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**Global Firms, National Corporate Taxes:  
An Evolution of Incompatibility**

by Shafik Hebous

**I N T E R N A T I O N A L M O N E T A R Y F U N D**

**IMF Working Paper**

Fiscal Affairs Department

**Global Firms, National Corporate Taxes: An Evolution of Incompatibility**

**Prepared by Shafik Hebous**

Authorized for distribution by Vitor Gaspar

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**Abstract**

How did the rise of multinational enterprises (MNEs) put pressure on the prevailing international corporate tax framework? MNEs, and firms with market power, are not new phenomena, nor is the corporate income tax, which dates to the early 20th century. This prompts the question, what is distinctly new (about multinational enterprises)—if anything—that has triggered unprecedented recent concerns about vulnerabilities in international tax arrangements and the taxation of MNEs? This paper presents a set of empirical observations and a synthesis of strands of the literature to answer this question. A key message is that MNEs of the 21st century operate differently from prior periods and have evolved to become global firms—with important tax ramifications. The fragility of international tax arrangements was present at the outset of designing international tax rules, but the challenges have drastically intensified with the global integration of business, the increased trade in hard-to-price services and intangibles, and the rapid growth of the digital economy.

JEL Classification Numbers: F14, F23, H25, H26

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Author's E-Mail Address: [SHebous@imf.org](mailto:SHebous@imf.org)

| <b>Content</b>   | <b>Page</b> |
|--|-------------|
| Abstract.....  | 2           |
| I. Introduction.....   | 4           |
| II. Multinational Enterprises Today are Better Termed “Global Firms” .....   | 6           |
| A. Observations about Multinational Enterprises.....   | 6           |
| B. Multinational Enterprises and Taxation .....  | 8           |
| III. Empirical Observations about International Trade and Digitalization .....   | 10          |
| A. International Trade and Activities of Multinational Enterprises .....   | 10          |
| Digitalization.....  | 15          |
| IV. Multinational Enterprises and Monopoly Player.....   | 16          |
| V. Multinational Enterprises and Taxation.....   | 17          |
| A. International Tax Arrangements Were Made with an International Company in Mind,<br>Not a Global Firm—and Even That Is Challenging ..... | 17          |
| The Source–Residence Principle Is Fundamentally Incompatible with The Global Firm<br>Business Model.....                                   | 18          |
| VI. Conclusion.....  | 22          |
| References.....  | 23          |
| Tables   |             |
| 1. Recent Evidence on Transfer Mispricing.....   | 9           |
| 2. Top 10 Countries: Average Outward / Inward Foreign Direct Investment as Share of GDP .....  | 14          |
| Figures  |             |
| 1. Value-Added and Employment of Multinational Enterprises.....  | 8           |
| 2. World Imports of Services.....  | 11          |
| 3. World Exports of Commercial Services by Sector.....   | 12          |
| 4. Intangible Capital and Value Added: The Smile Curve.....  | 13          |
| 5. Digital Business: Worldwide Subscribers of Selected Companies.....  | 15          |
| 6. A Simplistic Structure of a Multinational Enterpris.....  | 17          |
| 7. Tax Treaty Networks .....   | 19          |
| 8. An Illustration of the Organizational Structure of a Global Firm.....   | 20          |

## I. INTRODUCTION<sup>1</sup>

In December 1600, long before the Industrial Revolution (1760–1820) or the first long-distance telephone call (by Alexander Graham Bell in 1876), the East India Company was established with a royal charter awarding the company a monopoly on English trade in the Indies. It is one of the first multinational enterprises. Historical records suggest that the company accounted for half of world trade in the 18th century (Farrington 2002). As of today, a significant number of key multinational enterprises are not young. For example, in 2018 only about 26 companies in the Fortune 500 were established after 2000—about half of the rest are older than 100 years.<sup>2</sup> However, multinational enterprises today, as this chapter will argue, are different in important respects—with important tax implications—from those of previous centuries.

Thinking of international trade—whether the crawling caravans on the Silk Road or the giant vessels of the 21st century—we tend to picture goods and containers or merchants seeking to exploit comparative advantages, regional differences in endowments, economies of scale, and benefits from agglomeration and specialization. While these economic fundamentals still largely explain current observed patterns of international trade, a distinctive recent feature—which emerged at the end of the 2nd millennium—is the rise of international trade in services and intangible assets. With a mere mouse click, a company can import or export management services, sell patents and other hard-to-price know-how assets to its own affiliated companies abroad, engage in operational leasing services with other group members, purchase an insurance contract from an offshore company—just to name a few examples. Beyond benefits of specialization, as this chapter will argue, taxes play an important role in explaining observed patterns of international trade in services.

The corporate income tax, in its current form (that is, the notion that corporations are taxpayers regardless of their owners), is slightly more than 100 years old. For example, in 1909 the federal corporate income tax in the United States was introduced.<sup>3</sup> The rate reached 52.8 percent in 1968 to finance the Vietnam War, comparable with other corporate income tax rates in Europe at the time. Currently, statutory corporate income tax rates in advanced and developing countries are 22.3 and 24 percent on average, respectively, but significant differences across countries remain (not only regarding corporate income tax rates but also more generally concerning tax systems), enabling multinational enterprises to minimize taxes and shift income to low-tax jurisdictions using various schemes. One popular tax-minimizing practice is to violate or misuse the arm's length principle—the notion that intragroup prices should be valued at the prices charged to unrelated parties—for example, by overpricing imports from affiliated companies in low-tax

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<sup>1</sup> This paper is a chapter in a forthcoming IMF book on corporate income taxation. I am grateful to Ruud de Mooij, Erik De Vrijer, Cory Hillier, Michael Keen, Alexander Klemm, and Victoria Perry for useful comments and suggestions.

<sup>2</sup> Compiled by the author based on *Fortune 500*, <http://fortune.com/fortune500/>.

<sup>3</sup> For detail, see Kornhauser (1990). It was enacted in 1894 but eventually implemented in 1909.

jurisdiction (that is, inflating costs in high-tax countries) or underpricing exports to these affiliates (that is, understating incomes in high-tax countries).<sup>4</sup>

Since multinational enterprises and international trade were existent at the inception of the corporate income tax and its international arrangements, the question arises, what new developments, if any, have created vulnerabilities and increased concerns about the prevailing international tax framework and tax avoidance by multinational enterprises? In other words, what is it that makes the 2000s different from, say, the 1920s or 1960s? In fact, concerns about international tax planning and tax competition, in particular, took off in 1998 when the OECD launched a report on “harmful tax practices” (OECD 1998), and reached the top of the international policy agenda with the 2015 G20/OECD Base Erosion and Profit Shifting (BEPS) initiative, which lays out a set of “minimum standards” and common approaches for the corporate income tax to address profit-shifting practices. The salience of the issue in the public eye reached an unparalleled level with leaked records such as Lux Leaks and other major news headlines (see, for example, Bergin 2012). During the COVID-19 pandemic, some countries (including Belgium, Denmark, France and Poland) denied, or invoked the possibility of denying, tax reliefs for companies registered (or doing businesses) in “tax havens”. This gesture reflects an attempt to respond to the general public dissatisfaction with the taxation of multinationals.<sup>5</sup>

This chapter summarizes a set of empirical observations and insights from three strands of the literature (international trade, public finance, and recent studies on firm market power) to shed light on the interlinkages between the current international tax framework and the evolution of multinational enterprises. The theme that emerges is that the fundamental challenges facing the corporate income tax framework at present are not distinctively new. However, the new “global” enterprise (as opposed to the term “multinational enterprises”) exacerbates existing weaknesses, thereby exposing major flaws of the fundamental concepts of current arrangements.

The major challenges that global firms intensify are increasing difficulties in (1) applying the arm’s length principle, (2) identifying the location of “value creation”— which is a conceptual issue, and (3) identifying source and residence countries (economically speaking)—key concepts for the current international tax system, whereby broadly a source country refers to where production takes place and the resident country is the primary location of the company (where it is “effectively managed”). As a result, profit shifting has become a serious concern.

Key reasons behind these difficulties arise from the following facts: (1) the typical global firm of today produces in and for the *global* market, which incapacitates the notion that production and business can be easily separated by national boundaries; (2) increasing importance of intragroup trade in particular in hard-to-price services and intangibles; and (3) increased digitalization of the economy, which—beyond enabling doing business with little (or even without a) physical

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<sup>4</sup> Other strategies include the use of intragroup borrowing to benefit from interest deductions in high-tax countries. For an overview of tax avoidance practices, see, for example, Beer, De Mooij, and Liu (2019); Dharmapala (2014); Hebous and Weichenrieder (2014); and IMF (2014).

<sup>5</sup> Also, the pandemic has sparked off considerable debate about taxing “excess profits” of companies that benefited from the pandemic.

presence in a country (significantly weakening the existing concept of source country)—prompts serious rethinking about the value created by consumers or users.

This chapter is structured as follows: The second section provides a summary of the evolution of multinational enterprises. The third section presents a set of empirical observations about international trade and digital trade. The fourth section briefly discusses firm market power and the tax implication, whereas the fifth illustrates the difficulties in taxing the global firms based on the arrangements of today. The chapter ends with concluding remarks.

## II. MULTINATIONAL ENTERPRISES TODAY ARE BETTER TERMED “GLOBAL FIRMS”

### A. Observations about Multinational Enterprises

**Observation 1: Multinational enterprises today are different from multinational enterprises in the last century or earlier periods and should be called global firms.**

The evolution of multinational enterprises can be thought of in terms of three phases:

*Phase I (trading company):* Early multinational enterprises, up to the middle of the 19th century, were mostly established by states to perform specific functions. For example, early chartered companies essentially focused on trade in cotton, silk, tea, species, and other raw material.<sup>6</sup> In the mid and late 19th century, with the spread of the limited liability concept, the business model of multinational enterprises evolved to become international distribution of home-manufactured products, but those multinational enterprises remained important importers of raw material.

*Phase II (international company):* In the early 20th century, during World War I and the interwar period, the spread of trade protectionism led companies to establish local plants to serve national markets and escape trade barriers (what we may call “international companies”). This meant that the prime purpose of the foreign presence of multinational enterprises was tariff jumping and serving local markets. These companies produced close to where they sold.

*Phase III (global firm):* Starting from the late 20th century (early 1970s) the liberalization of international trade and investment, coupled with improved information technology and decreasing transportation costs, created a new era for multinational enterprises and transformed them to what we may call “global firms” (see Palmisano 2006). Two defining features of this era have been particularly salient since the late 1990s and early 21st century: (1) the integration of production and (2) outsourcing functions. The latter, to the extent outsourcing is to unrelated parties (that is, the function is being undertaken by a nonrelated company as opposed to within the multinational group), has no direct consequences on corporate tax avoidance,<sup>7</sup> but tax

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<sup>6</sup> Examples include the East India Company (an English company that was established in 1600 as a trading company in the Indian Ocean region), the Dutch East India Company (an amalgamation of various Dutch companies that traded in the Indian Ocean region), and the Emden Company (a Royal Prussian Asiatic Company that traded with China).

<sup>7</sup> However, somewhat distinctly but relatedly, as jobs are increasingly transformed into tasks done by outside contractors (for example, freelancers and the gig economy), there will be important implications for personal

competition between countries remains relevant, among other factors. The global integration of production (a global supply chain) means that the multinational enterprise has become a globally integrated enterprise that supplies to *the global market* as opposed to fragmented markets defined within national boundaries.<sup>8</sup>

The falling costs of information technology have facilitated the coordination of a global complex production process entailing multiple locations. This constitutes a shift from foreign investment that is entirely driven by the host market (that is, producing goods and services close to where they are supposed to be sold) to an integrated production model shaped by the question of how to supply globally, that is, a worldwide value delivery. A product might be designed in a country where there is little or no demand for it, and thus the question becomes, what is the exact location that creates the value of this design? Examples of global supply activities are abundant, including marketing strategies for the brand, research and development activities, legal services, human resource services, and other services for the entire worldwide group. As Palmisano (2006), p. 129, states, “[N]ew perceptions of the permissible and the possible have deepened the process of corporate globalization by shifting its focus from products to production.” This is a key change in the multinational enterprise business model, with significant implications on taxation, as we will argue in the fifth section, “Multinational Enterprises and Taxation.”

**Observation 2: Multinational enterprises are important employers and value-added generators in the economy.**

In 2018 the world’s 500 largest companies (Fortune Global 500) employed 67.7 million people worldwide, generated \$30 trillion in revenues (that is, a multiple of 1.5 of US GDP) and \$1.9 trillion in profits, and are represented by 33 countries.<sup>9</sup>

The share of value added by multinational enterprises in total value added is significant, reaching more than 50 percent in some advanced countries (Figure 1). While typically the number of multinational enterprises constitute a low share in the total number of enterprises in a country (not exceeding 5 percent in most economies), their share of total employment is close to or above 20 percent in many economies (Figure 1). In the United States, in 2016, the value-added generated by majority-owned US affiliates of foreign multinational enterprises reached \$910.6 billion, accounting for 6.4 percent of total US business-sector GDP and 5.6 percent of total private-industry employment (ignoring US-owned multinational enterprises).<sup>10</sup>

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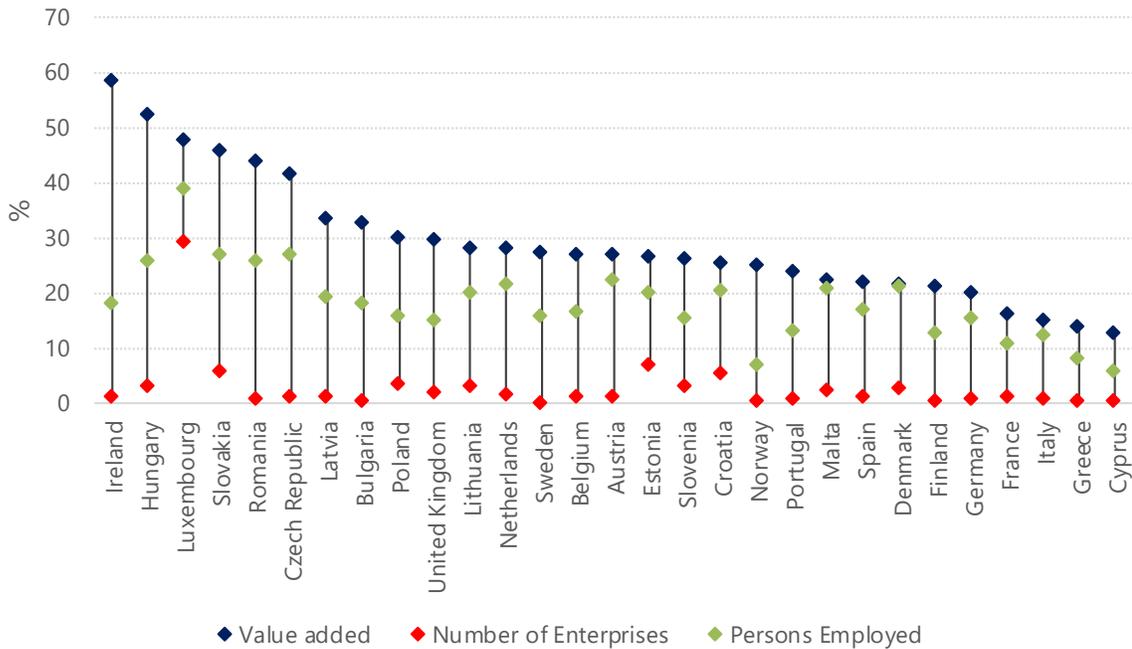
income taxes resulting, for instance, from a vanishing tax-withholding function of firms, increasing mobility of labor, and existing different tax treatments of employees (wage earners) and the self-employed.

<sup>8</sup> It remains to be seen how the COVID-19 pandemic and recent international trade tensions affect the supply chains of the global firm.

<sup>9</sup> See *Fortune 500*, <http://fortune.com/fortune500/2018>.

<sup>10</sup> US Bureau of Economic Analysis: <https://apps.bea.gov/scb/2018/12-december/1218-affiliates.htm>

**Figure 1. Value-Added and Employment of Multinational Enterprises**  
(Percent of Total)



Source: Data are from the Eurostat. Numbers are for nonfinancial foreign-controlled enterprises, 2015.

## B. Multinational Enterprises and Taxation

In a way, the evolution of multinational enterprises through the above mentioned phases (under Observation 1) is similar to that of the theory of international trade and foreign direct investment that progressed from initially modeling a single-plant production firm with all activities in a single location to “horizontal” firms—which produce the same goods in several countries—and “vertical” firms—which split stages of production by location (see Markusen 2004). This literature, however, focuses on explaining bilateral foreign direct investment by variables such as relative endowment differences across countries (differences in production costs), market access costs (trade costs and investment costs), and market size (for example, Carr and others 2001; Markusen and Maskus 2001; Egger and Köthenbürger 2018).

The question of how international tax differences affect foreign direct investment decisions has been almost exclusively addressed in a separate strand of (mostly empirical) literature, which generally finds the following:

- High taxes reduce foreign direct investment flows—that is, the intensive margin of foreign direct investment (De Mooij and Ederveen 2008; Feld and Heckemeyer 2011).
- High taxes reduce the propensity to host a new foreign direct investment—that is, the extensive margin of foreign direct investment (see, for example, Devereux and Griffith 1998).

- Greenfield investments are more responsive to taxes than mergers and acquisitions, because in the latter case the tax effect is partially capitalized in the acquisition price (Hebous, Ruf, and Weichenrieder 2011).
- Vertical foreign direct investment appears to be more sensitive to taxation than horizontal foreign direct investment (Overesch and Wamser 2009).

While the above studies look at *real* responses to taxes, another strand of the literature, discussed under the following observation, looks at the effects of taxation on the location of profits.

**Observation 3: Multinational enterprises face lower effective taxation than domestic firms but tend to be important contributors to total corporate income tax revenues in many countries.**

Multinational subsidiaries, especially in relatively high-tax countries, tend to report lower profits than comparable domestic companies (as found in, for example, Bilicka 2019, for UK firms; and Egger, Eggert, and Winner 2010, for a panel of European firms). However, at the consolidated group level, multinational enterprises tend to be highly profitable companies—some reach after-tax profits of multibillions of US dollars. For instance, profits of Apple reached \$45.7 billion in 2016. Profits of SAP, a German-based software company, reached about \$4 billion in 2016. To put it differently, the five-year (2012–2017) cumulative return on \$100 invested in Netflix stock yielded \$1,400 (that is, a return of 1,400 percent). A similar investment in Alphabet (parent company of Google) would have yielded \$300 (that is, 300 percent return).<sup>11</sup> Anecdotal evidence suggests that the effective tax rate of some giant multinational enterprises hardly reaches 1 percent or is even close to zero in some locations.<sup>12</sup>

**Table 1. Recent Evidence on Transfer Mispricing**

| Study  | Country      | Revenue Foregone<br>(% of Corporate Income Tax Revenue) |
|--|--------------|---|
| Cristea and Nguyen (2016)                        | Denmark      | 3.2   |
| Davies and others (2018)                         | France       | 1   |
| Flaaen (2018)                                    | USA          | 0.73  |
| Hebous and Johannessen (2019)                    | Germany      | 2   |
| Liu, Schmidt-Eisenlohr, and Guo<br>(forthcoming) | UK           | 0.37  |
| Wier (2018)                                      | South Africa | 0.5   |

Source: Author.

Note: The above studies look at mispricing of goods, except for Hebous and Johannessen (2019), which studies mispricing of services.

Strategies of international tax planning to lower effective taxation in higher-tax jurisdictions include, beyond the violation of the arm's length principle, locating asset sales in low-tax

<sup>11</sup> See Annual Reports published on U.S. Securities and Exchange Commission: <https://www.sec.gov>.

<sup>12</sup> See, for example, NY Times: <https://www.nytimes.com/2019/04/29/us/politics/democrats-taxes-2020.html>.

jurisdictions—to avoid capital gains taxes, arranging business operations in high-tax jurisdictions on a contractual basis (“risk transfer”), and exploiting mismatches in the legal characterization of financial instruments or transactions between countries (generating tax arbitrage, for example, in the form of double deductions), to name a few.<sup>13</sup> Surveying the literature on profit shifting is beyond this paper, but Table 1 summarizes recent evidence on transfer mispricing. Overall, available results, which are largely based on examining trade in goods (not services, except for Hebous and Johannessen 2019), suggest that failing to adhere to the arm’s length principle has had a negative impact on corporate income tax revenues in several countries. Unfortunately, country-specific evidence for developing countries is rather scarce. Further, several studies find evidence for profit shifting through intragroup lending—also in developing countries (see, for example, Feld, Heckemeyer, and Overesch 2013; and Fuest, Hebous, and Riedel 2011).

However, multinational enterprises contribute a large share of corporate income tax revenues in some countries. UNCTAD (2015) estimates that multinational enterprises, on average, contribute about 23 percent of total corporate income tax revenues in developing countries. Bilicka (2017) shows that 55 percent of corporate income tax revenue in the United Kingdom is paid by multinational enterprises. In many countries, the distribution of corporate income tax payments is highly skewed toward a relatively small number of large taxpayers that pay a large fraction of the aggregate revenue.

### III. EMPIRICAL OBSERVATIONS ABOUT INTERNATIONAL TRADE AND DIGITALIZATION

#### A. International Trade and Activities of Multinational Enterprises

**Observation 4: A small fraction of firms engage in international trade, and an even smaller fraction of firms engage in related-party trade.**

Bernard and others (2018) document that only a small fraction of firms in the United States export (and import), not exceeding 35 percent. Moreover, remarkably, only 8.5 percent of all firms are responsible for about 85 percent of the total value of US exports (approximately 2,000 firms). Similar patterns are found in other countries (Freund and Pierola, forthcoming).

Furthermore, only the very largest firms tend to engage in related-party trade, accounting for a disproportionately large share of aggregate value of international trade (Bernard and others, 2009; 2018). According to the WTO (2018), about 80 percent of global trade is within multinational enterprises. This high concentration of international trade and substantial overlap between traders and multinational enterprises imply that taxation and transfer pricing issues are particularly relevant for a minority of “superstar” firms (considering the universe of all firms).

The degree of intrafirm trade varies across products and partner countries. For instance, as documented in Bernard and others (2010), more than 70 percent of US imports of autos, medical equipment, and instruments involve intrafirm trade, but in the case of rubber it is only 2 percent.

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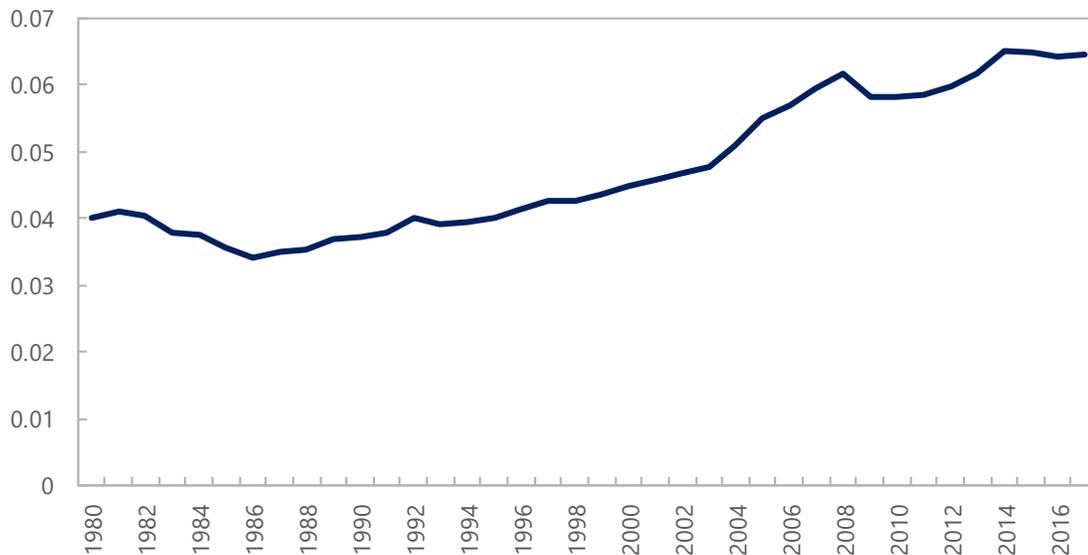
<sup>13</sup> Beer, De Mooij, and Liu (2019) and IMF (2014) provide an overview.

**Observation 5: International trade in services has rapidly risen, reaching more than 6 percent of world GDP, and a significant share of international trade in services is related-party trade in hard-to-price business services.**

Figure 2 shows that world imports of services have been upward trending since the 1980s. According to WTO statistics, international trade in services accounted for more than 22.7 percent of world trade in 2017. This development reflects changes in technology (demand for services as inputs) and growing demand by final consumers. Figure 3 shows, however, that business services, together with financial, telecommunication, computer, and information services, account for more than 55 percent of commercial services (the rest is mainly transport and travel).

The WTO (2018) states that developing economies accounted for 30.6 percent of world commercial services exports and 38.1 percent of imports. Furthermore, there are key regional players. For example, Singapore is a leading exporter of intellectual property services (royalties on patents and trademarks), with an amount totaling \$8 billion (about 2.5 percent of GDP) in 2017.

**Figure 2. World Imports of Services**  
(Percent of Total)

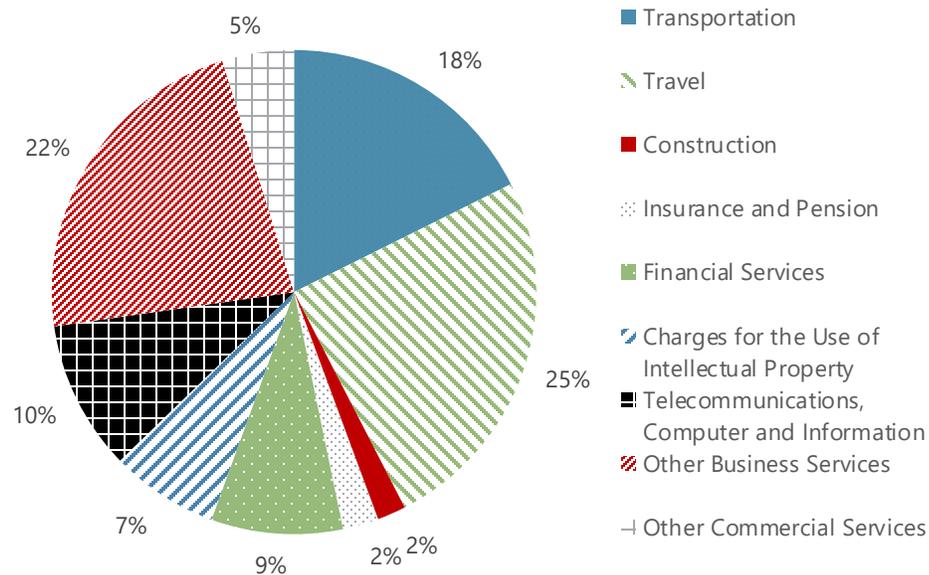


Source: Calculation by the author based on data obtained from WTO statistics (<https://data.wto.org/>).

Although transfer pricing rules apply to goods and services, the nature of trade in services is distinct from goods in several respects, facilitating abusive practices. For example, business services, such as management services, intellectual property, and information services, are relatively easy to be relocated across borders within the multinational group, and it is difficult to determine their market prices. In fact, compared to physical goods, it is not even straightforward to define many services. The lack of clear comparables for many services poses a challenge for many tax administrations around the world, making it inherently difficult to apply the arm's length principle. For instance, consider one affiliate of a global firm that is responsible for developing a marketing strategy for the entire group. What is the value of this function for the

various subsidiaries? Typically, the affiliates will enter into a cost-sharing arrangement, but the money value of the marketing service for each subsidiary does not unambiguously have a market price. Similar difficulties occur for pricing royalties (for example, charges for the use of patents or trademarks and other forms of intellectual property) and legal services, to name two.

**Figure 3. World Exports of Commercial Services by Sector**

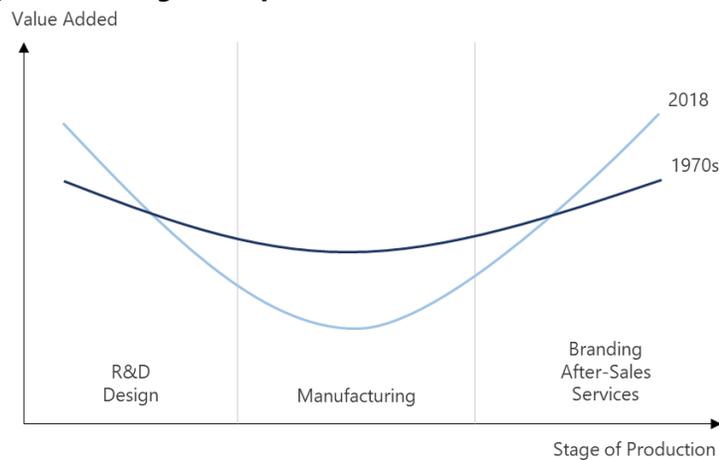


Source: Data obtained from WTO statistics (<https://data.wto.org/>). Figures are for 2017.

**Observation 6: The importance of intangible and intellectual property assets in the business model and cross-border trade of multinational enterprises has significantly increased.**

The importance of "intangible capital"—in the form of technology, design, brand value, and managing know-how assets—has grown enormously in the last years. The World Intellectual Property Organization (2017) refers to the so-called smile curve (Figure 4), which illustrates the higher shares of pre- and post-manufacturing phases—such as research and development activities and branding—in production value in the 21st century compared to earlier years.

The discussion under Observation 4 explains that payments such as cross-border royalties are difficult to price, but the underlying know-how assets, per se (such as patents and trademarks), that generate royalties can also be relocated across borders. For example, an intangible asset can be sold (even before being patented) from the affiliate where it was developed to another affiliated company in another country to be patented in that country, whereby the legal ownership involves either a physical shift or just a transfer of use rights (without the need for a physical transfer to take place). The challenge is that the price of the intangible asset can be extremely difficult to determine according to the arm's length principle.

**Figure 4. Intangible Capital and Value Added: The Smile Curve**

Source: WIPO (2017). Reportedly, the Smile Curve was first put forth by Stan Shih, the founder of Acer Inc.

**Observation 7: Multinational enterprises nowadays spend a significant amount on research and development.**

At the macroeconomic and firm levels, research and development is a very instrumental policy issue, given its importance for long-term macroeconomic growth and firm growth. Currently, multinational enterprises invest significantly in research and development. Jaruzelski, Chwalik, and Goehle (2018) identify the top 1,000 innovators and report that Amazon and Apple are at the top of the list, with research and development spending reaching \$22.6 and \$16.2 billion, respectively. Among the top innovators are car makers and firms in the pharmaceutical and health care industries. In 2018 these 1,000 companies together spent \$782 billion on research and development (this is larger than the GDP of Saudi Arabia or Switzerland).

To encourage firm innovation, many countries provide tax incentives. The economic rationale is that the social benefit from research and development is higher than the private benefit, giving Pigouvian motivation for a corrective subsidy or tax incentives to address positive externalities. Tax incentives can take two broad forms: First, research and development tax incentives can target research and development inputs, for example in the form of investment tax credits (deducting qualified investment expenses from the tax liability) or super-tax deductions of research and development input costs (from taxable income). Second, an increasing number of countries provide effective lower taxation for qualified income from intellectual property and know-how assets (regimes known as patent box regimes); that is, these incentives target the output of research and development. Incentives for research and development inputs are more efficient and effective than patent box regimes because the latter reward only successful research and development (which is also a function of inputs other than research and development) and disregard the positive externalities by research and development that does not generate immediate income (IMF 2016a; see also Hebous (2020)). Moreover, patent box regimes have also been used as a tool for tax competition, encouraging the relocation of (the legal ownership of)

patents and know-how assets (not the underlying research and development activity) within the multinational group for tax purposes (Hebous, 2020).<sup>14</sup>

**Observation 8: Low-tax jurisdictions play a disproportionate role in global trade in services and foreign direct investment.**

Hebous and Johannesen (2019) show that low-tax jurisdictions play an important role in shaping the pattern of international trade in services.<sup>15</sup> The evidence suggests that bilateral service trade with low-tax jurisdictions is around six times larger than service trade with non-low-tax jurisdictions, whereas no such stark difference was found for goods trade. This disproportionate role in global service trade is the result of a combination of comparative advantage (specializing in specific services) and tax advantages. Low-tax jurisdictions are typically relatively small with de facto relatively low effective taxes even if the statutory corporate income tax rate is high (for example, because of preferential tax regimes or patent box regimes). They have emerged in the last decades as important investment hubs with very high shares of foreign direct investment to GDP—well beyond explaining foreign direct investment by the size of the domestic markets of these hubs—and in global foreign direct investment—with an astonishing share of 40 percent of global foreign direct investment being funneled through five relatively small countries: Hong Kong SAR, Ireland, Luxembourg, the Netherlands, and Switzerland (Table 2). , although nontax factors, including benefits from specialization, are also relevant.

**Table 2. Top 10 Countries: Average Outward / Inward Foreign Direct Investment as Share of GDP**

| <i>(Percent)</i> |   |  |                    |
|------------------|---|--|--------------------|
| Country          | Foreign Direct Investment in Percent of GDP | Share of World Foreign Direct Investment | Share of World GDP |
| Luxembourg       | 7,037                                       | 12.8                                     | 0.1                |
| Mauritius        | 2,210                                       | 0.9                                      | 0.0                |
| Malta            | 1,103                                       | 0.4                                      | 0.0                |
| Cyprus           | 1,047                                       | 0.7                                      | 0.0                |
| Netherlands      | 672   | 16.2                                     | 1.0                |
| Hong Kong SAR    | 446   | 4.5                                      | 0.4                |
| Ireland          | 264   | 2.5                                      | 0.4                |
| Switzerland      | 178   | 3.5                                      | 0.8                |
| Singapore        | 176   | 1.7                                      | 0.4                |
| Hungary          | 159   | 0.6                                      | 0.2                |

<sup>14</sup> To address profit-shifting motivations, a minimum standard in the G20/OECD BEPS initiative requires linking the qualification for a lower tax on the patent income to the underlying research and development expenses on that patent.

<sup>15</sup> There is no widely accepted definition or a list of low-tax jurisdictions or major hubs for international tax planning. For related discussion, see Dharmapala and Hines (2009); Hebous (2018); and Hines (2010).

Source: Author's calculation based on IMF Coordinated Direct Investment Survey, <http://data.imf.org/cdis>. Numbers are for 2017.

## Digitalization

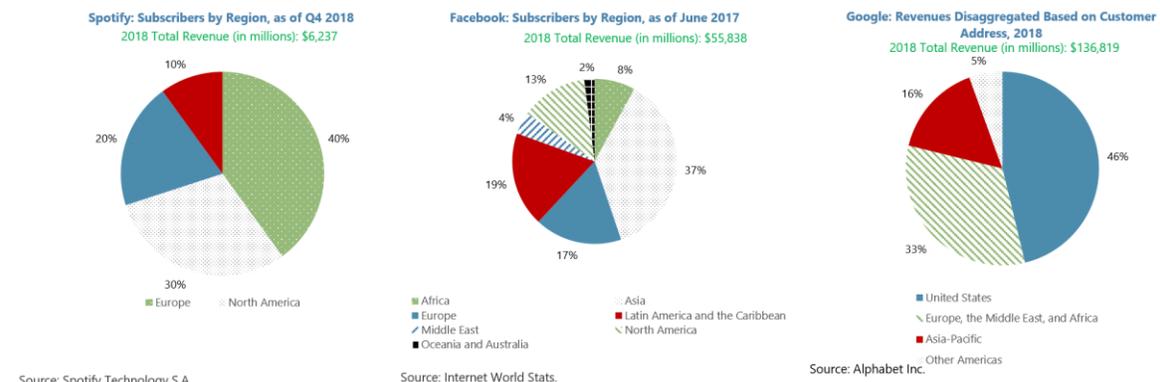
### Observation 9: Global digital trade has been significantly growing.

According to a report by the US International Trade Commission (2017), global digital trade grew from \$19.3 trillion in 2012 to \$27.7 trillion in 2016. Business-to-business e-commerce—amounting to 86.3 percent of total digital trade—is six times larger than business-to-consumer e-commerce (13.7 percent of total). Top business-to-consumer e-commerce markets are China (\$767 billion) and the United States (\$595 billion).

The term “digital company” is vague. It has been increasingly used to refer to a handful of companies with significant social media market shares, digital advertising, or digital platforms to sell goods and services, but most companies in various industries are exhibiting increasing adoption of their business models to digital technology (see Aslam and Shah, 2020).

The link between the share of subscribers (users) and the location of tangible assets (and employment) of digital companies is drastically weaker than in traditional, or last-century, business models. Figure 5 shows broad geographical distributions of users of three selected companies (Spotify, Facebook, and Google). This challenges the link between “source” country and value creation, where source country typically refers to the country where employment and tangible assets are located, and it exacerbates the limitations of the current concept of a “permanent establishment” that is ultimately requiring physical presence for the allocation of taxing rights.

**Figure 5. Digital Business: Worldwide Subscribers of Selected Companies**



Note: Compiled by the author.

From the corporate income tax standpoint, one view is to consider selling without a physical presence as exports. The question, however, apart from the large amount of profits that hypothetically could have been taxed under a traditional way of doing business, is, to what extent are users or consumers creating value? This question is at the heart of current discussions about reforming international tax, including at the OECD/G20 Inclusive Framework.

Collecting information on company users (or customers) is not new. Credit card companies and insurance companies have long collected and analyzed data about their customers. However, the new distinct feature is that revenues of “digital” companies (large amounts at stake) directly depend on information from users and consumers, and the big data they generate. It is not only that the collected data itself can be sold but also that some products, such as online advertisements, are tailored toward world customers; companies can, in turn, exploit this information and thereby generate income. In light of the weak connection between physical presence (employment and assets) and potential value creation, the discussion of value creation by users becomes crucial for determining taxing rights and understanding the motto “To tax where the value is created.”

#### IV. MULTINATIONAL ENTERPRISES AND MONOPOLY PLAYER

**Observation 10: Market power in the United States has increased, implying a lower degree of competition, but this development is less obvious in developing countries.**

In the United States, average markups (the margin of the price above the marginal cost) have risen from 21 percent in the 1980s to 61 percent in 2017 (Loeckend Eeckhou 2017). However, estimates of level and the trend of the markup are not uncontroversial (Basu 2019). Evidence for other countries, particularly for developing countries, is rather scarce. IMF (2019b) finds that markups in a panel of advanced economies has increased by about 8 percent since 2000, but no similar significant effect can be found in emerging market economies. Moreover, results indicate that the increase in markups is concentrated among a small fraction of firms.

Many multinational enterprises have well-established positions in their monopolistic markets. For instance, in the market for online search engines, Google continuously has had a global market share of about 90 percent in the last years. Netflix user penetration rates (as a percent of digital video viewers in a country) are above 60 percent in the United States and Norway, and above 50 percent, among others, in Denmark and Sweden.

Generally, taxing monopoly rent is efficient, but the corporate income tax is a tax on normal return as well as economic rent. Other tax systems, namely cash-flow taxation or an allowance for corporate equity, tax only rent, but in practice such tax systems are rarely implemented (IMF 2016b; 2019a). Tax competition affects production decisions, including of monopolists, with efficiency implications. In this context, consideration should be given regarding the location of the rent, which should depend on the nature of the monopoly power. Location-specific rent, as in the natural resource sector, should and can be taxed at source, which would preserve revenues for the resource country. However, the source (as a location) of monopoly power of highly digitalized business, and more generally of firm-specific rent, is not clear cut, and its taxation may drive away investment. In sum, taxing rent is desirable to the extent that it raises revenues without affecting efficiency, but under current tax arrangements profit shifting and tax competition create challenges in efficiently taxing such rents.

## V. MULTINATIONAL ENTERPRISES AND TAXATION

### A. International Tax Arrangements Were Made with an International Company in Mind, Not a Global Firm—and Even That Is Challenging

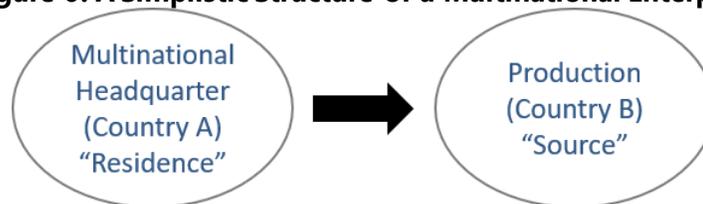
The tax implications of current corporate income tax arrangements and possible reform options are studied in depth in this volume. The following is a brief overview focusing on the pressures associated with the evolution of multinational enterprises.

#### **Allocation of taxing rights is an issue even in the absence of differences in taxation.**

The question of how to allocate taxing rights between countries is a fundamental one even in the absence of differences in taxation. Consider a two-country world (a residence and a source country, as depicted in Figure 6) and the most simplistic example of a multinational enterprise that is present in two countries, loosely speaking, in the spirit of an “international company” referred to under Observation 1. Suppose both countries impose the same tax on profits. Still, the question is, how should taxing rights between countries be allocated? The country where the company is headquartered may impose a tax on worldwide profits. The country where production takes place imposes a tax on profits in that country. This leads to double taxation of profits generated in the source country.

According to current corporate income tax arrangements, in principle, source countries are typically allocated primary taxing rights to the active income—subject to finding a sufficient physical presence (‘nexus’) that is defined by reference to a permanent establishment (PE) in its jurisdiction—, and residence countries the primary taxing rights to passive income, such as dividends, royalties, and interest income (see Nersesyan, 2020). This is governed by domestic laws and tax treaties. The League of Nations developed first drafts of a tax treaty in 1928 following the source–residence principle.<sup>16</sup> A bilateral tax treaty (or a double tax agreement) between two countries allocates the taxing rights between both countries to deal with double taxation. Generally, a double tax agreement reduces the taxing rights of a source country in return for increased taxing rights of a residence country. Also, a double tax agreement, inter alia, may lower cross-border withholding tax rates on capital income (for example, dividends and interest).

**Figure 6. A Simplistic Structure of a Multinational Enterprise**



Source: Author’s illustration.

<sup>16</sup> Later, the UN and the OECD built on these in developing tax treaty convention models.

### **Differences in taxes across countries intensify the debate about taxing rights.**

Differences between countries in tax rates, and tax systems more broadly, deepen the challenges facing current taxing arrangements by generating incentives for multinational enterprises to locate profits in the low-tax jurisdictions and for countries to compete over real production and paper profits. By impacting the locations of production and profit, the allocation of taxing rights between countries (based on the source–residence principle) becomes a more pressing issue. Multinational enterprises’ behavioral responses can have major revenue and macroeconomic effects.

### **Tax treaties open their own loopholes.**

Double tax agreements can be used by multinational enterprises to minimize taxes (see Leduc and Michielse, 2020)—mainly, but not only, by lowering cross-border withholding tax rates on royalty, interest, or dividends—by establishing “conduit” companies instead of investing directly in the final host country. A conduit company can be, for instance, a holding company (that is, a company that owns other companies but does not manage them); a management company (an entity that manages a pool of resources and provides services to, possibly offshore, related parties); a financing company (that lends to related parties); or a regional headquarter. Another example of exploiting provisions in tax treaties is to sell shares in a conduit company that derives their value from an underlying immovable asset located in another country. This offshore indirect transfer of assets can avoid capital gains taxes in the country where that asset is located.<sup>17</sup> Figure 7 depicts the growth in double tax agreement networks between 1970 and 2015. Currently, there are more than 3,000 bilateral double tax agreements with a significant increase in the number of double tax agreements in force that involve developing countries. As put in Brumby and Keen (2016), “[T]ax treaties are like a bathtub; a single leaky one is a drain on a country’s revenues.”<sup>18</sup>

### **The Source–Residence Principle Is Fundamentally Incompatible with The Global Firm Business Model**

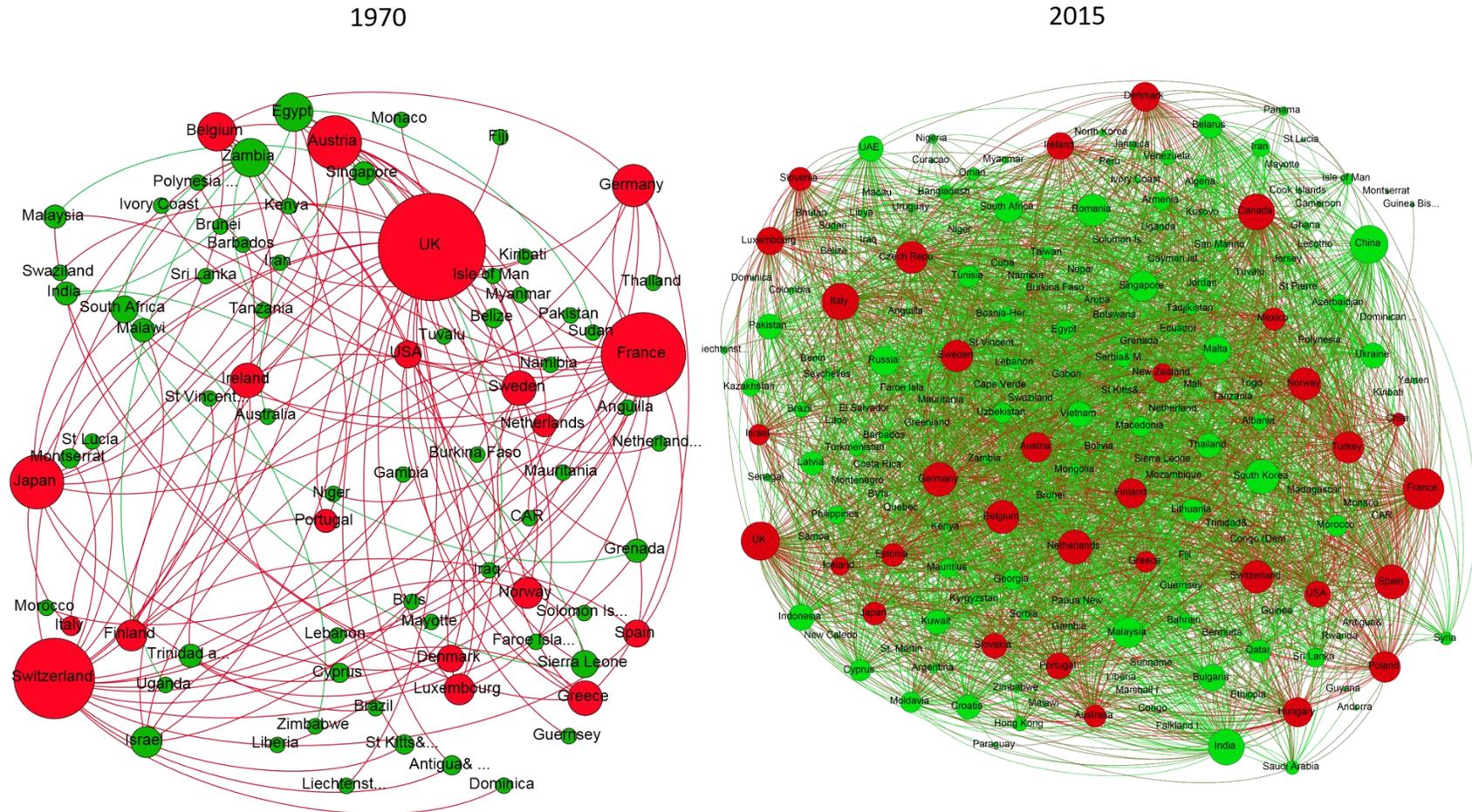
Keen (2017, page 10) writes: “[T]he League of Nations did not have a Facebook page. Its staff didn’t Google or order online from Amazon. A century ago foreign direct investment involved tangible things like railways and oil wells. Royalties meant charges on coal and the like, not payment for the use of brand names or patents.” This quotation is a perfect summary of this discussion. The issues outlined in the preceding subsection are not new and demonstrate that even under a relatively simple form of business organization of a multinational enterprise, the arm’s length principle, the source–resident principle, and distinguishing between different types of income face challenges. The global firm, however, raises these challenges to an unprecedented level. Given the existing international tax framework, as discussed by Waerzeggers, Hillier, and Aw (2020), practices by the global firm to shift profits to low tax jurisdictions has led to the proliferation of anti-avoidance rules, especially in the last decade, which made domestic tax law systems more complex and uncertain without addressing the fundamental shortcomings of an outdated system.

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<sup>17</sup> See the Platform for Collaboration on Tax (2020). The G20-OECD Base Erosion and Profit Shifting include minimum standards to prevent tax treaty abuse, inter alia.

<sup>18</sup> For studies on tax treaty shopping, see, for example, Beer and Loeprick (2018); and Riet and Lejour (2018).

Figure 7. Tax Treaty Networks

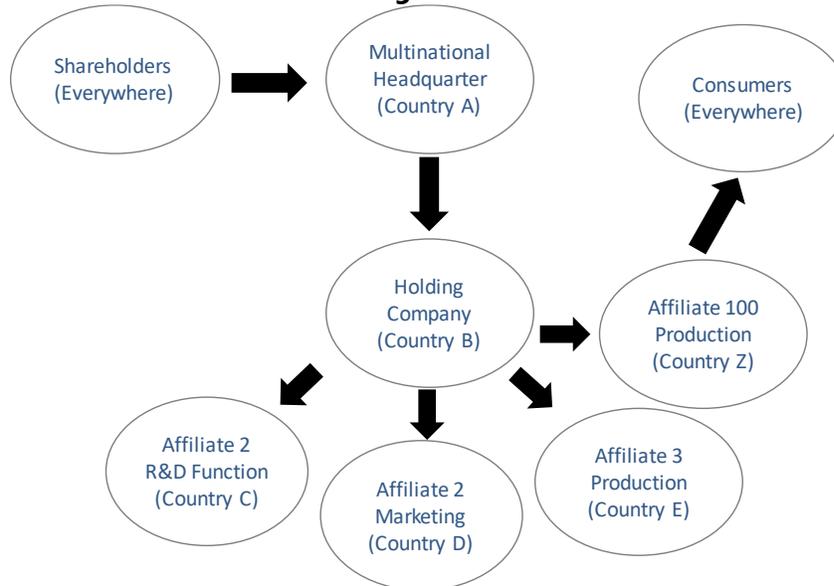


Source: Author's illustration using IBFD documents.

Note: Red nodes denote advanced economies, whereas green nodes denote developing countries. The size of a node indicates the number of treaties in a country.

Figure 8 illustrates a simplified structure of a typical global firm to, loosely, depict the discussion in the second section (“Multinational Enterprises Today Are Better Termed ‘Global Firms’”) and the observations that have been made in this chapter. The global firm does not supply the same product to fragmented national markets, but it relies on globally integrated production to supply the global market with different products. The ultimate shareholders of the global firm are typically residents of different countries. The global headquarter is in one country, but different foreign affiliates are tasked with different nonproduction activities for the entire group (including regional headquarters and activities such as research and development, legal services, and marketing) and production processes. In fact, many large global firms may not engage in manufacturing in the traditional sense. Typically, many of these affiliates will be owned by a holding company (often several holding companies are involved), and the concept of a management company has gained popularity. Finally, for many types of businesses, the locations of consumers do not necessarily require a (significant) physical presence of the company. Examples include, but are certainly not limited to, online retailers and advertising that is targeted to users of social media and other platforms.

**Figure 8. An Illustration of the Organizational Structure of a Global Firm**



Source: Author's illustration.

The business and the structure of the global firm (as discussed in Section 4.2) makes it difficult, if not impossible, to identify the country where the value is created. Traditionally, the location of labor and physical capital was thought to identify value creation, but this is an outdated notion for a borderless firm. First, there is an increasing value creation by intangible capital and services. Second, it can be argued, putting things together is ultimately generating value, implying that the whole is greater than the sum of its parts—that is, the value of the final product is higher than the sum of the value of marketing and the value of production, assuming these exist, and thus the location of this sum is unidentified as it is at the level of the worldwide group. Third, one can reasonably argue that consumers can generate value because of (1) the value of the data they generate and (2) their demand. That is, data collected from users generate value for many digitalized businesses, not only in terms of generating revenues through directly selling the data

but also through using the data to directly tailor valuable products and services such as advertising. Moreover, the global firm does not produce where it sells, but currently the location of sales (i.e., demand) does not identify a source country under current tax arrangements. Hence, overall, it is safe to conclude that, for the global firm, the location of value creation cannot be identified by the physical presence.

While there have always been practical concerns and questions about the economic meaning of residence–source, the distinction has become vaguer and more complex to grasp as the income of the global firm is less linked to physical capital or employment (Observations 5, 6, and 9). Decreased importance of physical presence of companies for sales significantly weakens the concept of source country. Furthermore, current arrangements do not efficiently tax economic rents (Observations 2, 3, and 10).

The nature of research and development activities (Observation 7) has implications for profit shifting and tax competition (see Hebous, 2020). The global firm can locate real research and development activities in countries that provide input tax incentives (for example, tax credits) but locate the resulting patents or trademarks in countries that offer patent box regimes (where income and royalties benefit from lower taxation). Empirical evidence indicates that multinational enterprises allocate the legal ownership of know-how assets within the group for tax reasons to benefit from patent box regimes (Karkinsky and Riedel 2012). Action 5 of the G20/OECD BEPS Project on combating harmful tax practices requires, as a minimum standard, that patent box incentives be linked to the development of the patent (expenditures on the patent) in the country. As of April 2019, 126 countries have committed to this minimum standard. This may limit the scope for profit shifting using the legal location of patents but likely also intensifies competition over real research and development activities.

The massive increase of intragroup transactions of intangibles and services, many of which do not have world market prices, have substantiality weakened the ability of the arm's length principle to determine their appropriate prices (Observations 5 and 6). For example, the value of brands or cost-sharing arrangements between affiliates poses challenges that cannot be easily solved by finding a dataset of comparables. In a way, at the current juncture, some argue that the returns of the global firm can be split into a portion that can be, to some extent, determined by the arm's length principle (routine profits) and a portion that is difficult to be subjected to the arm's length principle (residual profits).

Many companies receive passive income (especially holding companies, management companies, and financing companies) that in principle should be taxed at residence. Starting in the late 1920s, some countries (largely) exempted these types of companies from taxation even though they were resident. This can be done, for example, through preferential tax regimes or tax rulings that enable specific arrangements. These become an important tax competition tool beyond the statutory tax rate (Observations 3 and 8). Moreover, distinguishing between different types of passive income and between passive and active income has become extremely difficult, in practice, due to mismatched national tax systems and different legal characterizations of similar (and rather complex) arrangements and transactions.

## **VI. CONCLUSION**

The owners of the global firm are all over the globe, and so are its customers. Its production is integrated across countries. Increased value creation from sources other than physical capital and employment casts doubts on the traditional way of thinking of value creation. The increased importance of intragroup trade, especially in hard-to-price services and intangibles, intensifies the challenges facing the arm's length principle. The decreased importance of maintaining a physical presence of companies for sales (and, more generally, the organizational structure of the global firm) have made guarding the borders between residence and source an extremely fragile undertaking. Distinguishing between different types of income has become more difficult and potentially prone to inconsistency across countries. The consequences are tax competition and profit shifting.

In sum, multinational enterprises have evolved with the advancement of technology and opportunities of the ever-increasingly modernized world, but international tax arrangements, with their fundamental weaknesses since their inception, could not and, as many would argue, cannot get up to speed.

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