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POINT

Taxing the multinational enterprise: On the forced redesign of global value chains and other inefficiencies

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Abstract
The taxation of the multinational enterprise (MNE) has been a continuing concern for policymakers. We argue that the changing nature of the mobile MNE (e.g., its improved ability to fine-slice the value chain and disperse it geographically) makes it increasingly important to rethink current tax policies. First, there should be more focus on the inefficiencies that arise when taxation leads to the inefficient location of MNE activities. Thus, MNEs may shift activities to low-tax jurisdictions that offer lucrative pecuniary and non-pecuniary incentives, but do not enable their investments to maximize their contribution to global value creation. Second, international tax regimes should ensure that MNEs pay for their consumption of local public goods, and public finance scholars have long known that the taxation-based distortions are minimized when the tax objects are immobile. However, the bulk of current tax policies are aimed at corporate profits that are both poor proxies for the consumption of local public goods as well as extremely mobile. Integrating theory from international business, public finance and economic geography, our analysis demonstrates that moving the incidence of taxation from corporate profits to dividends and consumption would unambiguously improve both wealth creation and efficiency.
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> If all that were necessary to bring about compliance with the criminal laws were to increase penalties, the crime problem would have been solved long ago.
> Milton Handler (1975)

INTRODUCTION

Taxing multinational enterprises (MNEs) has been a consistently frustrating experience for governments and international agencies (Feldstein, Hines, & Hubbard, 1995). The use of transfer pricing that in principle allows MNEs to shift profits from high-tax to low-tax regimes has been a perennially contentious issue, and worries have grown as global financial flows through offshore financial centers have increased.[1] Frustrations seem to have grown as liberalization and pro-market policies have eased the mobility of

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financial capital (Grilli & Milesi-Ferretti, 1995), and as the relative decline of the tangible component of industrial production has made physical capital a much less effective barrier against the mobility of firms' activities (Grossman & Rossi-Hansberg, 2008; Mudambi, 2008).

It is hardly surprising that governments, needing to finance public goods as well as government transfers, are expending significant resources on investigating and regulating MNEs and trying to set up, monitor and enforce international tax treaties and arrangements. Such resources add additional inefficiencies to the well-known deadweight losses associated with taxation, identified in the voluminous public choice and public finance literature (e.g., Tullock, 1967; Goolsbee, 1998).

In this paper, we highlight an additional source of welfare loss that has received much less attention – namely the distortion that is introduced when taxation leads to the inefficient location of productive MNE activities. MNEs may shift activities to low-tax jurisdictions that offer lucrative pecuniary and non-pecuniary incentives – rather than to those locations where these investments would maximize their contribution to global value creation. Such low-tax jurisdictions often do not offer the mix of external capabilities (e.g., a highly skilled local labor force, universities, demanding users) that optimally complement the internal capabilities of the MNE. However, MNE managers may choose the immediate benefits of tax incentives over the longer-term global value creation generated by selecting the location that has the best match with their internal capabilities. This implies that tax arbitrage considerations can create distortions that thus far have received little attention in the scholarly literature and that are particularly salient in the context of international business.

We offer three key and related arguments. First, the changing nature of the MNE is an important part of the development described above. MNE location choices are increasingly "fine-grained" and flexible as they slice their value chains into ever-narrower specialized activities. Accordingly, thinking about how to optimally design the overall MNE taxation regime needs to start from a theory of the MNE that incorporates such "fine slicing" (Mudambi, 2008). We argue that the received theory of the MNE tends to portray modes of international investment as both highly "lumpy" and irreversible. MNE investment location is viewed as both "all or nothing" and "once and done." Established theory therefore has difficulties accounting for the increasingly fine-grained breakup of global value chains and is a less reliable guide for thinking about how taxation may impact upon the location of activities and the welfare gains or losses associated with location choices.

Second, we argue that a key objective in designing international tax regimes is to ensure that MNEs pay for their consumption of local public goods. In accordance with basic public finance theory, this requires identifying less mobile MNE tax objects. However, the bulk of current tax policies are aimed at corporate profits that are extremely mobile.

Third, in addition to being highly mobile, corporate profits are also a poor proxy for the extent of MNEs' consumption of local public goods. A firm's consumption of public goods tends to be highly correlated with its level of production. However, with the massive worldwide decline in spatial transaction costs (defined as *all* the costs of undertaking business transactions over geographical space, including transportation costs), value creation and sales locations have become increasingly disjointed. Value creation tends to be driven by the availability of knowledge-intensive resources or factors of production, while sales are based on demand conditions. It has long been known that corporate profits stem from MNEs' R&D and marketing knowledge stocks that have little relationship with input use and public goods consumption.[2]

Overall, we go beyond the existing discussion of the taxation of MNEs that tends to concentrate on the static issue of transfer pricing. Specifically, we discuss the dynamics of tax competition involving MNEs and public decision-makers. On the one hand, MNEs are increasingly mobile and able to shift activities flexibly across locations. On the other hand, public decision-makers (at various levels) may have mixed motives to tax MNEs. These include the real imperatives of raising resources to fund local public goods as well as populist political posturing in electoral competition (Rogoff, 1990). Further, public decision-makers face difficulties not only in imposing taxes on MNEs, but also in coordinating tax initiatives among themselves (e.g., because national elections are not synchronous).[3]

The paper is organized as follows. In next section, we focus on the organization of the modern MNE and discuss how it has changed over the past several decades. Following that, we provide a broad

overview of the current international tax system as it pertains to these firms. This allows us to pinpoint the inefficiencies of the current system. In the next section, we integrate public finance theory (that gives primacy to location-centered objectives) with the realities of today's MNE; this enables us to outline a theoretical and practically feasible system that both minimizes inefficiencies and links taxation to the activities associated with MNEs' consumption of local public goods.

THE MULTINATIONAL ENTERPRISE AND GLOBAL VALUE CREATION

Progress in thinking about international corporate taxation has to start from a descriptively accurate theory of the MNE. The received view of the MNE in the international business and the management literature still fundamentally derives from the original pioneering work of Buckley and Casson (1976) and other co-founders of the theory of the MNE, notably Rugman (1981), Hennart (1982) and Teece (1985). The basic idea is that the MNE is an organization that internalizes transactions across national borders. It emerges because cross-border internalization is superior to market transactions in terms of value-maximization/transaction cost minimization. Much early theory focused on the difficulties (i.e., transaction costs) of trading intangible assets (capabilities, culture) across national borders as a key motive for the existence of the MNE and used similar reasoning to explain its size and scope. The logic typically was (and still is) that ownership advantages – of whatever kind – can be optimally leveraged within a hierarchy across national borders to locations where their deployment results in net value-added.

However, international business theory has long recognized that the structures that govern transactions across borders are many and different (e.g., Benito, Petersen, & Welch, 2009). Further, both the organization theory and international business literatures have highlighted the fact that firms' modes of operation can be organized and governed in a variety of ways. They innovatively create combinations of governance instruments that are superior to generic "governance structures" in handling new or local challenges (Zenger & Hesterly, 1997). Much of this is made possible by fundamental advances in management practices, methods of allocating costs, and improved ways of measuring multidimensional performance. Many of these advances can be traced to advances in information and communication technologies, which represent important drivers of falling spatial transaction costs (Iammarino & McCann, 2006; Cano-Kollmann, Cantwell, Hannigan, Mudambi, & Song, 2016). Spatial transaction costs include both pure iceberg transport costs, as well as other costs (including the portion of transport costs that are not affected by distance) arising from transacting across space. These costs arise from institutional differences and consist of items like drawing up and monitoring contracts across institutional and cultural boundaries, protecting valuable commercial knowledge in regimes where intellectual property rights are not as well developed as in the home country, and so on (Mudambi, Li, Ma, Makino, Qian, & Boschma, 2018). One implication is that activities can be dispersed across geographical locations to a much larger extent. These developments are highly visible in the context of the MNE.

Global Value Chains and the Modern MNE

The modern MNE differs markedly from the picture painted in the MNE literature of yesteryear. Part of the reason is that when the theory of the MNE began to emerge in the 1960s and 1970s, the world was considerably less liberalized and shot through with customs barriers and many other hindrances to establishing business abroad. Given that spatial transaction costs across countries and markets were significant, it made sense to enter foreign markets by moving entire value chains. At that time, spreading value chains across multiple destinations was prohibitively costly. This may have led to activities in MNE value chains being located in countries where the "optimal activity-specific" productive efficiency was not maximized because of transaction costs along the entire value chain (Mudambi & Puck, 2016; Verbeke & Asmussen, 2016). In other words, the emphasis on the "discrete, structural alternatives" in the analysis of the MNE reflected reality.

However, sustained liberalization and the opening of markets and locations around the world mean that MNEs can not only engage in "tax-shifting" at lower cost, but can also break the shackles of discrete, structural choices: they are in a much better position to realize the benefits of specialized local resources. First, like firms in general, MNEs engage in ongoing experimentation with regard to the way they organize transactions and access the services of outside partners across borders (Buckley, 2011). In this process, MNE boundaries are becoming increasingly diffuse and porous (Buckley, 2009). Second, empirical analyses of the location choices of MNEs suggest that they

increasingly disaggregate their global value chains into fine-sliced activities. These activities are often placed in or sourced from very different locations, before the final value proposition is orchestrated through reaggregation (Mudambi, 2008; Contractor, Kumar, Kundu, & Pedersen, 2010; Buckley, 2011). While this gives rise to substantial management challenges, the ongoing trend toward fine-slicing global value chains (Beugelsdijk, Pedersen, & Petersen, 2009) suggests that specialization and location advantages dominate the increased costs of managing complex contractual and other corporate arrangements across borders. Thus, the centrifugal trend is efficiency-increasing overall.

To better understand the drivers and efficiency implications of the above trend, we need to now consider both how MNEs are currently taxed and how locations may compete for MNE activities. The current tax regime leads to the inefficient location of MNE activities and thus to inefficiencies in global value creation. Further, attempts to attract MNE activities can introduce an element of wasteful rent-seeking as locations spend resources trying to attract MNEs in competition with other locations. Additional inefficiencies may result when locations manage to attract MNE activities (e.g., by tax breaks or subsidies that may vary in terms of the extent to which they are hidden) that do not really fit with the location's comparative advantage (see especially McCann & Mudambi, 2004, Table 2: p. 512).

HOW MNES ARE CURRENTLY (INEFFICIENTLY) TAXED

The current system of corporate taxation levies taxes in each location where the MNE reports profits. It treats MNEs "as loose collections of separate entities operating in different countries, rather than as conglomerates making profits in a global marketplace" (Forbes, 2013). Historically, this may have arisen from the fact that tax regimes were designed by practitioners trained in international economics and international finance, disciplines that have rarely incorporated insights from international business (Mudambi, 1998a). These problems have grown worse, since as we have noted, spatial transaction costs have been rapidly falling worldwide at least since the beginning of the 1970s[4] and the dispersion of MNE global value chains across locations has dramatically increased (Mudambi & Puck, 2016; Verbeke & Asmussen, 2016).

Public decision-makers fear that MNEs may free-ride on the location's provision of public goods, that is, they can gain access to (sometimes very high quality) public goods, but effectively evade paying their "fair" share of taxes for the provision and maintenance of these goods. Since governments usually generate quite high deficits and accumulated debt, additional revenues from taxable corporate profits during their terms in office translate into additional resources they can use to increase public spending, boosting their political capital (Rogoff, 1990). However, the goal of maximizing tax revenues – as opposed to fostering MNE investments and knowledge spillovers – is myopic and inefficient in the long run (Haufler & Schjelderup, 2000).[5]

First, corporate income taxes lower MNEs' incentives to invest, because the higher cost of capital lowers investment return. By increasing corporate income taxes, governments benefit from additional tax revenues in the short term but lose out on the outcomes and spillovers from corporate investments (e.g., new employment) in the long run (Mukherjee, Singh, & Žaldokas, 2017).[6] Further, governments risk losing the positive externalities that flow from MNE location; in fact, MNEs are "flagship firms" that are typically at the center of a dense web of buyers, suppliers and specialized support firms (Rugman & D'Cruz, 1997). The potential loss of welfare in the long run caused by MNE exit seems to be confirmed by the extant empirical evidence (Devereux, Griffith, & Klemm, 2002), which has shown that the most profitable MNEs are also the ones whose capital is more mobile across countries.

Second, because of the flexibility of global value chains, MNEs can easily shift their profits from relatively higher corporate income tax countries to relatively lower corporate income tax countries, by means of tax planning strategies and preferential tax regimes (for more details, see, Mintz, 2004, and Mintz & Smart, 2004). To address this practice of transfer pricing and the associated profit shifting, OECD governments are coordinating their actions against preferential corporate tax treatments designed to attract MNEs, aiming to reduce tax competition among countries.[7] However, as argued by Devereux and Vella (2014), the OECD Base Erosion and Profit Shifting (BEPS) initiative is quite far from either solving profit shifting problems or generating a stable long-run tax system. Even though tax harmonization among some countries may work, in general we do not expect to see a

uniform global tax rate, because (a) some countries do not have incentives to coordinate their tax policy with that of other countries, and (b) because it is costly to enforce international tax treaties among nations.

In this situation, a tax race (the so-called race to the bottom, cf. Devereux et al., 2002: 452) may take place, and MNEs' location choices about their activities are likely to be driven not only by the target country's resources and public goods (and their match with MNE assets), but also by the corporate income tax rate they face (Coeurderoy & Verbeke, 2016). This engenders welfare losses and reduces efficiency by distorting the way global value chains are distributed across nations (Hines, 2006).[8] A telling example is provided by DHL that moved its European hub from Brussels to Leipzig (Deutsche Welle, 2008), demonstrating that very specific activity facilitation (i.e., permission for extensive nighttime flights) can overcome even fundamental deficiencies in geographical location and infrastructural resources (i.e., Brussels' central location and transportation resources are far superior).

LOCATIONS AND PUBLIC GOODS

The theory of the MNE has often treated locations as passive actors. When locations were brought into the analysis, early international business scholars often viewed the relationship between the location and the MNE as essentially adversarial (e.g., Vernon, 1971). However, a recent and growing strand of international business scholarship views MNEs and locations as locked together in a beneficial coevolutionary embrace (e.g., Cantwell, Dunning, & Lundan, 2010). MNEs are the principal modality through which locations are connected to global value chains. Locations and firms need one another in the manner of flowers and bees: As "firms fine-slice their activities, locations are unlikely to remain thoroughly vertically integrated; as firms connect locations, these locations provide firms with specialized locally generated knowledge, and both change together" (Cano-Kollmann et al., 2016: 260).

The above argument suggests that the relationship between locations and MNEs, far from being adversarial, is mutually beneficial, with significant direct and indirect benefits for locations. As this becomes clear to political decision-makers in the relevant locations, the process of coevolution between MNEs and locations results in a concomitant dynamic of inter-location competition. Thus, every major MNE location decision involves a short-listing process wherein government agencies compete with one another to attract the investment. With few exceptions (Head & Ries, 1996; Mudambi, 1998b), coverage of this inter-location competitive dynamic has remained confined to the business press, receiving relatively little attention in the academic literature.[9]

Locations derive both static and dynamic advantages from MNE operations. These have received attention in a strand of the academic literature that characterizes them as "spillovers" (Blomstrom & Kokko, 1998). These spillover benefits include both intentional and unintentional flows from the MNE to the local area. Static advantages comprise, for instance, employment (including the provision of high skill jobs that may be created locally for the first time), enhanced product/service choice for local consumers, and the payment of various kinds of local taxes. Dynamic advantages encompass technology and knowledge outflows, the spurring of local entrepreneurial and innovative activity, eventually leading to a virtuous cycle of cluster evolution toward higher-value activities.

Locations compete for foreign direct investments (FDI), passively as well as actively. Passive competition occurs as locations invest in general purpose public goods that benefit foreign and local firms alike. These include investments in education and training, physical transport infrastructures, utilities and so on. While the effect of such investment in public goods is realized in the long term, it still drives the majority of FDI decisions (Dunning, 1993). Active competition occurs as locations provide various kinds of financial incentives, such as special tax breaks and/or subsidies, aimed specifically at foreign firms (Raff, 2004). The effects of such incentives are often seen in the short term and only have a small impact. If all costs and benefits are accounted for, such incentives rarely compensate for weaknesses regarding the quality of the locally supplied public goods, especially in the case of high knowledge, high-value FDI.

By their very nature, public goods will be supplied at inefficiently low levels by the normal functioning of markets. The basic reason is that the provision of public goods by private entities is characterized by well-known inefficiencies stemming from free-riding (Olson, 1971) and coordination failures (Kindleberger, 1986). Hence, locations must find ways to finance public goods from the Exchequer, without which their participation in

global value chains and consequent ability to create value for their citizens will be severely compromised. This raises a fundamental question of public finance: in a world of low and falling spatial transaction costs where MNE activities are often highly mobile, how can a location make MNEs pay for their consumption of public goods?

HOW MNES SHOULD BE TAXED (IF AT ALL)

All taxes (save for lump-sum taxes) create welfare losses (Slemrod, 1990). The public finance field recognizes such losses as the costs of financing the production of public goods (and/or the possible benefits of redistributing income). One set of inefficiencies (stemming from the excess burden of taxes) is accepted in order to address another set of inefficiencies (i.e., the market failure in the production of public goods). Thus, one may argue that the inefficiencies of taxation are the price that society pays in order to address (a) market failures, notably those that attach to the provision of public goods, and (b) possible equity issues that are dealt with through redistribution.

However, minimizing the distortions implied by the tax regime is in the interest of every individual in society, since it generates Pareto-improving gains, that is, the given level of public goods or redistribution benefits are achieved at lower costs to society. One of the key indicators of the efficiency of any tax regime is the mobility of the resources that are taxed (Wilson & Wildasin, 2004). Hence, economists since Henry George (1884) have typically advocated taxing land and real estate – that is, immovable objects – as low-distortion forms of taxation. By contrast, corporate income taxes, and *particularly* those on MNEs, are at the other extreme. MNEs are firms whose financial operations are globally mobile (Buckley, 2011); taxing them is therefore highly inefficient, as operations will, to a large extent, move to other jurisdictions in response to taxes. There is considerable real evidence that MNEs do just that (see, e.g., Dischinger & Riedel, 2011).

Based on these arguments, we argue that taxing MNE profits is *particularly* counterproductive. Specifically, such taxation results in both welfare costs in the form of allocation inefficiencies (e.g., MNEs' private costs in terms of sub-optimal location decision-making) and, perhaps most importantly, an adversarial relationship between governments and MNEs by criminalizing legitimate business decision-making, which may imply further distortions of efficiency, as MNEs become reluctant to invest.

With respect to the efficiency of MNE decision-making, MNEs should locate operations where their ability to use resources (internal as well as external) and access markets maximizes their contribution to value creation. This is well established in the global strategy literature (Bartlett & Ghoshal, 1989; see the updated analysis of Rugman, Verbeke, & Yuan, 2011). However, in the presence of multiple tax rates (as among OECD countries, see Table 1), the MNE has the opportunity to create financial value by means of tax arbitrage, i.e., transfer pricing. This imposes private agency costs on the MNE's shareholders, since to some extent managers will locate operations (and reap rewards) based on short run *tax* benefits rather than long run *real* benefits. Accordingly, resources are misallocated as the MNE does not optimally use resources and access markets.

Moreover, innovation and learning have become critical components in the process of creating intangible assets. Thus, short-term tax benefits may be obtained at the cost of long-term losses in innovation and knowledge outputs. Behavioral theory ideas suggest that managers may overly discount or even neglect long-term benefits from learning and innovation because under bounded rationality their decision-making can be disproportionately influenced by cues represented by short-term gains (Marginson & MacAuley, 2007).

As regards the relationship between governments and MNEs, inefficiencies take a very real form in the enormous expenditure of governments on policing and monitoring legitimate business activity, as well as in the expenses MNEs incur in order to generate a veil of secrecy, such as the use of tax havens, "export processing zones," and all practices designed to minimize the extent of reported activity in high-tax regimes (see recent statistics provided by Sauvant, 2017). These expenses are the transaction costs involved in competing – between countries as well as between countries and MNEs – for the contested property rights to MNE income streams. For example, the compliance costs of reporting the extent of profits in many jurisdictions are still high, and MNEs are likely to either make adjustments on reported profits or artificially increase reported costs, thus hindering the government's tax collection process (Carrillo, Pomeranz, & Singhal, 2017). In other words, under the current tax regime, truth telling regarding local profits may

Table 1 Corporate income tax rates across OECD countries. *Source*: OECD (2014)

Country	Central government	Combined with subcentral government
Australia	30	30
Austria	25	25
Belgium	33	33.99
Canada	15	26.7
Chile	25	25
Czech Republic	19	19
Denmark	22	22
Estonia	20	20
Finland	20	20
France	34.43	34.43
Germany	15.83	30.18
Greece	29	29
Hungary	9	9
Iceland	20	20
Ireland	12.5	12.5
Israel	24	24
Italy	24	27.81
Japan	23.4	29.97
Korea	22	24.2
Latvia	15	15
Luxembourg	20.33	27.08
Mexico	30	30
Netherlands	25	25
New Zealand	28	28
Norway	24	24
Poland	19	19
Portugal	28	29.5
Slovak Republic	21	21
Slovenia	19	19
Spain	25	25
Sweden	22	22
Switzerland	8.5	21.15
Turkey	20	20
UK	19	19
USA	35	38.91

not emerge as an optimal strategy for many MNE executives (Demski & Sappington, 1984).

Further, transaction costs borne by MNEs may interact with bounded rationality and informational considerations. Thus, even MNE executives themselves can often only guess where their firm's knowledge and innovation were created. Large MNEs operate in global innovation systems that are highly complex and so interdependent that the sources of new knowledge creation are hard to pinpoint. When Tim Cook, the CEO of Apple, says that he cannot estimate how much value Apple created in Europe, he is just stating a fact.

Thus, given the enormous inefficiencies and costs of the current system of differential corporate income tax rates, can we accept the position of most governments and international agencies like UNCTAD saying that this is the best we can do? We dispute this conclusion. The current system arose in a world where value creation was local and spatial transaction costs were high, so that the inefficiency of corporate income taxation was relatively low. General Motors had to make cars in Detroit, and Hollywood had to make movies in LA. This world has changed beyond recognition. As spatial transaction costs have fallen, MNE operations have become global and flexible. Taxing their profits has become ever more inefficient.

So, how are the public goods that MNEs consume to be financed? The answer is based on the recognizing that some tax targets are more mobile than others. As, for instance, suggested by Fehr, Jokisch, Kambhampati & Kotlikoff (2017), the loss of public revenue through the reduction in corporate income

taxes to zero should be offset by corresponding increases in taxes on significantly less mobile targets than MNE profits, such as consumption. This solution owes its theoretical genesis to Milton Friedman and has been advocated for many years by several scholars (e.g., Auerbach, Devereux, Keen, & Vella, 2017; Devereux & Vella, 2014).

We specifically propose to offset the zeroing of corporate income taxes by increasing dividend and sales taxes. First, this solution makes those who benefit from MNE operations – the owners and consumers – pay for the public goods that are used for generating profits and output. Second, zeroing corporate income taxes avoids the typical earnings management behavior of MNEs, that is, accounting practices adopted to manipulate the income statement by reporting a lower corporate income before taxes. Given that corporate income taxes are now zero, there is no incentive for the MNE to adjust income to avoid paying taxes. Truth telling regarding profits now emerges naturally as an optimal strategy for MNE executives. Further, it removes MNEs' incentives to increase leverage beyond the optimal level, since using interest payments to lower taxable profits is no longer necessary. This allows the MNE to lower financial management costs and to focus time and effort on core activities.[10] Third, the profits of the MNE are only taxed once (in the hands of the shareholders) and not twice as in the current system.

Consider the example in Table 2 (Panel A) which illustrates that our proposal is financially sustainable. The current situation is the following: the sales and corporate profit of the MNE reported in the country (before taxes) are $100,000,000 and $10,000,000, respectively; the corporate income tax rate is 25% (quite close to the average among OECD countries, as shown in Table 1); the sales tax rate is 20%;[11] 3% of the net income is paid out as dividend (for examples of "average" and "special" dividend rates see http://www.dividend.com/how-to-invest/comparing-dividend-stock-sectors-by-yield/); and the dividend tax rate is 20%. The overall tax collection is equal to $22,545,000.

What happens if the corporate income tax rate is zeroed and the dividend tax rate is doubled (i.e., 40%)? The loss of public revenue engendered by zeroing the corporate income tax rate can be (more than) offset by shifting the sales tax rate to 22.5%. As shown by Fehr et al. (2017), consumption taxes lead to higher long-run welfare gains than those associated with taxes on factors of production (like wages). In Panel B, we repeat the above simulation in an industry, such as oil and gas, where the dividend rate is higher (i.e., 10%) than the average (i.e., 3%). In this case, the lost tax collection from corporate incomes can be covered by setting the sales tax rate equal to 22.3%.

In addition, or alternatively, we could increase capital gains taxes, property taxes and/or other

Table 2 Illustrations of the financial sustainability of our proposal

	Baseline situation		Our proposal	
Panel A: "average" dividend rate (3%)				
Sales (€)	100,000,000		100,000,000	
Sales tax rate*	**20%**	20,000,000	**22.5%**	22,500,000
Corporate profits before taxes (€)	10,000,000		10,000,000	
Corporate tax rate	**25%**	2,500,000	**0%**	0
Net corporate profits (€)	7,500,000		10,000,000	
Dividend rate	3%		3%	
Dividend tax rate	**20%**	45,000	**40%**	120,000
Total tax collections		22,545,000		22,620,000
Panel B: "oil and gas" dividend rate (10%)				
Sales (€)	100,000,000		100,000,000	
Sales tax rate*	**20%**	20,000,000	**22.3%**	22,300,000
Corporate profits before taxes (€)	10.000.000		10.000.000	
Corporate tax rate	**25%**	2,500,000	**0%**	0
Net corporate profits (€)	7,500,000		10,000,000	
Dividend rate	10%		10%	
Dividend tax rate	**20%**	150,000	**40%**	400,000
Total tax collections		22.650.000		22.700.000

(A) All tax rates (noted in bold) and dividend rates correspond to currently typical prevailing rates in OECD countries. (B) For the calculation of the sales tax rate, we assume that the MNE sells directly to the end consumer. This makes the sales tax rate equal to the value-added tax rate.

indirect taxes (e.g., on alcohol, tobacco, betting and gaming, vehicle excise, soft drinks and/or a climate change levy). The relative percentage increase in each tax is country specific, and thus, we cannot provide a "one size fits all" proposal. However, just to give the reader an idea of the "weights" of each type of tax on the composition of tax receipts, we focus on the UK case (data sourced from the Office for Budget Responsibility, Economic and Fiscal Outlook, March 2017: http://budgetresponsibility.org.uk/efo/economic-fiscal-outlook-march-2017/): corporate income taxes, consumption taxes and property taxes constitute 8, 18 and 9% of the overall tax receipts; dividend taxes are part of direct income taxes that make up 25%; capital gains taxes are part of capital taxes that account for 5%; the indirect taxes mentioned above add up to 8%. As the reader can see from these numbers, finding a proper mix of taxes that make our proposal financially sustainable is far from impossible.

How would our proposal be applied in practice across a variety of national jurisdictions? When coordinating among themselves regarding corporate income tax policies, different countries have to take into account that the overall taxation of MNEs may have many components, for example national, state and local taxes (see Table 1). This means that tax coordination must occur at different levels and it should involve public decision-makers who do not necessarily have aligned interests. MNEs look at the complete tax package – and not just at the national corporate income tax – while decentralized public decision-makers may not. This introduces the complication of cascading taxes; for example, if state and local taxes are very different across countries, this limits the range of freedom and effectiveness of national governments in setting up coordinated tax treatments. By contrast, setting the same dividend and sales taxes across countries is much more simple, because these tax rates are typically under the direct jurisdiction of the national government. Thus, coordination costs are much lower. Most fundamentally, shareholders and consumers are much less mobile than MNEs, and thus, it is very unlikely that countries would deviate from coordinated policies to attract them.[12]

CONCLUSIONS

From an overall efficiency perspective, the changing nature of the MNE is good news: the increasing disaggregation across different locations that liberalization and pro-market policies, and advances in ICT and other technology-based revolutions have made possible allows for a better use of the comparative advantages of different locations. However, the other side of the coin is that locations increasingly compete for MNE operations in terms of direct transfers of wealth (e.g., tax breaks) and more indirectly in terms of investments in public goods, notably education and infrastructure. This has two implications.

First, tax competition may be highly inefficient, because it may lead MNEs to locate operations where they do not show an efficient value-adding fit with local conditions. Governments have tried to overcome the above problem by means of coordinated policies against special tax treatments. However, in equilibrium, we do not expect the same corporate income tax rate worldwide because some countries do not have incentives to coordinate their tax policy with that of other countries. Without coordinated tax policies, the unique equilibrium is instead the reduction in corporate income tax rates to zero. This represents the only solution through which MNEs are incentivized to invest in a global value-maximizing manner, both in terms of direct value created for their shareholders, and in terms of the associated positive externalities – technology spillovers, local entrepreneurial outcomes and employment generation.

Second, a key problem in designing international corporate income tax regimes is to tax MNEs such that they pay for their consumption of local public goods. In accordance with basic public finance theory, this requires identifying less mobile MNE tax objects. Strong candidates for such tax objects are the shareholders and the consumers of MNEs who are much less mobile than MNEs themselves.

NOTES

[1]The data indicate that investment flows from MNEs to offshore financial centers have grown dramatically in recent years. This is true for *all* MNEs: those with headquarters in OECD countries, as well as those with headquarters in developing, emerging and transition economies. The home bases of these MNEs range from the USA and the Netherlands, through Brazil and China to sub-Saharan African countries (OECD, 2014; UNCTAD, 2016).

[2]An early reference is Grabowski and Mueller (1978).

[3]For instance, many European pundits have interpreted the Trump fiscal reforms of 2017–18 as a sort of declaration of war, in spite of the fact that the decreased US corporate income tax (from 35% to 21%) is still higher than that in many European countries, for example the UK (19%), Poland (19%), Ireland (12.5%), and Hungary (9%).

[4]Further, as Buckley (2011) notes, spatial transaction costs have been falling to virtually zero for financial flows, declined by an order of magnitude for the movement of goods and services, but dropped only modestly for the cross-border flows of people. MNE profits are heavily weighted toward financial flows, their operations depend on the flows of goods and services (Eden & Lenway, 2001), and their requirements in terms of moving people (mainly through expatriation) are rather modest.

[5]The debate about the setting of corporate income taxes and the welfare costs associated with alternative tax regimes dates back to Feldstein (1978).

[6]For instance, exploiting staggered shocks in US state-level corporate tax rates, Mukherjee et al. (2016) show that an increase in corporate tax rates reduces future innovation.

[7]For instance, see the case of Apple in Ireland, described in the *Wall Street Journal* (December 19, 2016).

[8]For instance, Albornoz and Corcos (2007) model strategic competition between two governments to attract MNEs by means of subsidies. The authors show that the absence of subsidies raises welfare. An example is provided by the company Berkshire Hathaway: this company has $485 billion in assets and $20 billion in profits and received over $1 billion from the 514 US state economic development subsidy programs (Forbes, 2014). Further, as suggested by Navaretti and Venables (2013), even when policies have limited influence on MNEs' location choice, competition among countries leads to investment diversion (and not investment creation).

[9]Ireland's long-running tax incentives to attract MNE operations are just one example of location competition that has received considerable attention in the business press (Dalby & Scott, 2015) and has been strongly criticized by its European Union partners (European Commission, 2016).

[10]Another potential welfare-enhancing effect (not directly related to our idea) is that the zeroing of corporate income taxes (and thus the possibility to earn higher profits) allows the MNE to become more competitive, having "more space" to either lower prices or invest in new resources (e.g., technology, capital assets, human capital) aimed at improving the MNE's long-term productivity with positive effects on the social welfare.

[11]Except for the USA, OECD countries have a value-added tax (VAT) and 20% is fairly representative of currently prevailing rates. In our example, we assume that the MNE sells directly to the end consumer. This makes the sales tax rate (that is a feature of the US and Canadian systems) equal to the value-added tax rate.

[12]We have focused on analysis of efficiency, whereas arguments for MNE profit taxation are sometimes made on equity grounds. While it is beyond the scope of this paper to address this issue, we make two points that demonstrate that such considerations do not weaken our case and further that our recommendations often improve equity by creating progressive wealth transfers. First, it may be demonstrated in almost all cases that schemes that separate efficiency (value creation) from equity (value distribution) Pareto dominate schemes that blend the two objectives (Stigler, 1971; Milgrom & Roberts, 1990). Second, increasing taxes on dividend (and perhaps capital gains) are almost certainly progressive in nature. Sales taxes may also be progressive, depending on the nature of the output good.

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