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# Taxing Multinationals in Europe

*Ernesto Crivelli, Ruud De Mooij, Erik De Vrijer,  
Shafik Hebous, Alexander Klemm*

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Prepared by Ernesto Crivelli, Ruud De Mooij, Erik De Vrijer,  
Shafik Hebous, and Alexander Klemm

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## Executive Summary

There is mounting global awareness that the existing corporate income tax (CIT) system is no longer fit for purpose. The international policy debate reflects the urgency of agreeing on and implementing fundamental reforms. Significant problems originate when international spillovers increase via tax competition among countries and cross-border profit shifting by multinational enterprises (MNEs), with the aim of reducing their total tax payments. Some of this debate reflects dissatisfaction with the traditional means of allocating the overall tax base. In Europe, close connections among economies aggravate corporate tax spillovers within the region. The related revenue losses are even more damaging now that the devastating economic impact of the COVID-19 pandemic is putting severe stress on the public finances in many countries.

This departmental paper aims to contribute to the European policy debate on CIT reform in three ways. First, it takes a step back to review the performance of the CIT in Europe over the past several decades and the important role played by MNEs in European economies. Second, it analyzes corporate tax spillovers in Europe with a focus on the channels and magnitudes of both profit shifting and CIT competition. Third, the paper examines the progress made in European CIT coordination and discusses reforms to strengthen the harmonization of corporate tax policies, to effectively reduce both tax competition and profit shifting.

The most striking feature of the CIT in Europe is the continuous and ongoing decline in statutory CIT rates from an average of 35 percent in 1995 to 21 percent by 2019. Nonetheless, the CIT has remained an important source of revenue, averaging about 3 percent of GDP during this period, which reflects the rising share of corporate profits in GDP and some broadening of the taxable CIT base. Empirical evidence suggests that MNEs' profits tend to be taxed less than profits of domestic peers, reflecting profit shifting from high- to low-tax affiliates.



Evolving MNE business models increasingly rely on complex global supply chains and intragroup trade in services and intangible assets. This challenges a key assumption of the current CIT framework, namely that corporate activities and profit sources can be easily defined and separated by national borders. Equally important is the ongoing expansion of cross-border digital activities and trade, which raises questions about another cornerstone of the existing CIT system: basing taxing rights on the physical presence of the producer.

The empirical literature documents a wide variety of tax planning devices to shift taxable MNE income from high- to low-tax jurisdictions, and there is a wide range of estimates regarding the estimated tax revenue losses from individual profit-shifting mechanisms (micro approach). Studies based on a macro approach find generally larger effects, with some European countries losing and others gaining sizable shares of their tax bases and revenues.

Strong tax competition in Europe appears to have been a major driving force behind the steep decline in CIT rates that has brought the average European CIT rate below the average rate in OECD countries. The implied revenue losses of such a large drop in CIT rates are significant for all countries involved. Tax competition in Europe is also reflected in the proliferation of preferential tax regimes for income from intellectual property (IP boxes). It is yet too early to tell whether the new G20-OECD minimum standard on such IP regimes will be effective in curbing this type of tax competition.

To effectively reduce tax competition and profit shifting in Europe, deeper coordination of CIT policies will be needed. Efforts to better harmonize corporate taxation in the EU have a long history but have not advanced as far as in other areas of taxation, such as the VAT. The latest initiatives comprise the proposal by the European Commission—revived in 2016—to introduce a Common Consolidated Corporate Tax Base (CCCTB) and a 2019 proposal by France and Germany at the Inclusive Framework of the OECD to introduce minimum effective taxation of MNEs. Each of these reforms would constitute real progress in reducing CIT spillovers. Jointly, they would complement each other and be even more effective.

Effective minimum taxation of MNEs would reduce the intensity of tax competition and profit shifting, thereby setting a floor under CIT revenues. A minimum tax will also reduce existing pressures on foreign direct investment (FDI)-receiving countries, including low-income and developing countries, to set tax rates below the minimum. For MNE residence countries, it would provide a backstop to outward profit shifting. The revenue effects of an effective minimum tax can be significant, depending on the level of the minimum rate and the scope of its application.

Full CCCTB implementation would consolidate not only corporate tax bases but also EU-wide MNE profits. The latter would be apportioned to individ-

ual countries based on a formula that includes both production factors and sales by destination. While the CCCTB would greatly reduce the scope for profit shifting in Europe, it would still leave room for tax competition to attract mobile production factors, although this effect would be muted by using sales in the apportionment formula. Joint implementation with a minimum tax would further mitigate strategic spillovers. EU-wide revenue effects of the CCCTB reform, particularly if this included cross-border loss relief and new deductions for equity and R&D expenses as presently proposed, would likely be small initially but grow over time. Since the CCCTB would significantly affect the relative CIT revenues of individual countries, finding agreement among all EU Member States may require a stepwise implementation of the CCCTB. As a first step, the formula apportionment could be applied to above-normal profits only.

The long years of debate on these issues have resulted in promising reform proposals. At the current juncture, it is time for action.



## Introduction

Cross-border spillovers and other vulnerabilities of the corporate income tax (CIT) framework have long been recognized, generating calls for reforms. Europe, a key player in the ongoing global reform discussions, has been debating European options of CIT harmonization to tackle tax spillovers in the region. The main concerns with the current CIT arrangements originate in international spillovers resulting from cross-border profit shifting by multinational enterprises (MNEs) and tax competition between jurisdictions, both undermining the corporate tax take and the integrity of the tax system. This departmental paper discusses options for European CIT harmonization to address CIT spillovers while at the same time further advancing the EU project to build an integrated market in capital, labor, and goods and services.

European economies are deeply connected, thereby aggravating corporate tax spillovers in Europe. The common market in the EU—with the free movement of factors of production—and close economic relations with non-EU neighbors (including Norway, Switzerland, and the United Kingdom) has generated large trade, investment, and financial flows among European countries and significant economic benefits. This deep interconnectedness, however, has raised the sensitivity of each country's CIT base and rate to that of other countries, magnifying CIT spillovers.

Recent economic and technological developments have further intensified corporate tax challenges. First, the MNE business model has evolved to produce for the global economy through complex global supply chains and a heavy reliance on intragroup trade in hard-to-price services and intangible assets. This model challenges the idea that production and business can be easily separated by national borders and complicates efforts to combat profit shifting. Moreover, the increased “digitalization” of the economy raises issues about the allocation of taxing rights among countries—that is, how and where to tax MNEs?

The COVID-19 pandemic has made corporate taxation spillovers more salient as countries are in need of revenue and are experiencing decreased public tolerance toward perceived unfairness of the tax system. During the pandemic, the ongoing debate on the fairness of tax systems has prompted some European governments (including Belgium, Denmark, France, and Poland) to announce—or invoke the possibility of—denying COVID-19 tax reliefs for companies registered (or doing businesses) in low-tax jurisdictions.<sup>1</sup> Tax deferral and relief measures have been among the critical fiscal measures for mitigating the economic effects of the pandemic and for supporting the future recovery. Their estimated average fiscal costs in advanced and emerging Europe are 6.2 and 3.1 percent of GDP, respectively. In the meantime, public debt ratios in many economies are rapidly rising toward 100 percent or already exceeding this level by appreciable margins. In this setting, revenues will need to be mobilized as demands for public spending are likely to remain high to rebuild economies, address major challenges such as climate change, and support aging populations.<sup>2</sup>

Despite various important EU initiatives and commitments, European CIT coordination has been rather limited thus far. Under current CIT arrangements, the CIT rate and base are ultimately sovereign choices. For example, the current difference between the maximum and the minimum statutory CIT rates in Europe is about 17.5 percentage points. In contrast, EU coordination efforts in other taxation areas are more advanced, for example regarding consumption taxes. Similarly, more can and should be done to limit spillovers in the CIT system.

European reform proposals should take into account global reform developments. The 2015 G20-OECD Base Erosion and Profit Shifting (BEPS) project attempted to mitigate problems of profit shifting under the existing global CIT framework but addressed neither the pervasive tax competition nor the allocation of taxing rights among countries. In October 2020, the OECD-led Inclusive Framework published blueprints to move toward a fundamental reform of the international corporate tax framework, but no political consensus has been reached yet. The blueprints are for two new approaches to taxing MNEs: specifying a minimum global tax and establishing a new taxing right based on sales by destination. Awaiting a political consensus on global reforms, several European CIT actions have recently been taken, either multilaterally—such as the adoption of the Anti-Tax Avoidance Directives (ATAD I and II)—or unilaterally—such as digital services taxes in some countries. Despite these important G20-OECD and European initiatives

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<sup>1</sup>For this purpose, the European Commission made a non-binding Recommendation that Member States should consider using the EU list of non-cooperative jurisdictions for tax purposes that includes only non-EU countries.

<sup>2</sup>See IMF (2020a). IMF (2020b) estimates an overall global fiscal cost of 12 percent of global GDP.

to repair the international CIT framework, key concerns remain unresolved and the policy debate on how to tax MNEs continues. Existing studies on profit shifting indicate a large amount at stake—globally ranging between USD 240 and 600 billion. Foregone revenue because of declining CIT rates is even higher.

Deep European economic integration provides opportunities for more comprehensive regional CIT reforms. While global tax reform options are generally superior to others, situated between unilateral measures and global reforms there are regional, in particular European, reforms that can constitute an important step toward a global solution. In the absence of a global solution, European reform can address profit shifting and tax competition concerns within the region.

This paper assesses international challenges of corporate taxation and discusses regional reform options from the perspective of European countries. It builds on extensive IMF policy and analytical work in this area and contributes to the policy debate by (1) taking stock of the scope of the spillovers, especially from the standpoint of European countries and (2) addressing the policy question: what feasible European reforms can significantly reduce profit shifting and tax competition? The paper links the discussion around this question to recent EU and OECD proposals and looks at options for (1) a minimum tax in Europe that ensures a minimum level of taxing profits and (2) a formula apportionment approach that in its various designs—including the European Commission proposal of a Common Consolidated Corporate Tax Base (CCCTB) in the EU—consolidates the profits of all affiliates of the multinational group at the European (or global) level and allocates the resulting tax base across jurisdictions based on a formula (including for example sales by destination and production factors such as assets and employment).

To this end, the paper summarizes in Chapter 2 a set of stylized facts about the CIT and MNEs in European countries. Chapter 3 discusses profit shifting and tax competition with a focus on Europe. Chapter 4 discusses European reform options, and Chapter 5 presents conclusions.



## CHAPTER

# 2

## The Corporate Income Tax and the Role of Multinational Enterprises in Europe

This chapter takes stock of the pressures on the CIT in advanced Europe.<sup>1</sup> First, it provides an overview of stylized facts about the CIT rates and revenues for European countries. Second, it sheds light on the importance of foreign direct investment (FDI) and MNEs in Europe. It also briefly summarizes the rising importance of digital trade. Despite facing some common CIT challenges, a theme emerges: differences across European countries point to the importance of country-specific circumstances in shaping European reforms to address profit shifting and tax competition.

### CIT Performance in Europe

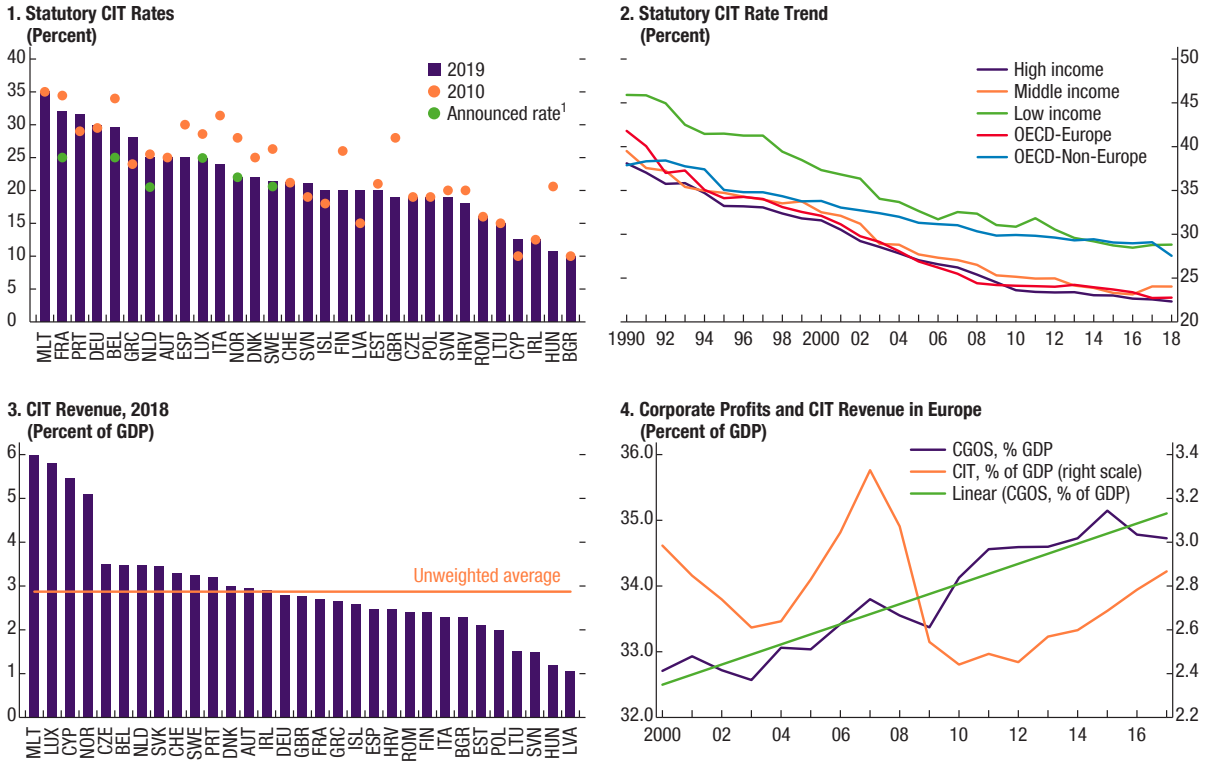
Statutory CIT rates in the region have on average been on a continuous downward trend (Figure 1, panels 1 and 2). This trend seems to continue: France has just lowered its CIT rate slightly and plans to gradually reduce it further to 25 percent by 2022, and the United Kingdom has lowered the tax rate since 2010 (from 28 percent to 19 percent). Several small open economies, including Belgium, Norway, and Sweden have also recently cut their CIT rates or announced further cuts. The recent Swiss tax reform brings the combined (federal and subnational) CIT rate in some cantons down to almost 12.5 percent. The declining trend in statutory rates reflects a variety of effects, but it is arguably also a telling sign of international tax competition at work. CIT rates have been declining in not only Europe but also other

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<sup>1</sup>This paper takes as a given that it is desirable to tax corporations. Reasons to do so are the desire to tax corporate rents or redistribute some income. While this could be achieved with greater taxation of dividends, a share of these flows to nonresidents. Furthermore, absent corporate income taxes, individuals could avoid personal income taxes by choosing to incorporate. For a detailed discussion see IMF (forthcoming) and Bastani and Waldenström (2020).



Figure 1. Corporate Income Tax Statutory Rates and Revenue



Sources: Eurostat; IMF, FAD Tax Policy Rates Database; OECD; and IMF staff calculations.  
 Note: CGOS = corporate gross operating surplus. CIT = corporate income tax. Data labels in the figure use International Organization for Standardization (ISO) country codes.  
<sup>1</sup>As of November 2019.

regions. For example, one element of the US corporate tax reform of 2018 was cutting the federal tax rate from 35 to 21 percent.

The CIT nonetheless remains an important source of revenue for Europe. CIT revenue in Europe accounts for about 10 percent of tax revenue collection. It averaged about 3 percent of GDP in 2018 and above 4 percent of GDP in one-third of the countries (Figure 1, panel 3). Even though tax rates have been on a downward trend, CIT revenue collection in percent of GDP has remained remarkably constant over time, taking account of the business cycle (Figure 1, panel 4). This is for a variety of reasons, with varying importance across countries: early rate reductions were often accompanied by a broadening of the tax base; rising profitability as captured by increasing corporate gross operating surpluses (CGOS); a rising share of the (profitable) financial sector; and shifts from the personal to the corporate income tax as

the latter regime became increasingly attractive for small businesses and the self-employed.<sup>2</sup>

CIT revenue performance varies across European countries, in part due to tax competition and profit shifting. CIT revenues are not solely the result of the statutory tax system, that is, the definition of tax bases, the tax rate, and any special regimes. One other important factor for CIT revenues is the large variation in the degree of incorporation and, on the other hand, the practice of running businesses as transparent entities taxed under the personal income tax. Also important are the economic structure of a country—for example, the presence of natural resource rents or large multinationals—and the behavior of taxpayers in their investment and tax compliance decisions, which are driven by both tax and nontax factors. This multitude of factors creates challenges for cross-country comparisons. One measure that is sometimes used, the CIT revenue productivity, is defined as the ratio of CIT revenue scaled by GDP to the statutory CIT rate. This measure gives an indication of how much revenue is raised by each percentage point of the CIT rate. In Europe, CIT revenue productivity averages 14 percent but with a fairly large dispersion across countries (Figure 2, panel 1).

To help understand what drives CIT productivity, this ratio can be decomposed as follows:

$$\frac{CIT\ Revenue}{CIT\ Rate \times GDP} = \frac{1}{CIT\ Rate} \times \frac{CIT\ Revenue}{CIT\ Base} \times \frac{CIT\ Base}{CGOS} \times \frac{CGOS}{GDP} \quad (1)$$

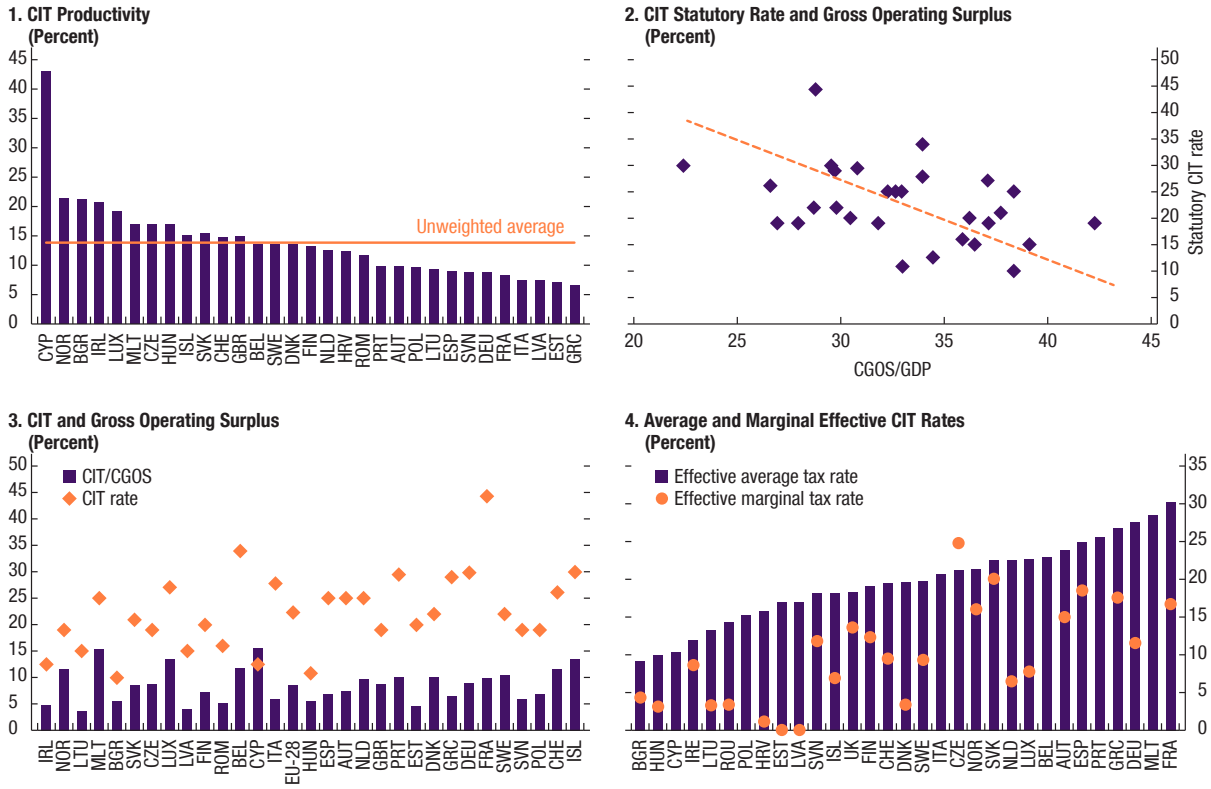
in which CGOS = corporate gross operating surplus.<sup>3</sup> In practice, no publicly available data are available on the statutory tax base, so only two ratios can be analyzed: (1) the share of CGOS in GDP and (2) the share of CIT revenue in CGOS. Two observations suggest the presence of tax competition and profit shifting in Europe:

- There is a negative association between countries' statutory CIT rates and the share of profits in GDP (Figure 2, panel 2), which among other things reflects tax competition and profit shifting, as countries attempt to make their tax systems more attractive than those of others by offering lower tax rates. The combination of a relatively low CIT rate and a relatively high share of corporate profits explains in most cases the higher CIT productivity observed in some countries.

<sup>2</sup>Papers that discuss these channels include a surge in profitability due to globalization (Becker and Fuest 2007), a rising share of the financial sector in the economy (Devereux and others 2002), and incentives for businesses to incorporate (De Mooij and Nicodème 2008).

<sup>3</sup>CGOS measures the return on corporate investment before tax, depreciation, and interest deductions. CGOS is used as proxy for corporate profits.

Figure 2. Corporate Income Tax Performance, 2018



Sources: Eurostat; OECD; and IMF staff calculations.  
 Note: Effective tax rates are from the OECD database and are computed assuming that the sources of finance are debt and equity with corresponding shares of 35 and 36 percent, respectively. The reported effective rates are the unweighted average of asset-specific effective rates computed for four different categories of assets: nonresidential structures, tangible assets, intangible assets, and inventories. The pretax rate of return is set to 20 percent. See [https://stats.oecd.org/Index.aspx?DataSetCode=CTS\\_ETR](https://stats.oecd.org/Index.aspx?DataSetCode=CTS_ETR). CGOS = corporate gross operating surplus. CIT = corporate income tax. Data labels in the figure use International Organization for Standardization (ISO) country codes.

- The ratio of CIT revenue-to-CGOS—which is a measure of the average paid tax rate on reported corporate profits—in almost all countries is well below their statutory CIT rates (Figure 2, panel 3). This reduces CIT productivity and primarily reflects policy choices regarding the corporate tax base.

Policy choices beyond the statutory tax rate can also be measured by the average effective tax rate (AETR). This measure is calculated using a forward-looking assessment of the tax system. While AETRs depend crucially on assumed financing, asset composition, and profitability, they are lower than statutory tax rates in most countries (Figure 2, panel 4). AETRs are relevant for the location choice of MNEs, in particular for rent-earning invest-

ments.<sup>4</sup> The marginal effective tax rate measures the tax on returns from an investment that just breaks even.

## **MNEs and Foreign Direct Investment in Europe**

MNEs account for a large part of real economic activity in the European economy. Foreign-owned enterprises contribute about 20 percent of the value added generated in the EU, and significantly more in several countries (Figure 3, panel 1). Their contribution to employment is also substantial (about 15 percent, on average). More than 40 percent of profits of nonfinancial corporates in Hungary and Ireland originate from affiliates of MNEs and more than 20 percent in Luxemburg, Poland, or the United Kingdom, to mention a few (Figure 3, panel 2). Similarly, European multinationals have achieved significant global presence. There are 142 European multinationals among the 500 largest companies worldwide. European MNEs have the largest global presence in terms of revenue in the financial sector (including banking and insurance) and the energy and motor vehicle industries, but a relatively low presence in the technology sector (Figure 3, panels 3 and 4). In 2017, they employed 18.5 million people worldwide and generated revenues of USD 8 trillion and profits of USD 490 billion.

Empirical evidence suggests that MNE profits tend to be taxed less than profits of their domestic peers. Bilicka (2019) finds that multinational affiliates report lower profits than comparable domestic companies in the United Kingdom. Egger, Eggert, and Winner (2010) document a similar finding in high tax European countries using a panel of European firms. However, at the consolidated group level, MNEs tend to report relatively high after-tax profits, in part reflecting tax optimization through tax planning and avoidance strategies to shift profits from high- to low-tax affiliates.

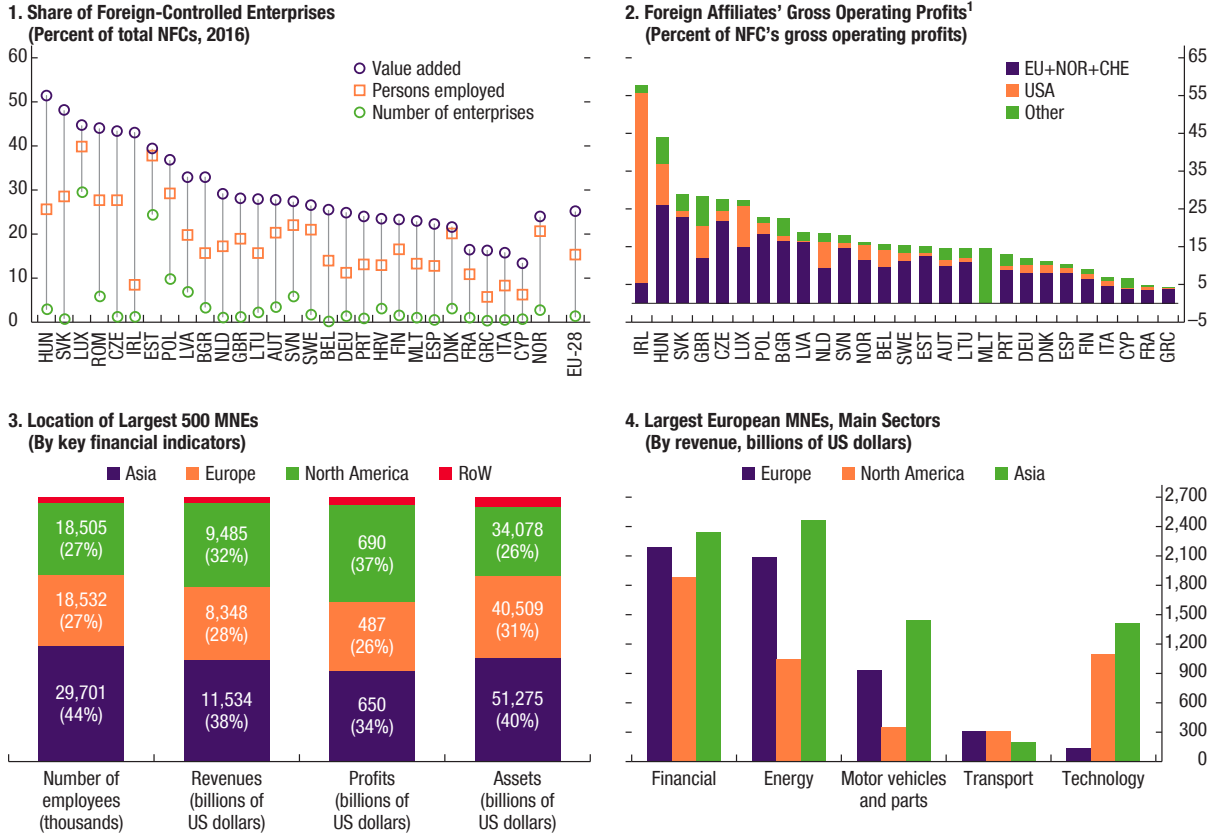
Europe plays a key role in global FDI. Six European countries are among the top 10 world locations of FDI, comprising together 40 percent and 50 percent of world inward and outward FDI, respectively (Figure 4, panel 1). However, a significant share of FDI in Luxemburg and the Netherlands is dominated by “transit” flows by special purpose entities (SPEs). These entities typically have minimal physical production or employment in the host country and carry out holding activities, conduct intrafirm financing, or manage intangible assets.<sup>5</sup> Corporate tax systems provide especially attractive international tax rules for SPEs, in the form of low (or zero) cross-border withholding taxes on dividends and other capital income, among other offerings.

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<sup>4</sup>See Devereux and Griffith (2003) for the derivation of AETRs and empirical evidence.

<sup>5</sup>De Mooij and others (2020) report that SPEs in Luxemburg spend almost 3 percent of GDP on salaries and purchases of business services.

Figure 3. Multinational Enterprises in Europe



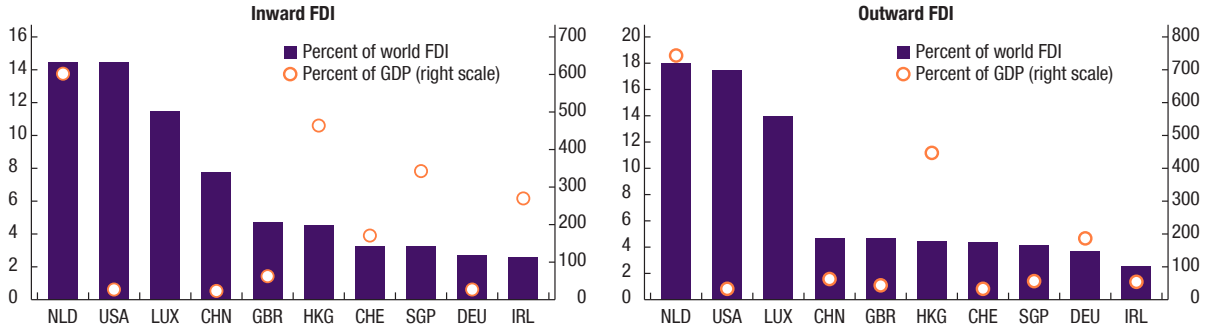
Sources: Eurostat; Fortune Global 500; OECD; US Bureau of Economic Analysis; and IMF staff calculations.  
 Note: RoW = rest of the world. Data labels in the figure use International Organization for Standardization (ISO) country codes.  
<sup>1</sup>For Malta, the decomposition in panel 2 is unavailable. In panel 2, the purple bar includes the United Kingdom.

Damgaard, Elkjaer, and Johannesen (2019) estimate that out of 40 trillion of global FDI in 2017, approximately 15 trillion went into this type of corporate structure. Of this, approximately 6 trillion are located in Luxembourg and the Netherlands and 1 trillion in Ireland and Switzerland. However, FDI by SPEs (particularly in Luxembourg, the Netherlands, and Switzerland) declined significantly in 2018 (Figure 4, panel 2), following the 2017 US corporate tax reform that encouraged repatriation of foreign earnings by US multinationals.

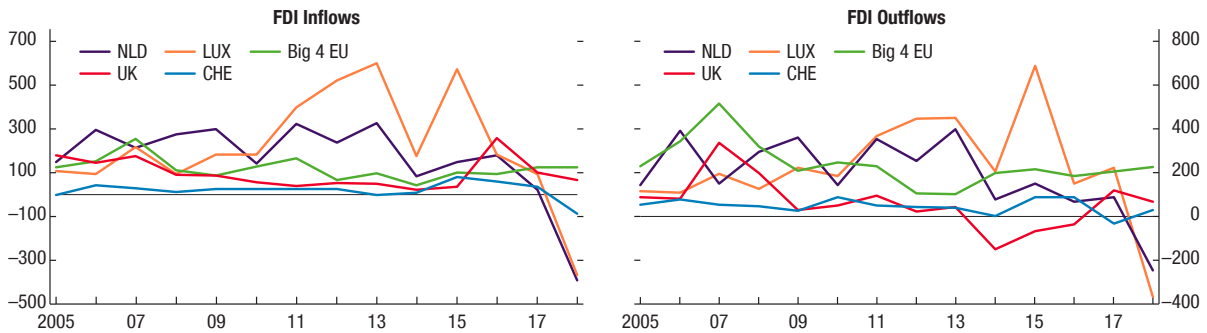
The significant increase in cross-border digital trade has been a distinct recent trend. As MNEs are shifting away from the traditional business model of producing close to the locations of their consumers, global digital trade grew from 19.3 trillion in 2012 to 27.7 trillion in 2016 (US International Trade Commission). The number of enterprises engaged in cross-border digital sales in the EU has risen significantly in several sectors. This development has

Figure 4. Foreign Direct Investment in Europe

1. Top Locations for Inward and Outward FDI (Percent)



2. FDI Inflows and Outflows (Billions of US dollars)



Sources: OECD, FDI Statistics; IMF, Coordinated Direct Investment Survey Database; and IMF staff calculations.  
 Note: Numbers for Luxembourg and the Netherlands include only foreign direct investment (FDI) by special purpose entities. Data labels in the figure use International Organization for Standardization (ISO) country codes.

been at the fore of the debate about the allocation of the right to tax MNEs' profits, which is currently tied to the physical presence of the company ("permanent establishment"). As discussed in Chapter 4, some reform options entail allocating taxing rights to destination countries where consumers or users are based.



## Corporate Tax Spillovers in Europe

This chapter focuses on CIT spillovers from a European perspective. It lays out the specific channels of international spillovers, surveys estimates of profit shifting, and revisits the discussion on tax competition. The analysis builds on country-specific contributions in IMF surveillance on international corporate tax issues in Europe (Box 1) and other available empirical evidence to corroborate the stylized facts presented in Chapter 2.

### Corporate Tax Spillovers

Attention to cross-border spillovers of corporate tax policies has increased in the past several years. The term “spillover” in this paper refers to the impact that one jurisdiction’s corporate tax policy has on the economic wellbeing of other jurisdictions. Following IMF (2014) and Crivelli, de Mooij, and Keen (2016), the analysis here focuses on two distinct types of cross-border spillovers: “base” and “strategic” spillovers.

*Base spillovers* reflect the impact of one country’s tax policy on the tax bases of other countries. This includes base effects resulting from (1) impacts on real investment and (2) profit shifting.

1. *Impact on real investment*: Tax policies can have a significant impact on FDI positions and there is ample empirical evidence to support this view. For instance, De Mooij and Ederveen (2008) perform a meta-analysis based on a large econometric literature on taxation and FDI and report that a 10 percentage point reduction in a country’s average effective tax rate increases its stock of FDI, on average and in the long term, by more than 30 percent.<sup>1</sup> The size of these spillovers depends on country size.

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<sup>1</sup>Feld and Heckemeyer (2011) report similar results.



From the point of view of, say, the United Kingdom, the tax rate set by a small Pacific island country probably doesn't matter much, since the amount of capital it could lose to such a country is small. Yet the tax rate in large countries, such as Germany or France, does significantly matter for the tax base in the United Kingdom.

2. *Impact on profit location*: Multinationals use various tax planning devices to shift taxable income from high- to low-tax jurisdictions. Empirical studies confirm the importance of profit shifting, both for specific channels and the overall sensitivity of reported profits to tax rate differentials between countries (see more below). Country size matters much less for profit shifting than for real investment, for example, the CIT rate of a small island economy does matter to the United Kingdom (and other large countries)—possibly as much or even more than the rate in Germany or France.

The base spillovers through real investment and profit shifting are not independent. Indeed, profit shifting opportunities may blunt the impact of taxes on real investment and thus mitigate real distortions in allocation, though profit shifting might also require firms to install some capital in a location to justify shifting profits there. Klemm and Liu (2019) provide a conceptual framework for these interactions and discuss empirical literature.

*Strategic spillovers* result from the impact on a country's policy choices of tax changes abroad: tax competition in its broadest sense. Hence, whereas base spillovers reflect responses by firms, strategic spillovers refer to responses by governments. As each country attempts to make its tax system more attractive than those of others, international tax competition leads to suboptimal global welfare outcomes because of inefficiently low tax rates (Keen and Konrad 2013). Tax competition is most visible in the global decline in CIT rates during the past decades; it also materializes in preferential regimes that target certain investments. The intensity of tax competition is often measured by tax reaction functions, which have been estimated using different specifications and spatial patterns. The empirical evidence suggests that countries compete aggressively using statutory CIT rates: a 1 percentage point reduction in the average CIT tax rate in all other countries is found to induce a country to reduce its own rate by between 0.35 and 0.75 percentage point. Evidence on tax competition using marginal effective tax rates is less clear-cut, however (Leibrecht and Hochgatterer 2012).

### Profit Shifting in Europe

The empirical literature suggests that profit shifting is relatively large in Europe. Studies either estimate a specific mechanism of profit shifting based

**Table 1. Revenue Impact of Transfer Mispricing of Intragroup Trade**

Country	Study	Revenue Foregone (% of CIT Revenue)
Denmark	Cristea and Nguyen (2016)	3.2
France	Davies and others (2018)	1.0
Germany <sup>1</sup>	Hebous and Johannessen (2021)	2.0
United Kingdom	Liu Schmidt-Eisenlohr, and Guo (2020)	0.4
United States	Flaen (2018)	0.7

Source: IMF staff.

<sup>1</sup> The studies listed in the table examine the mispricing of goods, except for Hebous and Johannessen (2019), which study the mispricing of services.

on firm-level data (see Box 2 for an overview) or assess the overall magnitude of profit shifting by estimating the impact of CIT rate differentials on the profitability of affiliates within a multinational group.

Recent empirical studies show that the price wedge between the arm's length price and the transfer price for related-party transactions varies systematically with corporate tax rates. Table 1 summarizes selected studies using firm-level European data. For example, Cristea and Nguyen (2016) find that Danish multinationals reduce the unit values of their exports to affiliates in low-tax countries by between 5.7 and 9.1 percent. Overall, studies based on micro-data suggest relatively modest revenue losses from transfer mispricing practices, ranging between 0.5 and 3 percent of the CIT revenue in selected European countries and the United States (Table 1). However, these studies do not capture all forms of profit shifting, and some might not entirely capture profit shifting into certain low-tax jurisdictions for which full data are not available (Clausing 2016). Moreover, they also do not account for the interaction between the different channels of profit shifting, which can be important (Saunders-Scott 2015; Nicolay and others 2017).

Estimates based on macro data suggest more sizable revenue losses from profit shifting than micro-based studies. One common macro approach involves estimating the semi-elasticity of the CIT base with respect to the CIT rate differential—defined as the difference between a country's statutory CIT rate and the average of the other countries' CIT rates. Beer, de Mooij, and Liu (2019) conduct a meta study and report a semi-elasticity of 1.5—that is, a 1 percentage point increase in the CIT rate relative to other countries reduces reported taxable profits by 1.5 percent.<sup>2</sup> Using this elasticity, the amount of shifted profits, and thus the corresponding revenue effect, can be simulated.

<sup>2</sup>Heckemeyer and Overesch (2017) combine 25 of these studies in a meta-analysis, producing an average “consensus” estimate of the semi-elasticity of 0.8. Beer, de Mooij, and Liu (2020a) expand the list of studies, improve on the empirical strategy, and obtain a larger semi-elasticity of 1.0. Moreover, they find that the elasticity is rising over time and that a semi-elasticity of 1.5 best reflects the current value.

**Table 2. Revenue Loss due to Profit Shifting**

(Percent of Corporate Tax Revenue)

Year of data	(1)	(2)	(3)	(4)	(5)
	Estimates based on Beer, de Mooij, and Liu (2020a)	Clausing (2016)	Crivelli, de Mooij, and Keen (2016)	Gobham and Jansky (2018)	Tørsløv, Wier, and Zucman (2018)
	2016	2012	2013	2013	2015
France	19	23	22	28	21
Germany	10	28	15	23	28
Spain	2	24	19	20	14
Greece	8	26	9	16	7
Portugal	9	19	8	15	9
Italy	13	16	10	10	19
Austria	1.7	...	9	6	11
Denmark	-2	13	7	5	8
Finland	-5	18	7	5	11
United Kingdom	-5.6	...	5	2	18
United States	29	26	14	54	14
Global	5.1	15	6	23	10

Source: Compiled by IMF staff.

Note: Estimation methods based on the cited papers.

Based on this approach, the first column of Table 2 displays new estimates of revenue impacts for 2016. The estimates point to global revenue losses due to profit shifting of about 5.1 percent of corporate tax revenue. Importantly, the estimates are qualitatively heterogeneous across European countries indicating both tax-base losers and tax-base gainers.

Several macro studies estimate a global net revenue loss, ranging from 5.1 to 23 percent of current CIT revenue (Table 2). For example, Clausing (2016) estimates an average semi-elasticity of US MNE affiliate profits with respect to the effective tax rate of 2.9. The study assumes that non-US MNEs follow a similar profit shifting pattern and extends the results to several large economies. Tørsløv, Wier, and Zucman (2018) estimate inward profit shifting in low tax jurisdictions as the excess of profitability (profit-wage ratio) of foreign MNEs compared to domestic firms using macro-level foreign affiliate statistics. This excess profit is then allocated proportionally to countries of origin using data on service exports and intra-group interest receipts. They report a global CIT revenue loss of about 10 percent. Their analysis suggests that fully eliminating profit shifting would increase reported profits by about 15 percent in high-tax EU countries.

## Tax Competition in Europe

One of the most visible signs of tax competition in Europe is the fall in corporate tax rates in recent decades. While the average CIT rate in Europe was about 35 percent in 1995, it has declined to 21 percent today (Figure 5). The average rate in Europe is lower than in other regions in the world, possibly reflecting relatively large intra-EU spillovers from tax competition. Estimates

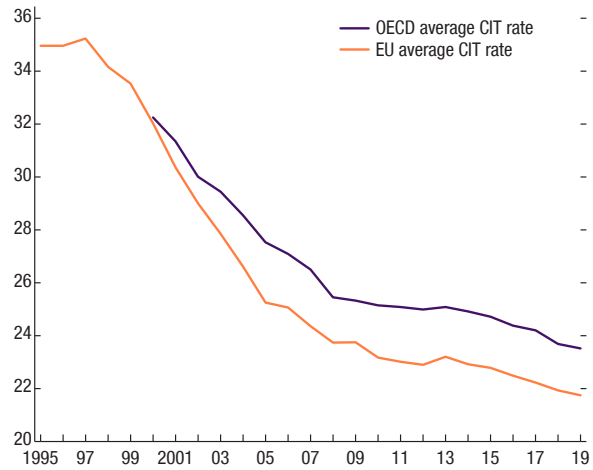
of tax reaction functions (that is, how the CIT rate in one country responds to changes in the CIT rates of other countries) support the presence of spatial patterns in tax competition (Revelli 2005). As an illustration of the significant revenue effects of CIT competition, if the EU27 countries plus Norway, Switzerland, and the United Kingdom had applied their 1990 CIT rates to their 2018 CIT bases, they would have collected 1.6 percent of GDP more revenues.

While this number does not take into account base changes—whether due to policy changes (such as base-broadening measures) or behavioral responses (such as incorporation decisions and profit shifting), it does indicate a large decline in revenue because of CIT rate cuts.<sup>3</sup>

Tax competition is also reflected in preferential tax regimes. In Europe, these regimes focus on lowering tax rates on income from IP—for example, patents and trademarks. The underlying rationale is that investment in research and development (R&D) is widely considered as a key driver of innovation and productivity growth. As the social benefits can significantly exceed private gains due to externalities, there is a strong rationale for fiscal incentives to support R&D. However, the evidence is mixed at best that output-based regimes, such as special IP regimes, stimulate domestic R&D—unlike, for example, incentives that directly reduce the price of R&D such as tax credits and subsidies (IMF 2016a). In fact, evidence suggests that IP regimes have been used by firms for profit shifting purposes by relocating their IP management. Subsequently, European governments have started to use them as a form of tax competition. Preferential IP regimes exist in several European countries (Figure 6). Recent adopters include Lithuania, Poland, and Serbia.

Since 2015, one of the BEPS minimum standards requires preferential regimes to meet a so-called nexus test. The G20-OECD BEPS project aimed

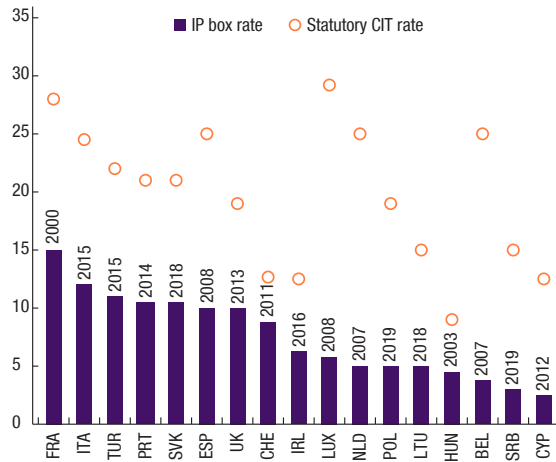
**Figure 5. Statutory CIT Rates in Europe, 1995–2019**  
(Percent)



Sources: Eurostat; OECD; and IMF staff estimates.  
Note: CIT = corporate income tax.

<sup>3</sup>Figures vary across countries. Nicodème, Caiumi, and Majewski (2018) report that the CIT rate cuts between 1995 and 2015 lowered revenues by 0.81 percent of GDP in the EU 28 and that changes to the base overcompensate the rate effect.

Figure 6. Selected IP Box Regimes



Sources: Hebous (2021b); and IMF staff estimates.  
 Note: The year above each bar is the year of introducing an intellectual property (IP) box regime. Actual names of the regimes vary. CIT = corporate income tax. Data labels in the figure use International Organization for Standardization (ISO) country codes.

to address several areas of concern related to profit shifting (Box 3). BEPS action 5 requires “substantial activity” by the taxpayer as a qualification for a preferential tax regime (the “nexus approach”). Preferential tax regimes that fail to conform to the nexus approach are deemed harmful and should be revised. There are two broad categories:

1. *Intellectual Property (IP) Box regimes.* The so-called “nexus approach” requires a link between a taxpayer’s expenditures on the IP and the qualified IP income. This requirement addresses multinational enterprises’ practices of relocating (hard-to-price) intangibles within the group (that is, locating the legal ownership of the patent in a low-tax jurisdiction after developing the patent in a different jurisdiction).
2. *Non-IP regimes:* The focus here is on preferential tax regimes for “geographically mobile activities.” Examples include headquarter regimes (that is, companies that provide management services for the multinational group), incentives for financing and leasing activities, distribution centers regimes (that is, activities of purchasing from other affiliates and reselling for profit), shipping regimes, and holding company regimes (that is, companies that hold equity participations and/or a variety of assets that generate royalties and other income). The nexus approach applies to non-IP regimes, but determination of qualified income is specific to each category of regime. Generally, as stated in the OECD 2017 Progress Report on Preferential Regimes, “core income generating activities presuppose having

an adequate number of full-time employees with necessary qualifications and incurring an adequate amount of operating expenditures to undertake such activities” (OECD 2017, Annex D, p. 40).

Whether tax competition using preferential regimes is more or less harmful than using statutory CIT rates is controversial. The welfare effect of using a preferential tax regime depends, for instance, on the degree of mobility of the tax bases and whether tax competition with the general CIT rate is unrestricted (Keen 2001). In the case of the latter, preferential regimes that target the more mobile part of the CIT base can dampen tax competition in the general CIT rate. Repeal of preferential regimes could imply a lower overall tax rate and lower revenues, as tax competition shifts toward the general rate. The fact that the EU allows preferential regimes for IP income may to some extent relax pressures on general CIT rates.

**Box 1. IMF Work on Corporate Taxation in Europe**

Since 2016, IMF bilateral surveillance has increased its coverage of corporate taxation issues with macroeconomic significance—in Europe and elsewhere—including special features in several Article IV consultation reports (Box Table 1.1). Corporate taxation topics with a particular country-specific relevance include balancing the tax treatment of different forms of business incomes to limit tax arbitrage; improving the tax treatment of losses (for example, loss-carry-forward rules to encourage entrepreneurial risk taking and allow startups to recoup their initial losses once the company has become profitable); abolishing ineffective size-dependent CIT rates and preferential regimes; and better aligning national and subnational corporate tax systems. Issues of common concern relate to tax competition and profit shifting with attention to the design of tax incentives for innovation. Also schemes to address debt bias from corporate taxation have been discussed.

**Box Table 1.1. Corporate Taxation Projects in Advanced Europe**

Country	Date / IMF Country Report	Main Topics in Conjunction to International Tax
Belgium	March 2017 / (17/70)	Innovation incentives; debt bias; scope for CIT rate reduction.
France	September 2017 / (17/289)	Efficiency and growth friendliness of capital taxation; CIT rate reduction.
Switzerland	June 2018 / (18/174)	Implementation anti-tax avoidance measures while preserving competitiveness and revenue.
Denmark	June 2018 / (18/178)	Growth friendliness of capital taxation; innovation incentives; debt bias.
Ireland	June 2018 / (18/195)	Impact of US tax reform and anti-tax avoidance measures; dependency on concentrated CIT revenue.
Germany	July 2019 / (19/214)	CIT efficiency and innovation incentives.
Luxembourg	November 2020 / (WP 2020/264)	International tax reforms and the role of special purpose vehicles.

### Box 2. Evidence on Profit-Shifting Strategies

Multinationals use various tax planning devices to shift taxable income from high- to low-tax jurisdictions. The most common strategies can be grouped in the following categories:

*Abusive transfer pricing:* countries face increasing difficulties in applying the arm's length principle, that is, the rule that transactions between related parties should be priced as if they were between unrelated parties. This is especially true for firm-specific intangibles and services for which market prices are rare. Several studies report empirical evidence on mispricing intragroup trade (Table 1).

*Location of intellectual property (IP):* A specific concern is the transfer of IP rights to low-tax jurisdictions early in their development when they are hard to value. Another concern relates to transferring mature IP assets from zero- to low-tax jurisdictions to claim capital allowances on the market value of the IP at the time of the transfer. The empirical literature documents a significant negative relationship between the effective taxation of income from IP and firm intangible assets, including patents (Alstadsæter and others 2018; Griffith, Miller, and O'Connell 2014).

*Intragroup lending to deduct interest expenses in relatively high-tax jurisdictions while earning interest income in low-tax jurisdictions:* There is substantial evidence that taxation induces intracompany borrowing to reduce tax payments in high-tax locations, so-called debt shifting (IMF 2016b; Feld, Heckemeyer, and Overesch 2013; Hebous and Ruf 2017).

*Exploiting mismatches:* Tax arbitrage opportunities can arise if different countries classify the same entity, transaction, or financial instrument differently (Harris 2014).

*Treaty shopping:* Tax treaty networks can be exploited to route income to reduce taxes (Weichenrieder and Mintz 2010; Van't Riet and Lejour 2018). Within the EU, withholding taxes are largely abolished on intra-EU payments under the Interest and Royalties Directive and the Parent-Subsidiary Directive, and thus no major treaty concerns arise in this context. However, one concern is the differences across Member States in their tax treatments of outbound payments (that is, from a Member State to a non-EU country). In particular, no outbound withholding taxes on such outbound payments combined with no withholding taxes within the EU can potentially facilitate aggressive tax planning.



**Box 3. The G20-OECD BEPS Project**

The G20-OECD project on base erosion and profit shifting (BEPS) concluded in 2015 on 15 action items aimed at identifying practices in the prevailing system of international corporate taxation that contribute to base erosion and profit shifting; recommending legal and administrative measures to combat those practices; and encouraging adoption of these measures at the national and regional levels (OECD 2015). The 15 action items include minimum standards (which all countries are expected to implement in domestic law or tax treaties), amendments to core OECD guidance (such as transfer pricing guidelines and model treaties) and common approaches (with an aspiration to convergence). The actions require changes in domestic law and tax treaties to (1) strengthen the rules for the taxation of controlled foreign corporations; (2) prevent base erosion through use of interest expense; (3) counter harmful tax practices by improving transparency and requiring substantial activity for preferential regimes (such as IP regimes); (4) prevent tax treaty abuse and redefining permanent establishments; (5) align transfer pricing with value creation in relation to intangibles; (6) design mandatory disclosure rules for aggressive tax planning schemes; and (7) address the tax challenges of the digital economy (this issue is currently at the center of ongoing work on reform options by the BEPS Inclusive Framework).

## European Tax Coordination

To mitigate profit shifting and tax competition within the EU, deeper coordination of corporate tax policies among the Member States will be necessary. Currently, a global debate on fundamental coordinated reform of the international tax system is underway, most prominently under the OECD Inclusive Framework (OECD 2020a, b). Irrespective of the outcome of this effort, however, the unique institutional structure in the European Union, with its objective to fully integrate goods, labor, and capital markets, demands deeper forms of coordination among its Member States to address the challenges of profit shifting and tax competition. Indeed, there are several initiatives in the EU to further coordinate European corporate tax policies. These have received a renewed momentum with the recently proposed package by the European Commission for fair and simple taxation, launched in July 2020 (EC 2020). This section discusses the role of tax coordination in the EU to address challenges of profit shifting and tax competition. It starts with a brief overview of current tax coordination in the EU (first section). Then, it elaborates on coordination of tax rates (second section) and tax bases (last section), respectively.

### European Tax Directives Related to the CIT

During recent decades, the EU has coordinated several aspects of CIT policies in the Member States through directives. Most prominently, during the 1990s and early 2000s it passed three important directives on business taxation, intended to remove obstacles on cross-border activities of multinationals:

- The *Merger Directive* (90/434/EEC last amended in Council Directive 2005/19/EC) rules out additional taxes on cross-border transfers

**Table 3. ATAD and G20-OECD BEPS**

ATAD Measures	BEPS <sup>1</sup>	Description
1. Interest limitation rule	Yes	An <i>earning-stripping</i> rule that addresses profit shifting using intra-company loans by denying the deduction of interest expenses if the ratio of net interest payments to Earnings before interest, tax, depreciation and amortization (EBITDA) exceeds 30 percent.
2. Controlled foreign company (CFC) rule	Yes	<i>CFC rules</i> attribute passive income of a non-resident controlled entity, if some conditions are met, to the parent company (that is, to be deemed as taxable income in the resident country).
3. Hybrid mismatches rule	Yes	A <i>hybrid mismatches rule</i> counters tax planning that exploits differences in countries' legal characterizations of an entity or a financial instrument (for example, leading to double deduction). The ATAD originally addressed arrangements within the EU, but it was extended in March 2017 to coverage arrangements between EU Member States and non-member states.
4. General anti-avoidance rule (GAAR)	No	A <i>GAAR</i> is a provision of last resort that empowers the tax authority to counter schemes or transactions that undermine the intention of the tax law to avoid taxes, despite being formally compliant with the tax law.
5. Exit taxation	No	Member States shall apply an exit tax on the excess of the market value of the transferred assets over their tax value, to prevent companies from avoiding tax in the State of origin by moving their tax residence or closing a permanent establishment. This tax serves as a safeguard against base erosion rather than a source of revenues.

Source: Compiled by IMF staff.

<sup>1</sup>“Yes” indicates that the measure is included in the G20-OECD BEPS initiative but it is not a minimum standard. “No” indicates that the measure is not included in the G20-OECD BEPS initiative.

of assets in the case of mergers between two companies in different Member States.

- The *Parent-Subsidiary Directive* (Council Directive 2003/123/EC) abolishes withholding taxes on payments and double taxation of dividends between associated companies of different Member States.
- The *Interest and Royalty Directive* (Council Directive 2003/49/EC) rules out withholding taxes on interest and royalty payments between associated companies of different Member States.

Recently, the EU has adopted two directives aimed at limiting profit shifting by MNEs. Guided by the BEPS outcomes, the European Council adopted two Anti-Tax Avoidance Directives (labeled ATAD I and ATAD II) in 2016 and 2017, respectively. These make some of the BEPS outcomes, beyond the minimum standards, mandatory for EU Member States (on limiting interest deductibility, for instance) and include other measures (for example, an exit tax). The anti-avoidance measures in the ATADs are summarized in Table 3. Moreover, several EU Directives have been passed to implement BEPS recommendations in EU law, including Directives on Administrative Co-operation and the Dispute Resolution Mechanism Directive.

Although employing ATAD measures can reduce profit shifting, it runs the risk of intensifying tax competition in the EU, as tighter anti-tax avoidance measures can make real investment more responsive to tax rate differences between Member States. For instance, De Mooij and Liu (2020) find that the adoption of transfer pricing regulations by countries has increased the

sensitivity of investment to tax rates. In response, governments might become more inclined to compete for real capital by lowering their rates. Becker and Fuest (2012) find that tightening anti-avoidance rules can prompt low-tax jurisdictions to further lower their tax rates and engage in more aggressive tax rate competition. Indeed, several EU countries have recently lowered statutory CIT rates or are planning to do so. Addressing concerns of tax competition will require additional steps in the coordination of corporate tax policies in the EU.

To address tax competition, EU countries agreed in 1998 on a non-binding code of conduct with respect to harmful tax practices (Box 4). It banned certain preferential tax practices that were deemed “harmful” and, although non-binding, the peer pressure induced by this process has led several European countries to modify various tax regimes; it also induced new Member States from Eastern Europe to adjust their tax rules before joining the EU.

European corporate tax policies have also been shaped by rulings of the European Court of Justice (ECJ). First, several rulings by the ECJ have banned tax practices that violate core EU principles, such as the freedom of establishment. In response, countries have eliminated tax barriers to support the integrated European market. This, however, had the side effect of also restricting certain anti-tax avoidance strategies by countries, such as CFC rules or denials of tax deductions, for example, for interest. Ongoing state aid cases involve cases against permitted tax planning by MNEs and thus aim to mitigate tax avoidance. These practices were deemed as possible violations of European state aid rules and thus challenged by the European Commission. Recent high-profile cases of this kind involving Apple, Starbucks, and Fiat have attracted ample attention.

Recent discussions on tax coordination in the EU have focused on the taxation of highly digitalized companies. This includes, for instance, companies engaged in online advertising, intermediation services, and the sale of data. In 2018, the European Commission launched a proposal with two components: (1) a desirable long-term solution and (2) an interim proposal for the short term. The long-term solution would change profit allocation rules such that Member States could tax profits arising from sales by highly digitalized businesses operating in their territory, even if such a business does not have a *physical* presence there. However, this would require wider international agreement beyond the EU as it involves a change in the allocation of taxing rights as reflected in existing bilateral tax treaties. Such changes are currently being discussed in the OECD as part of the reform of the international tax framework. Until such agreement is reached, the EC proposed as an interim solution to levy a 3 percent tax on gross income of large digitalized businesses with a global turnover exceeding a certain threshold. Thus far, however, no

agreement has been reached on the proposal. The debate is ongoing, both in individual EU countries to unilaterally impose digital service taxes and in the OECD Inclusive Framework to pursue a coordinated approach to address the challenges of the digital economy. The primary objective of these proposals is to address the perceived unfairness in the allocation of taxing rights across countries rather than to directly address the spillovers associated with corporate tax systems.

### Tax Harmonization

Tax harmonization in the EU has seen remarkable achievements in the area of indirect taxation but has met with less success regarding the CIT. For example, the EU VAT Directive (2006)<sup>1</sup> provides for “the harmonization of legislation concerning turnover taxes” by laying down a “common system” and a “uniform basis of assessment” for VAT, thereby largely harmonizing the VAT base while leaving VAT rates to member states within certain limits. Thus, the VAT Directive limits, but does not eliminate, the margin of discretion in the VAT design in Member States, for example by defining the scope of VAT exemptions and the allowed number of reduced VAT rates. In contrast, as summarized above, Member States have far more discretion in the CIT design. There have been discussions and proposals, however, to harmonize the CIT rate or base, as discussed below.

#### Corporate Income Tax Rate Harmonization

Coordination with respect to the CIT rate has long been debated in the EU as a way to mitigate CIT competition, but with little success. An expert report from 1963 by the Neumark Committee proposed a minimum tax of 50 percent on retained earnings, and the European Commission in 1975 proposed a harmonized corporate tax rate for the Member States in a band between 45 and 55 percent. In 1992, the Ruding Committee systematically reviewed the distortions to the common market imposed by differences in corporate taxation. It proposed a bandwidth for corporate income tax rates between 30 and 40 percent. In addition, it discussed harmonization of the corporate tax base, including by abolishing preferential tax regimes. In 2004, the French President Chirac and the German Chancellor Schroeder announced a plan for setting a minimum CIT rate in the EU to address “fiscal dumping” by some Member States. Despite all these attempts, agreement has never been reached on a minimum CIT rate in the EU (Pîrvu 2012).

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<sup>1</sup>The 2006 Directive recasts the 1977 Directive (77/388/EEC of 17 May 1977) on the harmonization of the laws of the Member States relating to turnover taxes.

The current debate on rate coordination is about introducing a minimum effective level of taxation of MNEs. The discussion on minimum taxation was revived in 2019 by a joint proposal of Germany and France. The nature of this proposal was different from the prior debate, however. Instead of referring to a minimum statutory tax rate for all EU Member States, “minimum effective taxation” was now referred to as schemes that would ensure that profits of MNEs are subject to some minimum overall level of taxation. This would apply to outbound and inbound foreign direct investment.

- *A minimum tax on outbound investment.* This would tax foreign earnings of multinationals at a reduced rate with credit for source-based taxes. One recently adopted tax of that nature is on global intangible low-taxed income (GILTI) introduced in the United States in 2017. It imposes a minimum tax on foreign earned profits (irrespective of repatriation or retention) and would be applicable above a 10 percent deemed return on tangible assets located abroad. The minimum tax rate is set at 10.5 percent (if no tax is paid abroad), with US liability wholly eliminated through crediting if the foreign tax on that income exceeds 13.125 percent. Variants of this approach can be envisaged and are currently being discussed globally under Pillar 2 of the OECD Inclusive Framework. One variant is to eliminate exceptions (so-called carve-outs) and simply tax any income of foreign branches or subsidiaries if insufficiently taxed abroad. Another variant is to apply the test for the minimum level of taxation on a country-by-country basis, instead of pooling income across high- and low-tax foreign jurisdictions.
- *A minimum tax on inbound foreign investment.* This would impose a minimum tax on operations in source countries or deny tax-reducing deductions. One example of such a minimum inbound tax is the base erosion and anti-abuse tax (BEAT) introduced in 2017 in the United States. Again, alternative designs are currently being discussed in the OECD. For instance, the minimum tax can be made conditional on the tax imposed in the receiving country being below some minimum level.

Effective minimum taxation in Europe would mitigate both profit shifting and tax competition. Because nearly all EU countries have moved toward territorial taxation, active business income earned in foreign subsidiaries is taxed only by the source country. This has created strong incentives for profit shifting toward low-tax jurisdictions since there is no offsetting tax liability in the residence country of the MNE. Charging some minimum tax on foreign income by the residence country can provide an effective backstop to such profit shifting. Moreover, minimum taxes on outbound investment will reduce pressures on source countries (including low-income and developing countries) to engage in aggressive tax competition by setting tax rates below

the minimum. Indeed, the benefit to source countries of offering very low tax rates will be reduced since the gains for companies will be mitigated by the minimum tax. Minimum taxes on outbound investment can thus have a strategic effect of limiting aggressive tax competition, which can benefit source countries as well as others.

International coordination of minimum taxes will help address spillovers. In principle, a minimum tax on outbound and inbound investment could be implemented unilaterally. However, unilaterally strengthening residence-based taxation runs the risk that the parent company will have an incentive to relocate to jurisdictions not imposing such a charge. Similarly, a minimum tax on foreign affiliations may deter inbound investment. International coordination of minimum taxes would be desirable to address such spillovers. While ideally this should occur at the global level, if that is not feasible European coordination can at least limit spillovers within the EU. In sum,

- *Unilateral adoption would reduce profit shifting out of the adopting country.* At the same time the country would become a less attractive location for headquarters (outbound tax) and investment (inbound tax).
- *European adoption would reduce profit shifting out of the region.* Moreover, as Europe is an important capital exporter, it would reduce incentives for capital importing countries to lower taxes below the minimum. Negative effects on competitiveness would be smaller than under unilateral adoption, provided multinationals value being headquartered in the region.
- *Adoption by all important capital exporters would fundamentally change tax competition.* It would remove the incentive for every country to reduce their tax rates below the minimum. It would also avoid competition over global headquarters.

The level of the minimum tax will determine its implications. Charging tax on foreign earnings at a rate equivalent to the domestic CIT rate would establish a pure worldwide system without deferral. This would be consistent with the principle of capital export neutrality and undo incentives for profit shifting and tax competition. However, differences in tax rates between countries would violate the principles of capital import neutrality and capital ownership neutrality (which in the absence of a minimum tax would hold) and induce spillovers through the competition over headquarters. Setting a minimum tax at a rate that is lower than the domestic rate is therefore to some degree a compromise between the two principles. The GILTI provision in the United States, for instance, sets the minimum rate at half the domestic rate and thus reduces, but does not remove, the incentives for profit shifting and tax competition.



The aggregate revenue effect of minimum effective taxation of MNEs will depend on the minimum rate, as well as other design features such as carve-outs. Devereux and others (2020) explore the impact of a global effective minimum tax rate—imposed on a country-by-country basis—on both outbound and inbound investment of 10 percent, assuming there is no exclusion of income from the application of the minimum tax (carve-outs). They find that this would generate additional revenue of about USD 32 billion globally, which is 14 percent of the taxes paid by foreign affiliates of MNEs and 1.7 percent of worldwide CIT revenue. If there were a carve-out or some form of global blending, on the other hand, revenue effects would be smaller. The OECD estimates additional gains by 0.8 to 1.1 percent of global CIT revenues from lowering profit shifting, with the total gain impact reaching 1.7 to 2.8 percent of global CIT revenues—assuming a 12.5 percent minimum tax rate.<sup>2</sup> To the extent that low-tax countries raise their tax rates in response to the global minimum, they would raise additional revenues from taxing international income as well as from their domestic tax bases—while the revenue effect for high-tax countries would be correspondingly lower. Clausing (2020) estimates that the minimum tax on outbound investment (GILTI) in the 2017 US reform lowers the US affiliate CIT base in low-tax jurisdictions by about 12 to 16 percent.

The longer-term merits of minimum effective taxation—either at the global or the EU level—would likely be associated with its dynamic effects. It would likely mitigate the incentives for profit shifting and reduce the intensity of tax competition, thereby putting a floor under CIT revenues. Moreover, the minimum tax creates a space for countries to raise their tax rates because taxing below the agreed minimum would no longer benefit MNEs and mitigate tax competition. However, the positive effects of a minimum tax crucially depend on its design and shrink with a lower minimum rate or bigger carve-outs.

### **Corporate Income Tax Base Harmonization**

Two broad approaches have been proposed since the 1990s for harmonizing the CIT base in the EU. As discussed in the 1992 Ruding Report and later taken up again by the Bolkestein Committee in 2001, two alternatives for harmonizing the CIT base were put forward: (1) under common base taxation (CBT) there would be a uniform set of rules to determine the CIT base for all EU countries, or (2) under home state taxation (HST) the corporate tax base of an MNE would be determined by rules of the headquarters

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<sup>2</sup>The OECD impact assessment assumes a carve-out of 10 percent on payroll and depreciation of tangible assets (OECD 2020): <https://www.oecd.org/tax/beps/tax-challenges-arising-from-digitalisation-economic-impact-assessment-0e3cc2d4-en.htm>



jurisdiction of the MNE. Countries could thus maintain their own rules but would simply mutually recognize each other's practices within boundaries (Lodin and Gammie 2001). Ultimately, the discussion led to a concrete proposal by the European Commission in 2010 for the introduction of a CCCTB. In revised form, this proposal was relaunched in October 2016 and is still under discussion between the Member States. The rest of this subsection elaborates on this proposal, with a focus on CIT-base consolidation and formula apportionment.

The CCCTB proposal of 2016 envisages a two-step approach to reform the CIT base in the EU:

- *Common Corporate Tax Base (CCTB)*: In the first step, Member States would agree on, and implement, a single EU-wide set of rules for computing the tax base of companies in the EU. Those rules would be mandatory for large multinational groups with global sales of at least EUR 750 million; other companies could voluntarily opt into the system. The proposed CCTB includes a tax deduction for a notional return on equity (to mitigate debt bias) as well as a super-deduction for R&D expenditure (to stimulate innovation). The proposal foresees several anti-avoidance measures including those from ATAD I and II. It also would allow for cross-border loss relief.
- *Common Consolidated Corporate Tax Base (CCCTB)*: The second step involves full consolidation of EU-wide profits and formula apportionment. The group's consolidated profit would be shared between the Member States using an apportionment formula and each Member State would apply its own CIT rate to the apportioned share of the profits. The formula comprises four equally weighted factors: (1) labor, based in equal measure on the number of employees and payroll costs; (2) assets (tangible fixed assets, whether owned, rented, or leased); (3) sales (other than intra-group sales) of goods and services net after discounts, returns, VAT, and other taxes and duties; and (4) a data factor that reflects the collection and use of personal data of online platforms and services users.<sup>3</sup> The sales factor would be calculated based on destination (that is, where the goods are sold/ dispatched to or where the service is carried out). For some sectors, the formula would be adjusted to account for specific circumstances, such as in the financial, oil and gas, and international transportation sectors.<sup>4</sup>

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<sup>3</sup>The original proposals include only three factors (assets, employment, and sales). The data factor was proposed in 2018; see the European Parliament legislative resolution of 15 March 2018: [https://www.europarl.europa.eu/doceo/document/TA-8-2018-0087\\_EN.html](https://www.europarl.europa.eu/doceo/document/TA-8-2018-0087_EN.html)

<sup>4</sup>In 2018, France and Germany issued a common position paper on the CCCTB, suggesting some modifications to the proposed common base, such as eliminating the notional deduction for equity and the super deduction for R&D and postponing the cross-border loss relief. It also suggested making the common base mandatory for all companies.

Consolidation with formula apportionment under the CCCTB has significant merit and is common for business taxes levied by subnational governments in, for example, Canada, China, Germany, Japan, and the United States. Hence, as economic integration proceeds, formula apportionment seems to present itself as better suited than the arm's length principle for dividing profits of related companies across jurisdictions. Indeed, the key advantage of formula apportionment is that it avoids all conceptual and practical difficulties in applying the arm's length principle. By allocating the consolidated tax base using proxies for substantial economic activities, such as payroll, assets, and sales, formula apportionment can align the tax base closely with where production factors are located and where the consumers are based, without the theoretical (and frequently practical) need to examine every specific transaction.

The CCCTB would greatly reduce the scope for profit shifting but would also induce new distortions. By taxing MNEs on a consolidated basis, formula apportionment eliminates scope for profit shifting through transfer pricing and other devices. However, tax avoidance will not disappear altogether as new distortions in corporate ownership structures may arise. For instance, combining two independent firms would generally change their combined tax liability. Gordon and Wilson (1986) thus show that companies will have an incentive to spread excess returns to low-tax jurisdictions under formula apportionment by merging with companies in low-tax states. Moreover, under formula apportionment the CIT becomes a tax levied on the factors of the formula. Since some assets and forms of labor are mobile across borders, differences in CIT rates will still induce distortions in the allocation of these production factors. Such distortions are likely to be reduced, however, since the CCCTB formula is partly based on sales by destination. As the location of consumers is not under firms' control, differences in tax rates will not induce distortions in the location of sales. Note, however, that sales by destination might not be immune from profit shifting. For instance, risks arise through the channeling of sales through low-margin unrelated firms based in low-tax countries. Systems of destination-based profit taxation using border adjustments avoid such risk of avoidance and would be even more robust to profit shifting (Box 5).

The CCCTB does not eliminate tax competition, as the production factors used in the apportionment formula will be affected by tax differences. As the CCCTB uses assets and labor as factors in the formula, low-tax countries can still induce firms to relocate such production factors, to have a larger portion of the EU-wide profit apportioned there. Tax competition under formula apportionment could become even more intense than under arm's length pricing if these production factors receive a large weight in the formula, because the revenue gain from attracting such factors comes from not

only an increase in local activity, but also being allocated a larger share of the MNEs overall profit. However, this effect is muted in the CCCTB as it contains sales by destination in the apportionment formula. Introduction of the CCCTB together with some form of effective minimum taxation would further mitigate such tax competition.

EU-wide tax revenue effects from the CCCTB are ambiguous but likely to be positive if dynamic effects are considered. The CCCTB will have four important effects on EU-wide corporate tax revenue.

1. The common base under the CCTB is broader than the current aggregate tax base of countries. The EC (2016) estimates that this broadens the aggregate tax base in the EU by 3 percent.
2. Cross-border consolidation means that losses in certain affiliates can be immediately offset against the profits of affiliates in other countries. This will reduce the aggregate EU-wide tax base (although loss consolidation will also eliminate an important distortion to investment, which can partly offset this adverse revenue effect).
3. As the CCCTB eliminates profit shifting, it will likely reallocate the tax base from low-tax countries toward high-tax countries. This will raise overall revenue for a given overall base.
4. The CCCTB induces positive dynamic effects on economic activity and tax revenue. For instance, the proposed common base with the notional deduction for equity, the super deduction for R&D, and cross-border loss relief will significantly mitigate distortions in investment, corporate finance, and innovation.

The EC impact assessment uses a computable general equilibrium model for the EU to simulate CCCTB effects and finds that it will boost investment by 3.4 percent and raise GDP by 1.2 percent (EC 2016).<sup>5</sup> These dynamic economic gains will further expand the tax base. On balance, the impact assessment finds that the short-term aggregate revenue effect of the CCCTB will likely be positive but small. However, to the extent that incentives for tax competition are reduced on account of the sales factor in the apportionment formula, corporate tax revenue might well be enhanced in the longer term.

The CCCTB may induce large changes in tax revenue of individual countries. Some studies have analyzed the distributional implications of formula apportionment in Europe. They generally ignore behavioral responses and

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<sup>5</sup>These simulated effects of the CCCTB package include R&D deductions and an allowance for growth and investment (“AGI,” which provides an allowance for corporate equity).

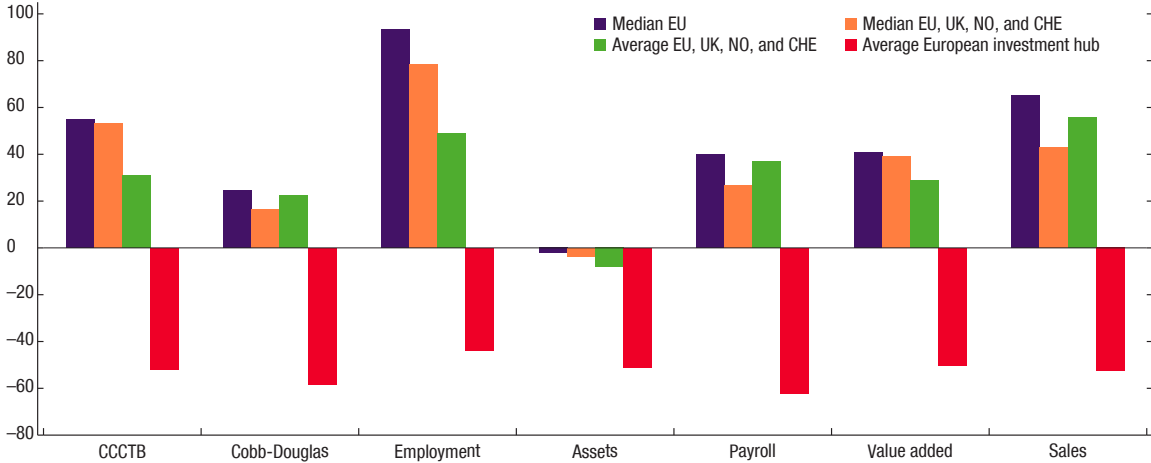
focus mostly on allocations based on production factors, as information about sales by destination is often not available in data sets.

- Fuest, Hemmelgarn, and Ramb (2007) use German micro data to assess the impact of a three-factor formula of assets, employment, and sales by origin. They find that tax base changes are large. Small European countries such as Ireland and the Netherlands would lose part of their tax base, while large countries such as Germany, Italy, and France would benefit.
- Devereux and Loretz (2008) use ORBIS data for firms across Europe and find that, in some contrast to Fuest, Hemmelgarn, and Ramb (2007), and irrespective of the apportionment factors used, Belgium, Denmark, Finland, Germany, Italy, and Luxembourg would see a reduction in tax revenues, while Spain, Sweden, and some countries in Central and Eastern Europe would experience an increase.
- De Mooij, Liu, and Prihardini (2019) explore the distributional implications of global formula apportionment across countries. Using data on US-based MNEs from the US Bureau of Economic Analysis, they analyze the impact of the CCCTB formula, including the sales-by-destination factor. Figure 7 shows the impact for EU countries. It suggests that significant gains are reported for the larger EU countries and those in Southern and Eastern Europe; major losses are reported for the Benelux countries and Ireland. More systematically, their study finds that formula apportionment will benefit countries with higher tax rates and lower revenues in low-tax countries.

As finding agreement on the CCCTB among all EU member states has been difficult,<sup>6</sup> more limited approaches to formula apportionment might be considered as a first step, such as residual profit allocation (Avi-Yonah, Clausing, and Durst 2009; Devereux, and others 2019; Beer and others 2020) The large distributional implications of the CCCTB in particular create a significant barrier to finding unanimous agreement among the Member States. It might therefore be of interest to initially seek reforms with a more limited application of formulary principles. One such partial application is reflected in proposals for the so-called residual profit allocation. These schemes split an MNEs income into a “routine” return on investment, which is closely tied to capital and/or other production factors, and a “residual” return obtained from the consolidated account of the MNC. The routine return could be taxed as usual in the country where production takes place. The residual return could be allocated to countries based on a formula (for example, sales

<sup>6</sup>Under the EU “Enhanced Cooperation” procedure, a subset of a minimum of nine Member States can establish advanced integration without the involvement of other member countries: [https://eur-lex.europa.eu/summary/glossary/enhanced\\_cooperation.html](https://eur-lex.europa.eu/summary/glossary/enhanced_cooperation.html)

**Figure 7. Impact of Formula Apportionment on Tax Revenue from US MNEs under Various Allocation Keys (Average 2011–16)**  
(Percent)



Source: IMF staff estimates.

Note: The Common Consolidated Corporate Tax Base (CCCTB) formula in the exercise is based on employment, assets, and sales. NO = Norway; CHE = Switzerland.

by destination) and then taxed at prevailing rates (which might differ from the tax rate on the routine return). The allocation of residual profits based on sales by destination aims to avoid the problems with the taxation at source, such as distortions in capital allocation and tax competition. However, the revenue implications of such residual profit allocation can still be significant for individual countries (Beer and others 2020).

Overall, base harmonization reforms can render unilateral taxes on digital services in Europe less important. A CCCTB generates new taxing rights in destination countries if the allocation formula includes sales by destination or a data factor, which (in part) addresses the issue of where to tax profits of digital activities within Europe. A minimum tax does not address this issue, but it lowers the tax-advantage of low-tax locations, thereby at least ensuring that profits of digital activities are taxed in Europe at the minimum level. To the extent that the current location decision of these profits is driven by differences in taxation, a minimum tax would level the playing field, thereby somewhat reducing tax incentives to avoid taxable presence in the destination country.

#### **Box 4. CIT Obligations and Commitments in the EU Code of Conduct on Business Taxation (CoCBT)**

The CoCBT was adopted by the European Council in December 1997 to tackle “harmful tax measures” and oversee the provision of information on those measures, with a CoCBT Group being established in 1998 to be responsible for its implementation. The CoCBT is not a legally binding document; Member States are voluntarily committed to it. It covers “[tax] measures which affect, or may affect, in a significant way the location of business activity in the Community” (EU 1997). As of 2014, it sets criteria for assessing harmful tax measures largely in the spirit of Action 5 of the G20-OECD BEPS project, including, but not limited to, violating the nexus approach—which classifies a tax measure as harmful if tax advantages are granted in the absence of any “real economic activity”—and ring-fencing—for example, by granting benefits only for nonresidents or specific sectors. The ambit of the CoCBT was recently extended to include areas such as transparency and exchange of information regarding transfer pricing and identification of non-EU countries that encourage “abusive tax practices” (a term used by the European Commission).

In December 2017, the CoCBT Group adopted the first EU list of non-cooperative tax jurisdictions for tax purposes based on three criteria: (1) tax transparency (exchange of information standards developed by the Global Forum on Tax Transparency); (2) “fair tax competition” in line with the CoCBT or the OECD Forum on Harmful Tax Practices (and as in Action 5, jurisdictions with a zero-CIT rate should implement the nexus approach); and (3) implementation of the G20-OECD BEPS minimum standards. As of October 2020, the list contains 12 jurisdictions—all together having a negligible share in total FDI from or into the EU (American Samoa, Anguilla, Barbados, Fiji, Guam, Palau, Panama, Samoa, Seychelles, Trinidad and Tobago, US Virgin Islands, and Vanuatu).

#### *EU State Aid Rules*

EU competition policy has rules on state aid aiming at ensuring fair competition in the EU’s internal market on a “level playing field.” Article 107 of the Treaty on the Functioning of the European Union (the Treaty) contains a general prohibition on state aid, unless it is justified by reasons of general economic development. The EC oversees that state aid complies with the EU rules empowered by the notification procedure which—apart of a few exceptions—requires Member States to notify state funding to the EC for approval before being implemented. The EC has the power to recover incompatible state aid. To qualify as state aid, a measure, generally, needs to have the following specific features: (1) “an economic advantage” conferred to an undertaking which that undertaking would not have received in the normal course of business and that advantage must be conferred by the state or through state resources; (2) the advantage

**Box 4. CIT Obligations and Commitments in the EU CoCBT (*continued*)**

conferred must be given to the recipient on a selective basis, for example, to specific companies or industry sectors, or to companies located in specific regions (this is the case for all regional and sectoral aid schemes); and (3) the measure may distort competition and is likely to affect trade between Member States.

The European Council explicitly recognizes that some tax measures in Member States can fall within the scope of both the CoCBT and the state aid provisions. Tax rulings—while they are per se not necessarily violating state aid rules—can be deemed unlawful if they provide, on a discretionary basis, selective advantages to a specific company or group of companies. Since June 2013, the EC has been investigating the tax ruling practices of Member States. Examples of cases wherein the EC decided that unlawful state aid existed include Starbucks in the Netherlands (2015), Amazon in Luxembourg (2017), and Apple in Ireland (2016). Developments have been ongoing, with the decisions of the EU General Court in September 2019 to annul the EC’s decision that Starbucks had been granted a tax advantage of EUR 30 million and in July 2020 to annul the EC’s decision that Apple had been granted a tax advantage of EUR 13 billion.



### Box 5. Border-Adjusted Profit Taxes

Destination-based profit taxes would be a powerful way to address profit shifting and tax competition while removing any need to determine transfer prices. The border adjustment means that exports are tax exempt while imports are nondeductible. Their prices are thus irrelevant for the determination of the tax base, and profit shifting is not feasible. This is also true of channels other than transfer price manipulation (Auerbach and others 2017a). Tax competition would also be reduced significantly because taxes are determined by the destination of sales, not the location of production. Full neutrality would require real exchange rates to adjust. This is expected to occur (Auerbach and others 2017b), but according to some research may take some time (Buiters 2017, Barbiero and others 2018).

Destination-based taxes can be implemented as highly efficient rent taxes. Given the absence of tax competition, the same revenue can be raised by applying a higher rate on a smaller base, such as pure economic rent. In that case, the tax is neutral to investment, that is, it would not discourage any investment that is profitable in the absence of taxation. The simplest and most studied implementation of a border-adjusted profit tax is the Destination-Based Cash-Flow Tax (DBCFT)—for example, Bond and Devereux (2002), Auerbach and others (2017a), and IMF (2019). This is an economically efficient tax, as it does not distort investment or financing choices. Moreover, its compliance and administrative costs are likely to be very low, given that the tax base is calculated from cash transactions. A disadvantage is, however, the large amount of refunds that would likely be due to exporters. Other destination-based rent taxes—for example, based on an allowance for corporate equity—are feasible but face additional complications (Hebous, Klemm, and Stausholm 2020).

If adopted unilaterally or regionally, repercussions for non-participating jurisdictions would be severe. While adopting a DBCFT (or other border-adjusted tax) protects from losses from profit shifting, other countries would face even more intense tax competition pressure. From the point of view of countries taxing at the origin, a destination-based country would appear as a tax haven, as it would apply a no taxes on inwardly shifted profits. Resulting losses from profit shifting can be expected to be severe (with no corresponding tax revenue gain in the DBCFT country), pushing countries to follow in DBCFT adoption to obtain a more robust tax base, too. There are, moreover, legal doubts about whether a DBCFT can be drafted in a World Trade Organization-compliant way (Schön 2016; Grinberg 2017).

These taxes would lead to major redistribution of tax payments and—in their most convenient implementation—make revenues more volatile. Hebous, Klemm, and Stausholm (2020) calculate the revenue impact of replacing the current CIT with a DBCFT at the same rate and find that while global revenues would be similar, individual coun-



**Box 5. Border-Adjusted Profit Taxes (*continued*)**

tries may lose or gain significant amounts, depending on their economic circumstances. In particular, given the exemption of exports and taxation of imports, countries with trade deficits tend to increase their tax revenues. Another important driver of the revenue effect is whether the current system benefits or suffers from profit shifting, which would stop under the DBCFT. Hebous, Klemm, and Stausholm (2020) also show that the volatility of tax revenue would rise significantly, while it would be a less effective automatic stabilizer (given the deductibility of investment, which is cyclical).

## Conclusions

This paper is motivated by the mounting tension between the importance of effective taxation of corporate profits and the widely shared assessment that the current international CIT framework is outdated. Our focus is on Europe where corporate income tax remains an important source of revenue. Vigorous tax competition among countries and significant cross-border profit shifting by MNEs have generated distortions and lowered tax revenues, despite a rising share of corporate profits in GDP. Domestic firms are put at a competitive disadvantage and citizens perceive the existing corporate tax system as unfair. While global reform efforts are ongoing, the question remains: what can Europe do to address these negative spillovers, support tax revenue, and see dynamic efficiency gains?

The impact of the COVID pandemic on public finances adds to the urgency of CIT reform. The sudden halt in economic activity and sharp drop in employment are far worse than anything on record. The pandemic is prompting many governments to spend more than they had anticipated pre-COVID while collecting less taxes. Many countries are accumulating public debt at rates reminiscent of major wars. In this context, there is a clear premium on collecting appropriate and fair tax on corporate profits.

CIT revenue performance varies considerably across European countries, partly due to tax competition and profit shifting. The continuous downward trend in statutory CIT rates seems to indicate a race to the bottom in corporate taxation in Europe with a significant revenue cost. In addition, the proliferation of preferential tax regimes, notably for income from intellectual property, has reduced effective tax rates considerably below statutory ones.

There are clear indications that MNEs find ways to avoid taxation of significant amounts of corporate income generated in cross-border activities through a variety of tax planning devices, resulting in substantial revenue

losses. Updated estimates indicate that the revenue loss arising from profit shifting in high-tax European countries can be very large.

To move toward a more equitable taxation of economic activities and expand the fiscal space needed to respond to the current crisis, it is more urgent than ever to put a brake on excessive tax competition and effectively fight tax avoidance. Given the transnational nature of these challenges, a successful response requires international cooperation, preferably at the global level. At the same time, very close economic connections within Europe demand tighter coordination among its member countries. Stronger coordination on corporate tax issues is enabled by the unique institutional setup of the European Union.

Despite important multilateral efforts to repair the international CIT system, key concerns remain unresolved. The G20/OECD BEPS project concluded in 2015 on 15 action items to combat base erosion and profit shifting, and the EU has subsequently adopted two Anti-Tax Avoidance Directives that build on the BEPS project. Nevertheless, the policy debate continues on effective taxation of MNEs and a coordinated approach to address the challenges of taxing the digital economy, both in the OECD Inclusive Framework and within the EU.

The first-best solution to these challenges would be a global agreement on limits to tax competition and taxation of the digital economy together with effective implementation of anti-profit shifting measures. Irrespective of the feasibility of a global agreement, however, deeper coordination among EU member states of corporate tax policies on both the tax rate and the tax base will be necessary to mitigate tax competition and avoidance within the EU. It will also help make further progress toward the integration of markets for capital, goods, and labor that the European project intends to achieve.

The current focus of discussions on CIT rate coordination is on a minimum effective taxation of MNEs. Introduction of minimum effective taxation in Europe on outbound and inbound direct investments would be an important step to mitigate tax competition and profit shifting. It could also have significant revenue effects, depending on its modalities.

Implementation of the CCCTB has significant merit and would greatly reduce the scope for profit shifting. The 2016 CCCTB proposal by the European Commission involves full consolidation of EU-wide profits and apportionment of taxing rights among countries based on a formula comprising production factors and sales, including by digitalized businesses that do not have a physical presence in the destination country. The CCCTB would not fully eliminate tax competition to the extent that the factors used in the apportionment formula are mobile, but introduction together with

minimum effective taxation would mitigate such distortions. The EU-wide growth and revenue effects from the CCCTB are likely to be positive, especially if dynamic effects on investment, corporate finance, and innovation are considered. At the same time, the CCCTB may induce large changes in tax revenue of individual countries, benefiting high-tax countries at the expense of investment hubs. Combining the CCCTB with a minimum tax may allow increasing low CIT rates, thereby expanding revenues also in low-tax countries. Paving the way for CCCTB implementation may require compensating measures for countries that lose significant revenue and perhaps considering as a first step more limited approaches to formula apportionment, such as under residual profit allocation.



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