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IMPLICATIONS OF DIGITALIZATION FOR INTERNATIONAL CORPORATE TAX REFORM¹

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This paper is concerned with the challenges, but also the opportunities, created by digitalization for the taxation of multinational profit. To cite the European Commission Expert Group on Taxation of the Digital Economy:

“The economy is becoming digital. Digitalization is the process of spreading of a general purpose technology. The last similar phenomenon was electrification. Digitalization of products and services shortens distances between people and things. It increases mobility. It makes network effects decisive. It allows the use of specific data to such an extent that it permits the satisfaction of individual customer needs – be it consumers or businesses. It opens up ample opportunities for innovation, investment, and the creation of new businesses and jobs. Going forward it will be one of the main drivers of sustainable growth.”²

Starting from the same approach as the European Commission Expert Group and the OECD,³ we do not believe that it is sensible to attempt to “ring-fence” the digital economy as if it were distinct and separate from the rest of the economy such as, for example, natural resources. All industries are affected by digitalization, in particular for our purposes, in the way it opens up borders. Compared to twenty years ago, individuals can easily purchase goods and services directly from businesses in other countries, and they can easily purchase shares in businesses in other countries. Even small and medium-sized companies can now operate internationally. So, although digitalization is most pronounced in the “digital” sector, it raises problems for taxation in all sectors of the economy.

¹ We thank Michael Keen, and other participants at the IMF conference on “Digital Revolutions in Public Finance” in April 2017, for helpful comments on an earlier draft of this paper.

² European Commission Expert Group on Taxation of the Digital Economy (2014), p.5.

³ OECD (2015), p.54.

This greater internationalization raises fundamental questions about how national governments can and should tax corporate profit, and the extent to which they need to coordinate with each other in doing so. These questions arise against a backdrop of increasing public concern with the taxation of profits of multinational enterprises (MNEs), spurred by a general belief that many have found it relatively easy to arrange their affairs to pay minimal amounts of tax. Businesses that are clearly digital are in the forefront of this concern, as they appear to be able to shift profit to tax havens with ease, but these problems are not restricted to such companies. A variety of tax planning techniques to shift profits to tax havens or low tax jurisdictions is available to all companies.

In response to this widespread concern, the OECD and G20 launched a reform project in 2013 – the Base Erosion and Profit Shifting (BEPS) project. This was hailed as the most ambitious reform of the international tax system of the past 100 years. However it did not usher in radical change. The BEPS project left the fundamental structure of the international tax system unchanged but proposed a number of actions with the aim of eliminating or narrowing some of the main tax planning routes available at the time.

Action 1 of the BEPS project dealt with the digital economy.⁴ Its Final Report identified and discussed the main challenges presented by the digital economy and also discussed a number of targeted measures. However, it did not propose any of these targeted measures. Instead, it took into account the specific issues raised by the digital economy when developing its general proposals. These general proposals were therefore intended to substantially address the issues raised by the digital economy. An update of this report is expected in 2020. In the meantime, a number of targeted measures have been adopted unilaterally by some jurisdictions. For example, India introduced an “equalization levy” and the UK and Australia introduced “Diverted Profits Taxes”; these do not exclusively target primarily digital companies, but those companies were certainly at the forefront of the thinking behind them. Indeed, the UK Diverted Profits Tax is widely known as the “Google Tax”.

For the reasons given below, we do not believe that the international tax system is fit for purpose, even as reformed following the BEPS project. Consequently, we believe that the proliferation of a variety of uncoordinated measures implemented within the existing framework is unlikely to provide a long-term satisfactory solution to the challenges to the tax system presented by digitalization.

⁴ For a critical evaluation see Olbert and Spengel (2017).

In this chapter we take for granted that governments will wish to continue to implement taxes on business profit, and focus on the form of such taxes. We take a broad view, comparing the existing pattern of such taxation with radical alternatives. We focus on radical alternatives and not on proposals to bring change within the existing framework of the international tax system because we believe that the existing framework itself is flawed and cannot provide a long-term solution to the problems at hand. We also do not cover other taxes relevant to businesses such as Value Added Taxes (VATs), although, as shall be seen, some key issues which arise under VATs also arise under some of the reform proposals we consider.

Part I of this chapter sets out a simple model of a modern multinational company and then briefly describes how the existing system seeks to tax its profit. Part II discusses two radical alternative approaches to coping with the impact of digitalization on the allocation of the tax base among countries. Part III considers other models which are more specific to digital businesses. Part IV briefly concludes.

I. Digitalization and the existing international corporate tax regime

Consider the following example:

- A MNE has its headquarters and parent company in country P
- It has shareholders in country S
- It has a manufacturing subsidiary in country M
- It owns intangible assets in a subsidiary situated in a low tax jurisdiction, L
- It sells products to consumers in country C, where it also has a marketing team.

Note that this example is clearly much simplified relative to actual practice. But it serves to illustrate the main points of principle.

How does the existing system tax such a company? Essentially, it sets out to avoid “double taxation”, by allocating taxing rights between “residence” and “source” countries. Very broadly, the residence country is where a person, natural or legal, who has the right to receive the profits of the activity resides while the source country is where the economic activity takes place. Broadly again, in a “1920s

compromise”⁵ in the League of Nations, source countries were allocated primary taxing rights to the active income of the business, and residence countries the primary taxing rights to passive income, such as dividends, royalties and interest.⁶ Crucially, these rules apply, with some modification, to transactions *within* the MNE, that is, when an affiliate of an MNE transacts with another affiliate located in a different jurisdiction. This is of great consequence because MNEs can set up subsidiaries and other affiliates anywhere in the world with relatively minimal effort and they can also dictate the number and kind of transactions amongst such affiliates.

This compromise is fraught with difficulty; its implementation requires defining and policing the border between residence and source countries, and between different types of income. Yet the compromise remains integral to the fundamental structure of the international tax system, and many of the problems afflicting the system ultimately stem from this very structure.

This can be illustrated in the context of our example, in which the company may pay tax on its profit in some or all of countries P, M, L and C – and shareholders may pay additional tax in S. In general, a company which is a subsidiary of a multinational company is also a legal entity in the country in which it is established and therefore liable to tax on its profit in that country. To begin with, therefore, the manufacturing subsidiary would pay tax on the profits that it generates in M. However, suppose that the manufacturing subsidiary paid a royalty to the subsidiary in L owning the intangible asset – this could be for intellectual property (IP) used in production, for example. This would shift profit from M to L, since the royalty would be deductible in M and taxable in L.

A system which allows MNEs to shift profits from high to low tax jurisdictions by placing IP in the latter is clearly defective. Note also that the MNE can increase the profit shifted from M to L by inflating the royalty payment. As intra-group prices of this kind are easily manipulated, complex rules are in place to address such practices. These rules – transfer pricing rules – essentially require intra-group prices to be aligned with the prices which would have been charged by unrelated parties. However, these complex rules are problematic for a variety of reasons and they ultimately do not provide a satisfactory solution to the problem at hand.⁷

⁵ Graetz (2001).

⁶ See for example Warren (1994) and Avi-Yonah (1996).

⁷ See for example Avi-Yonah (1995), Avi-Yonah and Benshalom (2011) and Devereux and Vella (2014).

The extent to which profit is allocated to C depends on the rules for “permanent establishments (PEs)”. As there is no subsidiary in C, the subsidiary in M sells products directly to consumers in C. The question then becomes whether the subsidiary in M is operating in C through a PE, which in turn depends broadly on the physical presence of the company in that country. In our example, if the marketing team constitutes a PE part of the profits of the manufacturing subsidiary in M would be allocated to C for tax purposes. Complex rules are in place for defining a PE, and attributing profits to a PE.

Finally, if a dividend is paid to the parent company in P, then the parent may also have to pay tax on the receipt of that dividend, usually after receiving a credit for taxes paid elsewhere.⁸

The actual allocation of profit in practice depends on many factors. As noted, for example, the extent to which profit can be shifted to L depends on the size of the royalty payment made by the manufacturing company. It also depends on how the company was originally able to arrange ownership of the intangible asset in L. If, for example, the IP was developed by another subsidiary located in a high tax jurisdiction and then transferred to the subsidiary in L, the allocation of profit would also depend on the price paid on the transfer. The size of both these payments is governed by transfer pricing rules.

The effects of digitalization

Has digitalization affected this position?

A starting point is that this example could exist in the absence of digitalization; this is not intended to be a model of company in the “digital” sector. Broadly, digitalization does not affect the nature of the problem. However, digitalization does exacerbate the problem. This is primarily because digitalization facilitates the internationalisation of all aspects of a company’s business. In other words, as a result of digitalization it is easier for a company’s shareholders, activities and customers to be located all over the world.

First, and perhaps most obviously, the setup of the multinational firm in many different countries benefits enormously from greater digitalization. In a world of modern communications, it is relatively easy for businesses to be run from many different locations, in increasing complex supply chains – to the extent that

⁸ Countries that tax such income are commonly designated as having a worldwide tax system; countries which do not are designated as having a territorial system.

identifying “the” location of a particular activity becomes increasingly difficult. For example, it is increasingly possible for the R&D, production and marketing of a product to be undertaken in different countries. Indeed, the production of different components of a product and their assembly may all be undertaken in different countries. Digitalization is one of the main factors albeit not the only one, which facilitates this internationalization.

The problem becomes more acute in a purely digital world. Consider the example of an app which is collaboratively developed and tested by employees based in a number of countries. As business activities spread across the globe, it becomes even harder for the existing international tax system to allocate their taxable profit in a coherent and sensible manner which satisfies all of the countries involved.

A second consequence of digitalization is an increase in the ease with which profits can be shifted to low tax jurisdictions. Digitalization has made it easier to set up a subsidiary in L, and to make payments to that company, be they royalty, interest or other payments which produce valuable deductions in high tax jurisdictions. In extreme cases, the company in L may simply be a money-collecting box, without any real employees. The OECD BEPS project seeks to address the worst excesses of such strategies. We discuss some of these issues further below.

A third consequence of digitalization is that it is easier for a MNE to sell its products to consumers in a particular jurisdiction with minimal or no physical presence there. This is evident in cross-border sales of digital products but it can also arise in more traditional businesses as seen in our example above. Indeed, digitalization affords MNEs greater freedom in choosing the location of their marketing team. With modern communications, advertising of all forms, including through social media, may be managed by staff located outside country C. Where this happens, the consumers’ country, C, is less likely to be able to tax any part of the profits resulting from the sale because the physical presence necessary to satisfy the threshold is missing. The OECD Commentaries set out the rationale for the traditional PE threshold. They state that the threshold “has a long history and reflects the international consensus that, as a general rule, until an enterprise of one State has a permanent establishment in another State, it should not properly be regarded as participating in the economic life of that other State to such an extent that the other State should have taxing rights on its profits” (Commentaries to Article 7, para. 11). The PE concept thus “effectively acts as a threshold which, by measuring the level of economic presence of a foreign enterprise in a given State through objective criteria, determines the circumstances in which the foreign enterprise can be considered

sufficiently integrated into the economy of a state to justify taxation in that state.”⁹ In the context of our example, moving the marketing team to M, for example, would take away the taxing rights previously assigned to C. Arguably, digitalization would then allow companies to generate value more easily in jurisdictions where they make sales (and which are then arguably “source” countries) but which would not have taxing rights because companies’ operations there fall short of the PE threshold.

The OECD BEPS Action 1 Final Report discusses this possibility.¹⁰ It considers expanding the notion of PE by using revenue-based factors, digital factors and user based-functions. It also considers how to allocate profit to such a PE. The existing profit allocation rules would not work well in this setting and so the OECD considers alternatives including methods based on fractional apportionment and modified deemed profits methods. However, the discussion in that report illustrates how difficult it is to produce satisfactory rules of this type.

Finally, digitalization has also contributed to the increasing distinction between where a parent company is located and where its shareholders are. There has traditionally been a “home bias” in the investment portfolio decisions of individuals and mutual funds. However, data suggest that this has shrunk considerably over time. In addition, the share of personal savings held in tax exempt accounts has increased. As a result, for example, Rosenthal and Austin (2016) estimate that the share of US corporate stock held in personal taxable accounts fell by more than two-thirds over the last 50 years, from 84% in 1965 to 24% in 2015. For the more open economy of the UK, the share of listed company stock held directly by domestic individuals fell from 54% in 1963 to 12% in 2014.¹¹ Rosenthal and Austin report that foreigners directly owned around 26% of US corporate stock in 2015; the equivalent percentage for the UK for 2014 is 54% - and this has grown from 7% in 1963.¹² Where there is international portfolio investment, the link between the location of shareholders and parent companies breaks down; and this link is become weaker over time.

This distinction raises the more fundamental question of whether a tax on corporate profit is a reasonable proxy for the taxation of the income due to shareholders. In a world of increasing international portfolio investment, the notion that it is a reasonable proxy is increasingly hard to defend.

⁹ OECD BEPS Final Report, Action 1, p. 26.

¹⁰ OECD BEPS Final Report, Action 1, Chapter 7.

¹¹ See Office for National Statistics (2014).

¹² Ibid.

The OECD BEPS project

Reference has already been made to the OECD BEPS project, which began in 2013, and which produced an extensive set of reports recommending numerous reforms in 2015. The broad thrust of the proposed reforms purport not to be changing the current allocation of taxing rights, but they do depart from it to some extent.¹³ This is done by adding a qualification to the current allocation rules where abuse is perceived. Specifically, although there is no clear unifying theme, a number of the actions focus on “economic activity”, “relevant substance”, “substantial activity” or “value creation”¹⁴. The general analysis repeatedly speaks of the need for “a realignment of taxation and relevant substance ... to restore the intended effects and benefits of international standards.”¹⁵ The OECD claim that “no or low taxation is not *per se* a cause of concern, but it becomes so when it is associated with practices that artificially segregate taxable income from the activities that generate it.”¹⁶

At a general level, then, the OECD BEPS proposals aim to “provide countries with domestic and international instruments that will better align rights to tax with economic activity”.¹⁷ This principle is reflected in the specific actions. As we have written at length elsewhere,¹⁸ there are many problems associated with this new principle. We highlight two central problems here.

First, this new principle is simply different from the existing principles inherited from the 1920s. As the basic structure is being kept in place and the new principle is being overlaid on top it, the post-BEPS international tax system is likely to be more incoherent, with taxing rights being aligned with economic substance in some cases but not in others. There does not appear to be any principle for distinguishing between the two set of cases; at best, reliance will be placed on vague and arbitrary tests such as “artificial” and “excessive”.

¹³ Devereux and Vella (2014), pp. 461-464.

¹⁴ The four terms appear to be used interchangeably.

¹⁵ OECD (2015).

¹⁶ “BEPS relates chiefly to instances where the interaction of different tax rules leads to double non-taxation or less than single taxation. It also relates to arrangements that achieve no or low taxation by shifting profits away from the jurisdictions where the activities creating those profits take place. No or low taxation is not *per se* a cause of concern, but it becomes so when it is associated with practices that artificially segregate taxable income from the activities that generate it.” OECD (2015), page 10 [Emphasis added].

¹⁷ OECD (2015), p. 11.

¹⁸ Devereux and Vella (2014).

Second, from a conceptual perspective, a system that seeks to align taxing rights over income with the 'economic activity' that created it is questionable because it is not at all clear where such economic activity actually takes place. Numerous factors contribute to the creation of income, including finance, research and development, head-office functions, manufacturing, marketing and sales. All of these factors are necessary components of the generation of profit in an MNE. But they might be spread over a number of countries, making it impossible – even conceptually - to pinpoint the contribution of each specific location to the overall profit earned.

II. Alternative approaches

The existing system – and, in all probability, the post-BEPS system – has numerous faults. The problem with the current international tax regime that most concerns commentators is that of avoidance and profit shifting. This was the key issue addressed by the BEPS project, and it is likely that the BEPS project will succeed to some extent in limiting the worst excesses of the profit shifting industry. However, the arbitrary distinctions in the tax system will remain, and the lack of any clear principle for where profit should be taxed is not a good basis for a stable tax system. It is unlikely that the problems of profit shifting have been overcome permanently, and much greater complexity has been introduced.

Further, as has been well documented, the system also affects the location of real economic activity.¹⁹ Partly as a result, this fragile tax system is further destabilized by competition amongst states. States compete for investment and company headquarters through their tax rates and bases. For the sake of competition they are willing to give up parts of their tax bases or knowingly allow them to be eroded (e.g. by offering generous interest deductibility rules). They are also willing to facilitate the erosion of the base of other jurisdictions. Tax competition amongst states thus further destabilizes the already fragile international tax system and will continue to do so post-BEPS.

Paradoxically, the BEPS project could enhance tax competitive forces. If a tax system becomes more robust to profit shifting, companies which wish to lower their global tax bill may have to do so by relocating their real activities to low tax jurisdictions. It seems likely that the outcome of the BEPS project will be at least some reduction in the ability of MNEs to use traditional methods to shift their profits to low tax

¹⁹ See the literature survey by Voget (2015).

jurisdictions. But if companies have to move their real activities to obtain a favorable tax result, one can then expect states to compete even more intensely through the tax system, since attracting real economic activity (or deterring local companies from moving their real activities abroad) is associated with broader economic benefits than merely attracting (or deterring the outflow of) profit.

A simple example illustrates this point. Action 5 of the BEPS Action Plan addresses Harmful Tax Practices, with a particular focus on patent box regimes. These regimes offer preferential rates on returns generated by IP. Action 5 seeks to counter situations where IP is produced through R&D activity undertaken in State A, but subsequently transferred to State B which offers the patent box regime. Very broadly, and subject to qualification, it does so by limiting the income which can benefit from the patent box regime to that generated by IP which is undertaken in the country offering the regime. In BEPS terms, this should contribute to the alignment of taxing rights with economic activity (or at least, the R&D activity). But this change can lead to greater real economic distortions. Post-BEPS, MNEs will have to move their R&D to the jurisdiction offering the patent box if they are to benefit from it. Given that attracting R&D activity is more beneficial to an economy than merely attracting IP, it follows that states should compete even more intensely over the rates levied on the returns to IP.

A related point on the impact of the BEPS proposals on tax competition follows from the observation that states currently compete through the tax rate and base. The curtailment of profit shifting opportunities essentially makes it harder for states to compete through the tax base. For example, BEPS Action 4 recommends the introduction of rules limiting the deductibility of interest. This blunts states' ability to offer generous interest deductibility rules which have the effect of eroding tax bases in those states. As competition over some aspects of the tax base is curtailed, the pressure to compete over tax rates increases.

From an economic perspective, there is a powerful argument to tax corporate profit in the location of immobile (or relatively immobile) activities. As, by definition, companies cannot easily move the location of these activities, such taxes should have a reduced or even minimal impact on the location of corporate activity. They should also be harder to avoid. In other words, such taxes have attractive economic efficiency properties. It also follows that because companies cannot easily move the location of immobile activities in response these taxes, states will not have an incentive to compete through their tax system to attract these activities.

The options available for taxing MNEs include four broad locations: the residence of the ultimate shareholders; the residence of the ultimate parent company; the location of subsidiaries and permanent establishments of the MNE; and the residence of its customers. Each of the activities taking place in these locations might be thought to be necessary, but not sufficient, for the generation of profit (and the ‘creation of value’): the initial investment by shareholders, management by the parent company, all of the activities of the affiliates of the company, and eventually sales to third parties.

The current international tax system for taxing profit is, by and large, based on the third (and partly the second) of the broad locations listed above. As companies can choose where to locate either, the current system distorts these location choices and is thus inefficient.²⁰

However, most individuals are relatively immobile. The residences of the ultimate shareholders of a MNE and of its customers thus offer promising options for corporate tax reform. If the tax liability of a MNE depends on where its parent company, its intellectual property, its sales teams or its production are located, it has the ability and the incentive to shift these factors to favourable locations so as to lower its overall tax liability. But a MNE cannot easily move the residence of its shareholders (subject to the caveat noted below) or customers and therefore it should choose the location of its activities without the distorting influence of tax considerations.

We discuss each of these two options in turn.

a. Location of Shareholders

One radical reform option would be based on attempting to tax corporate profit as it accrues, but in the hands of the ultimate shareholders. A major advantage of such an approach would be that the location of the tax on profit is identified as the location of the owner of the business. While individuals are not immobile, they are certainly much less mobile than the key elements of a multinational business. Locating the taxation of business profit – of a multinational, or a company resident only in one country – in the place of residence of the owner, therefore would have a considerable advantage for both profit shifting and the location of real economic

²⁰ The headline-grabbing company “inversions” out of the US provide a vivid example of distortions to the location of parent companies.

activity. It would also align with one of the commonly voiced rationales for a corporation tax – that of acting as a proxy for the taxation of its shareholders.²¹

Throughout the discussion which follows, it should be borne in mind that MNEs are unlikely to be able to shift shareholders to low tax jurisdictions to lower their overall tax liability if their shares are widely held. However, if the shares are held by a small number of shareholders, there is perhaps a greater likelihood of such a shift. In such cases, corporation taxes levied in the shareholders' residence provide a further incentive – beyond incentives created by personal taxes – for these shareholders to move their residence to low tax jurisdictions.

Allocating the profits of a company to its shareholders for the purposes of including those profits in the taxable income of the shareholder is generally known as *pass-through* treatment. Business profit is allocated to shareholders who for tax purposes include their share of profit in their personal income. This is broadly how S-corporations are taxed in the US, and is also common for taxing partnerships.

In principle, there could be several ways in which profit is passed through to the owners of the business. One approach – which is used for S corporations in the US, for example - would be to allocate all profit to shareholders. Dividend payments from the company to the shareholder, and capital gains on the sale of shares, would then not need to be also taxed.²² In that case, in principle, in any tax year for the individual, the individual would need to declare in her tax return her share of any profit accrued within companies which she has owned within that year.²³ Note that “her share” would depend on the proportion of each company that she owned during the year. For example, suppose that she began the year owning 10% of company X, but after 4 months she purchased a further 50%, and then after 8 months she sold 20%, meaning that by the end of the year she owned 40%. For a precise allocation of profit to this shareholder, the profit accruing in each of these periods would need to be calculated, so that the correct proportion could be

²¹ Note that this rationale does not provide a comprehensive justification for a corporation tax. Consider, for example, a company resident in State A owned by shareholders resident in State B. In such a case, the tax imposed by State A on the company cannot be easily justified as a proxy for State B's taxes on the shareholders.

²² This tax system differs from an imputation system where profits are taxed at the corporate level but a credit for this tax is given to shareholders when computing the tax to be paid on dividends received.

²³ There is a problem of matching the year-end of the company and the tax year of the shareholder. It is more straightforward to rely on the financial year of the company, and to allocate a share of retained earnings at this point in time to be included in some subsequent tax return of the shareholder.

allocated to the shareholder for each part of the year.²⁴ In practice, and as an approximation to this, the shareholder could be allocated a share of the total annual profit of the year based on her average shareholding (in this case 36.7%) during the year.²⁵

A second option would be to tax only the dividends and capital gains received by the shareholder, which could in principle mean that the corporate level tax could be abolished entirely. Different versions of such an approach have been proposed recently. In an US context, Toder and Viard (2014) propose that non-listed firms be taxed on a pass-through basis as described above. Shareholders of listed firms would be taxed on the dividends and also on the accrued capital again on the value of their shares, on a mark-to-market basis. Grubert and Altshuler (2016) make a similar proposal, also in a US context, with dividends and capital gains being taxed as personal income. The main difference is in the determination of the capital gains. Grubert and Altshuler propose to tax capital gains on realisation, but to introduce an interest charge to offset the gain from deferral of taxing accrued gains. In this case there is no need to observe the current market price, and so the system could be applied to all businesses. A problem with both of these proposals is that – in the US context, at least - they would raise less tax revenue than currently raised under the existing system. Grubert and Altshuler therefore propose to keep the corporation tax, but at a much lower rate, and a later paper of Toder and Viard (2016) proposes the same.

One complication ignored in this discussion so far is how to treat ownership of shares through financial intermediaries such as mutual funds. The principle here is that the tax should be allocated to the ultimate shareholders. But that calls into question the taxation of intermediaries. For example, suppose that pension funds do not pay tax on the accumulation of their returns, as is common. Then should we view the pension fund as being the shareholder, or should we look through the pension fund to identify the beneficiaries – who may not receive their pensions for many decades to come? If there is a deliberate policy of providing a tax advantage to pensions, then looking through the pension fund to tax the beneficiary would undo this advantage. This would suggest treating the pension fund as the shareholder. This would certainly be a simpler approach. This would of course imply

²⁴ If the shareholding changed more frequently, then in principle the profit would need to be calculated on a daily – or hourly, or minute-by-minute, or even second-by-second, basis.

²⁵ For S corporations, where stock is sold mid-year the default rule is that the selling shareholder is allocated a pro-rata share of the annual profit. So, for example, if a shareholder sells a 50% share of the business six months into the year, she would be allocated 25% of the company's annual profit. But shareholders can also agree to elect that they close the books at date of sale, with a profit allocation being made up to that date.

that where the pension fund is not taxed on its earnings, then there would be no tax on the profit.

A key question for our analysis, however, is how either of these two broad ways of passing the tax on business profit to the owners of the business deals with the problems afflicting the international tax system, and in particular the problems of taxing multinational profit, exacerbated as this is by digitalization. Let us consider them in turn.

The first option is to calculate business profit and allocate it to shareholders. This simply does not address the problems of the taxation of MNEs, since that approach is silent on how to identify and locate profit. The options for identifying that profit are therefore those available more generally – it could be based on the residence of the parent company, the location of the MNE’s affiliates or its customers. In the US, for example, foreign income of S corporations is taxed in broadly the same way as foreign income of C corporations, that are liable to corporation tax: it is included in the tax base only when it is repatriated.

It might be natural to think of applying this option to the worldwide profit of the business, based on the residence of the parent company, since that is the company in which the ultimate owner directly owns shares. Where the shareholder is resident in the same country as the parent company, this would be an effective way of taxing the worldwide income of the shareholder. But this does not easily deal with international portfolio investment, such as the case when a shareholder in country B owns shares in a company in country A. In principle, the profits accrued in A should be allocated to the shareholder in B, and taxed by the government of B.²⁶

There would be one very significant problem with a cross-border implementation of this option: enforcement. The tax authority of the country of residence of the shareholder would require information from all companies (or other businesses) in which a domestic resident has an interest. That might be acquired from the resident shareholder, but then responsibility for information collection is passed to the shareholder, which raises questions of how the information could be audited. Otherwise the tax authority could collect information from the company directly, or from the tax authority in the residence country of the company.

²⁶ This does not happen with US shareholders; they face pass-through treatment only for S corporations resident in the US, not on corporations resident outside the US.

This is potentially where digitalization may offer an advantage. In a pre-digitalization age, it is inconceivable that a tax authority in one country would have the necessary information available to support pass-through treatment to a shareholder in another country. However, digitalization has made this flow of information possible, at least in principle.²⁷ Of course, creating systems and processes to allow this would be a huge enterprise. Also, and perhaps even more problematically, there must be the necessary political will, commitment and investment to allow for such information flows. Even here, however, recent events may justify relative optimism. Both the US-imposed FATCA and the Exchange of Information project led by the G20 and OECD have resulted in information exchanges which were unthinkable a mere few years ago. On the other hand, issues would certainly remain even if such systems were put in place. For example, concerns about confidentiality might lead many low-income countries to be refused such information. Nevertheless, it is conceivable that whilst digitalization helps to create the problem of pass-through treatment in the presence of international portfolio investment, it may also eventually offer a technical solution.

The second option described above bypasses the first of these problems. If we take the approach in its pure form, of abolishing the business-level tax of profit, and relying solely on taxes on dividends and capital gains of the owners, then we no longer have the problem of identifying the relevant profit of a multinational in any particular jurisdiction. In effect, we would be taxing the worldwide profit of any business directly owned – or part-owned - by the individual. That is because, ultimately, it is a share of worldwide profit that is collected by the owner through dividends and capital gains. However, even with this option, there remains the problem of dealing with international portfolio investment, when a shareholder in country B directly owns shares in a company in country A.

It is perhaps no coincidence that proposals to rely on taxes on dividends and capital gains have been made in the context of the US, which has a sophisticated tax system and tax authority. While it is conceivable that the US might be able to identify and tax all dividends and realised capital gains from the worldwide holdings of US citizens, that seems unlikely for many other countries. In particular, low income countries tend to rely much more on taxes on business for the administrative reasons that businesses are more likely to have financial records and to be registered with the tax authority. Moving away from taxing the business to taxing the owners of the business would be problematic where tax administrations lack resources.

²⁷ This possibility is also discussed in the chapter by Jacobs.

Finally, note that moving to this system would lead to a fundamental reallocation of tax base across countries. Whilst more work is needed to determine the winners and losers, given that few shareholders in MNEs reside in low-income countries these countries are likely to fall in the latter category.

b. Location of Consumers

An alternative radical reform would be to identify the location of the opposite end of the spectrum of a multinationals' activities: where it makes sales to third parties. Borrowing from the literature on VAT, we call this the place of "destination".²⁸

A key advantage of using the country of destination is similar to that of using the country of residence of the shareholders; consumers are relatively immobile.²⁹ At least in most cases, we would not expect a consumer to change her location in order to reduce the tax charge of the multinational from which she buys a product (although this could be possible if the customer also gains). Thus, under such a system, and unlike a typical tax based on the location of a MNE's affiliates or the location of the parent company, it is hard for the multinational to affect the location of its tax charge.

In principle, this has significant advantages for economic efficiency, robustness to avoidance and competitive pressures. As noted above, the existing system creates significant distortions to the location of economic activity, and the ownership of assets within a multinational, because these factors determine the location of the tax base. But where a multinational sells its product to a third party depends on the location of that third party. In principle, then, a tax based on the destination of sales could avoid such location distortions. A similar argument applies to profit shifting: if income is taxed in the place of destination, then it is very hard for a multinational to manipulate the source and hence the place of taxation of that income. As a result of these two factors, the likelihood of competition among countries should also be avoided. If country A lowers its tax rate, it should not attract either activity or tax revenue from country B, since the taxable income depends only on sales in A.

²⁸ The US Ways and Means Committee (2016) recently proposed a tax reform which would move the US to a destination-based tax, along the lines of a destination-based cash flow tax; see Auerbach et al (2017).

²⁹ Problems may arise when a consumer purchases a good or service in a country in which she is not resident. The OECD has guidelines on value added tax "place of supply" rules which address this.

While these are powerful reasons for exploring a tax based on the place of destination, it could be argued that having a tax based solely on the destination of sales is rather arbitrary. Under the existing system, as refined by the OECD BEPS project, it has been argued that the return from an activity should be taxed in the place of the activity; thus the return from undertaking research and development (R&D) should be taxed in the place where the R&D is undertaken. A system based solely on the destination of sales would not achieve this. And so arguably, there may be a problem in terms of the fairness of the allocation of the tax base among countries.

Several points can be made in defence of the destination location, however. First, it is not obvious that the return from R&D, say, should accrue to the place in which it was undertaken. Undertaking the R&D may be necessary, but it is not sufficient, for generating a return. Ultimately, the R&D must be used to produce a good or service that a third party wants to purchase. That requires several other necessary parts of the chain, including production, management, finance, marketing and sales – as well as the ownership of the business. Without all of these components, the multinational will not make a profit. It is true that the existing system attempts to identify that part of the profit attributable to the different elements of this chain but certain parts of the chain may be ignored altogether by the existing system, for example the country of sale if there is no PE. It is not at all clear conceptually how much value should be attributed to each part of the chain if each is necessary but not sufficient. The allocation to the different parts inevitably has a somewhat arbitrary nature. Finally, this somewhat arbitrary allocation is further undermined under the existing system as it is applied inconsistently.

Second, the place of destination can in principle be an important source of profit, even under current rules. The jurisdiction of “the market” is where what valuation experts describe as “customer-based intangibles” reside. Such intangibles are an important part of the value of many successful multinational enterprises. For example, in many technology businesses, once a customer has installed a particular company’s hardware, software or both, the company has a competitive advantage for subsequent generations of products and services independent of any technological superiority over other businesses; the value of this advantage amounts to an customer-based intangible asset of the company. Similarly in many businesses one successful product, whether based on technology, identification of consumer tastes, or some blend of both, can give a favourable image to a company, which can help sell other products in the future. The intangibles that reflect these elements of value are often described as an “installed customer base” or “customer

relations” or even “goodwill”. Once developed they can have value far in excess of any specific technology that fuelled their initial creation. Arguably, these intangibles are inherently located in the jurisdiction of final purchaser for the product or service, which is the market jurisdiction, because that is where the customer is.

Of course, not all profit is attributable to this type of customer-based intangibles. The development of new products and services, typically protected by patents, trademarks and/or copyrights, clearly are an important element in generating such returns. Yet there is also a rationale for sourcing a substantial part of these returns to the market jurisdiction: the value of these products is determined in substantial part by the legal protections offered through patent, trademark, copyright and other laws in the market jurisdiction itself. A patent-protected drug cannot generate residual returns in a market that readily permits generic products to be sold without regard to patent rights. Similarly, a handbag maker cannot readily earn residual returns if knock-offs are readily available. It is the predominantly the law of the market jurisdiction that protects these elements of value.

A tax on profit on a destination basis can therefore be seen in part as a return to several sources of profit, related to the country of the consumer. This may justify some taxation on the basis of a charge for publicly provided services, where those services are, for example, the protection of patents, trademarks and copyrights. But it should be acknowledged that a multinational is also likely to benefit from publicly provided goods and services in other locations, such as the location of production, or R&D. So taxing profit solely on a destination basis cannot be justified solely as a way of contributing to the cost of publicly provided goods and services.

A third and more compelling argument for taxing corporate profits on a destination basis is that it might be the only viable option in the long run. As competitive forces continue to drive down source- and residence-based corporate tax rates, countries might simply find that they are unable to meet their revenue targets for corporation tax under the existing system. In this sense, a decision to move to a destination based corporate tax system reflects an acceptance of the equilibrium towards which countries are being driven by the tax competitive process and a conscious attempt to free themselves from this process. Once a decision is made to tax corporate profit on a destination basis, countries acquire the ability to set their corporate tax rates according to their preferences and free of competitive forces.

A tax based on destination solves many of the problems which affect the existing tax system and which are exacerbated by digitalization. But it also introduces new

problems, depending on the system used.³⁰ One option is a VAT-type approach in which exports are not taxed, but imports are taxed; this is known as a destination-based cash flow tax,³¹ or DBCFT.³² This means that sales would be taxed in the location of the purchaser, while expenses would receive relief where they were incurred. A country would effectively tax domestic sales less domestic expenses.

Under this option, one issue arising is the taxation of imports for B2C transactions. For B2B transactions, this should not be problematic. Imports by businesses could be taxed, but they would also receive relief. These two tax effects would exactly cancel out. Imports by businesses could, alternatively, simply be ignored. So challenges for collecting revenue under a DBCFT relate primarily to cross-border B2C transactions, though it would be necessary to identify whether a transaction is B2B or B2C.

The DBCFT would tax imports purchased by individual consumers and non-taxable entities. Where a customer purchases a good or service directly from a business in another country, a tax should be levied at the rate of the destination country. Two options open to the destination country are to collect the tax from the exporting company or from the consumer. The former appears to be the more realistic option, although not without difficulties of its own, especially in the absence of fiscal borders, or for digital products, as is clear from the operation of VAT. These are difficulties that already arise under the VAT. In principle it would be necessary for the exporting company to register for tax in the country into which it is exporting the good or service; this is difficult to administer for relatively small exporters, particularly when the good or service can be downloaded electronically, or where there are no customs operations at borders. The exporter must also identify the location of its customer, and – depending in the treatment of business imports - whether the customer is a business or a consumer. The tax authority must identify companies from around the world that export to its country, and also guard against any opportunities for fraud if, for example, and again depending on the treatment of business imports, final consumers pretend they are businesses.

³⁰ Concerns about the impact of the DBCFT on countries with natural resources or other location specific rents can be addressed by retaining or introducing a tax on the location specific rent alongside the DBCFT.

³¹ Under a cash-flow tax immediate relief is given to all expenditure, including capital expenditure, and revenues are taxed as they accrue.

³² A DBCFT is equivalent in economic terms to a broad-based, uniform rate VAT with a payroll subsidy. On the DBCFT, see Auerbach, Devereux, Keen and Vella (2017).

Once again, however, digitalization may come to the aid of the tax collector. For example, gathering information from intermediaries such as credit card and other payment companies could be an important enforcement tool, both for a DBCFT and a VAT.³³

One innovation in the EU that could be applied amongst cooperating countries is a “one stop shop”, as proposed by Devereux and de la Feria (2014) and the European Commission (2014). Under such a system a company selling into several separate countries would need to register in only one; in many cases that is likely to be the origin country from which the company exports. The tax authority in that country would administer the DBCFT at the rate of the country to which the good or service is exported. There would be a clearing arrangement at the aggregate level, where payments are made between tax authorities in recognition of the appropriate recipient of the tax. Such cooperation would clearly create a significant administrative simplicity relative to the case in which the exporter is required to register and pay tax in each country in to which it exports. Again, such a system is considerably helped by digitalization of tax returns.

III. Specific issues for digital companies

So far we have considered the implications of digitalization for the taxation of all businesses, on the grounds that digitalization increases mobility of all elements of multinational companies. This raises increasingly difficult problems for the existing international tax system. But now let us consider two cases which might be thought to be particularly prone to the problems of digitalization.

Two-sided markets

A company has a two-sided market when it provides a platform for bringing together two economic agents that would like to interact with each other. This is not necessarily specific to digital companies, but digitalization makes this considerably easier.³⁴ There are many examples. For example, trading platforms such as Ebay, Amazon and Airbnb bring together agents that want to sell their goods or services

³³ See Lamensch (2015).

³⁴ For further discussion, see Aslam and Shah (2017).

with consumers that want to purchase them. A common element of such platforms is that the greater the number of people operating on one side of the platform, the more attractive the platform is for participants on the other side. For example, individuals seeking to sell goods or services would find it beneficial if the platform had many potential buyers. Similarly, buyers would find the platform more advantageous if there were many sellers.

This advantage can be developed and exploited by companies operating internationally. Note though, that this can be done without the company itself being “multinational” in the sense that it operates directly in many countries. In principle, all that is needed is a website that acts as a platform that individuals around the world want to engage with. That could be set up and implemented in a single country. However, a successful company could of course take advantage of digitalization to locate various parts of its activity and resources in different countries: programmers and researchers could be in one location, marketing in another, and servers with which customers interact would be in yet another.

Most of the issues raised in this case are common to the more general businesses that we have already discussed. However, one question arises in the case where the tax is based on destination. That is to identify the place of destination. Where both sides of the market pay for the service provided by the platform, then it seems reasonable to consider both parties to be customers of the platform; both represent sales to third parties and hence the location of each can be thought of as a destination.

But what if only one side of the market were required to pay? For example, suppose that the platform was trying to encourage more suppliers to register and hence did not explicitly charge suppliers, but only buyers. Would this mean that since there were sales only to buyers, that only the location of buyers represented a place of destination? On the one hand, this does not seem reasonable. Economic theory suggests that it is likely the cost of paying for the platform would in most cases be effectively shared by the buyer and seller, even if the explicit charge were applied only to the buyer. In that case, it might be reasonable to treat the location of the supplier also as a destination location, even if the supplier had not made an explicit payment. On the other hand, identifying the effective price paid by the seller (through charging a lower price) would be extremely difficult. For practical purposes, it is hard to imagine a tax that sought to impute a tax charge based on the location of the seller. This issue is the subject of the second case, of free usage.

Free usage

A number of prominent companies in the digital world – such as Google and Facebook - offer their services to one set of customers for ‘free’. They generate revenues through advertising services and use the ‘free’ data provided by users to enhance these advertising revenues. Again, this business model is not unique to “digital” companies – for example, free newspapers financed by advertising are common. But the international scope of these digital companies is clearly now immense. Furthermore, the data collected offers unprecedented opportunities for targeted and tailored advertising, thus enhancing the value of the services. The question then arises as to how the profits of such companies should be allocated to the different countries in which they operate. We take a MNE operating a search engine as an example in what follows.

The key issue here is that there is a form of barter. An individual does not pay to make a search on the MNE’s search engine; but in making a search she reveals information which is valuable to the MNE in selling advertisements that subsequently appear on her screen. The purchasers of the advertisements may be located in another country.

The appropriate allocation of taxing rights in such cases depends on the principle adopted. Under the existing system, the allocation will primarily depend on the location of employees selling the advertising. Under existing PE rules, rights to tax corporate profit are allocated to the country in which the advertiser resides if the MNE has a PE in that country. Given that the sales process is inherently digital, the lines defining a PE are somewhat blurred.³⁵ But the underlying problem here is one of a lack of principle. It is not really clear under what principle the existing system is, or should be, operating. If the “source” of income is where the advertiser is located, then this is most naturally associated with the place of residence the advertiser. But this is not how the OECD model currently works. If profit is allocated to shareholders and taxed in the residence of those shareholders, then the business model is irrelevant to the basis of taxation.

Under a destination-based system, we first have to determine what is the destination country. One obvious answer is that it is the place of residence of the advertiser. That is the person making a purchase. However, it could conceivably be argued although the income is received from the advertiser, the service of advertising is performed in the country of the user, and that the country of the user

³⁵ The UK’s Diverted Profits Tax is at least partly intended to address this issue.

should therefore be thought of as the destination country. This issue tests the notion of “destination”. To address this we must return to first principles as to what the aim of the tax is. If the basic aim is to assign taxing rights to an immobile location, then there is some merit in identifying the place the service is performed as the place of destination on the grounds that this will most often coincide with the place of residence of the (relatively immobile) user. By contrast, if the advertiser is itself a multinational company, then it may have an incentive to locate its purchasing activity in a low-tax jurisdiction in order to reduce the tax on the seller, and thereby also reduce its own net costs. Note however, that whilst this might be an advantage under certain destination-based corporate tax systems such as sales-based formulary apportionment, it would not be an advantage under the DBCFT, since the advertiser would ultimately be taxed where it eventually makes a sale – which it presumably hopes will be where the user of the search engine is resident.³⁶

We also need to deal with the barter with the user (in what might be thought of as a different form of a two-sided model). Suppose that the search engine provider is an MNE that charged a fee for using its search engine, and also paid an equal amount to those using the search engine for the information that they supply. Then the MNE’s worldwide profit would be unaffected (apart from greater transactions costs); it would have revenue and costs, but no net profit, in the country of the user.

Under existing PE rules, this would not generate any taxable presence in the country of the service provider if the MNE has no physical presence there. However, under a destination-based tax and based on actual receipts, the MNE’s sales would be partly attributed to the country of the user and partly to the country of the advertiser. However, the destination-based tax would also give relief to the MNE for the cost associated with purchasing information from the user. The net tax base under a destination-based tax would therefore continue to be zero, as long as the receipts and costs were equal. The allocation of taxing rights would therefore depend very much on the value assigned to the search and to the information; identifying the two values would then be of crucial importance.

Another possibility is that the value of the information collected by the search engine exceeds the cost of the provision of the search engine. In this case, the barter is favorable to the MNE, since it does not pay for the information. In effect, the profit, or economic rent, generated by the MNE is location-specific, since it can only be generated in the place of residence of the user of the search engine. This gives that state an opportunity to impose a tax on the barter transaction, which in

³⁶ See Auerbach et al (2017).

principle could be set at a rate that would not have any effect on the underlying activity, but would allow that state to capture a share of the economic rent earned by the MNE. This would be an attractive option for that state.

However, there remains, of course, the difficulty of determining the profit generated, and hence an efficient level of tax. The difficulty is made worse since there would be no actual transactions, nor, in all probability, any comparable transactions. If the level of tax were too high, then the service provider may not be willing to continue to provide the service. However, this does seem to be an interesting opportunity for countries to levy what could be an efficient tax on the economic rents of digital MNEs. Further work is needed on how such a tax could be constructed and levied in practice.

Another possibility is that the MNE did not collect any information from users. Suppose instead that it operated more like a free newspaper – its revenues were from advertisers willing to pay for such advertising despite not having any detailed information on the users. Would this make any difference to the position? This is not clear. If the principle is to allocate taxing rights to the country of destination, it could still be argued that the value of the service provided to the user should be taxable. However, this could be thought to effectively overturn the business model, which is to provide a free service financed by advertising.

Finally, it is perhaps worth noting that the issue of barter comes up under other taxes as well. The country of the user may well consider the user to have purchased an imported service, in which case it should in principle be subject to VAT. At the same time, the notional income from the sale of information would be a benefit in kind for personal income tax. If either tax were collected from individuals the sums involved would be likely to be so small as to be dominated by the costs of collection. However, the scale of the large digital companies is so great – that is, they have so many individual participants – that collecting revenue from the company is more feasible.

IV. Conclusions

We have considered a number of ways in which greater digitalization has increased the internationalization of business – for example, shareholders and customers may be located in different countries, and the company itself can organize itself in

complex supply chains also covering many countries. These factors pose significant problems for the national taxation of such international businesses. And these problems have been reflected in increasing public and political concern over the strategies used by multinational companies to exploit the existing international tax system to reduce their tax liabilities.

In our view, the existing system is not a good basis for taxation. It is based on arbitrary distinctions, between countries (residence v source) and between types of income (active v passive). Closing loopholes generally increases complexity, and is unlikely to generate a more sensible and stable system. Rather, fundamental reform is required – and the tax base should be based on relatively immobile factors, either where shareholders are located or where consumers are located. Both types of reform have a significant advantage in that the conceptual basis of the system would be clear. But they also both raise practical difficulties. A tax on shareholders would need to associate corporate profit in one country with a shareholder in another. A tax in the place of sale would need to tax imports, possibly exported by a small company in another country. However, both problems might in principle be helped by digitalization. To the extent that tax records are digitized, and possibly combined with other data, for example, from banks, then the problems of information for these systems may eventually be overcome.

There are also issues that arise particularly in digital companies. One involves the case where cash sales are made to advertisers in one country and where the advertisements appear on screens of users in another country. This may be combined with the use of information provided freely by those users. At the moment, there is little attempt to levy a tax in the country of the users, typically because no money changes hands in these locations. There is a case in principle for tax to be levied in the country of the user, but there remain significant practical and conceptual difficulties in doing so.

References

Aslam, A. and A. Shah (2017) "Taxation and the peer-to-peer (P2P) economy", Digital Revolutions in Public Finance conference, IMF, April 2017.

Auerbach, A.J., M.P. Devereux, M. Keen and J. Vella (2017) "Destination based cash flow taxation", *Oxford University Centre for Business Taxation working paper 17/01*.

Avi-Yonah, R. S. (1995), 'The Rise and Fall of Arm's Length: A Study in the Evolution of U.S. International Taxation', *Virginia Tax Review* 15(1), 85-159.

Avi-Yonah, R. S. (1996), 'The Structure of International Taxation: A Proposal for Simplification', *Texas Law Review* 74, 1301- 1359.

Avi-Yonah, R. S. and Benshalom, I. (2011), 'Formulary Apportionment: Myths and Prospects - Promoting Better International Policy and Utilizing the Misunderstood and Under-Theorized Formulary Alternative', *World Tax Journal* 3(3), 371-398.

Devereux, M.P. and R. de la Feria (2014) "Defining and implementing a destination-based corporate tax", *Oxford University Centre for Business Taxation Working Paper 14/07*.

Devereux, M.P. and J. Vella (2014) "Are we heading for a corporation tax fit for the 21st century?", *Fiscal Studies* 35.4, 449–475.

European Commission (2014) Report of the Expert Group on Taxation of the Digital Economy, chaired by Vitor Gaspar.

Graetz, M. J. (2001), "Taxing International Income: Inadequate Principles, Outdated Concepts, and Unsatisfactory Policies", *Tax Law Review* 54, 261-336.

Grubert, H. and R. Altshuler (2016), "Shifting the burden of taxation from the corporate to the personal level and getting the corporate tax rate down to 15 percent", *National Tax Journal* 69:3, 643-676.

OECD (2015) BEPS Action Plan, Paris: OECD.

Office for National Statistics (2014), Ownership of UK Shares, 2014.

Olbert, M. and C. Spengel, (2017), "International Taxation in the Digital Economy: Challenge Accepted?", *World Tax Journal*, 9.1, 3-46.

Rosenthal, S. and L.S. Austin (2016) "The Dwindling Taxable Share Of U.S. Corporate Stock", *Tax Notes* May 16.

Toder, E. and A. D. Viard (2014) "Major Surgery Needed: A Call for Structural Reform of the US Corporate Income Tax", *Peter G. Peterson Foundation*.

Toder, E. and A. D. Viard (2016) "A proposal to reform the taxation of corporate income", *Tax Policy Centre*.

Voget, J. (2015), "The effect of taxes on foreign direct investment: a survey of the empirical evidence", ETPF Policy Paper 3.

Warren, A. C. (1994), 'Alternatives for International Corporate Tax Reform', *Tax Law Review* 49, 599-614.

Ways and Means Committee (2016) "A Better Way Forward on Tax Reform".

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