How should business profit be taxed? Some thoughts on conceptual developments during the lifetime of the IFS

WP 19/12

July 2019

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Working paper | 2019

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July 2019

Abstract

This paper reviews developments since the 1970s in economic thinking about the design of taxes on business profit. It charts developments from proposals for a cash flow tax from the Meade Committee, to refinements of this in the form of an Allowance for Corporate Equity (ACEA) and levying the cash flow tax in the country of destination. It describes how the development of international trade and investment has led to ever-increasing problems in the international tax system with respect to economic efficiency, profit shifting, complexity and tax competition, and identifies why responding to these problems requires a major reform in the location of taxation.

1. Introduction

This paper reviews the development of the normative analysis of the taxation of business profit over roughly the fifty-year lifetime of the Institute for Fiscal Studies.[2]

This timespan roughly corresponds to the advent of optimal tax theory, and a newcomer to thinking about how to tax profit might reasonably start by wondering what optimal tax theory

[1] Director of the Oxford University Centre for Business Taxation; michael.devereux@sbs.ox.ac.uk. This paper draws on research with many friends and colleagues over many years; I am very grateful to all of them for helping to improve my understanding of the issues discussed here. I would particularly like to thank John Kay, who started me on this path, Alan Auerbach, Stephen Bond, Michael Keen and John Vella. This paper draws on joint work with the Oxford International Tax Group, which also includes Paul Oosterhuis and Wolfgang Schön, to whom I am also very grateful. I am grateful to the editor, two anonymous referees and to Alan Auerbach and Michael Keen for many helpful comments on an earlier draft of this paper. Of course, all errors and misunderstandings here are my own.

[2] There has also been much positive and empirical analysis which has greatly improved our understanding of the impacts of various aspects of taxes on business profit. The nature of this empirical work has developed considerably over time, with the advent of improved data and empirical techniques. This side of the analysis is very briefly reviewed in the paper, but the focus is on the normative analysis – how should business profit be taxed?

had, or has, to say about the subject. The answer is not very much. This reflects the fundamental approach of optimal tax theory, which broadly explores the trade-offs between economic efficiency and equity between taxpayers. But the trade-offs between efficiency and equity in the classical optimal tax literature have never really applied in thinking about taxing business profit. There are two central reasons.

First, following the Meade Report in 1978,[3] economists have thought the problem of economic efficiency has been solved, conceptually at least, in relation to taxing business profits, though the solution has developed over time, especially due to considerations arising from cross-border trade and investment. Meade's approach is straightforward. Businesses are assumed to maximise economic rent – profit over and above the normal required rate of return.[4] Basic theory says that a tax levied solely on economic rent would have no effect on business since maximising post-economic rent would require the same behaviour as maximising pre-tax economic rent. So (subject to the conditions set out below) a tax on economic rent (at any rate less than 100%) earned by business would be non-distorting – equivalent to a lump-sum tax, and the holy grail from the perspective of economic efficiency.

We do not see many lump sum taxes in the real world, for good reason – they are usually unfair. If the tax liability is unrelated to income, wealth or some other measure of ability to pay, then they are likely to be regressive. But the second reason why optimal tax theory has had little to say about taxing business profit is that the incidence of such taxes is - typically – hard to fathom. Some individuals must be worse off as a result of the tax but in most cases it is hard to know who they are, and how much worse off each of them they will be. The tax can be passed on to consumers, to workers, to suppliers, or be borne by the owners of the business. We are approaching the 60th anniversary of the initial classic paper on the incidence of taxes on capital,[5] and it is fair to say that the incidence of typical taxes on business profit is still the subject of dispute.[6]

However, there is one case in which we can be sure of the incidence of a tax on business profit, at least theoretically. And that is the tax on economic rent. If it is true that a tax on economic rent does not affect business behaviour, then it will not affect the prices at which the business sells its goods and services, nor the wages it pays its employees, nor the prices it pays its suppliers. Who then is left to bear the tax burden? The owners of the business. If we assume further that business owners generally fall in the middle- to upper- end of income and wealth distributions, then a business-level tax on economic rent will be progressive. This is therefore a case in which a tax equivalent to a lump sum tax should not be unfair, since it is related to wealth.

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[3] David Bradford also contributed at the time to the development of ideas about cash flow taxation: see, for example, US Treasury (1977) and Bradford (1986).

[4] Where the normal rate of return is that which can be expected on an alternative investment of comparable risk.

[5] Harberger (1962).

[6] For a recent summary, see Fuest (2015), although some more recent work is also briefly reviewed below.

What then of the efficiency/equity trade-off? It doesn't exist. The efficient tax also happens to be progressive. There is not much there for the optimal tax theorists to get their teeth into.

Actually, that is something of an exaggeration, on at least three counts. First, the classic results in optimal tax theory relevant to these issues either assume away the existence of economic rent or assume that it is taxed at 100%.[7] On the other hand, if there are constraints on other taxes that the government can use, then it may not be optimal tax economic rent at 100%. In practice, however, this does not give any clear guide as to the appropriate rate of tax on economic rent.

Second, taxing economic rent leaves to one side the question of whether or not the normal return earned by a business should be taxed or not. This depends in part how the normal return to savings – the capital income of individuals - should be taxed, since the normal return to business investment is an element of that capital income.[8] In the context of a tax levied in the country where economic activity takes place (and especially in a small open economy), a tax on the normal return is also likely to raise the pre-tax required rate of return on that economic activity, and hence drive some of it away – whilst the burden of the tax falls on immobile residents – this would be an argument against taxing the normal return, at least in that form.[9] Third, the discussion so far also leaves to one side whether it is equitable that a business operating in a jurisdiction and making use of publicly-provided goods and services there, should contribute to the costs of those goods and services. We return to some of these issues below.[10]

An appreciation of these benefits of taxing economic rents fairly reflects the state of economic thinking in the 1980s. For example, the July 1982 *Fiscal Studies* contained several papers on the then state of the UK corporation tax system, partly about a recent Green Paper on possible reforms issued by the government.[11] Some of the benefits of a cash flow tax on economic rent were set out by Edwards (1982). Actually, the then UK corporation tax had some important features of a cash flow tax – notably immediate expensing of plant and machinery. But rather than move towards this theoretically pure tax, to the disappointment of economic commentators at the time,[12] in 1984 the UK government instead moved in the opposite direction, broadening the tax base by reducing allowances for capital expenditure.

That early illustration of how tax policy is made in practice could lead to research in two directions; trying to understand better how governments make decisions or digging deeper

[7] See, for example, Diamond and Mirrlees (1971).
[8] There is an extensive literature on whether the normal rate of return on individual saving – typically referred to as "capital income" - should be taxed, and if so, at what rate; see, for example, Diamond and Saez (2011).
[9] See Gordon (1986). As argued below, this also applies to a tax on economic rent.
[10] There could also be other issues. For example, it could also be argued that a Pigouvian tax could help reduce the deadweight cost associated with monopolies restricting output and raising prices. However, that would generally require subsidising the monopolist, to raise its marginal revenue; that almost certainly would involve a trade-off with equity, which is why it has never seriously been considered.
[11] See Edwards (1982), Mayer (1982), HMSO (1982). Coincidentally, 1982 was the year that I joined IFS.
[12] See Devereux and Mayer (1984).

to understand important aspects of taxes that were not well incorporated into economic models.[13] Following the latter approach, there are several factors that should be considered in a modern analysis of taxing profit. First are the costs of implementation. Of course, these had been considered already in the early 1980s, but some of the subsequent developments in thinking about the design of taxes on profit have reflected such costs.

The other factors reflect a broader consideration; to a significant degree, modern businesses can operate relatively easily across jurisdictions. Barriers to trade and capital flows have fallen since the 1970s and businesses can by and large operate where they choose. So taxes on business profit can no longer be set in a single-country vacuum. The issue that has pushed taxes on the profit of multinational companies into the headlines and into political statements in G20 meetings in the last few years has been tax avoidance – and in particular, the perceived shifting of profits to low tax jurisdictions. The OECD Base Erosion and Profit Shifting (BEPS) project, which ran from 2013-15,[14] aimed at devising rules that would inhibit this perceived profit shifting. If governments want to continue to tax business profit, then they have to design systems that are robust to profit shifting.

But not only can profits move between countries; real activity can also move. A country with a high tax rate on profits can expect to see economic activity migrate to countries with lower tax rates. Crucially, this applies even if the tax base is economic rent if businesses are making location choices that are mutually exclusive. The simple case for economic efficiency of a tax on economic rent does not necessarily apply in a world in which capital can flow between countries.

This leads to tax competition in an attempt to attract real economic activity; though there may also be competition amongst governments for taxable profit and revenue, and to support national companies. The 1982 UK debate about corporation tax was in the context of the then corporation tax rate of 52%. That UK rate is now about to fall to 17%, so has fallen by two thirds. This reduction in tax rates has been mirrored in most other countries. A significant theoretical and empirical economic literature has developed to try to understand the process of tax competition, to identify where cooperation may yield higher welfare, and to explore other aspects of the design of such taxes.[15] A key issue in the design of taxes is whether they are incentive compatible, in the sense that there is a design that would be optimal for an individual country whether or not others also used that design.

As is set out below, these considerations do not invalidate the Meade Committee's approach, but they do call for a refinement. Essentially, as well as using economic rent as the tax base, it is also necessary to identify a location for taxing it which is relatively immobile, and to

[13] One issue here is the importance of lobbying by large businesses. There is evidence that large businesses that lobby more also see a subsequent reduction in their effective tax rates (Richter, et al, 2009).

[14] Although it continues in the sense that its recommendations are still being implemented, and the OECD is now considering further reforms

[15] For reviews of the theory and empirical literature respectively, see Keen and Konrad (2013) and Devereux and Loretz (2013).

protect the tax base from profit shifting. The solution set out below is to tax income in the location in which sales are made – a destination-based tax.

To reach that conclusion, the discussion in this paper is based around two key considerations in designing a tax on business profit. The first is the tax base. Conventional taxes are on the total profit earned by the shareholder, in that they broadly give relief (subject to constraints) on the cost of borrowing. A tax on economic rent would have a narrower base – since, as shown below, this could be thought of as giving relief for the opportunity cost of equity finance as well as the cost of borrowing A second alternative is to tax all income, by not giving relief for the cost of either form of finance. In general, giving relief for depreciation of capital, but not for the cost of finance, will tend to raise the required rate of return for investment and hence reduce investment.[16] However, these advantages of a tax on economic rent may be offset by other factors in an international context.

The second consideration is where the profit of a business operating across jurisdictions should be taxed. Note first that this issue arises whatever the nature of the jurisdiction, whether it is a country, a sub-national region, or even a region including several countries. For simplicity I will generally refer to the jurisdiction as a country, but much of the discussion also applies to other forms of jurisdiction.

The traditional economics literature – and indeed much of the policy debate – considers only two locations: residence and source. This creates problems for several reasons. First, the terms residence and source are not well-defined; and they tend to have very different meanings in the economics literature and in law. Second, and even more fundamental, there are clearly more than two possible locations. In broad terms it is possible to distinguish at least four types of locations in which profit might, in principle, be taxed: the residence of the owners of the business; the residence of the ultimate parent company; the location where economic activity (or "functions") takes place and assets are owned; and the location where sales are made. The traditional economics literature broadly assumes that the first two of these are the same (the "residence" country) and the second two are also the same (the "source" country).[17] But that is not very helpful; the four locations all have different characteristics, which affect their viability as a place for taxing the profit.

Before addressing these two broad questions – of what to tax, and where to tax it – we start by briefly considering whether there is a good rationale for having a distinct tax on business profit at all, separate from a typical personal income tax. Most countries do have such a separate tax on profits earned by corporations, to which any business with corporate form is liable. Some – notably the US – make much greater use of the personal income tax, even for profits arising in corporations. Where there is a separate tax, the issue then arises as to the

[16] An R-based cash flow tax avoids this effect by allowing immediate expensing for capital expenditure, even though it does not explicitly give relief for the cost of finance.

[17] This might therefore be thought of as a closed economy model, in which there is no international trade.

extent to which income arising in the company should be taxed both at the level of the company, and at the level of the owner of the company.

We then move on to consider in more detail options for taxation in the two dimension s outlined: what to tax and where to tax it. To do so, we evaluate options using a broad set of criteria: economic efficiency, equity, costs of implementation, robustness to avoidance, and incentive compatibility.[18]

2. Why have a separate tax on business profit?

Almost all countries have a distinct tax levied on the profits of some forms of business, typically those that are incorporated. So it may seem unnecessary to raise the question of whether such a tax is justified. However, the case for such a tax is not obvious, nor strong – certainly in the form in which such taxes have been implemented for many decades. This section considers four possible arguments in favour of such a tax.

An efficient and progressive tax

Anyone persuaded by comments in the Introduction may think that the question of whether business profit should be taxed has already been answered: we can do so in a way that is efficient and progressive, by limiting the tax to economic rent. Of course, we would also need to be sure that any such tax could be implemented at reasonable cost, that it would be reasonably robust to avoidance, and that it would be incentive compatible.

But also as mentioned above, we have to careful in determining the conditions under which a tax on economic rent would be fully efficient. That is mainly because of international considerations.[19] Suppose that a business is deciding whether to operate in country A or country B, that these two locations are mutually exclusive and that both countries have taxes that fall only on economic rent. Then we would expect the business to choose the location with the higher post-tax economic rent. In that case, the tax rate applied in each country may affect the location decision: for example, country A may have a higher pre-tax economic rent, but a lower post-tax economic rent.[20]

A fully efficient tax would not distort location decisions, and to avoid such distortions, the tax must be levied in a location from which the business finds it difficult, or impossible, to move away from. That is the basic idea behind taxing economic rent in the location of the sale to an

[18] These are the five criteria used in the forthcoming book by the Oxford international Tax Group; see Devereux et al (2019).
[19] Though this reasoning also applies to any other mutually exclusive choice; the role of taxes on economic rent, and the of the effective average tax rate, were first pointed out by Devereux and Griffith (1998).
[20] For theoretical models on this, see Bond and Devereux (2003) and Auerbach and Devereux (2018).

independent customer, as set out in more detail below.[21] In most cases we can think of individual consumers are being immobile – they are unlikely to move to another country in order to reduce the tax paid by the business from whom they are purchasing a good or service. But this is clearly not always the case and is less likely to be the case where the customer is another business; that also has implications for the precise design of the tax.

But, to the extent that it is possible to design the tax to achieve economic efficiency, whilst also meeting the other criteria, then this seems like a persuasive argument for such a tax. The problem is that existing taxes on profit come nowhere near this ideal. So it is worth also exploring the case for more traditional taxes.

A backup for tax on personal income

A traditional argument in favour of a separate corporation tax is as a backup to taxes on personal income. This is relevant for two forms of income tax – on labour income and on capital income. The argument here requires three steps. First, there is a good optimal tax case for taxing the underlying income. Second, in the absence of a corporation tax, the underlying income could be sheltered inside a business, at least deferring income tax until it is paid to the owner. Third, a tax on the business profit would be a cost-efficient way of closing such a loophole.

On the first step, the optimal tax literature has a great deal to say about the tax rate schedule for a tax on labour income. There has also been a healthy debate about the case for a tax on capital income, and the characteristics such a tax.[22] For current purposes, I will assume that there is a good case for taxing both labour and capital income (although not necessarily at the same rates), though it is worth noting that most income taxes in practice impose wildly varying effective rates on capital income, depending on the nature of the saving and return (for example, saving through pensions are typically treated far more favourably than saving in a bank account).

On the second step, suppose there were no business level tax on profit, and that retained earnings in the business were not subject to personal income tax in the hands of the owner. Then an individual could shelter income inside a business and at least defer paying personal income tax. Someone who both owns and works for a company would also have the opportunity to shelter labour income, by instead classifying it as profit.

However, it is the third step that is not persuasive. What has been identified is a potential loophole in the income tax system. So a reasonable question is how to close that loophole. For the case of deliberate sheltering through a relatively small business, with few owners, set

[21] One could also consider a tax where the economic rent is immobile – a location-specific rent. An example might be rent earned from extracting natural resources. However, identifying a rent as location-specific may in many cases not be exclusive. For example, a business that extracts a resource in one country may have market power in another country, where consumers have a particular desire for that resource.

[22] See, for example, Mankiw et al (2009), Banks and Diamond (2010) and Diamond and Saez (2011).

up for the purposes, then there can be many ways of doing so, and there are plenty examples of explicit anti-avoidance rules. At a more general level, it is possible to have "pass through" treatment, under which the profits of the business would be attributed to the owner and taxed as if they were personal income.[23] This treatment applies to S-corporations in the US, for example. It is also possible to consider personal taxes that offset the benefit of deferral within the business, by taxing realisations as if they had been accrued over time.[24] For investment in larger businesses, there may be the possibility of owner-level taxation of accrued gains measured by mark to market.

So it is not clear that a separate tax on business level profit is required. But even if it were a suitable anti-avoidance device in a closed economy, its merits tend to disappear in an open economy. That is because personal income taxes are generally levied on a residence basis on worldwide income. By contrast, corporation tax is instead typically levied on the profits of resident businesses, irrespective of who or where their owners are. In the UK, for example, foreign investors own over 50% of UK listed companies. Taxing UK-resident companies is therefore a far cry from taxing UK individual residents. Cross-border portfolio investment is not the only problem. To support a residence-based worldwide income tax, a domestic corporation tax would in principle need to tax the worldwide profit – including profit made by any foreign affiliates as it accrued - of a domestic company.[25] On the whole, the international tax system has been moving away taxing the profit of foreign affiliates even when it is repatriated.[26]

There is also a deeper problem in considering a tax on business profit levied in the country where activities take place as a proxy for a residence-based personal income tax. In investing in companies in a small open economy, at least, the world's investors will require a post-corporation tax rate of return that is equivalent to that available elsewhere on other investments of comparable risk. A rise in the corporation tax rate will raise the pre-tax required rate of return but leave the required post-tax rate of return unaffected. The incidence of the tax would be on immobile domestic factors, such as labour and land. By contrast, a residence based-tax on investors in a small open economy would not affect the post-business tax rate of return required by the world's companies but would instead reduce the post-personal tax rate of return of the investors. These are important distinctions, which call into question the need for any form of integration between corporate and personal taxes.

Overall, then, a tax on the profit of businesses operating in a country is a poor proxy for a personal income tax on the capital or labour income of individual residents of that country. A

[23] These issues are discussed in more detail in US Treasury (1992).
[24] See, for example, the generalised cash flow approach of Auerbach and Bradford (2004).
[25] Recent advance in information exchange between tax authorities in different countries have made this more feasible, but this would still raise considerable challenges for enforcement for many countries.
[26] Practice varies across countries. There have been recent proposals for "minimum" taxes which would apply to worldwide income. See OECD (2019a and 2019b).

more realistic means of taxing the worldwide capital income of individual residents is to have pass-through treatment where possible, supplemented by appropriate personal level taxation.

A fee for publicly-provided goods and services

A third possible rationale for a separate tax on business profit is as a contribution to the costs of publicly-provided goods and services. On the face of it, this seems reasonable – to the extent that the business does make use of such goods and services, then it may seem fair that it also contributes to their cost. But there are three problems with this claim.

The first is whether those individuals that are made worse off because of the tax are the same people who benefit from the publicly-provided goods and services. This may seem logical if the tax is borne by the owners, but it is less clear if the tax is passed on to consumers in higher prices or workers in lower wages. But perhaps it is possible to argue that both consumers and workers benefit from the business and so it is fair for these groups to bear the cost of the business' contribution.

The second problem is related. Different businesses make very different use of publicly provided goods and services. And profit also varies considerably between businesses. But there is not necessarily much correlation between the two. Think of a large factory, employing a substantial workforce, making a great deal of use of available transport facilities, and for good measure polluting the atmosphere. But it may well make very little profit. By contrast, an oil trading business may be extremely profitable yet use only a fraction of the resources of the factory. On equity grounds using the benefit principle, we should be seeking to relate tax liabilities to the use of publicly provided goods and services. That suggests some kind of fee for their use – in our example, with a larger fee being paid by the factory than the oil trader. It does not suggest a tax on profit.

The third problem relates to where use is made of publicly provided goods and services. Typically, active business profit is taxed in the place in which economic activity takes place. But a significant part of profit relates to passive income – for example, interest and royalty payments – which is typically taxed in the place in which the income is received, that is where a loan is made, or where an intangible asset is owned. The benefit principle seems much weaker in applying to such income since, for example, owning an intangible asset in a country may make relatively little use of publicly provided goods and services. Of course, there are some benefits – for example, in the legal protection of property rights, but these benefits would apply much more widely to where the company has functions and activities. Indeed, one form of property rights is patent protection, which is most relevant in the place in which the good or service is sold.

These considerations raise the question as to whether a tax on business profit is the best proxy for a fee for publicly-provided goods and services. This rationale would instead suggest a fee based broadly on a measure of the scale of economic activity.

Absence of alternative source of revenue

The discussion so far has implicitly assumed that the policy maker faces a choice between alternative forms of taxation to raise a given amount of revenue. This seems a reasonable characterisation of the problem in high-income countries. But it is less clear that this is the case in lower-income countries. Revenue raised in these countries tends to be a much smaller proportion of national income, and revenues from corporation tax tend to make up a larger share of total revenues as there are fewer reliable alternative revenue sources; not only is the personal income tax underdeveloped, but the VAT is often stretched to its limit and the goal remains of reducing further, not increasing, their still quite extensive reliance on tariff revenue.. The reasons for lower tax revenues in these countries stems from a number of factors, including lack of information and lack of resources in the tax authority. In such countries "revenue mobilisation" is a key aim.[27]

In this context, we should be attempting to identify a means of raising tax revenue that is not so costly that it is not worth introducing at all. In this context, too, the role of business is important, especially businesses that are not very small. That is because businesses tend to have better records, keeping better accounts – and so problems of information are smaller. So business is a useful tool in tax administration and can be required to undertake the role of tax collector.[28] But this applies to all taxes remitted by business, not just taxes on profit.[29] This rationale for a tax on profit still needs to compare alternative tax bases, even if they are all ultimately remitted by business.

3. Defining the tax base

With this discussion in mind, we now turn to focusing on the two key questions of what to tax, and where to tax it. For the former, we consider the tax base in a conventional location - roughly where the functions and activities of the business take place – which we will label, loosely, as the "origin" country.[30] The key issue to be addressed here is whether a tax on

[27] See, for example, IMF (2011).
[28] See, for example, Bird (1996), Kopczuk and Slemrod (2006) and Kleven et al (2016).
[29] An argument in favour of taxing profit in this context is that the incidence of the tax may be more likely to fall on the non-resident owners of the business and so the incidence of the tax is more easily "exported" – indeed, this could be thought of as a separate rationale for an origin-based tax on profit. However, the extent of tax exporting depends on the incidence of the tax; in a small open economy, it is likely anyway to fall on immobile domestic factors such as labour and land, and so not be exported. A tax solely on economic rent should be exported, however.
[30] This abstracts from the taxation of passive income, such as royalties and interest, which is typically taxed in the residence location of the business receiving the income.

economic rent in the origin country is economically efficient, and also meets the other criteria set out above. Even a tax on economic rent in the origin country can create distortions, and also raises problems with respect to the other criteria. This raises the question as to whether a better tax base to be levied in the origin country would be the total return to shareholders, or the total return to all investors. We briefly consider this, but our focus instead turns to considering other locations for taxing rent.

Existing systems

Existing systems of taxing profit are typically based on accounting treatment of profit.[31] Business-related costs are deductible, and capital costs can be depreciated over what is approximately the life of the asset. In addition, interest costs are generally deductible, although restrictions on interest deductibility have grown in response the use of debt finance (and hybrid financing) as a means of shifting profit to low-taxed countries.[32] The tax base can therefore be broadly interpreted as the income accruing to shareholders (although not necessarily distributed).

The consequences of this form of tax base for economic efficiency have been widely studied in what is now a huge empirical literature, which will not be reviewed here. Many economic distortions arise. For example, the tax raises the cost of capital, and hence depresses the level of investment.[33] It favours the use of debt, and hence increases the use of debt, leading to higher risk of default,[34] which is particularly important in the financial sector.[35] A separate tax on corporate profit can affect the decision as to legal form.[36] And the tax can affect also affect innovation and other margins.[37]

Identifying distortions arising from the implementation of a tax should not necessarily mean that that tax should not be used; almost all taxes result in some distortions, so it is necessary to balance distortions arising from different taxes and also other factors. But one attempt to measure the welfare costs arising from distortions from corporation tax on to the behaviour of small businesses in the UK put the cost at up to 29% of the tax revenue raised; [38] so if that

[31] Although there are differences, and there is a debate over whether there should be a closer alignment of taxable profit with accounting measures of profit. See for example, Freedman (2008) and Office of Tax Simplification (2017).
[32] See, for example, the recommendations of the OECD in its BEPS Action 4, OECD (2015).
[33] For recent evidence, see Zwick and Mahon (2017), Ohrn (2018), Devereux, Maffini and Xing (2019).
[34] For recent evidence see Faccio and Xu (2015), Devereux, Maffini and Xing (2018) and for a meta-study, see Feld et al (2013).
[35] Keen and de Mooij (2016) find that eliminating the bias to debt finance would increase banks' use of equity capital in the long run by more than 50%, which would be significant in terms of the fragility of the financial system.
[36] See de Mooij and Nicodème (2008), Liu (2014) and Devereux and Liu (2016).
[37] See, for example, Güçeri and Liu (2018),and Akcigit (2018).
[38] Devereux, Liu and Loretz (2014).

estimate is at all reasonable, these costs can be large (and are probably larger still in the financial sector).[39]

The incidence of such taxes has also been widely studied, although identifying the overall impact of the corporation tax is difficult empirically.[40] One reason is the difficulty of identifying the general equilibrium effect – for example, a rise in taxes on profit may reduce investment, which has an indirect impact on wages.[41] In addition, the incidence is likely to depend on the characteristics of the relevant labour market. A recent survey of earlier work identified a consensus that the labour force bears at least part of the tax on profits; whilst there is less consensus on the extent to which it does so, the survey estimated that approximately 50% of the revenue raised was borne by labour.[42] More recent work has used variation in US state level taxes to estimate that firm owners bear roughly 40 percent of the incidence, while workers and landowners bear 30 to 35 per cent and 25 to 30 percent, respectively.[43] The literature has mostly focused on the question of the extent which the tax is passed on to the labour force. But that is really a secondary question; the primary question should be whether the tax is progressive. Two recent papers address this issue directly. One, using variation of tax rates within Germany, finds that low-skilled, young, and female employees bear a larger share of the tax burden.[44] By contrast, a recent paper using US state level tax rates finds that cuts in tax rates lead to higher reported capital income for top earners, partly because high income individuals shift their compensation to avoid taxes.[45]

However, the current international focus for reform of taxes on business profit comes primarily not from economic inefficiency, problems of inequity or tax competition between large countries but concerns about avoidance and profit shifting. As noted above, the OECD BEPS project was almost wholly focussed on profit shifting and tightening rules to prevent profit being shifted to low-tax countries. There is not space here to outline the many ways in which profit can be shifted. However, they frequently have one of two features. One is the payment of passive income – e.g. royalties and interest – from an affiliate in the high tax country to an affiliate in a low tax country; the payment is typically deductible at the high rate and taxable at the low rate. A second is the manipulation of transfer prices used to trade

[39] Keen and de Mooij (2016).
[40] The incidence of the 2017 US corporation tax rate reform was widely discussed in the public debate at the time of the reform.
[41] An alternative approach is to consider only the “direct” impact, based on bargaining with the firm; see Arulampalam, Devereux and Maffini (2013).
[42] Fuest (2015).
[43] Suárez Serrato and Zidar (2016).
[44] Fuest, Peichl and Siegloch (2018).
[45] Nallareddy, Rouen and Suárez Serrato (2018).

within a multinational company; for example, there is an incentive to over-price a sale from a low tax country to a high tax country, and vice versa.[46]

The OECD has estimated that global corporate income tax (CIT) revenue losses due to base erosion and profit shifting are “between 4% and 10% of global CIT revenues, i.e. $100 to $240 billion annually.”[47] But the range of estimates is wide, which may reflect the caution noted by Dharmapala (2014) that the “more recent empirical literature uses new and richer sources of data, and finds an estimated magnitude of BEPS that is much smaller than that found in earlier studies”.[48]

Countries have implemented many anti-avoidance measures to combat these types of profit shifting, partly under the guidance of the OECD. But these measures have their own problems: they can become extremely complex, making them very costly to implement. Indeed, the international tax system, as set out in the OECD model treaty and its commentaries, is now so complex it is scarcely believable that most countries are able to implement it. A related problem is one of competition; countries may compete for real activities, for taxable profit and to favour their own businesses. This process drives down statutory tax rates and gives countries incentives to be relatively lax in the design of their tax bases.

In short, the existing system performs badly on almost any criteria.[49] Perhaps its strangest aspect is therefore how it has survived for so long. That is probably due to path dependence: given existing interests, changing the course of the international tax system will create gainers and losers. So changing it by consensus is far from easy – the history of unenacted proposals from the European Commission is testament to that. The best chance of reform would be to a system which countries would benefit from changing to even in the absence of coordination.

Taxes on economic rent

With that in mind, let us return to consider again the taxes on economic rent described in the introduction; here we consider them being used in the origin country. The lessons from the work of the Meade Committee in 1978 were that there are at least two forms of cash flow taxes that fall on economic rent, and hence which would be neutral with respect to investment and financing decisions. One – the “R-base” – is levied only on net real, as opposed to financial, inflows. The second – the “R+F base” – is levied on net real and financial inflows.

[46] See OECD (2013) and Devereux et al (2019) for more details.
[47] OECD (2015b).
[48] Dharmapala (2014), p 422. Riedel (2014) also finds a wide range of estimates, with the estimates of the proportion of profit shifted by multinationals from their high-taxed affiliates to their low-taxed affiliates to be in the wide range of between 5% and 30% of profit.
[49] For a more comprehensive review, see Devereux and Vella (2014) and Devereux et al (2019).

Since the net present value (NPV) of an investment, or the value of a firm, is the discounted present value of net inflows, then reducing all inflows by the same proportion (the tax rate) must also reduce the NPV of the investment by the same proportion. And the NPV is one measure of economic rent.[50]

There have been moves in number of countries towards cash flow taxes – and both the US and the UK currently permit immediate expensing (i.e. full relief for the cash expenditure on a capital asset) on at least some investment. But the R-base would also not give relief for interest payments; most countries still permit such relief, although this is increasingly constrained by anti-avoidance provisions. Full implementation of the Meade Committee proposals is rare.[51]

At least two problems arise with implementation. First, the R-base requires the distinction to be made between real and financial flows. But that is not a very clear distinction. It can raise difficulties, for example, if a business leases, rather than buys, assets. On the other hand, the R+F base requires a distinction between flows related to debt and flows related to equity finance. This distinction exists in most tax systems and is a boundary that is very hard to police. However, these problems are not insuperable.[52]

A second is that start-up businesses (or other businesses without taxable income) may create a taxable loss by undertaking capital expenditure. The neutrality properties of the tax require that loss to be offset against tax and any negative tax rebated to the business (at least in present value terms). Typically, governments are reluctant to provide rebates to loss-making, new businesses. One alternative approach to at least reduce the scale of this problem was proposed by the IFS Capital Taxes Committee in 1991.[53] That is to achieve the same result as the cash flow tax by giving an "allowance for corporate equity" – an ACE allowance - instead of immediate expensing.[54] The idea is that, in each period, relief should be given for the opportunity cost of equity finance – what the shareholder could have earned on some other investment of equivalent risk. This would effectively give relief for equity finance equivalent to that given for debt finance. In this case, it is not necessary to give immediate expensing for new investment; a trick of the ACE proposal is that for the purposes of determining subsequent relief the size of retained earnings reinvested in the business is determined as taxable profit less tax and dividends paid. A higher depreciation allowance therefore reduces

[50] By accounting identity, the R+F base is equivalent to the Meade Committee's "S-base", which would be on distributions to shareholders net of any issues of new equity – though of course this is not equivalent in terms of administration. Estonia taxes only dividend payments – this is close to a S-base, although new equity issues are not deductible.
[51] Between 2008 and 2014, Mexico applied a general R-base cash flow tax and an R+F-base cash flow tax for the financial sector. These regimes worked in parallel to the income tax system: the taxpayer had to compute both taxes, pay the income tax due and - if the cash flow tax due was higher - pay the additional tax over and above the income taxes. For a fuller account of the experience of cash flow taxes, see Ernst and Young (2015).
[52] See the discussion in Auerbach et al (2017).
[53] IFS Capital Taxes Committee, chaired by Malcolm Gammie, (1991). See also Devereux and Freeman (1991).
[54] This built on earlier work, notably Boadway and Bruce (1984)

the ACE allowance, implying that the tax falls only on economic rent irrespective of the generosity of depreciation allowances.

While using the ACE helps with the problems of rebates under a cash flow tax, it in principle requires relief to be given equal to the amount of equity investment multiplied by the risk-adjusted rate of return. That can only be applied approximately at best in the real world. The "risk" in this case is the risk that the ACE allowance is not received. If the government guarantees the ACE allowance in all states of the world, then effectively it is risk-free and so the allowance need only be paid at the risk-free rate.[55] In contrast to experiences of pure cash flow taxes, several countries have experimented with ACE-type systems. Hebous and Klemm (2018) document an ACE being introduced in 12 countries, with 7 currently still retaining the system.[56]

But what about criteria beyond implementation? Before discussing economic efficiency, we should note one important aspect of an origin-based cash flow tax; that is that the incidence of the tax can be exported to foreign owners of domestic-resident businesses. As noted in the Introduction, a tax on economic rent should be borne by the owners of the business, since in general the business will not adjust prices of outputs or inputs in response to the tax. It follows that the incidence of a tax on the profits of a business owned by non-residents will fall on these non-residents.[57]

However, from the perspective of economic efficiency, as we have noted above, even taxes on economic rent – implemented as a cash flow tax or an ACE on an origin basis – can affect the location choices of business. Those distortions create real social costs. The claims for economic efficiency on behalf of an origin-based tax on economic rent do not carry over from a closed economy to an open economy.

Indeed, there are disadvantages of having a narrower tax base. To raise the same revenue from a tax on economic rent as a conventional tax, the statutory tax rate is likely to have to be higher. That in itself creates a greater incentive at the margin for businesses to shift taxable profit out of the country to lower-taxed countries.

This problem is reversed if the tax base is expanded rather than narrowed. One option for doing so is to tax the whole return to the business, irrespective of how it is financed. This would mean not giving a deduction for the cost of debt finance; this is known as the Comprehensive Business Income Tax (CBIT).[58] Like a tax on economic rent, this would remove discrimination in favour of debt finance. This also has the advantage that the broader tax base could permit a lower statutory rate, thereby reducing the problem of profit shifting. On the

[55] See Bond and Devereux (1995). Variations on this are explored by Bond and Devereux (2003), including an allowance based on all financial capital, instead of separate (and different) relief for debt and equity. A similar proposal was made by Kleinbard (2007), who envisaged giving relief for the normal return at the business level but taxing the normal return at the individual level.

[56] Keen and King (2015) discuss the experience of the introduction of the ACE in Croatia between 1994 and 2001.

[57] This is an advantage of an origin-based tax on economic rent, relative to a destination-based tax on economic rent: see Auerbach and Devereux (2018).

[58] First analysed in detail by the US Treasury (1992).

other hand, this would clearly be moving away from taxing economic rent, which has negative consequences in raising the required rate of return on new investment projects and hence reducing economic activity.

De Mooij and Devereux (2011) compared the consequences for European countries of moving towards either an ACE or a CBIT. They used a computable general equilibrium approach that enabled simulations to be made for the impact on macroeconomic indicators, such as investment and growth, for individual countries making either reform. As a starting point, they considered the case in which an individual country introduced an ACE, assuming that any revenue shortfall (or gain) would be made up by the use of a lump-sum tax. The found that that, on average across EU countries, GDP would be 2.3% higher under such a reform. By contrast, the unilateral introduction of a CBIT would have opposite effects, arising from the greater distortion to investment; they found such a reform would reduce GDP by 3.4%.

But these are not necessarily very fair comparisons; if it were possible to use lump-sum taxation, that should dominate other taxes.[59] So the study then analysed what would happen if the business tax rate were adjusted to maintain revenue; under the ACE the tax rate had to rise by on average 17 percentage points whilst under the CBIT it could fall by on average 11 percentage points. This makes a big difference to the macroeconomic effects; under this scenario, the ACE with a higher tax rate increased GDP by a more modest 0.8%, whilst the CBIT now increased GDP by 1.1.%. The effect on the performance of the ACE with higher tax rate is driven partly by a higher tax on economic rent, which affects the location decisions of more profitable firms, and partly by the consequences of the greater incentive to shift profit.

These results suggest that the presumption in favour of a tax on economic rent on an origin basis may no longer hold in a setting of a modern open economy, where businesses make discrete location choices, and seek to shift their profit to low-tax countries. In this world, the statutory tax rate matters. A broader base can enhance welfare more than a base of economic rent. This turns upside down the world of the Meade Committee, and the 1980s consensus.

But consideration of an open economy also opens the possibility of taxing business profit in an alternative location. We now turn to that possibility.

4. Allocating the tax base between jurisdictions

The Introduction identified four types of locations in which profit might, in principle, be taxed: the residence of the owners of the business; the residence of the ultimate parent company;

[59] We might expect results in this direction at least, though, if the foregone corporation tax were replaced by increasing the rate of VAT.

the location where economic activity (or "functions") takes place and assets are owned; and the location where sales are made.

The discussion in the previous section considered tax levied in the third of these – the origin country, where (very broadly) functions take place and assets are owned. That has been the traditional place for taxing business level profit since the 1920s.[60] The conclusion from that brief discussion is that a tax in the origin country is unlikely to satisfy the criteria for a good tax on business profit. Even a tax on economic rent is likely to create economic inefficiencies in this setting. And the tax also fails on the other criteria, of implementation, robustness to avoidance and susceptibility to competition. Perhaps the best argument for maintaining a tax in the origin country is that a business makes use of public-provided goods and services there, and so should contribute to the costs arising. But, as argued above, that contribution need not be based on profit; it would seem more appropriate to base it on some measure of the value of the business of receiving those goods and services.

An exception to these objections to taxing profit in the origin country is, however, the treatment of profit derived from the exploitation natural resources. This is an exception largely on fairness grounds – the country with the resource should receive the revenue - but also on the efficiency grounds that the location of the resource is immobile.

We therefore now turn to considering each of the other options. Before doing so, it is worth briefly considering issues of economic efficiency in the context of an international economy. We have already noted that origin-based taxes on business profit can distort decisions as to the location of economic activity. From a global perspective, this is clearly one source of welfare loss from an economic inefficiency. Since Richman (1963), the avoidance of such an inefficiency is associated with the term "capital export neutrality" – indicating that taxes do not distort whether or not to invest at home, or abroad, or in which foreign country. But this is not the only source of economic inefficiency. Desai and Hines (2004) argued that "capital ownership neutrality" was also important, and arguably more so – that is, the ownership of productive assets should not be distorted by taxation, in the sense that one business may have preferential treatment over another in purchasing an asset. There is also a more general concept of taxes affecting competition between businesses competing with each other in an output market.[61] We can also distinguish optimality viewed from a national, as opposed to a global, perspective.

These different concepts have led to some debate as to where the optimal place of taxation is from the perspective of economic efficiency, although this debate has mostly taken place

[60] That statement is, of course, a gross simplification. Slightly less of a simplification would be to call it the "1920s compromise" under which passive income is taxed in the place of "residence" and active income is taxed in the place of "source" (Graetz, 2001). However, here the terms "residence" and "source" are used in their legal meanings. For example, a subsidiary of a multinational that receives a royalty is typically taxed where it is legally resident; this has nothing to do with the residence of the shareholders owners or of the parent company. In the terminology used here, the location of the subsidiary would be an origin location.

[61] See Devereux (2008). There is also a concept of "capital import neutrality", which is less well-defined, but broadly can be thought to overlap with capital ownership neutrality.

in the context of models where there are only two locations – "residence" and "source". For example, in such a framework, basic models demonstrate that capital export neutrality is achieved through taxation in the place of residence, and capital ownership is achieved through taxation in the place of source. However, this dichotomy does not hold, even in a world of only two locations, as long as countries can choose to tax only economic rent: a cash flow tax on outbound investment can generate both forms of neutrality.[62]

More generally, though, the classic distinction between "residence" and "source" is not helpful and more precision is required. We therefore now turn to considering three possible locations for taxing business profit: the residence of the parent company of a multinational group; the residence of the shareholders; and the residence of the customers.

Taxation in the residence of the parent

A traditional distinction in the debate on how profit should be taxed is between a "worldwide" system and a "territorial" system. The territorial system is essentially what we have here called taxing on an origin basis. A worldwide system would tax parent companies on their worldwide income.. This could also include taxation in the origin country. In that case, the country of the parent would give either a credit for taxes already paid in the origin country or allow taxes in the origin country to be deducted as a business cost. In that case, the country of the parent would not necessarily receive the entire tax on the worldwide profit of the business.[63]

Although there are no examples of a pure worldwide system, elements of such a system have been common. Mostly this has been in the form of taxing dividends received by the parent company, although this has gradually become less popular.[64] More recently, however there has been renewed interest in taxing worldwide profit of a multinational group as it accrues.[65] Several proposals have been made – typically within the context of the US – to extend the reach of the US tax system to incorporate different forms of worldwide income. Some of these proposals are in the form of a minimum tax; that is, it would only become a tax liability if other tax liabilities were low enough. For example, Clausing et al (2016) proposed a tax on the worldwide economic rent earned by US parent companies without deferral, but with a

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[62] Devereux, Fuest and Lockwood (2015); see also Becker and Fuest (2011).

[63] If large countries operated a worldwide tax system, with a credit for origin country taxes, then this would tend to diminish tax competition amongst those origin countries, since lowering the tax rate may not affect the ultimate liability of the multinational. Rather, reducing the tax rate would simply hand a larger tax base to the country of the parent, without creating a greater incentive to move activity to the origin country. In this case, a large country may act as a Stackelberg leader, see Gordon (1992).

[64] For example, the UK broadly abandoned attempts to tax foreign source dividends in 2009, and the US in 2017.

[65] An element of this was introduced by the GILTI provision in the US 2017 tax reform; a "minimum" tax based on the location of the parent company is also currently under active consideration in the OECD; see OECD (2019).

credit for foreign taxes paid.[66] Shay et al (2015) proposed an "interim minimum tax" of 15 % on the active income of controlled foreign corporations subject to a low tax rate in the host country. The 2017 US tax reform introduced a "GILTI" (global intangible low-taxed income) provision to tax the foreign-source intangible income of US resident companies, calculated as the excess of a 10% rate of return on tangible capital and taxed at half usual federal rate, with a credit for 80% of the tax in the origin country. That has its origins in proposals by the Obama Administration, and in work by Grubert and Altshuler (2013).

The idea of taxing worldwide profit in the hands of the parent company is perhaps a natural consequence of the "backup to personal income tax" rationale for taxing business profit. Personal income taxes generally tax individual residents on their worldwide capital and labour income. To the extent that an individual owns a domestic business that earns profit in the rest of the world, then it is natural to tax worldwide business profit.

There is not space here to provide a full evaluation of these proposals and developments; instead let us focus only on the key issues. To begin with, conditional on the location of residence of the parent company, then taxing the worldwide profit of a multinational business only in that location would achieve capital export neutrality (CEN), and hence not affect where the business chooses to undertake its activity. (A minimum tax approach, such as the US GILTI provision, taxes outbound investment at a lower rate, and so does not achieve CEN). Achieving neutrality with respect to business location would be a considerable benefit but depends on the first part of the initial statement – conditional on the location of the residence of the parent. The fundamental problem with tying the tax to this location is that this location itself is arbitrary.[67]

Historically, it may be the case that parent companies were generally located in the same country as their owners. But in the presence of international portfolio investment that is simply no longer true. That means that a tax in that location is a poor proxy for taxing the income of the individual owners; and it also means that existing businesses have an incentive to shift their parent companies to lower-tax countries, and new businesses can simply choose to start up in lower-tax countries. The data suggest that, even though there is some home bias in the allocation of individual investments, this has shrunk considerably over time. Rosenthal and Austin (2016) report that foreigners directly owned around 26% of US corporate stock in 2015.[68] The equivalent percentage for the UK for 2014 is 54% - up from 7%

[66] They also consider a less fundamental reform which would include a minimum tax based on foreign source economic rent, with a credit for foreign taxes.

[67] It is also notoriously difficult to define the "residence" of a corporation – which might be where it is incorporated, or where it has its management and control. Fleming, Perroni and Shay (2017) propose that a corporation should be resident in the US if 50% of its shares are owned by US residents.

[68] They also show that share of U.S. stocks held in taxable accounts has declined sharply over the last 50 years.

in 1963.[69] In Germany, the average percentage of foreign shareholders amongst the top DAX 30 corporates amounts to 56%. So where there is international portfolio investment, the link between the location of shareholders and parent companies breaks down; and this link is becoming weaker over time.

We might also expect it to become weaker still if business profit were predominantly taxed in the residence of the parent company, because that would become much more important than it is under the existing tax system. In the US, which has had elements of such a tax more recently, there has been pressure on US companies to "invert" (effectively to emigrate) in order to leave behind the burden of the US worldwide tax. The response of the US authorities has been to a series of anti-inversion rules, in an attempt to prevent existing businesses from leaving – though without affecting the new businesses.[70]

Taxation in the residence of the owners

Since the focus of this paper is the business-level taxation of profit, then taxing owners directly would be an abandonment of that approach. Nevertheless, especially if the aim of a business level tax is to compensate for the lack of tax on the business profit at the individual level, then it is useful to identify whether or not this is feasible. If it permitted taxes on profit at the business level to be abolished, then there could clearly be gains in terms of economic efficiency and implementation.

There are two clear problems in doing so. The first is one of timing. If the aim is to tax income as it accrues then either (a) that income has to be attributed to the owner on a period-by-period basis; or (b) income can be taxed when it is distributed to the owner, but with an adjustment for any delay between the accrual of the income and its distribution. The second problem is related and makes the first much more difficult – an individual resident in one country may own, or partially own, a business in a second country.

For relatively small businesses, resident in the same country as their owners, then pass-through treatment is feasible – here, owners are taxed on their share of the profit generated by the business in each period. That becomes more difficult when the business is very large; it has not so far been attempted, but it is conceivable that with modern technology it could be achieved. One alternative, proposed by Toder and Viard (2014), is that non-listed firms are taxed on a pass-through basis, but 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. Another alternative, proposed by Grubert and Altshuler (2016) is to tax

[69] See Office for National Statistics (2016).
[70] IMF (2014).

dividends when they are received and also to tax capital gains on realisation, but effectively to introduce an interest charge to offset the gain from deferral of taxing accrued gains.[71] In this case there is no need to observe the current market price, and so the system could be applied to all businesses. This leaves open how to tax intermediates such as mutual funds; perhaps the most straightforward approach would be to tax the funds directly; though another option might be to tax ultimate owners of the funds the same way as they would be taxed on their direct ownership of listed firms, leaving direct and indirect ownership subject to the same tax treatment.

Implementation issues become much more severe in a cross-border setting, where the tax authority of one country seeks to tax the income accruing in a business in another country. Again, with sufficient exchange of information that may eventually become possible. However, it seems beyond the present capacities of most tax authorities, especially those in lower income countries. Yet ignoring foreign source income would create both economic inefficiencies and inequities.

Taxation in the destination country

A final possibility is to tax business profit in the country of a sale to an independent customer. Borrowing again from the literature on VAT, we call this the place of "destination". There are several ways in which such a tax could be implemented. One would be to apportion the worldwide profit of a business in proportion to where it makes its sales. Most formula apportionment systems allocate some rights to the jurisdiction in which sales are made. Allocating taxing rights to profit between US states has become increasingly dependent on sales. And the CCCTB proposal of the European Commission also includes sales as one apportionment factor. There are also some proposals for hybrid systems which partially allocate taxing rights to the destination country.[72]

An alternative approach would be to return to the Meade Committee's cash flow tax, but to change the place in which income is taxed to the destination country: a destination-based cash flow tax (DBCFT).[73] This would follow the approach of a standard VAT, in zero-rating exports and taxing imports. In effect, the tax base in any country would be net cash flows associated with domestic sales and domestic expenses. Exports would not be taxed. Imports would be taxed, but where purchased by a business their cost would also be deductible; these

[71] This is based on the proposal by Auerbach (1991).
[72] See Avi-Yonah, Clausing and Durst (2009) and Devereux et al (2019b).
[73] See Bond and Devereux (2003), Auerbach, Devereux and Simpson (2010), Auerbach (2010), Auerbach et al (2017) and Auerbach and Devereux (2018). An alternative to this cash flow treatment would be to introduce an ACE, but with the same border adjustments for exports and imports - this destination-based ACE (DBACE) has been analysed by Hebous and Klemm (2018).

two effects would net out, with the result that imports by businesses are effectively ignored by the tax.

The rationale for this form of taxation of business profit is that it could be an efficient tax and could also meet the other criteria set out here. It is designed to build on the relevant parts of the Meade Committee's proposal, but to circumvent the problems that arise in applying a cash flow tax on an origin basis. It therefore has a similar promise to that held out for the Meade Committee's proposals in the 1980s, but for a modern, open economy.

It is impossible to detail all the aspects of this option here; for a full account see Auerbach et al (2017). But the key to the economic efficiency aspects are that changing the location of tax would have an impact on relative prices between countries. Suppose that country A begins with no tax on profit at all, but then introduced a DBCFT. The immediate impact would be two-fold. First, exporters would in effect receive a subsidy, since they could claim relief for their domestic expenses, but there would be no (domestic) tax on their sales (since they are exports). In this case exports would become cheaper abroad, and hence the demand for them would rise. Second, imports would become more expensive, and so the domestic demand for imports would fall. With a floating exchange rate, both of these effects would increase the demand for the domestic currency relative to foreign currency. That will lead to an appreciation of the domestic currency, causing the foreign price of exports to rise and the domestic price of imports to fall. The ultimate equilibrium would be neutral for the economy as a whole, but the government would raise tax revenue from domestic sales less domestic expenses.[74]

In this case, there would be no impact on the location of economic activity. The incidence of the tax would be on domestic owners of the taxed economic rents. This situation is similar to that for a destination-based VAT; the difference is that VAT also falls on spending from labour income as wages are not deductible for VAT purposes. Since there is no impact on economic activity, there should be no competitive pressure to reduce the tax rate to attract economic activity, or to favour domestic businesses.

Locating tax in the place of the customer also has significant benefits in terms of profit shifting: none of the usual channels for profit shifting would apply. Under a R-based tax, interest is not deductible, and so lending within a multinational group would be irrelevant for tax purposes. Paying a royalty is a charge for importing knowhow; there would be a tax on the value of the knowhow which exactly offsets the deduction for the royalty; so in effect the

[74] In the absence of a floating currency, these effects would take longer to achieve, through changes in nominal prices. Where the exchange is floating, non-residents who have borrowed in the domestic currency would see a rise in the nominal value of their debt expressed in other currencies. This was an issue when the United States considered introducing a form of the DBCFT in 2017; since the debt of other governments is often denominated in US dollars, the nominal value of their debt in their domestic currencies would rise.

royalty payment is also ignored by the tax. And, as we have already seen, trade within the multinational company is also irrelevant for tax purposes – exports are zero-rated and imports can be ignored.[75] The robustness to profit shifting is another strong advantage of the DBCFT. It also has the implication that profit shifting does not necessarily become more problematic as the tax rate increases, as it does under the origin cash flow tax.

Some issues of implementation do arise.[76] One key issue is broadly similar to VAT, in that a tax charge must be made on imported goods, especially on sales to consumers rather than businesses. This issue certainly creates difficulties for VAT but is not insuperable.

Compared to VAT, the DBCFT would give rise to a larger problem of rebates for exporters. That is because wages are deductible. So an exporter could in principle claim a rebate reflecting a domestic taxable loss, since costs are incurred domestically, but exports are zero-rated. One option here could be not to make payments to such businesses, but instead to allow these taxable losses to be netted against other taxes (such as payroll taxes) paid by the business.[77]

There are also legal issues, especially as to whether it is consistent with WTO law.[78] To an economist, this is surprising. The DBCFT is equivalent to a destination-based VAT plus a payroll subsidy. Since neither of these elements is contrary to WTO law, it is not clear why the combination might be.

Hebous et al (2019) estimate the impact of introducing a DBCFT in 80 in countries. They find that, with unchanged tax rates, total revenue would be comparable to the existing system. Not surprisingly, countries with trade deficits would gain revenue, while those with trade surpluses would lose. They also find that developing countries would on average be beneficiaries of a move to a DBCFT. One issue with such revenue estimates is how to deal with existing revenues from natural resources. Auerbach et al (2017a) estimate that if countries maintained their taxes on natural resources whilst switching to a destination basis for other sectors, then very few would see a reduction in their tax base due to the border adjustment.

5. Conclusions

[75] These issues are set in more detail in Auerbach et al (2017b) and Devereux and Vella (2018).
[76] These include its interaction with the double tax treaty network: see Collier and Devereux (2017).
[77] See the discussion in Auerbach et al (2017a).
[78] Legal opinions differ: see, for example, Schön (2017) and Pirlot (2019).

Following the pioneering work of the Meade Committee (1978) and others, it was generally thought at the time that an origin-based cash flow tax on economic rent was economically efficient and progressive. The more immediate developments in thinking were to do with implementation – and especially noting the equivalence, at least for efficiency, of the cash flow tax and a conventional system which also had an allowance for corporate equity (ACE).

However, further consideration of international issues in open economies cast doubt on this consensus. Two related problems emerged. First, even a tax on economic rent can affect mutually exclusive business location decisions, as businesses choose the location with the highest post-tax economic rent. Second, the narrow base of a tax on economic rent would require a relatively high statutory rate to collect a given revenue. But the rate itself also determines the incentive to shift profit to lower-tax countries. So the problem of profit shifting may be exacerbated with narrowing the origin tax base to economic rent.

Both of these key problems would be solved by the use of a destination-based cash flow tax. The key idea here is that income is taxed in the place of the customer, who is relatively immobile. Largely as a consequence, location decisions are unaffected by the tax. Also, the location of the tax makes it much harder to shift profit.

The promise of an economically efficient, yet progressive, tax is therefore still on the agenda. And that offers a better rationale for a separate tax on business profit than most of the alternatives that have been proposed. That rationale does not preclude also taxing the capital income of the owners of the business, on an individual basis.

Of course, the actual practice of taxing the profits of multinational companies has not kept up with the theory. At the time of writing, though, the OECD's Inclusive Framework are considering their first radical moves towards allocating some taxing rights to destination countries. Future research needs to analyse whatever reforms are made. It should also continue to address important issues in the absence of fundamental reform. One still unresolved issue is the incidence of a tax on profit – that is, how progressive it is (rather than which factor of production bears it). But an even more pressing issue is the appropriate taxation of business profit (or other taxes on business) as part of the efforts for revenue mobilisation in lower income countries. Our understanding of the best ways to implement taxes in the presence of administrative and informational constraints is still in its infancy, and this is an important area for future research.

References

Akcigit, U., J. Grigsby, T. Nicholas and S. Stantcheva (2018) "Taxation and innovation in the 20th century", *National Bureau of Economic Research Working Paper* 24982.

Arulampalam, W., M.P. Devereux and G. Maffini (2013) "The direct incidence of corporation tax on wages", *European Economic Review* 2012, 56.6, 1038-1054.

Auerbach, A.J. (1991) "Retrospective capital gains taxation", *American Economic Review* 81.1, 167-178.

Auerbach, A.J. (2010) "A Modern Corporate Tax", *The Center for American Progress / The Hamilton Project*.

Auerbach, A.J. and D.F. Bradford (2004) "Generalized cash-flow taxation," *Journal of Public Economics* 88.5, 957-980.

Auerbach, A.J. and M.P. Devereux (2018) "Cash flow taxes in an international setting", *American Economic Journal: Economic Policy* 10.3, 69-94.

Auerbach, A.J. M.P. Devereux and H. Simpson (2010) "Taxing Corporate Income", in J. Mirrlees *et al* (eds.), *Dimensions of Tax Design: The Mirrlees Review,* Oxford: Oxford University Press, 837-893.

Auerbach, A.J., M.P. Devereux, M.J. Keen and J. Vella (2017a) "Destination-based cash flow taxation", *Centre for Business Taxation Working Paper* 17/01.

Auerbach, A.J., M.P. Devereux, M.J. Keen and J. Vella (2017b) "International Tax Planning under the Destination-Based Cash Flow Tax", *National Tax Journal* 70.4, 783-802.

Avi-Yonah, R.S., K. Clausing and M.C. Durst (2009) "Allocating Business Profits for Tax Purposes: A Proposal to Adopt a Formulary Profit Split", *Florida Tax Review* 9, 497–553.

Banks, James and Peter Diamond (2010) "The base for direct taxation", in Mirrlees, James, Tim Besley, Richard Blundell, Stephen Bond, Robert Chote, Malcolm Gammie, Paul Johnson, Gareth Myles and James M. Poterba eds. Dimensions of Tax Design, Oxford : Oxford University Press.

Becker, J. and C. Fuest (2010) "Taxing foreign profits with international mergers and acquisitions", *International Economic Review* 51.1, 171–186.

Bird, R.M. (1996) "Why Tax Corporations?", Department of Finance Canada, Technical Committee on Business Taxation Working Papers: 1996-02.

Boadway, R. and N. Bruce (1984) "A general proposition on the design of a neutral business tax", *Journal of Public Economics* 24(2), 231-239.

Bond, S.R. and M.P. Devereux (1995) "On the design of a neutral business tax under uncertainty", *Journal of Public Economics* 58, 57-71.

Bond, S.R. and M.P. Devereux (2003) ""Generalised R-based and S-based taxes under uncertainty", *Journal of Public Economics* 87, 1291-1311.

Bond, S.R. and M.P. Devereux (2003) "Cash Flow Taxes in an Open Economy," CEPR Discussion Paper 3401.

Bradford, David (1986) Untangling the Income Tax, Harvard University Press.

Clausing, K., E. Kleinbard and T. Matheson (2016) “US Corporate Income Tax Reform and its Spillovers”, IMF Working Paper WP/16/127.

Collier, R. and M.P. Devereux (2017) “The Border-Adjusted Tax and Tax Treaties”, *Tax Notes December 18.*

de Mooij, R.A. and G. Nicodeme (2008) “Corporate Tax Policy and Incorporation in the EU”, *International Tax and Public Finance*, 15(4), 478.498.

de Mooij, R.A. and M.P. Devereux (2011) “An applied analysis of ACE and CBIT reforms in the EU”, *International Tax and Public Finance* 18, 93–120.

Desai M. and J. R. Hines Jr. (2003) “Evaluating International Tax Reform”, *National Tax Journal* 56, 487-502.

Devereux, M.P. (2008) “Taxation of outbound direct investment: economic principles and tax policy considerations”, *Oxford Review of Economic Policy*, 24.4, 698–719.

Devereux, M.P., A.J. Auerbach, M.J. Keen, P. Oosterhuis, W. Schon and J. Vella (forthcoming) Taxing Profit in a Global Economy, Oxford, OUP.

Devereux, M.P., A.J. Auerbach, M.J. Keen, P. Oosterhuis, W. Schon and J. Vella (2019b) “Residual Profit Allocation by Income”, *Oxford University Centre for Business Taxation Working paper* 19/01.

Devereux, M.P., C. Fuest and B. Lockwood (2015) “The taxation of foreign profits: a unified view”, *Journal of Public Economics*, 125, 83-97.

Devereux M.P. and H. Freeman (1991) "A general neutral profits tax", *Fiscal Studies* 12.3, 1-15.

Devereux M.P. and R. Griffith (1998) “Taxes and the location of production: evidence from a panel of US multinationals”, *Journal of Public Economics* 68.3, 335-367.

Devereux, M.P. and L. Liu (2016) “Stimulating Incorporation through Investment”, Oxford University Centre for Business Taxation Working Paper No. 16/07.

Devereux, M.P., L. Liu and S. Loretz (2014) “The Elasticity of Corporate Taxable Income: New Evidence from UK Tax Records”, *American Economic Journal: Economic Policy* 6(2): 19-53.

Devereux, M.P. and S. Loretz (2013) “What do we know about corporate tax competition?”, *National Tax Journal* 66.3, 745-774.

Devereux, M.P., G. Maffini and J. Xing (2018) Corporate tax incentives and capital structure: New evidence from UK firm-level tax returns, *Journal of Banking & Finance* 88, 250—266.

Devereux, M.P., G. Maffini and J. Xing (2019) “The impact of investment incentives: evidence from UK corporation tax returns”, *American Economic Journal: Economic Policy*, forthcoming.

Devereux, M.P. and C.P. Mayer (1984) Corporation Tax: the Impact of the 1984 Budget, IFS Report.

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.

Devereux, M.P. and J. Vella (2018) “Gaming Destination-Based Cash Flow Taxes”, *Tax Law Review* 71, 477-514.

Dharmapala, D. (2014) “What Do We Know about Base Erosion and Profit Shifting? A Review of the Empirical Literature”, *Fiscal Studies* 35.4, 421-488.

Diamond, P. and J.A. Mirrlees (1971) “Optimal Taxation and Public Production I: Production Efficiency,” *American Economic Review* 61, 8–27.

Diamond, P., and E. Saez (2011) "The Case for a Progressive Tax: From Basic Research to Policy Recommendations", *Journal of Economic Perspectives* 25.4, 165-90.

Edwards, J.S.S. (1982) “Green Paper on Corporation Tax: A Review Article”, *Fiscal Studies* 3.2, 102-113.

Ernst and Young (2015) “Experiences with cash-flow taxation and prospects”, *European Commission Taxation Papers*, Working Paper 55-2015.

Faccio, M. and J. Xu (2015) “Taxes and capital structure”, *Journal of Finance and Quantitative Analysis* 50 (3), 277–300.

Feld, L.P. , J.H. Heckemeyer and M. Overesch (2013) “Capital structure choice and company taxation: a meta-study”, *Journal of Banking and Finance* 37, 2850–2866.

Fleming, J.C., R.J. Peroni and S.E. Shay (2017) “Defending Worldwide Taxation with a Shareholder-Based Definition of Corporate Residence”, *Brigham Young University Law Review* 6*.*

Freedman, J. (2008) “Financial and Tax Accounting: Transparency and 'Truth'”, in W. Schön, ed. *Tax and Corporate Governance*, Springer.

Fuest, C. (2015) “Who bears the burden of corporate income taxation?”, *European Tax Policy Forum Policy Paper 1.*

Fuest, C., A. Peichl and S. Siegloch (2018) “Do Higher Corporate Taxes Reduce Wages? Micro Evidence from Germany”, *American Economic Review* 108.2, 393-418.

Gordon, R.H. (1986) “Taxation of Investment and Savings in a World Economy”, *American Economic Review* 76, 1086-1102.

Gordon, R.H. (1992) “Can Capital Income Taxes Survive in Open Economies?”, *Journal of Finance* 47.3, 1159-1180.

Graetz, M. (2001) “The David R. Tillinghast Lecture: Taxing International Income: Inadequate Principles, Outdated Concept, and Unsatisfactory Policy,” *Tax Law Review* 54, 261-336.

Grubert, H. and R. Altshuler (2013), Fixing the System: An Analysis of Alternative Proposals for the Reform of International Tax, *National Tax Journal*, 66.3, 671-712.

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.

Güçeri, I. and L. Li (2019) “Effectiveness of Fiscal Incentives for R&D: Quasi-experimental Evidence”, *American Economic Journal: Economic Policy,* 11,1, 266-91.

Harberger, A.C. (1962) “The Incidence of the Corporation Income Tax,” *Journal of Political Economy* 70(3), 215-240.

Hebous, S. and A. Klemm (2018) “A Destination-Based Allowance for Corporate Equity”, *IMF Working Paper* 18/239.

Hebous, S., A. Klemm and S. Stausholm (2019) Revenue Implications of Destination-Based Cash-Flow Taxation, *IMF Working Paper* 19/7.

HMSO (1982) Corporation Tax (Green Paper), Cmnd. 8456, London.

IMF (2011) “Revenue Mobilization in Developing Countries”, Washington DC: IMF.

IMF (2014) “Spillovers in international corporate taxation”, IMF Policy Paper, May.

IFS Capital Taxes Committee Institute for Fiscal Studies (1991) Equity for companies: A corporation tax for the 1990’s. London: The Institute for Fiscal Studies, Commentary 26.

Keen, M.J. and R. de Mooij (2016) “Debt, taxes, and banks”, *Journal of Money, Credit and Banking* 48.1, 5-33.

Keen, M.J. and J. King (2002) “The Croatian profit tax: an ACE in practice”, *Fiscal Studies* 23.3, 401-418.

Keen, M.J. and K. Konrad (2013) “The Theory of International Tax Competition and Coordination”, in E. Saez, M. Feldstein, R. Chetty and A.J. Auerbach eds. Handbook of Public Economics, Volume 5, Elsevier, Amsterdam & Oxford, 2013, 257-328.

Kleinbard, E. (2007) “Rehabilitating the Business Income Tax”, *The Center for American Progress / The Hamilton Project*.

Kleven, H.J., C.T. Kreiner and E. Saez (2016) “Why Can Modern Governments Tax So Much? An Agency Model of Firms as Fiscal Intermediaries”, *Economica* 83, 219-246.

Kopczuk, W. and J. Slemrod (2006) “Putting Firms into Optimal Tax Theory”, *American Economic Review Papers & Proceedings* 96., 130-134.

Liu, L. (2014) “Income Taxes and Business Incorporation: Evidence from the Early Twentieth Century”, *National Tax Journal*, 67(2), 387–418.

Mankiw, N. G., Weinzierl, M., and D. Yagan (2009) "Optimal Taxation in Theory and Practice", *Journal of Economic Perspectives* 23.4, 147–174.

Mayer, C.P. (1982) The Structure of Corporation Tax in the UK, *Fiscal Studies*, 3.2, 121-141.

Meade Committee (1978) The Structure and Reform of Direct Taxation, London: George Allen & Unwin.

Nallareddy, S., E. Rouen and J.C. Suárez Serrato (2018) “Do corporate tax cuts increase income inequality?”, *National Bureau of Economic Research* Working Paper 25498.

OECD (2013) “Addressing Base Erosion and Profit Shifting”, Paris: OECD.

OECD (2015) “Limiting Base Erosion Involving Interest Deductions and Other Financial Payments, Action 4 – Final Report”, Paris: OECD.

OECD (2015b) “BEPS Action Plan 11”, Paris: OECD.

OECD (2019a) “Addressing the tax challenges of the digitalisation of the economy”, Public Consultation Document, Paris: OECD.

OECD (2019b) “Programme of work to develop a consensus solution to the tax challenges of the digitalisation of the economy”, Paris: OECD.

Ohrn, E. (2018) "The Effect of Corporate Taxation on Investment and Financial Policy: Evidence from the DPAD", *American Economic Journal: Economic Policy* 10 (2), 272-301.

Office for National Statistics (2016), Ownership of UK Shares.

Office of Tax Simplification (2017) OTS Report on the Simplification of the Corporation Tax Computation.

Pirlot, A. (2019) “Don’t blame it on WTO law: An analysis of the alleged WTO law incompatibility of Destination-Based Taxes”, *Florida Tax Review*

Richman P. (1963) *Taxation of Foreign Income: an Economic Analysis*, Baltimore, MD Johns Hopkins Press.

Richter, B.K., K. Samphantharak and J.F. Timmons (2009) “Lobbying and Taxes”, *American Journal of Political Science 53.4,* 893-909.

Riedel, N. (2014) “Quantifying international tax avoidance: a review of the academic literature”, *European Tax Policy Forum Policy Paper 2.*

Rosenthal, S. and L. Austin (2016) “The Dwindling Taxable Share of U.S. Corporate Stock”, *Tax Notes* 151.6, May.

Schön, W. (2016) “Destination-Based Income Taxation and WTO Law: A Note”, Working Paper.

Shaviro, D. (2014) *Fixing the US Tax System*, Oxford: Oxford University Press.

Shay, S.E., J.C. Fleming, Jr. and R.J. Peroni (2015) “Designing a 21st Century corporate tax — an advance US minimum tax on foreign income and other measures to protect the base”, *Florida Tax Review* 17, 669-723.

Suárez Serrato, J.C. and O. Zidar (2016) “Who Benefits from State Corporate Tax Cuts? A Local Labor Markets Approach with Heterogeneous Firms”, *American Economic Review* 106.9, 2582–2624.

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

United States Department of Treasury (1977) Blueprints for Basic Tax Reform, US Government Printing Office, Washington.

United States Department of Treasury (1992) Integration of the Individual and Corporate Tax Systems: Taxing Business Income Once, US Government Printing Office, Washington.

Zwick, E. and J. Mahon (2017) “Tax Policy and Heterogeneous Investment Behavior”, *American Economic Review*, 107(1), 217-48.

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