CESifo Working Papers

The Economics of Corporate and Business Tax Reform

Dhammika Dharmapala

CESifo
Center for Economic Studies & Ifo Institute

The Economics of Corporate and Business Tax Reform

Abstract

The reform of corporate and business taxation is central to current tax policy debates in the United States. This paper provides a framework for analyzing reform proposals by describing the lessons from current economic research for business tax reform, addressing both international and domestic reforms within a unified perspective. The paper begins by identifying ten potential inefficiencies created by the current corporate tax regime. It then discusses three classes of reform proposals. The first involves a substantially lower corporate tax rate and a territorial regime. The second is a formula apportionment system. The third category includes a destination-based cash flow tax. The paper evaluates each of these proposals in the light of the framework introduced earlier. It concludes that the relatively modest reforms currently under discussion would address only a few of these margins. In contrast, more fundamental reforms would eliminate all or most of the inefficiencies of corporate taxation.

Dhammika Dharmapala
University of Chicago Law School
USA - 60637 Chicago IL
dharmap@uchicago.edu

1) Introduction

Discussion of business tax reform in the US has grown in recent years, to the point where it has now reached a crescendo. An emerging consensus on the need for reform has been built around the anomalous status of the US as the only remaining major economy that imposes worldwide taxation on its resident multinational corporations (MNCs) and by the widespread acknowledgment that the US statutory corporate tax rate is much higher than that prevailing elsewhere. There also now appears to be a fairly broad consensus on the general shape of reforms of business taxation. The aim of this paper is to review the lessons from current economic research for business tax reform. It develops a simple framework highlighting ten behavioral margins affected by corporate taxation that economic research has found to be important. It then assesses major current reform proposals in the light of this framework.

This review focuses on the economics, rather than the politics, of tax reform. The current political consensus rules out certain policy options. For instance, the Senate Finance Committee report on business tax reform (US Senate, Committee on Finance, 2014; known as the Hatch Report) describes a value-added tax (VAT) as a "bad" idea.[1] In contrast, this paper reviews all possible options to the extent that they provide useful benchmarks or insights. The emphasis here is also not on specific legislative or policy proposals, but rather on presenting a more abstract set of principles that can guide policymaking over the longer term.

The scope of this review encompasses the taxation of both corporations and other business entities. As much business activity takes place within pass-through form, some consideration of personal taxation and how it interacts with corporate taxation is unavoidable. In view of the importance of the international aspects of business taxation, this paper addresses both international and domestic reforms within a unified perspective. Despite the current policy interest in income inequality and ongoing concerns about public debt, this paper focuses on issues of efficiency rather than distribution or revenue. In part, this is because the incidence of the corporate income tax remains controversial, with some evidence that much of it is borne by workers (e.g. Arulampalam, Devereux and Maffini, 2012). A focus on efficiency also highlights the distinctive contributions

---

[1] "[A]doption of a VAT is a bad idea. . ." (US Senate, Committee on Finance, 2014, p. 55). In the television comedy series *Yes, Prime Minister*, the fictional senior civil servant Sir Humphrey Appleby explains that: "'Controversial' only means 'this will lose you votes.' 'Courageous' means 'this will lose you the election.'" The Hatch report, which uses a rather less subtle political lexicon, does not explain how many votes a "bad" idea would lose.

of economic research to tax policy. This is not, however, to downplay the importance of distribution and revenue.[2]

This paper begins by identifying ten types of inefficiencies created by the current corporate tax regime. These include distortions to the amount and location of investment by firms, to the use of external debt, to payout and repatriation decisions, to the organizational form chosen by firms, to the ownership of assets and the market for corporate control, and to patterns of global portfolio investment. Particularly relevant to international tax reform are the "lockout effect" (the retention of cash by US MNCs within foreign affiliates) and deadweight costs created by the expenditure of resources by firms on tax planning. This review aims to clarify these efficiency consequences and to briefly describe the empirical evidence regarding the magnitude of these distortions.

The paper then discusses proposed reforms of US business taxation, focusing on three broad classes of reforms, and evaluates each of these in the light of the framework introduced earlier. This discussion is necessarily selective and does not seek to exhaustively catalog every reform proposal that has been suggested. The first category is a "consensus" approach that encompasses the proposals most widely discussed in the policy arena. This involves a corporate tax rate reduction (from the current 35% rate to somewhere between 20% and 28%) combined with dividend exemption and various other elements, such as one-time levy on the foreign cash holdings of US MNCs and a minimum tax on their future foreign income. This type of reform would fully solve the lockout problem and mitigate several of the other distortions, but would leave many other inefficiencies in place.

The second type of reform is a formula apportionment system. This would address about half of the efficiency issues identified here, but may create new types of efficiency costs. Its most attractive feature - its departure from the traditional international tax law concepts of source and residence – also characterizes many of the proposals within the third category. These include a destination-based VAT (which faces significant political obstacles, but is an important conceptual benchmark notwithstanding the aspersions cast on it by the Hatch Report), a destination-based cash flow tax (Auerbach, 2010; Auerbach, Devereux and Simpson, 2010), and variants of a VAT

---

[2] The current consensus on business tax reform often takes as a constraint that reform should be revenue-neutral within the business (or corporate) sector, which may indicate a desire to maintain the existing (albeit unknown) pattern of distributional burdens.

such as the flat tax. These types of reforms would solve virtually all of the inefficiencies associated with the corporate tax.

This paper proceeds as follows. Section 2 introduces a general framework for understanding the efficiency costs of corporate taxation. Section 3 analyzes the "consensus" reforms described above. Section 4 discusses proposals for a formula apportionment system. Section 5 analyzes consumption-type tax reforms, and Section 6 concludes.

2) A General Framework: The Efficiency Costs of Corporate Taxation

The US corporate tax is now over a century old. First imposed in 1909 as an excise tax on the privilege of doing business in corporate form, and subsequently in the form of an income tax (Shaviro, 2009), the corporate tax applies to business entities that are organized as "C corporations" (named for subpaper C of the tax code). Importantly, it does not apply to other types of business entities. Space constraints preclude a discussion of its history and the various arguments for and against its existence (see e.g. Shaviro (2009)). However, we briefly summarize the US international tax regime as it applies to MNCs.

Figure 1 depicts a simple scenario in which a US parent owns a controlling stake in a foreign affiliate, separately incorporated under the laws of a foreign country F. Suppose that the US tax rate is 35% and country F's tax rate is 20%. Assume that this foreign affiliate earns $100 of income, and therefore pays $20 of tax to the government of F. There are no immediate US tax consequences. However, when the affiliate pays a dividend to its US parent, the latter has $100 of income under US tax law, with a foreign tax credit for the tax paid to F. The payment of this dividend is often termed the "repatriation" of earnings. Because of the foreign tax credit, taxes due upon repatriation are generally equal to the difference between the foreign tax paid and the tax that would be due if earnings were taxed at the US rate. In our example, an additional $15 would be due in US tax when the earnings are repatriated. This additional US tax – and its deferral until repatriation – creates distortions that many reform proposals seek to address.[3]

In our example, the US is the "residence" country (where the MNC parent is based) and F is the "source" country (where the affiliate's business operations are located). The distinction

---

[3] The Hatch Report (US Senate, Committee on Finance, 2014, p. 275) dismisses as "bad tax policy" reforms that would eliminate deferral and impose immediate worldwide taxation of US MNCs. Grubert and Altshuler (2008) analyze in detail a proposal of this type.

between "residence" (or "home") countries and "source" (or "host") countries is fundamental to international taxation. The income generated by normal business operations in the source country is referred to as "active" business income, whereas income received from other sources unconnected to normal business operations (such as interest income) is referred to as "passive" income. Residence countries (such as the US) with "worldwide" tax systems impose tax on the active foreign business income of resident MNCs (generally with a credit for taxes paid to the source country). It is far more common, however, for residence countries to use "territorial" (or "dividend exemption") systems, in which the "active" foreign income derived by resident MNCs from foreign business operations is exempt from residence country taxation (so that this income is taxed only by the source country). Even territorial residence countries may, however, tax the passive foreign income earned by their resident MNCs.

In order to provide a framework for understanding the efficiency consequences of corporate and international taxation, we distinguish among ten distinct behavioral margins. This is primarily for expositional purposes; there is no suggestion here that counting the number of margins addressed by a reform proposal is sufficient to evaluate the proposal's impact. Moreover, we do not intend to imply that each margin is of equal importance. Their relative importance is not fully settled, but some general impressions can be derived from the brief summaries below of the empirical evidence regarding their magnitude. We thus use this framework merely as a heuristic guide that is useful in evaluating current reform proposals.

2.1) Distortions to the Location of Investment – Extensive and Intensive Margins

Perhaps the most straightforward inefficiencies associated with corporate and international taxation relate to the location of economic activity. Locational decisions – whether and how much to invest in a given jurisdiction – are sometimes made at the margin (e.g. how large a factory to build), but when there are large fixed costs they may also be discrete in nature. Discrete real investment choices depend on the effective average tax rate (EATR) on the returns from the investment, taking account of depreciation allowances and other provisions that affect the tax base (Devereux and Griffith, 1998; 2003). On the other hand, how much real investment to undertake in a given location (conditional on operating in that location) depends on the effective marginal tax rate (EMTR) - the tax rate on an extra dollar of income generated by investment.

These extensive and intensive margins of investment constitute the first two of our ten potential distortions from corporate taxation. The efficiency cost from distortions to the location

of economic activity can be illustrated as follows. Consider $100 of investment that can be undertaken in either country A (which has a pretax return of $10 and a tax rate of 10%) or country B (which has a pretax return of $15 and a tax rate of 45%). Country A will be preferred even though the pretax return is higher in country B. This inefficiency arises from a divergence between the social and private returns – the (global) social return includes both the firm's after-tax return and governments' tax revenues, whereas the firm's private return includes only the after-tax return. As the firm is the decisionmaker, it is unsurprising that it maximizes the private rather than social return.

There is a large empirical literature studying the effects of taxes on the location of investment. Particularly voluminous is the literature at the country level on taxes and foreign direct investment (FDI), which generally combines the effects of discrete locational choices and of the amount of investment. As reported in a meta-study by de Mooij and Ederveen (2003), the median tax rate elasticity found in this literature is around −3.3 (that is, a one percentage point reduction in the host-country tax rate raises inbound FDI by 3.3%), suggesting a quite substantial response of the location of investment to taxes. Devereux and Griffith (1998) are unusual in isolating the separate effect of the EATR. They use a sample of US firms operating in Europe and analyze the probability of these firms choosing to produce in particular European countries. For instance, they find that a 1 percentage point increase in the UK's EATR reduces the probability of a US firm producing in the UK by 1.3 percentage points, indicating a sizeable effect on discrete location choices.

2.2) Income-Shifting

A particularly prominent issue relating to international taxation is the shifting of income by MNCs across jurisdictions in response to tax rate differentials. The OECD's Base Erosion and Profit Shifting (BEPS) initiative has directed global attention to this phenomenon (e.g. OECD, 2013). The term "income-shifting" generally encompasses both strategic transfer pricing (for instance, charging relatively low prices for goods and services transferred from high-tax to low-tax affiliates) and the strategic use of inter-affiliate debt (for instance, financing the activities of high-tax affiliates using debt issued by low-tax affiliates); see Dharmapala (2008; 2014a) for a discussion.

There is a large body of empirical evidence on the magnitude of MNCs' income-shifting, as reviewed in Dharmapala (2014a). Among economists who have studied this topic, the most

influential approach was developed by Hines and Rice (1994).[4] The more recent literature in this tradition uses commercial databases that provide unconsolidated (i.e. affiliate-level rather than consolidated worldwide MNC-level) financial and ownership information for multinational affiliates, such as the Amadeus database compiled by the Bureau van Dijk. The basic premise is that the observed pretax income of an affiliate represents the sum of "true" income and income that is shifted in or out. Measures of the capital and labor inputs used by the affiliate are used to predict the counterfactual "true" level of income. Shifted income is determined by the tax incentive to move income in or out of the affiliate, proxied by the tax rate difference across affiliates of the MNC. The source of identification is from changes in the statutory tax rates of countries that generate variation in the tax incentive to shift income to and from the affiliate.

The consensus of the recent literature is a semi-elasticity of reported income with respect to the tax rate differential across countries of 0.8 (Dharmapala, 2014a). This entails that a 10 percentage point increase in the tax rate difference between an affiliate and its parent (e.g. because the tax rate in the affiliate's country falls from 35% to 25%) would increase the pretax income reported by the affiliate by 8% (for example, from \$100,000 to \$108,000).

This evidence pertains to the magnitude of income-shifting, rather than to its efficiency cost. The literature has generally not focused directly on the circumstances in which the magnitude of income-shifting is a sufficient statistic for its deadweight cost. Thus, we address this issue using a simple model of income-shifting based on the framework in Dharmapala and Riedel (2013). The approach resembles that of Chetty (2009), which analyzes the relationship between individuals' labor supply decisions and their evasion and avoidance responses to taxes.

Consider an MNC that consists of affiliates in countries a and b. These affiliates earn exogenous pretax profits π_i and face corporate tax rates t_i, where $i \in \{a, b\}$.[5] Assume that country a (where the MNC is resident) is the higher-tax country (i.e. $t_a > t_b$), and has a territorial tax system that does not seek to tax the MNC's foreign profits. The MNC can shift reported income

---

[4] Other approaches to the measurement of income-shifting have been developed in the accounting literature, as reviewed in Dharmapala, 2014a). In addition, Dharmapala and Riedel (2013) propose an alternative approach that relies not on variation in tax rates but on income shocks experienced by parents that are propagated differentially among low-tax and high-tax affiliates.

[5] While we assume exogenous profits here, it is important to note that there may be interactions between income-shifting and the "real" locational distortions discussed in Section (2.1). The opportunity to engage in income-shifting may either mitigate or exacerbate real responses to tax differentials. There are also other potential distortions associated with income-shifting, such as an incentive to inefficiently use transactions with related parties rather than with arm's length parties.

between the two affiliates; shifting an amount *y* entails incurring an increasing, convex cost $C(y)$. The MNC's global after-tax profits are:

$$\Pi = (1 - t_a)(\pi_a - y) + (1 - t_b)(\pi_b + y) - C(y) \tag{1}$$

The MNC chooses *y* to maximize Π; the FOC is:

$$C'(y) = t_a - t_b \tag{2}$$

Suppose initially that $C(y)$ is entirely a pure resource cost. Then, the national welfare of country *a* can be defined as follows:

$$W_a = \Pi + t_a(\pi_a - y) \tag{3}$$

Here, national welfare is the sum of the resident MNC's after-tax global profits and domestic tax revenue. Assuming t_b is fixed, the impact on country *a*'s welfare of a small change in t_a is then found by differentiating W_a with respect to t_a while holding t_b constant. Π in Equation (3) is the maximized value of the MNC's profits, so an envelope theorem argument (analogous to that used in Chetty (2009)) implies that behavioral responses can be ignored when differentiating Π with respect to t_a. Thus, holding t_b constant:

$$\frac{dW_a}{dt_a} = t_a \frac{d(\pi_a - y)}{dt_a} \tag{4}$$

$\frac{d(\pi_a - y)}{dt_a}$ is a measure of the responsiveness of reported income to the tax rate, and under these circumstances Equation (4) shows that it is a sufficient statistic for the marginal deadweight loss experienced by country *a* from income-shifting.

Now suppose that $C(y)$ is not a resource cost, but a payment to tax planning professionals resident in country *a* (i.e. a transfer). Even in these circumstances, tax planning may still give rise to a social cost. Tax planners' output is not socially valuable, being merely a transfer from the fisc (i.e. other taxpayers) to the firm. However, their supply of tax planning services potentially results in foregone socially valuable output in their next-best occupation. This foregone output represents the deadweight cost of tax planning, which Dharmapala (2014b, p. 12) suggests "should be understood primarily as a misallocation of talent - for example, where someone who could have been another Mozart or could have found a cure for cancer instead toils away producing transfer pricing documentation."

Let $P(y)$ be an increasing, convex function that represents the output that would have been produced by tax planners in their counterfactual occupation.[6] The national welfare of country a can then be expressed as:

$$W_a = \Pi + t_a(\pi_a - y) + C(y) - P(y) \tag{5}$$

If $C(y) = P(y)$, which would represent a scenario in which tax planners operate in a highly competitive labor market and in which all of their counterfactual output is socially valuable, then Equation (5) is identical to Equation (3). The responsiveness of reported income to the tax rate is again a sufficient statistic for the marginal deadweight loss from income-shifting.

On the other hand, it may not be unreasonable to assume that $C(y) > P(y)$; this represents a scenario in which tax planners enjoy some rents in their tax planning occupation and/or some of the (privately valuable) output they would produce in their next-best occupation is not socially valuable. Under these conditions, an envelope theorem argument can be used to derive:

$$\frac{dW_a}{dt_a} = t_a \frac{d(\pi_a - y)}{dt_a} + \frac{dy}{dt_a}[(t_a - t_b) - \frac{dP}{dy}] \tag{6}$$

Here, the marginal deadweight cost depends not only on the responsiveness of reported income, but also on other terms such as $\frac{dP}{dy}$, on which empirical evidence is scarce.[7] Thus, when $C(y) > P(y)$, the responsiveness of reported income is not a sufficient statistic for the marginal deadweight loss of income-shifting. It follows that even if a reduction in the tax rate leads to a substantial increase in reported income, the corresponding reduction in deadweight cost may be small if a substantial portion of the costs of income-shifting are transfers.[8]

2.3) *The Location of Intellectual Property*

In recent years, policymakers have become increasingly concerned with attracting income from patents and other forms of intellectual property to their jurisdictions. This is largely separate from the much more longstanding interest in promoting research and development (R&D) activity. In pursuit of the former aim, a number of European countries and China have adopted "patent box"

---

[6] If $P(y) = 0$, then the social cost of income-shifting is zero, even if the estimated elasticity of reported income happens to be large. Note that in Equation (2), the MNC equates the marginal private cost, not the marginal social cost, with the tax differential.

[7] Although there is a large and growing literature on corporate tax avoidance (e.g. Desai and Dharmapala, 2006; 2009a), there is very limited evidence on $C(y)$ (and essentially no evidence on $P(y)$). A rare exception is Mills, Erickson and Maydew (1998), who use data from a confidential survey about the tax planning practices of 365 large US firms to analyze how tax planning expenditures are related to firm characteristics.

[8] Even if the marginal deadweight cost is small, what is more relevant in assessing fundamental reforms such as the destination-based cash flow tax is the aggregate deadweight cost $P(y)$, which is not easily observable.

regimes, involving favorable treatment of income derived from patents. There has been growing discussion as to whether the US should follow suit.

The existing evidence suggests that MNCs are highly responsive to tax differences in deciding which of their affiliates applies for a patent (and consequently where intellectual property is formally held). Using the Amadeus database, Dischinger and Riedel (2011) find that intangible asset holdings are disproportionately concentrated among affiliates in low-tax jurisdictions: a decrease in the average tax difference to other affiliates of 1 percentage point raises the subsidiary's level of intangible assets by 2.2%. Karkinsky and Riedel (2012) test whether patent applications are more likely to be made by lower-tax affiliates, and find a semi-elasticity of -3.5: at the sample mean, this implies that an increase in the corporate tax rate of 1 percentage point reduces the number of patent applications by 3.5%. A more recent study by Alstadsaeter et al. (2015) specifically examines patent boxes, isolating their impact from that of the general corporate tax rate, and also finds a quantitatively large effect.

The efficiency implications of where patents are formally held are likely to be minimal, unless some real R&D activity is required in the jurisdictions where patents are held in order to enjoy the tax benefit (which may distort the location of R&D across countries). Of course, there is a general argument for subsidizing R&D activity because firms cannot appropriate the social returns from their investment. However, R&D is directly subsidized through tax credits, and patents are protected by intellectual property law, allowing patentholders to earn rents that incentivize innovation. Unless these instruments are for some reason not being used optimally, it is difficult to envisage any additional role for patent boxes in subsidizing R&D activity.

The strongest argument for a patent box seems to be that this type of income is particularly mobile, and so countries should lower its tax burden as part of a process of engaging in tax competition. This bears some resemblance to "defecting" in a prisoner's dilemma game, but it should not be forgotten that this strategy is privately optimal (assuming that there is no available multilateral process to constrain tax competition). The main efficiency cost (apart from the potential distortion to the location of R&D) is likely to be an increase in the deadweight cost of tax planning, as patent box regimes create additional complexity.

2.4) Distortions to the Use of External Debt

A corporation's interest payments on debt are deductible, unlike its payment of returns to equityholders.[9] This tax treatment gives rise to an incentive for corporations to use more debt finance than they would otherwise choose. It is important to note that this incentive pertains to *external* debt – that is, borrowing at arm's length from lenders external to the corporation or affiliated group of companies to which it belongs – as distinct from income-shifting via the use of inter-affiliate debt. The latter does not entail the same type of "real" resource costs as external debt, though it does create deadweight costs of tax planning of the sort discussed in Section 2.2 above.

The efficiency cost of the tax-induced excessive use of external debt is generally framed in terms of the resource costs of insolvency and corporate reorganization (e.g. Dharmapala, 2009).[10] When firms use more external debt than they otherwise would because of the tax deductibility of interest payments, the costs of insolvency and reorganization are incurred more frequently. These costs are not identical to the legal costs incurred in the bankruptcy process, which are primarily a transfer. Rather, deadweight costs arise because of a misallocation of labor - the returns to bankruptcy practice rise, drawing in more lawyers at the margin who would have produced more socially valuable output elsewhere (absent the tax incentive for firms to use too much debt). In addition, when leverage is high and agency costs of debt exist, equityholders may seek to transfer wealth to themselves from bondholders through greater risk-taking. There may be additional deadweight costs due to this behavior when leverage is higher due the tax bias towards debt.

Framed in this way, the efficiency costs of debt bias seem somewhat attenuated. The consensus estimate of the literature on the magnitude of debt bias is that a 10 percentage point reduction in the corporate tax rate (e.g. from 35% to 25%) reduces the debt-to-asset ratio by 2.8 percentage points (e.g. from 50% to 47.2%) – see de Mooij (2012). The efficiency costs implied by the bankruptcy cost framework are very modest (Gordon, 2010), amounting to less than 1% of US corporate tax revenue.

---

[9] This tax preference arguably has its origins in the accounting treatment of interest payments as an expense associated with earning income. It therefore appears natural for interest payments to be deductible. Historically, the asymmetric treatment of interest and equity returns appears to have its origins in the efforts of accounting rules to measure the income of a business from the perspective of the equityholders (e.g. de Mooij, 2012; Desai and Dharmapala, 2015).

[10] Desai and Dharmapala (2015) suggest that under some circumstances, differences among MNCs in the extent to which they can deduct interest may lead to distortions in the pattern of ownership, similar to those discussed in Section 2.7 below.

While the traditional view has been that the efficiency costs of debt bias are small, since the financial crisis of 2008 there has emerged a new focus on the role of tax-induced debt bias in affecting the likelihood of financial crises. De Mooij, Keen and Orihara (2013) find that a higher degree of tax bias towards debt is associated with higher leverage among banks, which in turn is associated with a higher probability of a financial crisis among OECD countries. If the tax bias towards debt is indeed associated with financial instability, then its efficiency costs may be quite different in both nature and scale. For instance, they may include output losses from the effects of financial crises on the real economy. However, economists' understanding of the causes of the crisis and the role of taxation remain very much a work in progress.

2.5) Distortions to Payout and Repatriation Decisions

Corporations' choices of whether to pay dividends to equityholders, to repurchase shares, or to retain cash are influenced by the personal tax treatment of dividends and capital gains. Historically, dividends were taxed more heavily than capital gains – for instance, prior to the 2003 tax reform (the Jobs and Growth Tax Relief Reconciliation Act, or JGTRRA) the top rate on dividend income was 38.6%, while the tax rate on long-term capital gains was 20%. The 2003 tax reform reduced these rates to 15%. The top rate on both dividends and capital gains has risen to 20% since 2013, but these rates have remained equal to each other. Nonetheless, there is still some advantage to the retention of cash, as personal taxes are deferred until the realization of capital gains, and to repurchases when these represent a recovery of basis.

Evidence from the 2003 tax reform suggests that dividend payments are quite sensitive to the tax rate on dividends – Chetty and Saez (2005) find a 20% increase in dividend payments following the 2003 reform, with the response being stronger among firms where agency costs appear to be lower. To the extent that taxes induce firms to retain more cash, the primary inefficiency is likely to be from agency costs of free cash flow (i.e. negative-value investments). The bias towards retention also represents a distortion to the timing of payout. In principle, this may distort stockholders' intertemporal pattern of consumption if they are credit-constrained or otherwise prone to consuming more out of dividend income (for instance, due to placing dividend income in a different "mental account"). However, given that most stock is owned by households with higher incomes and reasonable access to credit, it is unlikely that this type of distortion is important.

The payment (or "repatriation") of dividends from foreign affiliates to their US parents raises a quite different set of issues. As previously discussed, the US tax is imposed only at the time of repatriation, enabling US MNCs to defer US taxes on active foreign income. When there are no profitable active investments abroad, deferral can be achieved by accumulating passive assets in low-tax affiliates, despite the Subpart F provisions that impose immediate US taxation of passive foreign income. Suppose that a foreign affiliate of a US MNC earns $100 of active income, delays repatriation, and invests in a portfolio of passive assets that earns a 10% annual return. Each year, it will be subject to immediate US tax at 35% on the $10 return (with a credit for any foreign tax paid). However, the US tax on the original $100 of active income is deferred until the time of repatriation (Weichenrieder, 1996).

This incentive to delay payment of dividends to the parent has become widely known as the "lockout" effect (because cash held abroad is said to be "locked out" of the US parent). The issue is one of great practical significance, as indicated by the large amounts of cash held by US MNCs in their foreign affiliates, currently estimated to be about $2.1 trillion.[11] In 2004, Congress enacted the American Job Creation Act (AJCA), which contained a provision (known as the Homeland Investment Act) that enabled US MNCs to repatriate foreign cash at a drastically reduced tax rate of 5.25% during 2005. This was ostensibly a one-time repatriation holiday, but Congress has on several occasions considered repeating this exercise and it remains part of the policy debate today.

A primary efficiency cost of the lockout effect is the possibility of negative-value investments abroad by affiliates of US MNCs due to the tax costs of repatriating cash to the US. For instance, Hanlon, Lester and Verdi (2015) analyze the market responses to announcements of acquisitions. They find that market reactions are less positive for the announcement of foreign acquisitions by US MNCs that have particularly large tax-induced foreign cash holdings. In particular, "a one-standard-deviation increase in our proxies for tax-induced foreign cash is associated with a lower acquirer's abnormal return of 0.32–0.38%, representing roughly 5–6% of the transaction value, or approximately $5–$6 million per deal" (p. 181).

In addition, there is a possibility of foregone profitable investments in the US if the parent is cash-constrained. This appears unlikely to be a significant problem, based on the results of

---

[11] See e.g. the Citizens for Tax Justice report on "$2.1 Trillion in Corporate Profits Held Offshore: A Comparison of International Tax Proposals" at http://ctj.org/pdf/repatriation0715.pdf.

studies of the AJCA. For instance, Dharmapala, Foley and Forbes (2011) analyze the uses to which repatriated funds under the AJCA were put. The law ostensibly required that repatriated funds were to be used to increase US investment and employment in order to qualify for the tax benefit. Dharmapala, Foley and Forbes (2011) use an instrumental variables strategy - based on ownership characteristics (such as the presence of tax haven affiliates and holding company structures) determined prior to the AJCA that increased the value of the tax holiday to firms – to identify the effects of exogenous increases in repatriations on a variety of outcome variables. They find no detectable impact on US investment or employment but find an effect on share repurchases, a pattern of responses that suggests that US MNC parents were not financially constrained.[12]

2.6) Distortions to the Choice of Organizational Form

The issue of "organizational form" refers to the choice on the part of a business entity of whether to incorporate or to operate in one of a number of possible noncorporate forms. The tax significance is that the income of noncorporate entities is "passed through" to the individual owners and taxed at the applicable personal tax rate. The existence of an entity-level tax on corporations, combined with the preferential personal tax rates on dividend and capital gains income distributed by corporations, can create incentives for an entity to either incorporate or avoid incorporation for tax reasons.

There is a substantial literature that seeks to measure the sensitivity of organizational form choices to tax rates (e.g. Gordon and MacKie-Mason, 1994). For instance, Goolsbee (2004) uses cross-sectional data on the organizational form of firms across states with varying ratios of corporate to personal taxation. He finds that a one percentage point increase in the corporate income tax rate reduces the corporate share of firms by 2.5%, indicating that this choice is quite responsive to the relative tax burden on corporations and pass-through entities. However, the efficiency cost is quite difficult to quantify. Goolsbee (2004) finds no detectable impact of organizational form on a firm's business operations. Rather, the efficiency cost is likely to consist of higher transaction costs. For instance, the Delaware corporation is an entity that is well-known

---

[12] There may, however, be other efficiency costs of lockout, such as increased agency costs of debt if the US parent borrows large amounts instead of repatriating. Early estimates of the overall deadweight cost of lockout were relatively modest - Desai, Foley and Hines (2001) estimate this cost as being about 2.5% of repatriations, while Grubert and Mutti (2001) estimate that it is about 1% of foreign income. However, current conditions are quite different, in particular with respect to the amount of cash held overseas.

among lawyers, whereas other legal forms such as limited liability companies (LLCs) may be less familiar.

The US is characterized by an extraordinarily large fraction of business activity being undertaken through noncorporate vehicles – in 2011, 54.2% of US business income was earned in pass-through entities (Cooper et al., 2015). However, some commentators have expressed concern that corporate tax reform may create a tax advantage to incorporation. Sanchirico (2016) highlights the irony of lowering corporate tax rates to address the lockout problem created by the availability of deferral for MNCs while at the same time creating opportunities for the deferral of taxation by domestic entities and individuals via incorporation. In the policy arena, there has also been a certain amount of resistance to lowering the corporate tax on the grounds that it would not benefit (and may adversely affect the competitiveness of) noncorporate business entities.

The central problem here can be characterized as one where the corporate tax rate is a single instrument that affects two very different kinds of behavior – the incorporation decisions of (typically small) business entities or individuals, and the location and investment decisions of large MNCs. Given the extensive array of inefficiencies attributable to the current corporate tax regime, it would seem inadvisable to forestall reform in order to prevent excessive incorporation by small entities. An alternative approach is to create different instruments to address the different behavioral margins. Currently, the US corporate tax has a graduated ("progressive") rate structure, with a 15% rate on the first $50,000.[13] One alternative may be to set the rate on the first $x of income at 35% (where x is chosen appropriately to reflect the likely upper bound on the income of the individuals and small business entities that may engage in excessive incorporation) and to set a 25% rate on corporate income above $x. In an admittedly rough way, this would subject the income of smaller corporations to a higher rate (which can be set to ensure neutrality with regard to organizational form) while giving larger corporations the benefit of a lower marginal rate.

---

[13] This graduated structure applies only for quite low levels of income, however, with a 34% rate for income above $335,000 and a 35% rate above $10 million – see e.g. Internal Revenue Service, 2014 Instructions for Form 1120.

There are also a number of other alternatives, such as increasing the tax rate on equity returns[14] (i.e. dividends and capital gains[15]). It may also be possible to create a special regime for closely-held corporations, where retained cash is deemed to have been paid as dividends to limit the deferral advantage, or closely-held corporations could simply be treated as pass-through entities, as proposed by Yin (1998).

2.7) Distortions to Asset Ownership and the Market for Corporate Control

The modern theory of the MNC emphasizes the central importance of the advantages of the common ownership of assets across countries in inducing (some) firms to become multinational. In particular, the widely used OLI (ownership, location and internalization) framework stresses that the ownership of assets affects their productivity. When multinationality is viewed in this light, the importance of tax rules that do not distort the pattern of ownership of assets across locations – for instance, which affiliates are owned by which parents - becomes readily apparent (e.g. Desai and Hines, 2003). The US worldwide tax system, it is often argued, potentially distorts these patterns of ownership by placing an extra burden on US MNCs.

To illustrate, consider a scenario where a US MNC is competing with an MNC based in Country B to acquire an asset in a third country C. Suppose that B imposes a 35% tax rate and is territorial, the US imposes a 35% rate on worldwide basis, and C imposes a 20% tax. If the affiliate in C is owned by the MNC from country B, then it faces a 20% local tax rate and no additional home country tax. If that same affiliate is owned by the US MNC, it faces the 35% US tax (with a foreign tax credit) in addition to the local tax, if repatriation is immediate. For instance, if the affiliate earns $100 (pretax) under US ownership but only $85 (pretax) under B ownership, the after-tax return is $65 for the US MNC and $68 for the country-B MNC. The latter will acquire the asset even though it is the less productive owner.

The efficiency cost in this type of scenario is the lower productivity of assets (in pretax terms) as a result of ownership distortions. Measuring the effects of ownership on productivity directly is not straightforward. However, the disadvantages of US residence for MNCs have

---

[14] The tax on equity returns has been set at a relatively low level to address concerns about the burden on corporations' cost of capital of taxation at both the corporate and personal levels. However, with increasingly globalized capital markets, the personal tax on US residents arguably plays less of a role in determining the cost of capital for US firms (e.g. Desai and Dharmapala, 2011).

[15] There are some clear disadvantages of higher personal taxes - for instance, increasing the capital gains tax may exacerbate the lock-in problem. This could be mitigated by other changes to capital gains taxation, such as requiring taxpayers to pay interest to offset the deferral advantage associated with the realization doctrine.

increasingly been reflected in the market for corporate control. In particular, corporate inversions have become a major issue in recent years. These are mergers and acquisitions (M&A) in which a US MNC is acquired by a foreign firm, with the combined entity subsequently establishing its tax domicile outside the US.[16]

A growing body of evidence has used data on M&A to estimate the impact of taxes, and especially of residence-based taxes on foreign income, on the pattern and value of these transactions. For instance, Huizinga and Voget (2009) analyze a large sample of cross-border M&A transactions over 1985-2004. They estimate that eliminating the US worldwide tax would have increased the fraction of post-merger entities with US domiciles from 53% to 58%. Voget (2011) analyses instances in which MNCs relocated their headquarters or residence over the 1997-2007 period. He finds that a 10 percentage point increase in the repatriation tax increases such relocations by a third. Feld et al. (2013) estimate that a switch from the US worldwide system to a territorial system would increase the number of M&A transactions with US acquirers by 17%. Using data on foreign acquisitions of US firms over 1990-2010, Bird (2015) also finds large tax-induced distortions of the M&A market, and estimates substantial welfare losses. Overall, this body of evidence suggests strongly that patterns of ownership among MNCs are quite substantially distorted by the US international tax regime.

2.8) *Distortions to the Choices of Portfolio Investors*

The discussion above focused on the acquisition of assets by different potential MNC acquirers. When such acquisitions are equity-financed, the funds are ultimately provided by portfolio investors. These portfolio investors can choose the firms in which they buy shares, to an increasing degree across national borders. Thus, to the extent that US MNCs are disadvantaged by the US tax system, they will be disfavored as vehicles for investment by portfolio investors. Desai and Dharmapala (2009b) construct a simple model in which US portfolio investors can achieve international diversification goals by either investing in US MNCs that operate abroad (engaging in FDI) or by buying stock in firms in foreign countries (i.e. engaging in foreign portfolio investment, or FPI). In this setting, the additional US tax on foreign income induces US portfolio investors to supply less capital to the US MNC and to invest instead in foreign firms.

---

[16] Another potential response is for new US-headquartered startups to begin life incorporated in a foreign tax haven jurisdiction in order to escape future US taxation of foreign income – see e.g. Desai and Dharmapala (2010).

Desai and Dharmapala (2009b) find evidence consistent with the importance of this phenomenon by combining data on US outbound FPI and US outbound FDI in 50 countries over 1994-2005. First, as shown in Figure 2, the ratio of FPI to aggregate US equity holdings (FPI plus FDI) is higher in countries with lower corporate tax rates (where the US residual tax is more burdensome). This pattern is confirmed in a regression analysis that controls for a variety of factors, including country-specific linear time trends. Their estimated coefficient of −0.033 implies an elasticity of FPI with respect to the local corporate tax rate of approximately −1. Thus, a 10% reduction in a country's corporate tax rate (e.g. from 35% to 31.5%) would be predicted to lead to a 10% increase in the value of equity held by US portfolio investors. This is another manifestation of the distortion of ownership patterns by worldwide taxation, albeit an ongoing process that lacks the drama of corporate inversion transactions.

3) "Consensus" Reforms: Territorialism with a Reduction in the Corporate Tax Rate

There appears to be an emerging consensus in policy circles on the general outlines of business and corporate tax reform, although there remains much uncertainty about its precise shape and the likelihood and timeframe of its enactment. The aim here is to briefly sketch the major features of this consensus, and to discuss the efficiency consequences of this type of reform in the light of the framework in Section 2. The major impetus for reform appears to stem from the lockout problem and from the recognition that the US statutory corporate tax is out of step with those of other comparable countries. This tax rate differential has become increasingly difficult to ignore, as has the accumulation of cash held by the foreign affiliates of US MNCs and the growth of corporate inversions. Thus, the key elements of the emerging consensus are a reduction in the corporate tax rate to somewhere between 20% and 28% (we use 25% for concreteness in the discussion below) and a shift from a worldwide to a territorial system (i.e. the exemption from US tax of dividends paid by foreign affiliates to their US parents). Broadly speaking, this is the type of reform envisaged by the Hatch Report and embodied in a number of current legislative proposals.

However, there is greater disagreement and uncertainty about various other elements of a possible reform package, especially the anti-avoidance rules that may be introduced as part of a reform. In particular, two quite novel ideas (analyzed in more detail below) have been widely

17

discussed: a one-time levy on the foreign cash holdings of US MNCs to be implemented at the time of the reform, and a minimum tax on foreign income.

3.1) Evaluating "Consensus" Reforms

Of the distortions catalogued in Section 2, only one – the lockout effect – is unambiguously and fully addressed by this type of "consensus" reform. This is because a dividend exemption system implies that there is no advantage to delaying repatriations.[17] The evidence from two other major economies – the UK and Japan – that implemented territorial reforms in 2009 supports the idea that such a reform in the US will solve the lockout problem. For instance, Egger et al. (2015) find that repatriations by foreign affiliates of UK MNCs increased following the UK reform. Moreover, investment by these affiliates declined after the reform, suggesting that they had previously been engaging in negative-value investments. These effects occurred even though (pre-reform) UK rules allowed greater scope for UK MNCs to return cash to the parent via mechanisms that avoided the repatriation tax than is the case for US MNCs. Hasegawa and Kiyota (2015) find similarly that repatriations from foreign affiliates with large amounts of retained earnings increased after the Japanese reform.

Ownership distortions relating to M&A activity and portfolio investment would be mitigated by a dividend exemption regime and by a lower corporate tax rate. Again, evidence from the UK and Japanese reforms is instructive. Liu (2015) finds that UK MNCs increased their activity in lower-tax foreign countries (where they were previously most burdened by the repatriation tax); this effect was not offset by reduced activity in higher-tax foreign countries or the UK. Feld et al. (2013) find that following the Japanese reform, the number of M&A transactions with a Japanese acquirer increased by about 32%. However, the extent to which these inefficiencies will be mitigated depends to a significant degree on the choice of a minimum tax.

Incentives for income-shifting out of the US are likely to be mitigated by the lower corporate tax rate. On the other hand, it is often argued that moving to a territorial system may increase the gains from shifting income out of the US. This is because under the current regime any income shifted out of the US will eventually be subject to the repatriation tax upon repatriation to the US. This would not be the case for active business income under a territorial system, thereby arguably creating a greater incentive for income-shifting. As was discussed in Section 2.2,

---

[17] This is true even with a minimum tax on foreign income set at a high rate, as the minimum tax would be applied on an immediate basis (without deferral).

however, the efficiency gains from changes in income-shifting activity are not straightforward to assess. Some of the purely domestic distortions would also be mitigated, but not eliminated, by a reduction in the corporate tax rate.

In summary, a "consensus" reform would mark a significant advance that would address the most glaring problems of the US corporate tax – the high statutory rate and the lockout problem – and would also mitigate a range of other distortions, both international and domestic. However, it would leave many of the inefficiencies of corporate taxation largely untouched.

3.2) A One-Time Levy on Foreign Cash Holdings

A territorial reform would relieve US MNCs of the burden of future repatriation taxes. It might seem that a reasonable *quid pro quo* would be the payment of a one-time levy, calibrated to the effective tax burden of the pre-reform repatriation tax. This element of a potential tax reform has gained significant support. In addition to preventing a windfall gain from tax reform for MNCs, this one-time levy is also viewed as an efficient (i.e. nondistortionary) source of revenue. The latter claim raises a puzzle, however. If it is indeed true that this would (credibly) be a one-time levy, then on efficiency grounds it is not clear why a levy should be limited to the expected burden of the repatriation tax - it would be efficient to tax the foreign cash holdings of MNCs at 100% in order to reduce other distortionary taxes.

Of course, the efficiency of such a levy depends crucially on the credibility of the promise that the levy will not be repeated. Once the administrative apparatus for taxing foreign cash is established, it will be tempting for Congress to repeat the ostensibly "one-time" levy. Past experience with other "one-time" policies in the international tax arena may be instructive. As discussed earlier, in 2004 Congress enacted the AJCA, one component of which was a "one-time" repatriation tax holiday. In 2009 and 2011, members of Congress sought several times to repeat the "one-time" holiday, and came fairly close to succeeding on some occasions. Indeed, a repatriation tax holiday is still discussed as a possibility in some policy circles today. This experience engenders little confidence in the one-time nature of the levy on foreign cash.

If the "one-time" levy on foreign cash is anticipated to recur, it may lead to a new type of inefficiency: excessive future repatriations. Suppose that a US MNC generates $1 abroad (following a tax reform that eliminates taxation upon repatriation). Repatriating immediately ensures that this cash will escape any future US levy, whereas keeping the cash abroad entails some possibility of the recurrence of the "one-time" levy. Other things equal, this will encourage

repatriation. In a frictionless world, this would not matter for efficiency, as cash can be borrowed as needed for profitable investment projects. Even in a situation where the MNC faces a higher cost of external relative to internal cash (and hence the use of internal capital markets is valuable), there would be no efficiency cost if the MNC can hold cash within the US parent and redeploy it to affiliates when profitable investment opportunities emerge. However, in the presence of agency costs among affiliates, repatriation to the US parent may create pressure to either use the funds for US investment or to pay out dividends to common stockholders, foregoing more valuable investment opportunities abroad.[18]

3.3) A Minimum Tax on Foreign Income

Proposals for a minimum tax on the foreign income of US MNCs take many forms (Grubert and Altshuler, 2013). For instance, the tax may be applied on a uniform basis (to all foreign income) or on a per-country basis. It may contain a "cliff" (where foreign income not subject to a sufficiently high foreign tax rate is subject to the full US rate) or may be applied at a rate that is substantially lower than the regular US rate. It may in some versions include an exemption for active business income or an exemption for a normal return to capital. Here, we ignore these complexities, and focus on the most straightforward version, assuming that it applies broadly to foreign-source income as that concept is currently defined.[19]

The main point that we make through a simple numerical example is that if the minimum tax rate is set relatively high, it will reduce foreign-to-foreign income shifting by US MNCs. While this reduces the deadweight costs of tax planning, it may reduce US national welfare by increasing the amount of foreign tax paid by US MNCs. On the other hand, if the minimum tax rate is low, then it will not have much impact on foreign-to-foreign income shifting. While US national welfare will not be reduced by increased payment of foreign taxes, the deadweight cost of tax planning will also not change substantially. To be sure, a minimum tax can generate a certain amount of additional US tax revenue. However, the aim of reform should arguably be to increase social welfare rather than to increase revenue.

---

[18] The expected burden of future levies may also create ownership distortions by adversely affecting the ability of US MNCs to compete for the purchase of foreign assets, relative to non-US MNCs that do not face the possibility of a levy on overseas cash holdings.

[19] Grubert and Altshuler (2013) carefully define alternative versions of the minimum tax and conduct numerical simulations of the impact on US and foreign tax revenues and other relevant outcomes. Ultimately, they argue for a per-country minimum tax, which they argue would reduce the incentives for income–shifting.

To illustrate these points, consider a world with three countries (as illustrated in Figure 3) – the US, a high-tax foreign country F, and a zero-tax haven H. Suppose that the US has enacted a territorial tax reform that involves dividend exemption with a corporate tax rate of 20%. Suppose that country F also imposes a corporate tax of 20%. Assume that the US MNC earns $50 in the US and $50 in F. It can choose to engage in tax planning to shift all $50 from the US to H at a fixed cost of $2.[20] Similarly, the US MNC can choose to engage in tax planning to shift all $50 from F to H, also at a fixed cost of $2. As in Equation (3), US national welfare is the sum of the after-tax profits of the US-resident MNC and US tax revenue.

Suppose initially that there is no minimum tax. Then, the US MNC will shift all income to H. Its payoff is its pretax worldwide income, minus its tax planning costs – i.e. $96 - and US national welfare is therefore also $96 (see Figure 3).[21] Now, suppose we introduce a minimum tax of 18%. In this scenario with a relatively high minimum tax, US MNCs are deterred from income shifting.[22] This implies that the deadweight cost of tax planning is saved, but US national welfare is now lower than without a minimum tax (specifically, it is $90 < $96; see Figure 4). Thus, the minimum tax can lower US national welfare by deterring foreign-to-foreign shifting and increasing tax payments to foreign governments by US MNCs.[23]

This reduction in US national welfare will not occur when the minimum tax rate is set relatively low. For instance, suppose it is 10%. Then, the US MNC will shift all its income to H and US national welfare will again be $96.[24] This is of course no lower than without a minimum tax, but also no higher, so the minimum tax does not enhance US national welfare. Of course, Equation (3) may be overly simplistic in that national welfare may place greater weight on tax revenue than on the MNC's profits. Then, a 10% minimum tax makes the US better off due to

---

[20] This tax planning cost is assumed to not be tax-deductible, though this is not crucial for the conclusions.

[21] The US MNC can avoid $10 of tax in each of the US and F at a cost of $2 per country of undertaking tax planning. Thus, the US MNC will shift all income to H. Its payoff is then $100 - $2 - $2 = $96.

[22] If the US MNC shifts its income from the US and F to H, its payoff is now $50 – 2 – 9 + 50 – 2 – 9 = 78. That is, it incurs the $2 tax planning cost per country, and also pays a $9 minimum tax to the US as the tax rate in H is zero. If it were to refrain from tax planning, it would shift no income to H and would pay $10 of tax to the US and $10 of tax to the government of F, and its payoff would be 50 - 10 + 50 - 10 = $80.

[23] This type of outcome may be less likely if current income-shifting is primarily from the US to H, rather than from F to H. However, the (limited) existing evidence suggests that income-shifting out of the parent tends to be smaller in magnitude than foreign-to-foreign shifting (Dischinger, Knoll and Riedel, 2014), possibly due to agency costs between the managers of the parent and managers of affiliates.

[24] The US MNC faces a minimum tax of $5 if it shifts to H. It will thus be willing to incur the $2 per country tax planning cost. The US MNC's payoff = $50 – 2 – 5 + 50 – 2 – 5 = 86 from shifting income, whereas it would be $80 if it chose not to engage in income shifting.

increased revenue. However, this effect is likely to be modest in magnitude. More importantly, even if additional tax revenue is socially desirable, it is not clear why the foreign-source income of US MNCs is the least distortionary source of such revenue, when one could instead increase personal tax rates (or introduce a VAT).

4) Formula Apportionment

The current system of international taxation is based on separate accounting (SA) for each affiliate of a MNC. Proposals for formula apportionment (FA) are premised on the idea that it is impossible to separate out the activities of different legal entities within the same economic firm. Implementing FA requires first defining a consolidated worldwide entity to which FA is to be applied. Its aggregate worldwide income is then apportioned based on a formula (such as the fraction of its worldwide sales that take place in the relevant jurisdiction).[25] Thus, FA dispenses with both of the traditional international tax law concepts of source and residence, and replaces them with a formula that allocates tax base among countries based typically on the location of consumers.

It is most natural to envisage FA being implemented on a multilateral basis, with some agreement among governments on the formula. However, in principle it is possible to imagine unilateral US implementation of FA, although this creates a possibility of double taxation or nontaxation. Indeed, the US would then become a haven for inward income-shifting – income reported in the US does not increase US tax liability, while shifting income out of jurisdictions that continue to use the source principle would reduce tax liability there. This effect may create pressure on foreign countries to follow suit and adopt FA themselves.

By abandoning the source and residence principles, FA would solve many of the international distortions associated with corporate taxation. There would no longer be any incentive to engage in the currently-prevalent forms of income-shifting, as tax liability would be based on the location of sales and not the source of income. Repatriation decisions would have no tax consequences, so the lockout effect and ownership distortions due to the residual tax would disappear. However, distortions that are primarily domestic – such as the bias towards external debt, the bias towards retaining cash, and distortions to the choice of organizational form – would

---

[25] For instance, an MNC that generates $100 of worldwide income and generates 20% of its worldwide sales revenue in the US would be deemed to have taxable income of $20 in the US.

be essentially unaffected by FA. Thus, FA can be expected to directly address about half of the distortions identified in Section 2, while doing very little to mitigate the remainder.

Moreover, it is possible that FA may give rise to new kinds of efficiency costs that are unknown under the current SA system. For instance, firms may sell their products to arm's-length wholesalers in low-tax jurisdictions who then resell in high-tax countries. Proponents have suggested look-through provisions to address such "reselling" strategies, but it is unclear how they would apply if the reseller modifies and adds some value to the product before reselling.

MNCs may also respond to an FA system by altering their patterns of asset ownership. For instance, MNCs would have an incentive to acquire businesses earning modest rates of return (such as restaurants) in low-tax countries, thereby increasing the fraction of their sales that are allocated to low-tax countries (e.g. Altshuler and Grubert, 2010). Conversely, routine activities would no longer be conducted in-house in high-tax countries. Such changes to ownership patterns may have significant efficiency costs.[26] Avi Yonah, Clausing and Durst (2008) propose an FA system that would impute a fixed "normal" return to routine activities, and use a sales-based formula to allocate only the returns to nonroutine activities. This would address the "restaurant" problem highlighted above to the extent that the restaurant's returns would be classified as a "routine" activity and allocated fully to the low-tax country. However, it would place considerable pressure on the distinction between routine and nonroutine activities, a distinction that is far from self-evident.[27]

FA is in many respects an important idea. Even in the rosiest scenario, however, it would only address about half of the distortions associated with the corporate tax, and it may give rise to new distortions from which we are currently spared. However, FA's most attractive feature - of moving away from the source and residence principles – also characterizes the destination-based corporate tax, to which we turn next.

5) *The Destination-based Cash Flow Tax and VAT-type Options*

A rather more fundamental type of reform than we have considered so far would involve moving from the income-type taxation of businesses towards a consumption-type tax system.

---

[26] Altshuler and Grubert (2010) develop a model that analyzes the consequences of FA and SA systems in a unified framework, and conclude that FA offers little overall advantage once MNCs' strategic responses to the FA system are taken into account.

[27] There are also a number of other difficult issues related to the implementation of FA, such as the definition of unitary entities for tax purposes.

Consumption-type taxes – such as cash flow taxes and various forms of a VAT - all share some fundamental commonalities. A cash flow tax takes as its base the net cash flows of a firm (its cash receipts minus its cash outlays). As investment is fully deductible at the time it is undertaken (i.e. fully "expensed"), a cash flow tax is a tax on economic rents, exempting the normal return to capital. The destination-based cash flow tax (DBCFT) builds on this idea by adding a destination principle that addresses many of the cross-jurisdictional distortions of corporate taxation (Auerbach, 2010; Auerbach, Devereux and Simpson, 2010).[28]

Moving to a DBCFT from the existing corporate income tax involves two major steps. The first is to transform the tax base from income to cash flow. This is accomplished by allowing deductions for all cash outflows (including the full cost of investment expenditures). The full expensing of investment eliminates distortions to the amount of investment. All cash receipts (apart from cash generated by the issuance of equity) are included in the tax base. Borrowed funds are included in the tax base, while interest payments are deductible as they constitute cash outflows. The symmetric treatment of borrowed funds and interest payments eliminates debt bias.

The second step is the introduction of the destination principle. A cash flow tax that uses a source principle may distort discrete investment and location choices, even though it fully expenses investment, because the EATR may differ across locations. In contrast, the destination principle is based on the location of consumption. It is implemented by ensuring that the DBCFT does not apply to any form of cross-border activity. Income from abroad – whether earned by a foreign affiliate or from exports – is excluded. This exclusion of foreign-related cash receipts goes considerably beyond what territorial income tax systems seek to achieve, and its conceptual basis is quite different. For a territorial income tax system, the key principle is source, and foreign-source income is exempt under certain conditions; however, income from abroad that is attributable to domestic economic activity is taxable. Under a DBCFT, the guiding principle is destination rather than source, and so what matters is the location of consumption, not the source of income. Thus, there is also no deduction for the cost of purchases made abroad. The DBCFT's stance of ignoring foreign transactions is essentially equivalent to the border adjustments made under a destination-based VAT, which ensure that the base of the VAT includes only domestic consumption.

---

[28] Devereux and de la Feria (2014) address issues relating to the implementation of a DBCFT. Note that the DBCFT proposal formulated by Auerbach (2010) applies to financial as well as nonfinancial firms.

The DBCFT would solve virtually all distortions from the corporate tax. It was noted earlier that it would not affect the amount or location of investment and that it would eliminate debt bias. There is no gain from income shifting because the source principle has been jettisoned. Under a DBCFT, there are no tax consequences associated with repatriation. Thus, lockout will not occur, and there will be no ownership distortions of any kind. Notwithstanding the caveats raised by the analysis in Section (2.2), it is reasonable to expect that there would be a substantial efficiency gain from the elimination of the deadweight costs associated with the (mis)allocation of workers to tax planning activity.

The only possible exceptions to this rosy scenario relate to areas where the DBCFT interacts with the personal tax system. In particular, the distortion to payout depends on the personal tax treatment of dividends and capital gains, while the distortion to the choice of organizational form depends on the personal tax treatment of pass-through business income. The adoption of a DBCFT does not, by itself, settle these issues, and the consequences with respect to these margins depend on the personal tax system with which the DBCFT is paired. One possibility is that the current personal income tax system continues to operate. Then, some distortions, for instance to organizational form, may persist. To address issues of organizational form, Auerbach (2010) proposes extending the DBCFT to S corporations (pass-through entities that are close substitutes for C corporations), based on the number of shareholders rather than on legal form. This would reduce the distortion, and while there may be some inefficiency at the margin (for instance, firms keeping the number of shareholders above or below the threshold for application of the DBCFT), it might reasonably be expected to be localized and small.

An alternative perspective emphasizes the commonalities between the DBCFT and the VAT. The DBCFT is equivalent to a destination-based subtraction-method VAT with a deduction for payroll (Auerbach, Devereux and Simpson, 2010).[29] Thus, the DBCFT could be viewed as the business component of a subtraction-method VAT (with a deduction at the business level for wages). Value-added due to labor inputs could then be taxed at the individual level, with this individual wage tax replacing the current personal income tax. The individual tax on value-added

---

[29] VAT systems generally use either the subtraction method – which involves computing the value of sales, subtracting the costs of inputs, and then applying the VAT rate to the result – or the credit-invoice method, which involves computing the value of sales, applying the VAT rate to the result, and then subtracting the VAT paid on inputs (which are established using the invoices provided by suppliers). These approaches are fundamentally equivalent, and tax the same base (namely, consumption). However, the credit-invoice method predominates around the world and is thought to have various administrative advantages (Grinberg, 2010).

due to labor would resemble the individual component of other subtraction-method VAT-type proposals, such as the well-known Hall and Rabushka (1995) flat tax. When paired with an individual-level tax on value-added due to labor, the DBCFT would eliminate all the distortions catalogued in Section 2. In particular, organizational form distortions of the type discussed in Section (2.6) will not occur because there is no personal income tax, and payout to common stockholders will also be unaffected by this tax system as there would be no personal tax on dividends or capital gains.

The DBCFT is thus clearly very attractive, in that it can solve essentially all of the inefficiencies described in Section 2. It should be remembered, however, that this virtue is shared by VAT-type proposals such as the flat tax and by a VAT (especially a "full-replacement" VAT under which personal and corporate income taxes would be eliminated).[30] Moreover, implementing a DBCFT would raise new issues of administration and law, whereas the implementation of a VAT could draw on the extensive body of law and experience developed by about 150 countries over several decades. Thus, the introduction of a VAT or one of its variants would seem to be a policy that is worthy of serious consideration, notwithstanding its lack of political popularity and the opprobrium it attracts in the Hatch Report.[31] However, a full consideration of the ramifications of such a fundamental reform is beyond the scope of this paper.

6) Conclusion

This paper has reviewed lessons from economic research for the current debate on business tax reform in the US. It began by presenting a simple framework highlighting ten behavioral margins affected by corporate taxation. Three broad categories of reforms were then analyzed in the light of this framework. The major general lesson to be drawn is that the relatively modest reforms (involving lower corporate tax rates and dividend exemption) that are under discussion are likely to generate only modest gains, while leaving many of the inefficiencies of corporate

---

[30] Note, however, that while legal form as such does not matter for VAT liability, there may be a different distortion to firm size around the VAT threshold. Most countries apply VAT only above a threshold, typically defined in terms of turnover (e.g. Liu and Lockwood, 2015), and firms may "bunch" below such a threshold.

[31] In the US political arena, a VAT is criticized primarily for two reasons – its "regressivity" relative to the current personal income tax, and its reputation as a "money machine" that is "too" efficient at raising revenue. Sometimes both arguments are made simultaneously, casting some doubt on the sincerity of the critic's concern for income redistribution. Even so, the distributional issues are important, though it should be remembered that redistribution can be achieved via expenditures as well as revenues.

taxation unaddressed. More fundamental reforms, however, have the potential to eliminate all or most of the inefficiencies of corporate taxation.

While arguments for fundamental reform may seem utopian, a combination of domestic and international factors arguably create a unique opportunity for policymakers. In particular, there is widespread agreement within the US on the need for business tax reform. At the same time, global dissatisfaction with the current international tax regime - based on source and residence principles - has grown, as evidenced by the BEPS initiative. All of these concerns can be addressed through business tax reforms that move beyond the source and residence principles, for instance by implementing the destination-based consumption-type taxes described in Section 5 above.

References

Alstadsæter, Annette, Salvador Barrios, Gaetan Nicodème, G. J., Agnieszka Maria Skonieczna, and Antonio Vezzani. 2015. "Patent Boxes Design, Patents Location and Local R&D." CESifo Working Paper No. 5416.

Altshuler, Rosanne, and Harry Grubert. 2010. "Formula Apportionment: Is it Better Than the Current System and Are There Better Alternatives?" *National Tax Journal,* 63 (4): 1145-84.

Arulampalam, Wiji, Michael P. Devereux and Giorgia Maffini. 2012. "The Direct Incidence of Corporate Income Tax on Wages." *European Economic Review* 56 (6): 1038-54.

Auerbach, Alan J. 2010. *A Modern Corporate Tax*. Washington, DC: Center for American Progress and the Hamilton Project.

Auerbach, Alan J., Michael P. Devereux, and Helen Simpson. 2010. "Taxing Corporate Income." In *Dimensions of Tax Design: The Mirrlees Review*, edited by James A. Mirrlees, Stuart Adam, Tim Besley, Richard Blundell, Steve Bond, Robert Chote, Malcolm Gammie, Paul Johnson, Gareth Myles and James Poterba, 837-93. Oxford: Oxford University Press.

Avi-Yonah, Reuven S., Kimberly A. Clausing, and Michael C. Durst. 2008. "Allocating Business Profits for Tax Purposes: A Proposal to Adopt a Formulary Profit Split." *Florida Tax Review* 9 (5): 497-553.

Bird, Andrew. 2015. "Domestic Taxes and Inbound Acquisitions." http://www.andrew.cmu.edu/user/apmb/Bird_TaxMA.pdf

Chetty, Raj. 2009. "Is the Taxable Income Elasticity Sufficient to Calculate Deadweight Loss? The Implications of Evasion and Avoidance." *American Economic Journal: Economic Policy* 1 (2): 31–52.

Chetty, Raj and Emmanuel Saez. 2005. "Dividend Taxes and Corporate Behavior: Evidence from the 2003 Dividend Tax Cut." *Quarterly Journal of Economics* 120 (3): 791-833.

Cooper, Michael, John McClelland, James Pearce, Richard Prisinzano, Joseph Sullivan, Danny Yagan, Owen Zidar, and Eric Zwick. 2015. "Business in the United States: Who Owns it and How Much Tax Do They Pay?" *Tax Policy and the Economy* forthcoming.

De Mooij, Ruud A. 2012. "Tax Biases to Debt Finance: Assessing the Problem, Finding Solutions." *Fiscal Studies* 33 (4): 489-512.

De Mooij, Ruud A. and Sjef Ederveen. 2003. "Taxation and Foreign Direct Investment: A Synthesis of Empirical Research." *International Tax and Public Finance* 10 (6): 673-93.

De Mooij, Ruud A., Michael Keen, and Masanori Orihara. 2013. "Taxation, Bank Leverage, and Financial Crises." International Monetary Fund Working Paper No. 13/48.

Desai, Mihir A. and Dhammika Dharmapala. 2006. "Corporate Tax Avoidance and High-Powered Incentives." *Journal of Financial Economics* 79 (1): 145-79.

Desai, Mihir A. and Dhammika Dharmapala. 2009a. "Corporate Tax Avoidance and Firm Value." *Review of Economics and Statistics* 91 (3): 537-46.

Desai, Mihir A. and Dhammika Dharmapala. 2009b. "Taxes, Institutions and Foreign Diversification Opportunities." *Journal of Public Economics* 93 (5): 703-14.

Desai, Mihir A. and Dhammika Dharmapala. 2010. "Do Strong Fences make Strong Neighbors?" *National Tax Journal* 63 (4): 723-40.

Desai, Mihir A. and Dhammika Dharmapala. 2011. "Dividend Taxes and International Portfolio Choice." *Review of Economics and Statistics* 93 (1): 266-84.

Desai, Mihir A. and Dhammika Dharmapala. 2015. "Interest Deductions in a Multijurisdictional World." *National Tax Journal* 68 (3): 653-80.

Desai, Mihir A., C. Fritz Foley, and James R. Hines, Jr. 2001. "Repatriation Taxes and Dividend Distortions." *National Tax Journal* 54 (4): 829-51.

Desai, Mihir A., and James R. Hines, Jr. 2003. "Evaluating International Tax Reform." *National Tax Journal* 56 (3): 487-502.

Devereux, Michael P., and Rita de la Feria. 2014. "Designing and Implementing a Destination-Based Corporate Tax." Oxford University Centre for Business Taxation Working Paper No. 14/07.

Devereux, Michael P., and Rachel Griffith. 1998. "Taxes and the Location of Production: Evidence

from a Panel of US Multinationals." *Journal of Public Economics* 68 (3): 335-67.

Devereux, Michael P., and Rachel Griffith. 2003. "Evaluating Tax Policy for Location Decisions." *International Tax and Public Finance* 10 (2): 107-26.

Dharmapala, Dhammika. 2008. "What Problems and Opportunities are Created by Tax Havens?" *Oxford Review of Economic Policy* 24 (4): 661-79.

Dharmapala, Dhammika. 2009. "The Impact of Taxes on Dividends and Corporate Financial Policy: Lessons from the 2000's." In *Tax Policy Lessons from the 2000s*, edited by Alan D. Viard, 199-233. Washington, DC: American Enterprise Institute Press.

Dharmapala, Dhammika. 2014a. "What Do We Know About Base Erosion and Profit Shifting? A Review of the Empirical Literature." *Fiscal Studies* 35 (4): 421-48.

Dharmapala, Dhammika. 2014b. "Base Erosion and Profit Shifting: A Simple Conceptual Framework." *CESifo DICE Report* 12 (4): 8-14.

Dharmapala, Dhammika, C. Fritz Foley and Kristin J. Forbes. 2011. "Watch What I Do, Not What I Say: The Unintended Consequences of the Homeland Investment Act." *Journal of Finance* 66 (3): 753-87.

Dharmapala, Dhammika, and Nadine Riedel. 2013. "Earnings Shocks and Tax-Motivated Income Shifting: Evidence from European Multinationals." *Journal of Public Economics* 97 (1): 95-107.

Dischinger, Matthias, Bodo Knoll, and Nadine Riedel. 2014. "The Role of Headquarters in Multinational Profit Shifting Strategies." *International Tax and Public Finance* 21 (2): 248-71.

Dischinger, Matthias, and Nadine Riedel. 2011. "Corporate Taxes and the Location of Intangible Assets within Multinational Firms" *Journal of Public Economics* 95 (7-8): 691-707.

Egger, Peter, Valeria Merlo, Martin Ruf, and Georg Wamser. 2015. "Consequences of the New UK Tax Exemption System: Evidence from Micro-level Data." *Economic Journal* 125 (589): 1764-89.

Feld, Lars P., Martin Ruf, Uwe Scheuering, Ulrich Schreiber, and Johannes Voget. 2013. "Effects of Territorial and Worldwide Corporation Tax Systems on Outbound M&As." ZEW-Centre for European Economic Research Discussion Paper 13-088.

Goolsbee, Austan. 2004. "The Impact of the Corporate Income Tax: Evidence from State Organizational Form Data." *Journal of Public Economics* 88 (11): 2283-99.

Gordon, Roger H. 2010. "Taxation and Corporate Use of Debt: Implications for Tax Policy." *National Tax Journal* 63 (1): 151-74.

Gordon, Roger H., and Jeffrey K. MacKie-Mason. 1994. "Tax Distortions to the Choice of Organizational Form." *Journal of Public Economics* 55 (2): 279-306.

Grinberg, Itai. 2010. "Where Credit Is Due: Advantages of the Credit-Invoice Method for a Partial Replacement VAT." *Tax Law Review* 63 (2): 309-58.

Grubert, Harry, and Rosanne Altshuler. 2008. "Corporate Taxes in the World Economy: Reforming the Taxation of Cross-Border Income." In *Fundamental Tax Reform: Issues, Choices and Implications*, edited by John W. Diamond and George R. Zodrow, 319-54. Cambridge, MA: MIT Press.

Grubert, Harry, and Rosanne Altshuler. 2013. "Fixing the System: An Analysis of Alternative Proposals for the Reform of International Tax." *National Tax Journal* 66 (3): 671-712.

Grubert, Harry, and John Mutti. 2001. *Taxing International Business Income: Dividend Exemption versus the Current System*. Washington, DC: American Enterprise Institute Press.

Hall, Robert E., and Alvin Rabushka. 1995. *The Flat Tax*. Stanford: Hoover Institution Press.

Hanlon, Michelle, Rebecca Lester, and Rodrigo Verdi. 2015. "The Effect of Repatriation Tax Costs on US Multinational Investment." *Journal of Financial Economics* 116 (1): 179-96.

Hasegawa, Makoto, and Kozo Kiyota. 2015. "The Effect of Moving to a Territorial Tax System on Profit Repatriations: Evidence from Japan" GRIPS Discussion Paper 15-09.

Hines, James R., Jr., and Eric M. Rice. 1994. "Fiscal Paradise: Foreign Tax Havens and American Business" *Quarterly Journal of Economics* 109 (1): 149-82.

Huizinga, Harry P., and Johannes Voget. 2009. "International Taxation and the Direction and Volume of Cross-Border M&As." *Journal of Finance* 64 (3): 1217-49.

Karkinsky, Tom, and Nadine Riedel. 2012. "Corporate Taxation and the Choice of Patent Location within Multinational Firms" *Journal of International Economics*, 88 (1): 176-85.

Liu, Li. 2015. "International Taxation and MNE Investment: Evidence from the UK Change to Territoriality" http://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Events/conferences/symposia/2015/liu-paper3.pdf.

Liu, Li, and Ben Lockwood. 2015. "VAT Notches." CEPR Discussion Paper No. DP10606.

Mills, Lillian F., Merle Erickson, and Eric L. Maydew. 1998. "Investments in Tax Planning." *Journal of the American Taxation Association* 20 (1): 1-20.

OECD (2013), *Action Plan on Base Erosion and Profit Shifting*, Paris: OECD.

Sanchirico, Chris William. 2016. "Tax Inertia: A General Framework with Specific Application to Business Tax Reform." *Tax Law Review* forthcoming.

Shaviro, Daniel N. 2009. *Decoding the US Corporate Tax*. Washington, DC: The Urban Institute Press.
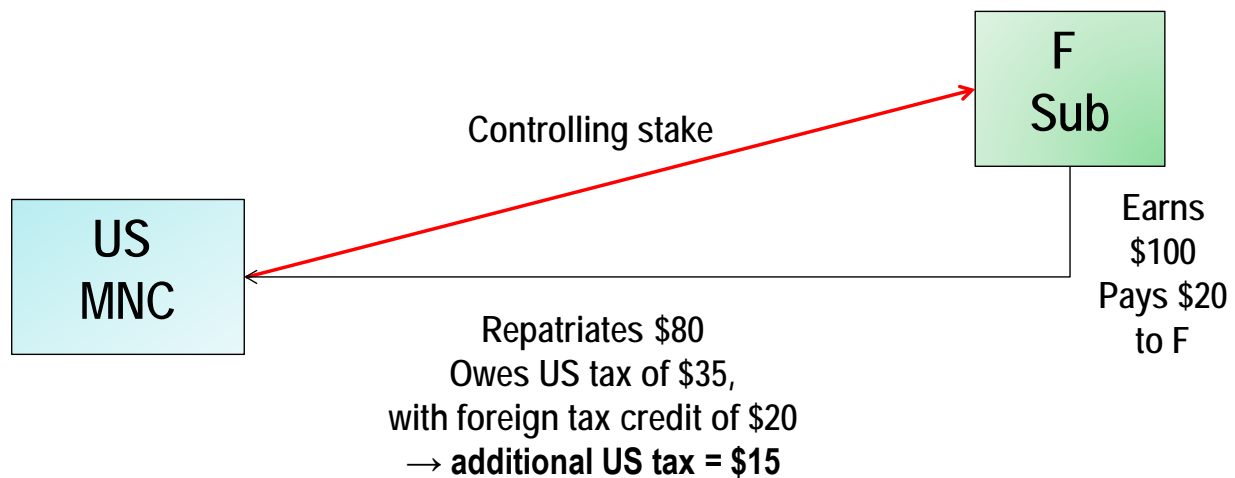
US Senate, Committee on Finance (2014) *Comprehensive Tax Reform for 2015 and Beyond* Washington, DC.

Voget, Johannes. 2011. "Relocation of Headquarters and International Taxation." *Journal of Public Economics* 95 (9): 1067-81.
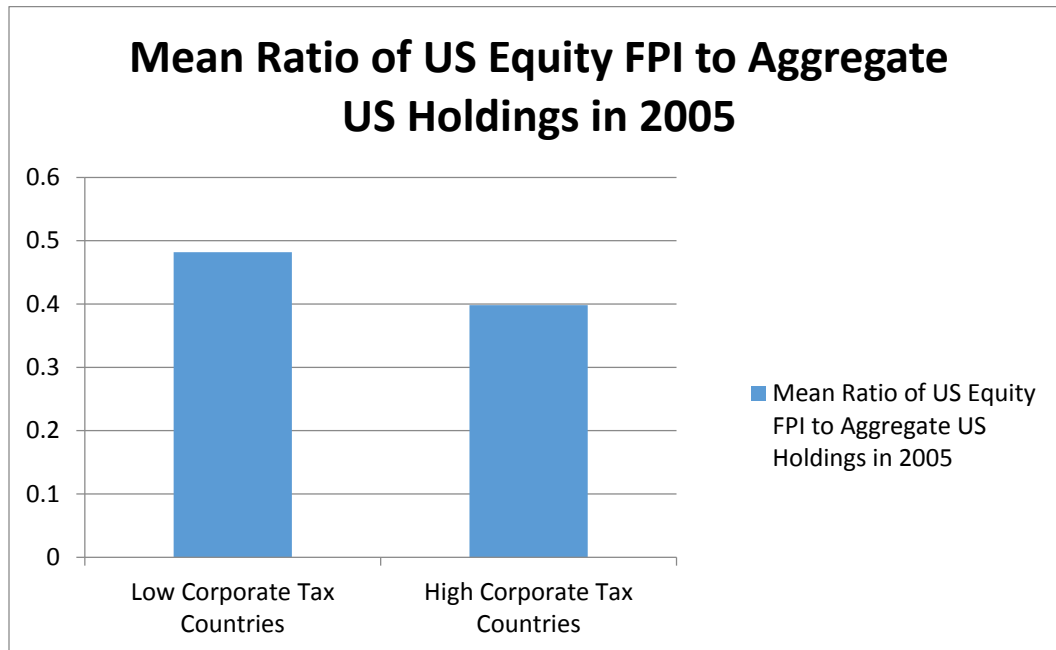
Weichenrieder, Alfons J. 1996. "Anti-Tax-Avoidance Provisions and the Size of Foreign Direct Investment." *International Tax and Public Finance* 3 (1): 67-81.

Yin, George K. 1998. "Future Taxation of Private Business Firms." *Florida Tax Review* 4 (3): 141-248.

Figure 1: A Simple Characterization of the US International Tax Regime

F
Sub

Controlling stake

US
MNC

Earns
$100
Pays $20
to F

Repatriates $80
Owes US tax of $35,
with foreign tax credit of $20
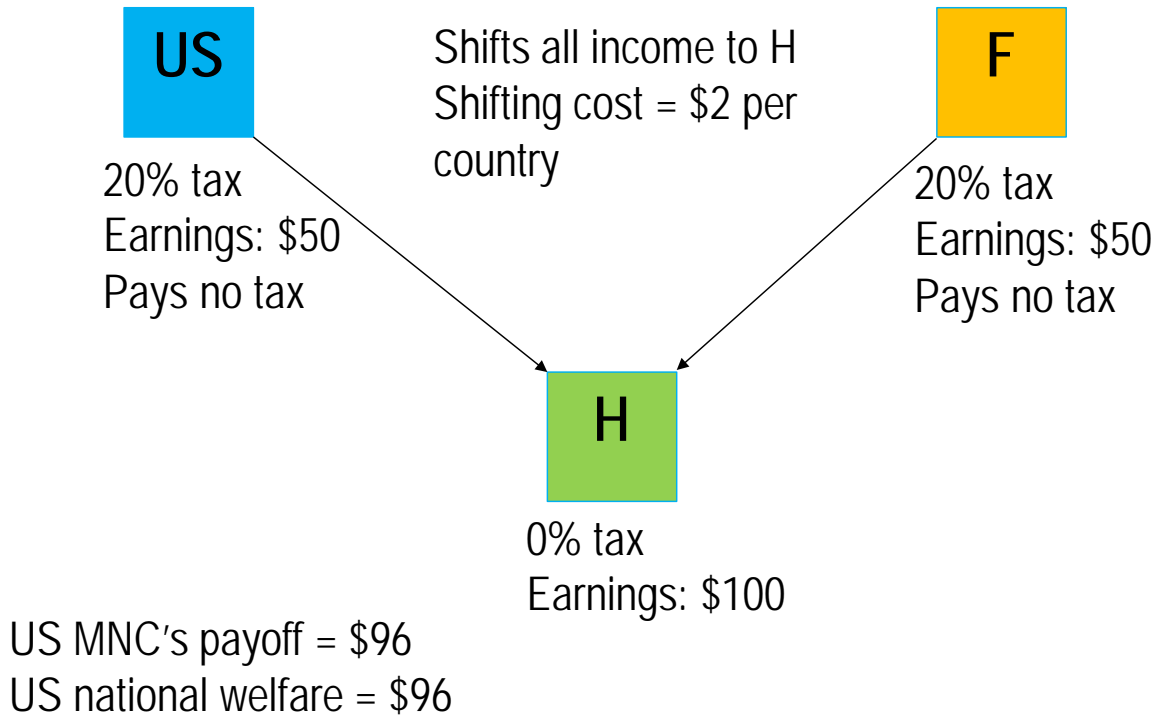→ **additional US tax = $15**

Figure 2: Portfolio Investment Abroad by US Residents

Notes: This figure is drawn from Desai and Dharmapala (2009b, Figure 2) and Desai and Dharmapala (2010, Figure 5). It depicts the mean ratio of outbound US FPI to aggregate US holdings (where aggregate US holdings are defined as the sum of US FPI and US FDI) for two subsamples of countries. The bars represent ratios for subsamples divided at the median corporate tax rate. Data on corporate tax rates (specifically, the top statutory corporate tax rate) is obtained from the data provided by the accounting firm PriceWaterhouseCoopers' worldwide summaries of corporate tax rates. The data on FPI by U.S. investors are obtained from the U.S. Treasury's Treasury International Capital (TIC) reporting system, available at www.treas.gov/tic/. The data on FDI are obtained from the Bureau of Economic Analysis (BEA), available at www.bea.gov.

Figure 3: US National Welfare without a Minimum Tax

Minimum tax rate = 0%

US
20% tax
Earnings: $50
Pays no tax

Shifts all income to H
Shifting cost = $2 per country

F
20% tax
Earnings: $50
Pays no tax

H
0% tax
Earnings: $100

US MNC's payoff = $96
US national welfare = $96

Figure 4: The Effects of the Minimum Tax on US National Welfare

Minimum tax rate = 18%

No income shifting

US
20% tax
Earnings: $50
Pays $10 tax

F
20% tax
Earnings: $50
Pays $10 tax

H
0% tax
Earnings: $0

US MNC's payoff = $80
US national welfare = $90 (↓ due to increased foreign tax payments)