of rules, with economically integrated (but legally separated) companies being treated as a single group for tax purposes. MNEs' taxable base would be calculated through a multifactor

¹ The separate entity approach treats related entities (entities pertaining to the same economic group) as if they were separate independent entities for tax purposes. Transactions between those entities *should* be valued at market prices, *i.e.*, at prices set in similar transactions between comparable independent parties, in order to comply with the arm's length standard.

² Throughout the paper, the '*FA approach*' refers to a unitary taxation with formulary apportionment, *i.e.*, we are not discussing applying the formula separately to each entity within an MNE, but rather on a combined basis, consolidating the accounts of all legally separate enterprises that are part of a single *unitary* business.

allocation formula to ensure a more accurate allocation of profits between EU Member States and improve the EU's investment environment.

Implementing a FA approach in the EU under the BEFIT initiative would mean an evolutionary change of the current international tax policy setting – a change advocated by many policymakers, academics and international tax institutions (Rixen, 2011; Keen & Konrad, 2013; Avi-Yonah & Tinhaga, 2017; International Monetary Fund, 2019). But it also poses a relevant question: if a FA approach were to be implemented in the EU, what would be the tax base redistributive consequences for each EU Member State? The impact assessment of the BEFIT initiative performed by the EC is yet to be presented and the last study carried out was still based on the CCCTB initiative (European Commission, 2016c) – when the provisions of the international (and European) tax regimes were significantly different. Hence, in this paper, we take advantage of recently published Country-by-Country Reporting (CbCR) data released by the Internal Revenue Service (IRS) to perform an empirical assessment of the FA approach initiative, empirically estimating which countries are the *winner*s and *loser*s of this new EU corporate taxation system. We aim to contribute to databased policymaking, still a key challenge when it comes to MNEs' worldwide activity.

The remainder of the paper is as follows. In section 2 we discuss the FA option to allocate MNEs' taxable profits across Member States and the attempts performed by the EC over the past two decades to implement it across the EU. In section 3 we start by describing the data sources most commonly used to assess MNEs' taxation and profit shifting activities, highlighting the superiority of CbCR data to assess this alternative corporate taxation system. Afterwards, we provide new evidence concerning the redistributive impact effect of implementing the BEFIT initiative in terms of EU Member States' tax base and revenue (re)allocation, comparing it to the current international tax regime, based on the separate entity approach. Large changes in tax base and revenue of individual Member States are expected, based on the intense profit shifting activities developed by MNEs within the Single Market (Tørsløv, Wier, & Zucman, 2022). The analysis is static, in the sense that it ignores behavioural responses by MNEs and governments to the reform. In section 4 we perform a comparative result analysis, review existing empirical studies on the topic, summarizing their findings and framing them within our results. We also develop a policy efficiency assessment, aiming to contribute to the ongoing policy debate about the much-needed change in the international corporate taxation regime. The FA approach has been one of the most politically sensitive topics among EU Member States, and the relaunch of the CCCTB proposal (under the BEFIT package) is expected to continuously face resistance, due to the direct distributional impact on corporate tax revenues collected by each country. Finally, in section 5 we present the main conclusions.

2 Formulary Apportionment in the European Union: two decades of proposals

On May 2021, the EC announced a new plan to consolidate profits of MNEs into a single tax base in the EU and allocate them between Member States through a formula. That plan was called the BEFIT initiative (European Commission, 2021), but it was not the EC's first effort to achieve a more harmonized corporate tax rules system in the EU. Throughout the past two decades, the EC has been searching for a common corporate tax base method in which all Member States could rely on. The goal was to reduce tax uncertainty and compliance costs to MNEs, while empowering the Single Market, by shutting down corporate tax distortions created by the coexistence of 27 different tax systems.

Approaches for harmonizing the EU's corporate tax rules began to be heavily debated in 1992, following a report that became known as the Ruding Report (European Commission, 1992). One of the purposes of the Report was to examine the distortion that Member States' tax planning impose on the internal market and the consequent obstacles imposed to cross-border investment, followed by addressing solutions to overcome these problems. According to the conclusions of the Report, the main problem for the complete integration of the Single Market was the different tax systems applied by Member States, stressing the need to counter special tax regimes in force, due to the economic distortions they were causing in the internal market.

The path to find a compatible corporate tax system for all EU Member States came in 2001, when the EC issued a communication asserting, for the first time, a strategy to provide a common consolidated tax base for all EU-wide activities (European Commission, 2001). The goal was focused on adjusting the EU's corporate taxation system to the current changed economic and political framework, while achieving a more efficient and economically integrated Single Market.

This strategy was further developed and culminated, in 2011, in a Directive on an optional common system for calculating the tax base of MNEs operating in the EU, the CCCTB (European Commission, 2011) – the first *official* attempt to change the EU's corporate taxation system to a FA regime. However, the discussions between Member States made it clear that there was no sufficient political support to adopt the CCCTB in its entirety. So, the CCCTB was relaunched in 2016 in the form of a two-step approach (European Commission, 2016b): the first step would rely only in the determination of a common corporate tax base, and the second would consolidate tax groups and apportion the consolidated tax base to the respective Member States based on a formulary apportionment formula. This initiative, if approved, would be mandatory to corporate groups with consolidated revenue exceeding EUR 750 million, with an opt-in for smaller groups. Following another deadlock on negotiations, both proposals were withdrawn, and the EC announced the BEFIT initiative, still under discussion.

The BEFIT initiative follows on EC's previous proposals: it also intends to harmonize the corporate tax base across all EU Member States, without harmonizing corporate tax

rates. After the definition of common rules to compute the corporate tax base of MNEs operating in the EU (allowing for the consolidation of EU-wide profits), the consolidated tax base is assigned to each Member State through an allocation formula. The implementation of this system would allow the EU to move from the separate entity approach to a FA regime, allowing to further advance the EU's project to build an integrated market. BEFIT is being designed to be a deeper and structural reform of the EU's corporate taxation framework, consistent with the OECD Two Pillar Approach.

The BEFIT initiative should secure a fair distribution of corporate tax revenue across Member States, allocating the consolidated tax base using proxies for substantial economic activities to align the tax base closely where production factors are located and where consumers are based. The formula defined in the last CCCTB proposal comprised three weighted factors: i) labour, based on equal measure on the number of employees and payroll costs; ii) assets (tangible fixed assets, whether owned, rented or leased); and iii) sales (other than intragroup transactions) of goods and service, net after discounts, returns, VAT and other taxes and duties. The sales factor would be calculated based on destination (where the goods are sold or where the service is carried out), to reflect the importance of the market where a MNE does business. As for the formula under the BEFIT proposal, the information made available until now anticipates that an appropriate weight regarding sales by destination, labour and assets will continue to be considered, but with the possibility of also including intangible assets within the assets factor, to better account for the highly digitalized global economy. Their consideration is though to be done through a proxy value based on R&D expenses and marketing and advertising costs that meet certain nexus requirements.

Whether intangibles should be included or not in the apportionment formula has no direct answer³. On one hand, intangibles are, nowadays, a very important part of an MNEs' competitive advantage and the relocation of intangible property has been a key channel used by MNEs to achieve tax advantage results, by transferring valuable intangible property with a wide potential scope of activities to a lower tax location (Dharmapala & Riedel, 2013; Mooij & Liu, 2018). On the other hand, not incorporating intangible assets in the formula, reflects the true spirit of its value being inherent and spread out across the MNE group. By not including them, national tax authorities are assigning their value to the entire MNE, divided across the other weighting factors, as the intangible assets' value derives, indirectly, from employment (R&D employees) and tangible assets (e.g., infrastructures, laboratories) (International Monetary Fund, 2019).

³ A detailed discussion of this subject can be found at Martins & Taborda (2022), who also raise the question of what types of intangible assets should be included. Nonetheless, since, to the best of our knowledge, no study has tried to include this variable in the estimates, it would be important that the EC presents the results of implementing the BEFIT initiative based on estimates with and without the inclusion of intangible assets in the apportionment formula.

3 An assessment of a Formulary Apportionment in the European Union

3.1 Data

Representative data of MNE's profits and activity is still scarce, albeit improving, allowing to explore different data sources to assess tax avoidance and profit shifting activities. From what is perceivable from section 2.2, previous studies on these topics and on the effects of new corporate tax policies can be broadly divided into two groups: micro data at the company level, and macro data aggregated at the country level. Micro data sources include the Bureau of Economic Analysis' survey data, Eurostat's foreign affiliate statistics, controlled foreign corporation data provided by the Internal Revenue Service and two private databases with company balance sheet information based on financial accounting, namely Bureau van Dijk's Orbis and Standard & Poor's Compustat.

Company-level empirical literature on corporate tax planning largely relies on the Orbis database, with that being especially true for research on the impact of implementing a FA scheme in the EU. At Orbis, general characteristics for each company (e.g., industry, date of incorporation), as well as financial information, are provided in a standardized format. Orbis is, in fact, one of the most comprehensive company-level databases, providing a good coverage since the mid-2000 (with some information going back to the 1980s). However, that coverage seems to be much better for European countries than for non-European countries, with companies in lower tax jurisdictions (especially tax havens) seemingly underrepresented – Tørsløv et al. (2022) estimates that Orbis only shows an average of around 17% of global profits. The reason for this incomplete coverage includes: i) an incomplete coverage of countries, as some do not keep business registries or do not make them publicly available (e.g., the US and Switzerland); ii) an incomplete list of subsidiaries, since information about ownership structures is incomplete and, in some countries, the obligation to report financial information is limited to certain types of companies; and iii) missing values in the variables of interest, as some countries do not require companies to report the specific information needed (profits, assets and employees). Estimates of profit shifting are thus likely to be substantially biased downwards, including estimates related to US MNEs' activity (the sample addressed in this paper). Additionally, Orbis does not contain information about intragroup revenues, one of the most common mechanisms used by MNEs to shift profits (Heckemeyer & Overesch, 2013). In fact, none of the above mentioned micro databases are well fitted to assess the FA impact, as extensively addressed in Garcia-Bernardo, Janský & Tørsløv (2021), either because they only have information for a small set of countries, information is not broken down by country, or because neither tax, employees nor tangible assets information is available.

At the aggregate level, the main data source available to study MNEs' activities is the CbCR data. CbCR was implemented as part of Action 13 of the OECD/G20 Base Erosion

and Profit Shifting (BEPS) initiative, with the main purpose of supporting tax administrations in the high-level detection and assessment of transfer pricing and other BEPS-related risks, aiming to decrease tax avoidance through enhanced transparency, by lowering the net tax benefits of MNEs' tax-motivated income shifting (as the risk of detection increases) (OECD, 2015). These reports are filled by the ultimate parent entity of an MNE, which is typically the entity in the best position to understand the global activities and structure of the group. It contains information on the global allocation of the group's income and taxes, together with indicators of the location of economic activity (e.g., revenues, profit and loss before taxation, taxes paid, number of employees, tangible assets) and is currently the only systematic source on the taxes effectively paid by MNEs in each of the countries where they operate, including detailed reporting on tax havens, which are usually underrepresented in other datasets. This makes CbCR data especially suitable for tax analyses, providing useful information that other sources lack, including greater quality of tax payment information, a significant expansion of country coverage and separated data on the subset of companies earning positive profits⁴. Moreover, the threshold for mandatory submission of the CbCR is an annual consolidated group revenue exceeding EUR 750 million (or US\$ 850 million) in the previous fiscal year, which includes all large MNEs that would be subjected to a mandatory FA scheme in the EU, making the CbCR the prevailing database for the analysis we intended to perform.

The first CbCR data was filed for fiscal years beginning on or after January 1st, 2016. For now, CbCR data is publicly disclosed in an aggregated and anonymized format⁵, although some MNEs are already voluntarily publishing their CbCR. Data is centrally published by the OECD, which has already released information on the global tax and economic activities of MNE groups headquartered in 47 jurisdictions for fiscal years 2016 through 2018. Additionally, some jurisdictions are also publishing their own aggregated and anonymized CbCR data. This is the case of the US, for which CbCR data until 2020 is already available. In fact, we focus our attention on this dataset and on the activities developed only by US MNEs, since US MNEs: i) are the ones that more actively shift profits away from EU higher tax countries (Clausing, 2020; Tørsløv, Wier, & Zucman, 2022), ii) have the largest bilateral trade and investment relationship with the EU

⁴ The CbCR data allows for a greater economic and statistical analysis of BEPS activities by avoiding most of the problems mentioned above associated with the micro databases, but it does not do it so without certain drawbacks. The main one is the possibility of double-counting profits, as a number of companies may be including as profit tax-exempt dividends flowing through subsidiaries – only in 2020 did the OECD issue guidelines that explicitly instruct MNEs to remove these intragroup dividends from profits. However, since CbCR data is used by tax authorities for transfer pricing risk assessments, it is unlikely that MNEs have an incentive to overstate their profits (especially in tax havens) by including intragroup dividends. Moreover, over half of the estimated double-counting involves domestic profit (Garcia-Bernardo, Janský, & Zucman, 2022), and, excluding the 'stateless income' observations, the double-counting is unlikely to be a substantial problem (Clausing, Profit shifting before and after the Tax Cuts and Jobs Act, 2020).

⁵ The information reported by MNEs concerns *aggregate* data, with separate information on each constituent entity in a jurisdiction being combined with no adjustment for transactions between constituent entities in the same MNE, as opposed to *consolidated* data, which treats the constituent entities of an MNE in a particular jurisdiction as a single economic entity. While ensuring confidentiality, the drawback of aggregating the statistics and the consequent non-disclosure of specific information about a particular MNE, is the lower level of detail of the data and the risk of obscuring the effects of potential outliers.

(UNCTAD, 2022), and iii) have been relying on European tax havens to carry out their activity under a tax-friendly environment, shifting their profits to non-EU offshore centres, by using the differences between tax systems within the Single Market and, consequently, distorting intra-EU competition (Vicente, 2023). The aggregate information that the IRS gathers and publishes provides information on the profile of large US MNEs and can be used to identify potential tax risks, as well as to analyse tax policy and estimate the overall impact of tax law changes and their effects on tax collected. Data on US MNEs is made available by the IRS on its Statistics of Income Tax Stats webpage⁶. The database used in our exercise refers to the period between 2018 and 2020 to stabilize the ratios calculated and conclusions inferred, while allowing us to capture a clear picture of the dynamic of US MNEs' activity after the Tax Cuts and Job Act (TCJA), enacted in 2018.

3.2 Tax base (re)allocation

To assess the impact that implementing the FA scheme would have on EU Member States' corporate tax base, we follow the methodology developed in IMF (2019). However, our analysis differs in two key aspects. First, instead of using the Bureau of Economic Analysis (BEA) aggregate data on US MNEs, we use the most recent data provided by the IRS, covering the period from 2018 to 2020⁷. Data from this period, to the best of our knowledge, has not been evaluated yet and includes the effects of the TCJA, while addressing any reporting errors that may have existed in the initial years of the CbCR, specifically 2016 and 2017⁸. Second, our main goal is to assess the impact of implementing unitary taxation within the EU, rather than on a global scale. As a result, we restrict our sample to the activity of US MNEs' at the EU level. Hence, we only consider the potential weighting scheme proposed by the EC⁹ for the latter CCCTB formula.

A US MNE (group) includes the ultimate parent entity and all the business entities

⁶ Data is based on CbCR data made available annually by the IRS, specifically from *Form 8975 – Country-by-Country Report* and *Form 8975 Schedule A – Tax Jurisdiction and Constituent Entity Information*, available at <https://www.irs.gov/statistics/soi-tax-stats-country-by-country-report>.

⁷ Mooij, Liu, & Prihardini (2021) also perform an assessment of global FA using CbCR data, although following a different methodology: before assessing the effects on global tax revenue, they estimate the tax base effect with cross-border loss consolidation using company-level data, even when considering the aggregate CbCR database. Also, they only consider 2016 and 2017 and do not consider the CCCTB formula while using the CbCR data.

⁸ For instance, the 2016 data only represents estimates based on a sample, as submission by MNEs was not mandatory for this first reporting year, and by the time that the 2017 data was published, OECD guidelines with further instructions and clarifications on the implementation of CbCR were not yet available.

⁹ For the following analysis, we use the CCCTB formula proposed by the EC in its latest 2016 Directive proposal, since the details regarding the BEFIT initiative formula will only be disclosed later this year. Moreover, as already mentioned in section 2, it is not expected that the BEFIT formula will significantly deviate from previous EC's proposals. Also, the estimates performed by the IMF (2019) on the impact of implementing worldwide unitary taxation indicate that, regardless of the weighting scheme, the effects on the tax base of each country are broadly similar: the magnitude of the changes may be different, but their direction in terms of reduction or expansion of the tax base is the same.

required to consolidate their accounts with the ultimate parent entity's accounts under US accounting principles. A company's tax liability is defined by its taxable income (consisting of earnings before interest, taxes, depreciation and amortization). The variable '*profit (loss) before income tax*' available in the CbCR dataset is used as a proxy for the corporate tax base of US MNEs. The (worldwide) unitary tax base under FA includes the sum of economic profits in the US and all countries in which US MNEs operate, but, since we are only interested in assessing the impact of implementing a unitary taxation in the EU, only profits earned within the EU should be considered¹⁰. Hence, denoting the economic profit of subsidiaries in Member State i by π_i , the aggregate profits earned by all US MNEs in their activity in the Single Market is:

$$[1] \quad \pi = \sum_i \pi_i .$$

The aggregate unitary tax base π is then allocated according to the CCCTB multi-factor apportionment formula, with the share of each factor defined as:

$$[2] \quad \alpha_{factor,i} = \frac{factor_i}{\sum_i factor_i} .$$

The factors taken into consideration are sales ($\alpha_{sales,i}$ – defined as the sum of revenues generated from transactions with independent parties), fixed assets ($\alpha_{assets,i}$ – defined as the total infrastructure investment in country i , comprising property, plant and equipment), employment ($\alpha_{employment,i}$) and payroll ($\alpha_{payroll,i}$), as formulated below:

$$[3] \quad \alpha_{CCCTB,i} = \frac{1}{3} \alpha_{sales,i} + \frac{1}{3} \alpha_{asset,i} + \frac{1}{3} \left(\frac{1}{2} \alpha_{employment,i} + \frac{1}{2} \alpha_{payroll,i} \right) .$$

CbCR data contains information that allows to directly compute the share of assets and employment, based on the '*tangible assets*' and '*number of employees*' variables, respectively. However, it does not have information on revenues by destination of sales (*i.e.*, by location of the final customer) nor on payroll. As for sales, we follow the common approach of using information on where sales are reported ('*revenues - unrelated party*' variable) rather than where the location of the final customer is, as information on the latter is usually not available in other data sources. Regarding the information on employee costs – payroll – we adopt the same methodology applied by Garcia-Bernardo, Janský & Tørsløv (2021) and approximate it as the product of the number of employees and GDP per capita.

The change in the tax base motivated by the change in the taxation regime is measured as the difference between the simulated economic profit under FA, obtained through the

¹⁰ This follows the same rationale as if only a subgroup of EU Member States adopted the consolidated tax base under the enhanced cooperation procedure. In that case, the single tax base for the MNEs opting for the system would only cover activities in those countries that would have joined the new corporate taxation regime.

allocation formula above, and the reported economic profit in the IRS data:

$$[4] \quad \Delta TaxBase_{CCCTB,i} = [\alpha_{CCCTB,i} \times \pi] - \pi_i.$$

Since $\pi = \sum_i \pi_i$ and $\sum_i \alpha_{CCCTB,i} = 1$, then $\sum_i \Delta TaxBase_{CCCTB,i} = 0$. This means that the net change in the aggregate EU tax base of US MNEs is zero¹¹ when implementing the FA scheme, as it simply redistributes the tax base across countries. However, individual economies experience significant changes in their tax bases under the CCCTB formula. By aggregating the accounts of all US MNEs' affiliates in the EU and apportioning the unitary tax base across jurisdictions using a formula, the tax base under the FA differs substantially from the separate entity approach for most Member States, as shown below in **Table 1**.

Table 1. Corporate tax base effect of the FA scheme (2018-2020)

Tax jurisdiction	Tax base under current regime [1] (US\$, millions)	α sales	α assets	α employment	α payroll	Tax base under FA regime [2] (US\$, millions)	Δ Tax base [2] - [1] (US\$, millions)
EU, total	153,259	100%	100%	100%	100%	153,259	0
Germany	12,895	19.2%	13.4%	22.1%	26.5%	29,051	16,156
France	4,857	11.5%	8.8%	14.1%	14.6%	17,721	12,864
Malta	-8,716	0.2%	0.3%	0.1%	0.1%	293	9,008
Luxembourg	4,759	3.3%	17.3%	0.5%	1.6%	11,046	6,287
Italy	4,116	6.7%	4.9%	7.7%	6.5%	9,538	5,423
Poland	2,663	2.3%	3.0%	9.8%	3.9%	6,198	3,536
Denmark	-815	1.1%	1.5%	1.3%	1.9%	2,148	2,963
Spain	5,322	5.3%	4.0%	7.5%	5.5%	8,064	2,742
Romania	654	0.6%	0.7%	3.5%	1.1%	1,849	1,196
Czech Republic	1,309	1.0%	1.1%	3.5%	2.1%	2,479	1,169
Belgium	7,337	4.1%	8.0%	4.1%	4.8%	8,445	1,108
Austria	899	1.4%	0.9%	1.1%	1.4%	1,819	920
Slovakia	326	0.5%	0.5%	1.9%	1.0%	1,237	911
Portugal	570	0.7%	0.6%	1.8%	1.1%	1,389	819
Finland	571	0.7%	1.0%	0.8%	1.0%	1,329	758
Bulgaria	174	0.2%	0.3%	1.0%	0.3%	593	419
Greece	402	0.4%	0.2%	0.6%	0.3%	539	137
Slovenia	66	0.1%	0.1%	0.2%	0.1%	163	97
Estonia	41	0.0%	0.0%	0.2%	0.1%	111	70
Latvia	20	0.0%	0.0%	0.1%	0.0%	50	30
Croatia	119	0.1%	0.1%	0.2%	0.1%	135	16
Sweden	3,497	2.3%	1.5%	2.3%	3.2%	3,368	-130
Lithuania	389	0.1%	0.1%	0.4%	0.2%	226	-162

¹¹ This is expected, given the FA method of accounting and because this exercise is based on aggregate data, which ignores the impact of cross-border loss consolidation only possible to assess with company-level data.

Tax jurisdiction	Tax base under current regime [1] (US\$, millions)	α sales	α assets	α employ- ment	α payroll	Tax base under FA regime [2] (US\$, millions)	Δ Tax base [2] - [1] (US\$, millions)
Cyprus	848	0.0%	0.1%	0.1%	0.1%	85	-763
Hungary	2,959	0.8%	0.8%	2.6%	1.1%	1,811	-1,148
Ireland	49,948	26.4%	18.5%	6.1%	12.8%	27,737	-22,212
Netherlands	58,049	11.1%	12.3%	6.5%	8.6%	15,836	-42,213

Note: Member States are ranked according to the corporate tax base effect under the CCCTB formula, ranging from the largest base expansion at the top, to the largest base reduction at the bottom.

Source: [IRS Statistics of Income Division](#), Table 1A. CbCR (Form 9975) and UNCTAD Data Center ([UNCTADstat](#))

The results show a significant difference between the profits currently reported by US MNEs under the ALS regime and the profits reported under the FA alternative. Our findings suggest that MNEs redirect profits to countries with lower tax rates or other preferential tax treatments, without a corresponding shift in economic activity. The impact of adopting the FA approach on reported profits shows that larger and higher tax countries are among the most affected by the ALS, experiencing a loss in tax base as MNEs shift profits to smaller and lower tax countries. This aligns with the findings anticipated by international tax literature (Keen & Konrad, 2013; Garcia-Bernardo et al., 2021; Tørsløv et al., 2022). Consequently, the latter group of countries are the expected ‘losers’ in the transition to a FA regime, which is better suited to block tax avoidance practices.

The countries that find their tax base significantly reduced under FA are mainly EU countries commonly identified as tax havens and investment hubs (Dharmapala & Hines Jr., 2009; Menkhoff & Miethé, 2019). These countries are known for attracting above-average shares of global investment due to their relatively attractive tax regimes. Notably, the Netherlands and Ireland rank 4th and 11th, respectively, on the Corporate Tax Haven Index¹² indicating their high compliance in facilitating companies to minimize their tax payments. Other ‘losers’ include Member States such as Hungary, Cyprus and Sweden, that have been consistently opposed the implementation of a unitary tax regime in the EU and have obstructed other tax avoidance strengthening policies (European Parliament, 2018).

On the other hand, in the absence of profit shifting (under the FA regime), our baseline estimates indicate that corporate profits in Germany would be 125% higher than currently reported levels, while in France they would be 265% higher. These profit losses due to profit shifting amount to US\$16,156 million in Germany and US\$12,864 million in France. Other major EU economies such as Italy and Spain, as well as countries with significant economic activity shares like Poland, would also benefit from the elimination of the separate entity approach in the Single Market.

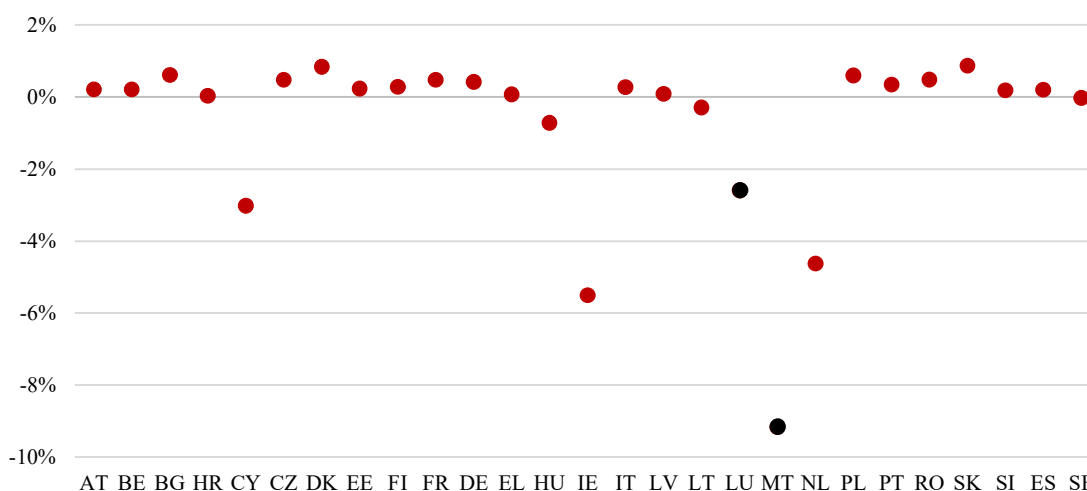
Contrary to expectations, Luxembourg and Malta are on the ‘winners’ side. Despite meeting the criteria commonly associated with tax havens, such as low tax rates and a

¹² The Corporate Tax Haven Index ranks each country based on how intensely its tax and financial systems enable MNEs to underpay CIT. For further details, see <https://cthi.taxjustice.net/en/>.

history of blocking anti-tax avoidance measures, these countries are experiencing a positive tax base effect. This unexpected outcome can be attributed to the significant underestimation of average profits by US MNEs in 2019 (in the case of Luxembourg) and 2020 (in Malta), which has skewed the results and benefited these jurisdictions.¹³ By excluding the corresponding outlier years for each country, both would now show losses of their tax base of around US\$1,859 million and US\$1,405 million, respectively, pushing them to the end of the table, right before the Netherlands and Ireland.

As **Figure 1** below shows, in relative terms, when expressing the tax base differential as a fraction of GDP, it is clear that the EU Member States most impacted by the change in the regime are those commonly recognized as facilitators of tax avoidance activities. The move to a new EU-wide corporate taxation system represents an almost imperceptible change ranging from -1% to 1% of GDP for almost all Member States, except for Ireland, the Netherlands and Cyprus – and Luxembourg and Malta, if we consider the same adjustment process as before. These countries are expected to incur in losses ranging from 2.6% to 9.2% of their GDP, showing the importance and weight that shifted profits from large US MNEs have in these economies.

Figure 1. Corporate tax base effect of the FA scheme (2018-2020), in percentage of GDP



Note: for Luxembourg and Malta (black dots), we are considering the adjusted profits, calculated through the adjustment process already described above.

Source: [IRS Statistics of Income Division, Table 1A. CbCR \(Form 975\)](#) and UNCTAD Data Center ([UNCTADstat](#))

¹³ The negative performance showed by US MNEs in those specific years is not in line with the average profits reported in all the remaining periods for which US CbCR data is available (2016 to 2020). During that period, Luxembourg reported average profits of US\$12,856 million, excluding 2019 when it registered losses that even surpassed those profits (namely US\$14,420 million). Malta's case is even more prominent, as it had an average profit of US\$838 million from 2016 to 2019, and in 2020 registered losses amounting to US\$29,618 million. Without additional information, and since US CbCR data is based on aggregate data, it is not possible to further infer what occurred on those specific years. However, considering the adjusted profits that disregard the outlier years does not alter the direction of the remaining results, it only exacerbates the additional profits that would be reallocated to larger economies. Also, the difference of the tax base of Luxembourg and Malta has, in effect, very little impact on future collected revenues, because the ETR applied to US MNEs' profits in these jurisdictions is close to 0%.

3.3 Revenue (re)allocation

These tax base changes have, in turn, an impact on the global corporate income tax (CIT) revenues collected, assessed by multiplying the change in the tax base in each country by the corresponding statutory CIT rate in place (τ), since countries are free to exercise its sovereign taxing rights by taxing its share of global profits at their preferred rate:

$$[5] \quad \Delta TaxRevenue_{CCCTB,i} = \tau_i \times \Delta TaxBase_{CCCTB,i}.$$

Since countries apply their own tax rate to the apportionment base, and as the individual tax bases do not remain the same, there is also a reallocation of the tax revenues collected, which does not sum to zero due to tax rates differences, especially if we consider the ETR. As the tax base is reallocated from lower tax countries (to where artificial profits are being currently shifted) to higher tax countries, there is a positive net effect on the aggregate tax revenues collected, even when tax rates remain unchanged, as shown in **Table 2**.

Table 2. Corporate tax revenue effect of the FA scheme (2018-2020)

Tax jurisdiction	Δ Tax base (US\$, millions)	Statutory CIT rate ⁽¹⁾	Δ CIT revenues (US\$, millions)	ETR ⁽²⁾	Δ CIT revenues (US\$, millions)
EU, total	0		2,278		6,978
Germany	16,156	29.9%	4,829	24.7%	3,996
France	12,864	33.6%	4,326	29.0%	3,733
Malta	9,008	35.0%	102 ⁽³⁾	0.4%	1 ⁽³⁾
Luxembourg	6,287	25.3%	1,590	1.6%	98
Italy	5,423	27.8%	1,508	28.6%	1,553
Poland	3,536	19.0%	672	20.6%	728
Denmark	2,963	22.0%	473 ⁽³⁾	21.5%	461 ⁽³⁾
Spain	2,742	25.0%	686	18.1%	496
Romania	1,196	16.0%	191	15.5%	185
Czech Republic	1,169	19.0%	222	17.3%	203
Belgium	1,108	28.1%	311	19.8%	220
Austria	920	25.0%	230	27.9%	257
Slovakia	911	21.0%	191	24.2%	221
Portugal	819	31.5%	258	28.2%	231
Finland	758	20.0%	152	19.5%	148
Bulgaria	419	10.0%	42	6.4%	27
Greece	137	25.7%	35	23.3%	32
Slovenia	97	19.0%	18	16.9%	16
Estonia	70	20.0%	14	20.0%	14
Latvia	30	20.0%	6	6.4%	2
Croatia	16	18.0%	3	14.2%	2

Tax jurisdiction	Δ Tax base (US\$, millions)	Statutory CIT rate ⁽¹⁾	Δ CIT revenues (US\$, millions)	ETR ⁽²⁾	Δ CIT revenues (US\$, millions)
Sweden	-130	21.6%	-28	16.0%	-21
Lithuania	-162	15.0%	-24	12.6%	-20
Cyprus	-763	12.5%	-95	3.6%	-28
Hungary	-1,148	9.0%	-103	6.1%	-70
Ireland	-22,212	12.5%	-2,776	12.3%	-2,738
Netherlands	-42,213	25.0%	-10,553	6.6%	-2,770

Note: Member States are ranked according to the corporate tax base effect under the CCCTB formula, ranging from the largest base expansion at the top, to the largest base reduction at the bottom.

⁽¹⁾ Combined statutory corporate income tax rates, which include both central and sub-central CIT rates.

⁽²⁾ Computations of the ETR are based on the subsample of profit-making entities of the dataset. Data on Estonia is missing (probably to ensure confidentiality due to the small number of forms on which the information is based), so it is assumed an ETR equal to the statutory CIT rate.

⁽³⁾ In the case of Malta and Denmark, as the previous tax base under the current system was negative (registered losses), there were no corporate income taxes due. Hence, the CIT rates are applied directly to the tax base under the FA regime, and not to the change in the tax base.

Source: [IRS Statistics of Income Division, Table 1A. and 1B. CbCR \(Form 8975\)](#) and [OECD Tax Database, Table II.1. Statutory corporate income tax rate](#)

The estimated increase in global CIT revenues, regarding US MNEs operating in the Single Market, is around US\$2,278 million under the FA regime, considering the current statutory CIT rates in force. This positive effect may be overestimated because the analysis is based on aggregate data that does not take into consideration the impact of cross-border loss consolidation (only possible to assess with company-level data), which has been estimated as being of relatively high significance (Cobham & Loretz, 2014). Moreover, the performed analysis considers the full cluster of MNEs mandatorily subject to the FA regime – as it respects to the same cluster of MNEs subject to the CbCR submission –, but not the MNEs out of the mandatory threshold that would like to opt for the new tax system. Since that decision rationally depends on the extent to which those MNEs expect to lower their tax liabilities by entering the new system, the overall estimated gains of the reform may be lower¹⁴. Nevertheless, although the net effect on global tax revenues is likely to be only *slightly* positive (close to a zero-sum game), the distributional effects are still significant, showing a high degree of inadequate distribution of the tax revenues across EU Member States under the current international tax regime. The impact that a FA approach would have on CIT revenues highlight the fact that larger countries with higher tax rates (those at the top of **Table 2**) are those that currently lose more tax revenues due to profit shifting activities to smaller countries with lower tax rates (mainly, the Netherlands, Ireland, Hungary and Cyprus).

That impact is even more perceptible considering the ETR. Assessing the impact on

¹⁴ However, according to Nerudová & Solilová (2019), even MNEs facing an expected increase in the tax burden for the whole group may decide to opt in due to other incentives, namely: lower compliance costs, cross-border loss offsetting, elimination of obstacles to mergers and acquisitions and the abolishment of transfer pricing issues. This can be especially true for start-ups and R&D-investing companies, that generally record losses in the first years and, if opting to enter the system, could carry-forward or cross-border offset those losses.

tax revenues based on the statutory tax rates is relevant as those are the ones legally binding and determined by governments, thus exogenous to MNEs' choices. Also, policy reforms are planned upon those rates. However, they do not reflect the tax rate *effectively* borne by companies and do not capture the existing multitude of incentives to engage in BEPS-related activities. The statutory tax rate is just one of the several legal components of corporate taxation that determine companies' tax liability, as the real applicable rate also depends, among others, on tax allowances, tax credits, special tax regimes (e.g., R&D incentives or patent box regimes) and tax rulings. Hence, to truly assess the expected change in the CIT revenues collected – dependent on the true tax burden carried by MNEs –, we need to calculate the ETR, which reflects MNEs' endogenous choices and provides a more accurate picture of the competitiveness of different tax systems. As in the remainder of the analysis, ETRs are averaged over the three available years (2018 to 2020) and calculated on a country-by-country basis, with the average ETR per country being proxied by the ETR of the US MNEs' subsidiaries resident in that country, computed as foreign income taxes paid relative to pre-tax profit. Also, as taxes are mostly paid only by profitable companies, only entities with positive profits and tax payments were considered when computing the ETR¹⁵.

As the results on the last column of **Table 2** show, considering the ETR instead of the statutory CIT rate allows the EU to globally collect an additional revenue amounting to US\$6,978 million, more than three times the additional revenue estimated under the statutory rate. This can be explained by the fact that smaller countries with lower tax rates – mainly the ones bearing losses from the change to the FA regime – engage more actively in tax competition¹⁶ (Keen & Konrad, 2013), showing lower ETR and, therefore, less expected losses in terms of CIT revenues. This is particularly true in the case of the Netherlands: assuming its statutory CIT rate, the losses would amount to more than US\$10 billion, but considering its low ETR applied to US MNEs (6.6%), losses do not even add up to US\$3 billion. As losses from all the losing countries will not be, in fact, so large, that leads to an increase of the positive net effect on global tax revenues, especially considering that the gains from the winner countries will be kept more or less constant – except for Luxembourg. Considering its statutory tax rate, Luxembourg would be among the top beneficiaries of additional tax revenue, but considering its ETR (1.6%), the change becomes almost imperceptible. Whether this country (and also Malta, for the matter) exhibit an outlier behaviour – as already mentioned in section 3.2 – or a significant

¹⁵ The decision of computing the ETR based only in the CbCR subsample of profit-making entities ('*Table 1.B: Tax Jurisdiction Information Limited to Reporting Entities with Positive Profit Before Income*') and not based on the sample containing all entities (including those making losses), is widely accepted in the literature (e.g., Clausing (2020) and Garcia-Bernardo et al. (2022)) as the best approach. Only by excluding the loss-making entities is it possible to compute meaningful ETR at the country-level, which, otherwise, would be biased upward, since taxes are only paid, typically, by profitable companies. However, to assess the effects of implementing a FA or the magnitude of profits to be taxed, as companies experience periods with losses and periods with profits over time, their profitability should reflect the sample as a whole (including those entities making losses).

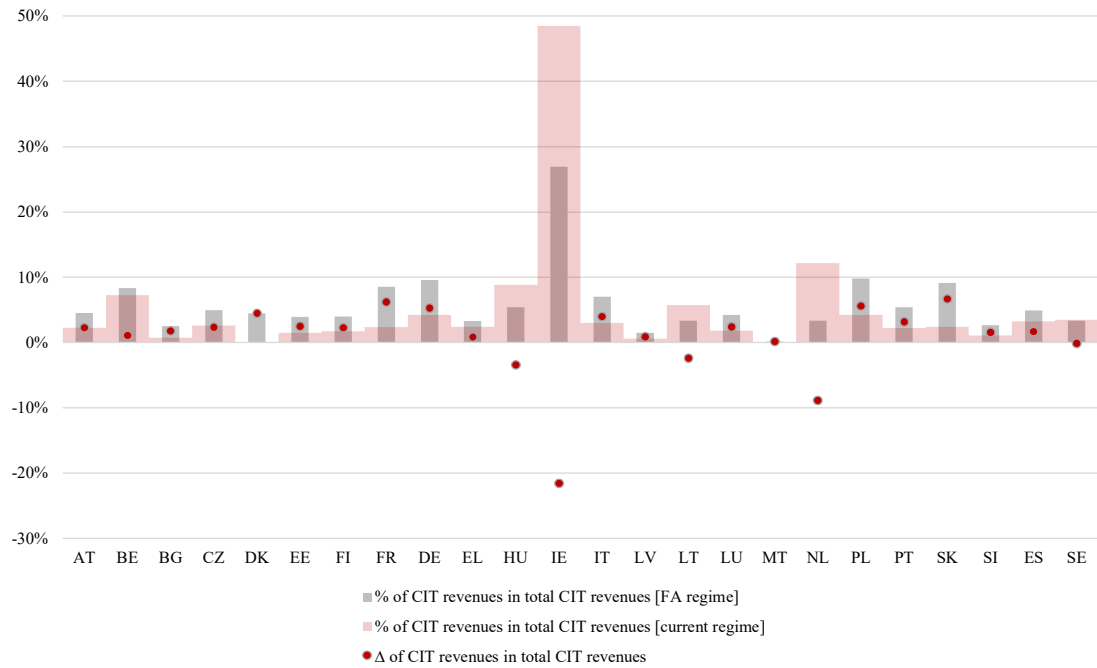
¹⁶ Smaller economies tend to gain more from corporate tax rate cuts than large countries, because since their domestic tax base is smaller, the revenue loss from a lower tax rate will be compensated by the revenue gain from foreign tax base inflow.

real change in their tax bases is not a decisive factor. This is because, given their low effective tax rates, the adjustment of their tax revenues to the new taxation system will always be minimal in the overall assessment of collected revenues at the EU level. The high differential between statutory *versus* effective tax rate, which is observed in almost all tax havens also highlights the fact that, under the current regime, smaller countries have no incentive to tightly control MNEs international profit shifting activities, since by adopting a lenient enforcement policy that allows MNEs to shift part of their profits to other offshore lower tax jurisdictions (translated in a low ETR), these countries can maintain high statutory tax rates and avoid sacrificing higher tax revenue from domestic companies.

Considering the results of applying the ETR, the top three countries that would raise higher tax revenues (Germany, France and Italy) are the three largest EU economies. Under the FA regime, these three countries would more than double their CIT revenues. Higher tax rate countries, such as Germany and France, have higher lost revenues under the current regime than lower tax rate countries, such as Eastern European countries – which is consistent with the idea that higher CIT rates give more incentives to shift profits. By symmetrically assessing the tax revenues losses that would occur with the FA regime, we find that, on average, the ‘*losing*’ countries obtain more than half of their current CIT revenues from taxes collected on shifted profits, as their tax revenues would decrease by 50%.

According to **Figure 2** (that shows the weight that revenues have under both scenarios in the total CIT revenues collected by each Member State), corporate tax revenues gains and losses, in percentage of the taxes collected, range, on average, between -10% and 10% if the EU opts for a FA regime. It is also possible to assess that taxes paid by US MNEs play a particularly significant role in Ireland and the Netherlands (and, to a lesser extent, in Hungary) – countries commonly identified as tax havens. While the Netherlands is among one of the most affected countries, Ireland is, by far, in a more dependent position: US MNE’s taxes represent almost 50% of all CIT revenues collected by Ireland, while in the remaining countries that weight is usually under 10%. With the new regime, stricter on aggressive tax planning schemes and tax avoidance strategies, revenues would drop to almost half (26.9%).

Figure 2. Corporate tax revenue effect of the FA scheme (2018-2020), in percentage of total corporate income tax revenues collected



Note: data on the total CIT revenues collected by Croatia, Cyprus and Romania is missing.

Source: [IRS Statistics of Income Division, Table 1A, and 1B, CbCR \(Form 8975\)](#) and [OECD Global Revenue Statistics Database](#)

4 Discussion and policy efficiency assessment

4.1 Comparative results analysis

Estimating the impact of a new corporate tax regime in the EU has its inherent difficulties, but three main approaches can be identified. The first one was developed by the EC following the Directive for the 2016 CCCTB initiative (European Commission, 2016c). The impact assessment performed by the EC was based on a computable general equilibrium model (the CORTAX model), designed to evaluate the effects of tax reforms. In its baseline scenario, the results suggested that the CCCTB had advantages compared with the no-action scenario, as profit shifting would essentially be eliminated, while total tax revenues would generally remain the same (foreseeing a small decrease of 0.08% of GDP for the EU-28 as a whole). However, soon this approach began to be criticised, since it relies on several structural parameters that capture economic agents' behavioural responses to tax changes, being reliable only as long as those parameters are correctly specified and estimated. Their outputs are, therefore, highly dependent upon the assumptions made in the underlying model.

The second alternative approach has been widely employed, placing greater emphasis on static comparisons. This approach uses comprehensive company-level data (extracted from the Orbis database) and evaluates the impact on tax bases for each country if the FA approach had been used in a previous period, estimating the tax bases under FA and comparing them with the actual tax bases observed during the period under study (e.g., Devereux & Loretz (2008), Nerudová & Solilová (2019) and Cobham, Janský, Jones, & Temouri (2021)¹⁷). These studies, contrary to our results, estimated a lower net effect in tax revenues (even negative in some cases), accruing from a reduction in the aggregate EU corporate tax base. This results mainly from the possibility of cross-border loss consolidation (not possible to incorporate in our methodology), which suggests a highly significant impact of this feature in corporate tax bases during the consolidation regime (Cobham & Loretz, 2014; Nerudová & Solilová, 2019) – an option that many EU Member States do not currently allow. Also, and as already mentioned in section 3.1, any results based in the Orbis database suffer from its lack of coverage, particularly regarding tax havens, likely understating the extent of MNEs' profit shifting and consequently, the redistributive potential of a FA approach. Nonetheless, considering the redistributive effects, results are already in line with the ones obtained in our analysis: apportioning profits in the EU according to measures of actual economic activity would result in a significant redistribution of the tax base among Member States at the expense of a particular group of jurisdictions with favourable tax regimes. Small and lower tax countries such as the Netherlands, Ireland and Luxembourg would lose part of their tax

¹⁷ These are examples of core studies that focused specifically on the impact of the CCCTB, *i.e.*, on the implications of implementing a FA approach only to EU Member States. For further studies addressing other country coverage, see, for example, Cobham & Loretz (2014) and Clausing (2016).

base, while large and higher tax countries such as Germany, France and Italy would benefit.

Finally, the third approach (more aligned with the analysis developed in this paper) is also based on static comparisons but using aggregate data on US MNEs. This type of data has been more widely used to measure profit shifting activities (e.g., Garcia-Bernardo et al. (2021) and Tørsløv et al. (2022)), but examples to estimate the impact of implementing a FA approach can also be found. For instance, the IMF (2019) explores the distributional implications of a global FA across countries using data in US MNEs from the BEA, while Mooij et al. (2021) further develop the assessment also considering the CbCR data published by the IRS. They analyse the impact of different formulas, including the CCCTB formula. Viegas & Dias (2021) also base their analysis in the CbCR data but focus exclusively on the EU-level. The message in these studies is clear: despite the aggregate corporate tax base remaining unchanged (as this approach does not consider cross-border loss consolidation), they point to an increase of aggregate tax revenues when considering the CCCTB formula and restricting the analysis to the EU. The redistribution flow of the tax base and revenues across Member States is as mentioned before: significant gains are reported for larger and higher tax countries, and significant losses are reported in investment hubs (the Netherlands, Ireland, and Luxembourg).

Overall, the literature on the effect of implementing a FA approach in the EU does not provide an unambiguous answer when it comes to estimating the impact on aggregate corporate tax revenues at the EU-level, as it will depend on the assumptions, methodology and database used, but it seems that the outcome will result from the issue with the highest effect: the intragroup loss consolidation or the reallocation of the tax base from lower to higher tax countries. Additionally, the outcome of the BEFIT initiative could differ significantly from the estimates reached due to non-anticipated behavioural responses arising from the implementation of this tax policy.

4.2 Discussion in light of behavioural responses

To assess the likely effects of the BEFIT proposal on artificial profit shifting it is important to distinguish between the steady-state response to changes in tax incentives and the immediate response. The results presented in section 3 are first-round effects, *i.e.*, they reflect the static impact of the reform and represent the potential revenue to be collected before any behavioural adjustments by MNEs or governments to the reform. But companies', as well as governments', behavioural responses should be expected, especially from those believing to lose from the change to a unitary taxation.

While reducing some current distortions, the FA could result in new tax-induced economic distortions, due to factor shifting (Eichfelder, Hechtner, & Hundsdorfer, 2018). It would greatly reduce the scope for artificial profit shifting but it does not, however, eliminate the risk of tax competition, considering that some of the factors used for apportionment are mobile. New distortions in corporate ownership structures may

arise, increasing tax competition over the real location decisions of factors¹⁸. This means that, from the static analysis, it appears that lower tax countries like Ireland and the Netherlands lose part of their tax base from a FA approach, but considering dynamic effects (for instance, on investment) could significantly change the impact, allowing them to experience a net welfare gain from the BEFIT proposal. For instance, if assets are part of the final applied formula, MNEs will have an incentive to locate more capital in lower tax countries, which will mitigate the revenue effect and may boost labour productivity, which will be reflected in GDP and welfare. MNEs will also likely allocate less artificial profits in lower tax jurisdictions when the FA is implemented: to minimize their global tax payments, it is expected that MNEs will concentrate both their profits and their *real* economic activity (*i.e.*, employees and tangible assets) in lower tax jurisdictions. In effect, it would lead to *true* changes in real factors location, rather than just artificial shifts in income through transfer pricing and mere financial and accounting transfers. As this factor reallocation would mean an effective change and could result in additional redistributions of the tax base across Member States, lower tax countries like Ireland and the Netherlands can indeed expect increases in their tax bases due to these ‘*new*’ distortions, softening the impact of implementing a FA system in the EU in the medium-term.

Although the potential for a certain percentage of MNEs leaving the EU must be taken into consideration, even when assuming a conservative estimate on the higher side of the behavioural response, a significant wave of defections is not expected. MNEs operate in the EU because of its significant influential global market power and size, exposure to international trade and unparalleled position in terms of inward and outward FDI (UNCTAD, 2022). In addition, they generate profits within the EU. As shown in **Table 1**, US MNEs reported an aggregate total of \$US 153,259 million in profits across the EU over the period under analysis (2018-2020), and it is not expected that a distribution of some of those profits to Member States with higher taxes would render their operation in the Single Market unprofitable, especially considering that one of the goals of BEFIT is to facilitate cross-border investment and improve the EU’s tax investment environment, by increasing tax certainty – one of the growing concerns and technical features most valued by MNEs¹⁹. Finally, other offshore tax havens (such as the Bermuda and the Cayman Islands) are not perfect substitutes for EU tax havens. The latter not only grant MNEs access to the EU’s extensive treaty network and directives that exempt them from withholding taxes, but are also better-governed countries (measured by political stability, government effectiveness, rule of law and the control of corruption) – an important feature to consider when choosing where to headquarter a company (Dharmapala & Hines Jr., 2009). For all this, the EU’s proposed corporate tax reform would, most likely, not largely affect US inbound investment in Europe.

¹⁸ This distortion can be, however, mitigated if BEFIT is introduced together with a minimum effective taxation, a measure already planned to be implemented under the OECD’s Pillar 2 initiative.

¹⁹ Through a survey of senior tax representatives of MNEs, Devereux (2022) found that concerning business investment and location decision-making, tax uncertainty is a more significant factor than the tax rate itself. Moreover, among the most important factors determining tax uncertainty is the complexity and frequent changes of the tax system.

4.3 Policy efficiency assessment

Under the FA regime, companies that are legally separate but economically integrated are treated as a unified group for tax purposes, in accordance with their genuine economic interconnection, often organized around integrated global value chains. This system operates on a simpler and more coherent basis, relying on apportionment factors designed to reflect the true economic contribution of each entity. As a result, the FA system undoubtedly emerges as a better fit for aligning taxation with economic substance, and, therefore, better suited not only to tackle international tax avoidance and artificial profit shifting, but also to ensure each Member State its fair share of taxes, as political and economic integration move forward in the EU (Rixen, 2011; Keen & Konrad, 2013; International Monetary Fund, 2019). But, on a higher stance – beyond the issues of tax avoidance and artificial profit shifting –, is transferring from the separate entity approach to a FA regime an *efficient* move?

It is the consistent implementation of efficient public policies that benefits society in the long run. Given the existence of winners and losers in terms of CIT revenues collected, implementing the BEFIT would not be a Pareto improvement. Hence, we are in a Pareto optimal situation, and, according to the Pareto criterion, it may not be *desirable* to move from one state to another (*i.e.*, moving from the ALS approach to the FA regime), because it would imply a decrease in the social welfare of some Member States²⁰. However, proceeding with the current regime does not allow reaching the utility-possibility frontier (which allows for a jointly higher payoff outcome), as CIT revenues are being lost due to tax evasion and avoidance practices.

Different transfer pricing approaches inevitably entail different economic effects for each Member State. Since some will benefit at the expense of others, disagreements arise over the distributional choice on how profits (resulting from MNE's globally integrated activity) and related CIT revenues should be allocated in the EU. The Pareto efficiency criterion does not provide a unique solution for that dispute – there are multiple noncomparable Pareto optimal outcomes of the distribution of tax revenues. In fact, the Pareto criterion is limited and not the most suitable to evaluate economic reforms when there are winners and losers²¹ (Coleman, 1984). In order to evaluate public policies that cause winners and losers, policymakers should assess it under another efficiency

²⁰ A country's welfare is represented by the welfare of its consumers – immobile across countries – that, in turn, depends, to some degree, on the amount of the publicly provided goods, financed through, among other means, CIT revenues collected. Following on Becker & Fuest (2012), a representative household has as utility function $U^i = C^i + \eta^i G^i$, where C^i is private consumption in country i , G^i is a publicly provided good and η^i is the marginal utility of public consumption. Hence, higher amounts of the publicly provided good provide a higher degree of utility, and governments finance G^i through, among others, a CIT.

²¹ If policymakers were often guided exclusively by the Pareto criterion, society would tend to remain unchanged, as, under this criterion, the available space for change is small. It is very limiting that recommended economic and social policies are only those in which at least one person is made better off, and no one is made worse. Any simple economic reform is expected to inflict loss upon someone.

concept²², the Kaldor-Hicks (KH) criterion, under which the CCCTB implementation is efficient.

The KH criterion²³ is an economic efficiency-based concept according to which resources are allocated efficiently when there is no possible reallocation that increases the social welfare *as a whole*. According to this comparative evaluation tool – which weights the effects of a given program, policy or decision against the one in force – a public policy change is justifiable if the winners win more than the losers lose, so that the former could *theoretically* compensate the latter and still have a surplus for themselves, generating an increase of the social welfare (Coleman, 1984; Cooter & Ulen, 2016). This compensation does not have to actually take place, it just has to be possible *in principle*. This is the fundamental difference between the KH and the Pareto criteria – the two main efficiency criteria for public policy action in the context of welfare economics. This is why the KH concept is likewise referred to as the potential Pareto improvement.

And this is also why, according to the KH criterion, BEFIT should be implemented, as the welfare gains to the EU economy of undertaking this comprehensive tax policy reform outweighs the losses. By increasing the aggregate level of CIT revenues in an amount sufficiently large to compensate the losers and still make room for a net surplus (as little as it may be), it is possible to make any Member State better off without making any other worse.

²² The evaluation of public policies can also be performed using equity criteria, more focused on the resulting social allocation of burdens and benefits. These are, however, out of the scope of this research.

²³ This criterion comes from the combination of the Kaldor and the Hicks criteria. The Kaldor criterion delineates that a change is efficient if the maximum amount that the ‘winners’ are willing to pay exceeds the minimum amount that the ‘losers’ are willing to receive (Kaldor, 1939). On the other hand, the criterion formulated by Hicks (1939) delineates that a change is efficient if the maximum amount that the ‘losers’ are willing to offer the ‘winners’ to avoid such a change is less than the minimum amount the ‘winners’ are willing to accept as a form of payoff to block the change.

5 Final considerations

With this paper we contribute to the fast-growing literature on MNEs' taxation and profit shifting activities. We update and extend the existing body of literature on the impact on implementing a FA approach in the EU, assessing the potential (re)allocation effects in the corporate tax base and tax revenues across EU Member States under the BEFIT initiative, planned to be launched soon by the EC. For the impact assessment, we use newly published CbCR data released by the IRS, which allows for a high-level exposure of transfer pricing and other BEPS-related risks, aiming to decrease tax avoidance through enhanced transparency. CbCR data allows to assess EU-wide taxable profit, which we then allocate to individual Member States according to the apportionment formula last proposed by the EC, to assess the effect in the corporate tax bases. Then, by considering both the statutory CIT rate and the ETR of each country, we are able to estimate the new tax liability per country and compare it with the liability under the existing system.

By providing novel evidence on the impact of a possible FA approach in the EU, we aim at contributing to databased policymaking and to the ongoing policy debate at the EU-level regarding a new corporate tax regime in the Single Market, more adequate to reflect today's levels of globalization and economic integration. Under this alternative, new distortions in corporate ownership or in the location of the apportionment factors may arise, but the scope for artificial profit shifting through transfer pricing mechanisms would be greatly reduced. This topic is of particular importance to the EU, as the Single Market has been unfairly targeted by the US MNEs aggressive tax planning schemes: US MNEs shift twice as much profit (relative to the size of their earnings) as EU MNEs, while EU higher tax countries lose twice as much profit (relative to GDP) as the US (Tørsløv et al., 2022). Continuing with the current system, based on the separate entity approach, will not deter MNEs from distorting competition in the Single Market, depriving higher tax countries from collecting their fair share of corporate tax revenues.

According to our findings, the estimated impact that a FA approach would have on reported profits across EU Member States suggests that MNEs do shift profits to countries with lower ETR or other preferential tax treatments without also shifting economic activity. These results are in line with international tax literature (Keen & Konrad, 2013; Garcia-Bernardo et al., 2021; Tørsløv et al., 2022), as larger and higher tax countries such as Germany and France are among those who lose more tax base (and revenues) due to MNEs' profit shifting to smaller and lower tax countries (such as the Netherlands and Ireland).

A change in line with the CCCTB or the BEFIT proposals would allow for a fairer redistribution of the taxing rights, ensuring a higher alignment between the creation of value and profit allocation. It would also be an economically efficient tax policy, according to the KH criterion, with an increase of the globally collected revenues at EU-level. The FA approach will not consubstantiate a pareto-improving response to profit shifting – as it will not produce gains for all parties involved – but it should be viewed more like an instance of redistributive cooperation, rather than a mutually beneficial deal,

as it intentionally reduces at least one other government's welfare compared to the *status quo* for the sake of a fairer internal market in the EU.

The likely effects and reallocation results of this EU tax reform should be, however, read with caution – they are static in the sense that they do not consider behavioural responses in light of the reform. The analysis is, therefore, a form of *ex-post* evaluation, assessing the amount of corporate tax revenues that would have been raised if the EU tax system would be consistent with the BEFIT features, while keeping unchanged MNEs' investment decisions and corporate structures. However, MNEs subject to the new tax system may change the location of their investment, rearrange their activity, or engage in different tax planning operations after its effective implementation. Hence, comparisons between the incentives for profit shifting under the current transfer pricing regime considering tax planning strategies *versus* under the FA approach in the absence of tax planning may be simplistic and overestimate the advantages of moving to a new taxation system. On the other hand (and considering that BEFIT aims at facilitating cross-border investment by increasing tax certainty and lessening tax compliance costs), the likely effect of more investment made within the Single Market is also not captured in these static results. Hence, the net effect on global tax revenue is, most likely, slightly positive – as firstly assumed in the last impact assessment developed by the EC (European Commission, 2016c) –, but the distributional effect is large, since part of the tax base is reallocated from lower to higher tax countries.

Finally, it is also important to highlight that findings can fairly deviate from the ones presented if the BEFIT final allocation formula turns out to be substantially different, as the result of political concessions to ensure the unanimous vote on a new corporate taxation system in the EU. The redistributive power of implementing a FA approach in the Single Market heavily depends on the factors included in the formula and on the corresponding weights. As of now, the foremost discussion regarding the final formula to be proposed relies on the inclusion of intangible assets – the pros and cons of their inclusion were already addressed in section 2. If so, the analysis would have to be performed using company-level data, as the CbCR does not contain that information. This absence is somewhat perplexing given the highly digitalized environment in which the MNEs operate and the fact that they are becoming an ever-more dominant value driver for MNEs. Also, as the location of intangible property is one of the channels used by MNEs to shift profits across jurisdictions (Dharmapala & Riedel, 2013; Mooij & Liu, 2018), the benefit of including this data in the CbCR would supplant the additional compliance burden for MNEs, by allowing to assess, to some extent, how common is the use of this tax-planning strategy.

References

- Avi-Yonah, R. S. (2007). The Rise and Fall of Arm's Length: A Study in the Evolution of U.S. International Taxation. *Law & Economics Working Papers Archive: 2003-2009*. Retrieved from http://repository.law.umich.edu/law_econ_archive/art73
- Avi-Yonah, R. S., & Tinhaga, Z. P. (2017). Formulary Apportionment and International Tax Rules. In S. Picciotto, *Taxing Multinational Enterprises as Unitary Firms* (pp. 67-74). Brighton, UK: Institute of Development Studies.
- Becker, J., & Fuest, C. (2012). Transfer pricing policy and the intensity of tax rate competition. *Economics Letters*, 117, 146-148.
- Clausing, K. A. (2016). The US state experience under formulary apportionment: are there lessons for international reform? *National Tax Journal*, 69(2), 353-385. doi:<https://doi.org/10.17310/ntj.2016.2.04>
- Clausing, K. A. (2020). Profit shifting before and after the Tax Cuts and Jobs Act. *National Tax Journal*, 73(4), 1233-66. doi:<https://doi.org/10.17310/ntj.2020.4.14>
- Cobham, A., & Loretz, S. (2014). *International distribution of the corporate tax base: Implications of different apportionment factors under unitary taxation*. International Centre for Tax and Development.
- Cobham, A., Janský, P., Jones, C., & Temouri, Y. (2021). An evaluation of the effects of the European Commission's proposals for the Common Consolidated Corporate Tax Base. *Transnational Corporations*, 28(1), 29-50.
- Coleman, J. L. (1984). Economics and the Law: A Critical Review of the Foundations of the Economic Approach to Law. *Ethics*, 94(4), 649-697.
- Cooter, R., & Ulen, T. (2016). *Law and Economics, 6th edition*. Berkeley Law Books.
- Devereux, M. P. (2022). *What creates tax uncertainty? Evidence from three phases of a cross-country survey*. Oxford University Centre for Business Taxation, Saïd Business School.
- Devereux, M. P., & Loretz, S. (2008). The Effects of EU Formula Apportionment on Corporate Tax Revenues. *Fiscal Studies*, 29(1), 1-33. doi:<https://doi.org/10.1111/j.1475-5890.2008.00067.x>
- Dharmapala, D., & Hines Jr., J. (2009). Which countries become tax havens? *Journal of Public Economics*, 93, 1058-1068.
- Dharmapala, D., & Riedel, N. (2013). Earnings shocks and tax-motivated income-shifting: Evidence from European multinationals. *Journal of Public Economics*, 97, 95-107.
- Eichfelder, S., Hechtner, F., & Hundsdorfer, J. (2018). Formula Apportionment: Factor Allocation and Tax Avoidance. *European Accounting Review*, 27(4), 649-681. doi:<https://doi.org/10.1080/09638180.2017.1364165>
- European Commission. (1992). *Report of the Committee of independent experts on company taxation*. DG XV – Internal Market and Financial Services, Publications Office.
- European Commission. (2001). *Towards an Internal Market without tax obstacles: a strategy for providing companies with a consolidated corporate tax base for their EU-wide activities*. Brussels: COM(2001) 582 final.
- European Commission. (2011). *Proposal for a Council Directive on a Common Consolidated Corporate Tax Base (CCCTB)*. COM(2011) 121 final, Brussels.
- European Commission. (2016b). *Proposal for a Council Directive on a Common Consolidated Corporate Tax Base (CCCTB)*. COM(2016) 683 final, Strasbourg.

- European Commission. (2016c). *Impact assessment Accompanying the document: Proposals for a Council Directive on a Common Corporate Tax Base and a Common Consolidated Corporate Tax Base (CCCTB)*. Strasbourg: European Commission.
- European Commission. (2021). *Business Taxation for the 21st Century*. COM(2021) 251 final, Brussels.
- European Parliament. (2018). *Report on the proposal for a Council directive on a Common Consolidated Corporate Tax Base (CCCTB)*. Committee on Economic and Monetary Affairs. European Parliament.
- Garcia-Bernardo, J., Janský, P., & Tørslov, T. (2021). Multinational corporations and tax havens: evidence from country-by-country reporting. *International Tax and Public Finance*, 28, 1519-1561. doi:<https://doi.org/10.1007/s10797-020-09639-w>
- Garcia-Bernardo, J., Janský, P., & Zucman, G. (2022). Did the Tax Cuts and Jobs Act Reduce Profit Shifting by Us Multinational Companies? *NBER Working Paper No. w30086*. doi:10.3386/w30086
- Heckemeyer, J., & Overesch, M. (2013). Multinationals' Profit Response to Tax Differentials: Effect Size and Shifting Channels. *SSRN Electronic Journal*. doi:10.2139/ssrn.2303679
- Hicks, J. R. (1939). The Foundations of Welfare Economics. *The Economic Journal*, 49(196), 696-712.
- International Monetary Fund. (2019). *Corporate Taxation in the Global Economy*. IMF Policy Paper No. 2019/007 (Washington, D.C.): International Monetary Fund.
- Kaldor, N. (1939). Welfare Propositions of Economics and Interpersonal Comparisons of Utility. *The Economic Journal*, 49(195), 549-552.
- Keen, M., & Konrad, K. A. (2013). The Theory of International Tax Competition and Coordination. In A. J. Auerbach, R. Chetty, M. Feldstein, & E. Saez, *Handbook of Public Economics* (Vol. 5, pp. 257-328). Elsevier. doi:<https://doi.org/10.1016/B978-0-444-53759-1.00005-4>
- Martins, A., & Taborda, D. (2022). BEFIT and Formulary Apportionment: Should Intangibles Be Included in the Formula? *EC Tax Review*, 31(3), 131-139. doi:<https://doi.org/10.54648/ecta2022013>
- Menkhoff, L., & Miethe, J. (2019). Tax evasion in new disguise? Examining tax havens' international bank deposits. *Journal of Public Economics*, 176, 53-78. doi:<https://doi.org/10.1016/j.jpubeco.2019.06.003>
- Mooij, R. A., Liu, L., & Prihardini, D. (2021). An assessment of global formula apportionment. *National Tax Journal*, 74(2), 431-465. doi:<https://doi.org/10.1086/714112>
- Mooij, R., & Liu, L. (2018). *At A Cost: the Real Effects of Transfer Pricing Regulations*.
- Nerudová, D., & Solilová, V. (2019). The Impact of the Introduction of a CCCTB in the EU. *Intereconomics*, 54(3), 160-165. doi:<https://doi.org/10.1007/s10272-019-0815-2>
- OECD. (2015). *Transfer Pricing Documentation and Country-by-Country Reporting, Action 13 - 2015 Final Report, OECD/G20 Base Erosion and Profit Shifting Project*. Paris: OECD Publishing. Retrieved from <http://dx.doi.org/10.1787/9789264241480-en>
- Rixen, T. (2011). From double tax avoidance to tax competition: Explaining the institutional trajectory of international tax governance. *Review of International Political Economy*, 18(2), 197-227. doi:<https://doi.org/10.1080/09692290.2010.481921>
- Tørslov, T., Wier, L., & Zucman, G. (2022). The Missing Profits of Nations. *Review of Economic Studies*, 1-36. doi:<https://doi.org/10.1093/restud/rdac049>
- UNCTAD. (2022). *World Investment Report 2022 - International tax reforms and sustainable investment*. Geneva: United Nations.

- Vicente, J. A. (2023). Following a new tax leader: the urge to implement Formulary Apportionment in the European Union. *Working Papers REM 2023/0274*. Retrieved from https://rem.rc.iseg.ulisboa.pt/wps/pdf/REM_WP_0274_2023.pdf
- Viegas, M., & Dias, A. (2021). Country-by-Country Reporting: A Step Towards Unitary Taxation? *Intereconomics*, 167-173. doi:10.1007/s10272-021-0974-9