

University of Chicago Law School

Chicago Unbound

Coase-Sandor Working Paper Series in Law and Economics Coase-Sandor Institute for Law and Economics

2015

Interest Deductions in a Multijurisdictional World

Mihir A. Desai

Mihir.Desai@chicagounbound.edu

Dharmika Dharmapala

dangelolawlib+dhammikadharmapala@gmail.com

Follow this and additional works at: https://chicagounbound.uchicago.edu/law_and_economics



Part of the [Law Commons](#)

Recommended Citation

Mihir Desai & Dharmika Dharmapala, "Interest Deductions in a Multijurisdictional World" (Coase-Sandor Working Paper Series in Law and Economics No. 725, 2015).

This Working Paper is brought to you for free and open access by the Coase-Sandor Institute for Law and Economics at Chicago Unbound. It has been accepted for inclusion in Coase-Sandor Working Paper Series in Law and Economics by an authorized administrator of Chicago Unbound. For more information, please contact unbound@law.uchicago.edu.

CHICAGO

COASE-SANDOR INSTITUTE FOR LAW AND ECONOMICS WORKING PAPER NO. 725
(2D SERIES)



COASE-SANDOR INSTITUTE
FOR LAW AND ECONOMICS
THE UNIVERSITY OF CHICAGO LAW SCHOOL

Interest Deductions in a Multijurisdictional World

Mihir A. Desai and Dhammika Dharmapala

THE LAW SCHOOL
THE UNIVERSITY OF CHICAGO

April 2015

This paper can be downloaded without charge at:
The University of Chicago, Institute for Law and Economics Working Paper Series Index:
<http://www.law.uchicago.edu/Lawecon/index.html>
and at the Social Science Research Network Electronic Paper Collection.

Interest Deductions in a Multijurisdictional World

Mihir A. Desai
Harvard University and NBER
mdesai@hbs.edu

Dharmika Dharmapala
University of Chicago
dharmap@uchicago.edu

April 2015

Abstract

This paper proposes and evaluates alternative methods for addressing the tax treatment of interest expenses in a multijurisdictional setting. The differential deductibility of debt entailed by various current tax law provisions leads to potential distortions in the patterns of asset ownership across MNCs and various proposed solutions have significant limitations. We suggest alternative regimes – a worldwide debt cap (WDC) and a net financing deduction (NFD) – to address the ownership distortions that we highlight along with other well-established problems of income-shifting through debt. These alternative regimes are extensions to a multinational setting of two general approaches to the neutral treatment of interest expenses - the CBIT (comprehensive business income tax) and ACC (allowance for corporate capital). While these regimes provide solutions to ownership distortions and to problems of “base erosion and profit shifting,” they have the potential disadvantage of restricting other policy parameters.

JEL Classification: H25; H87; G32

Keywords: Interest deductions; international taxation; base erosion and profit shifting

Acknowledgments: We thank the Forum Editor (John Diamond), Ben Alarie, Mike Devereux, Itai Grinberg, Jim Hines, Michael Smart and Johannes Voget for valuable discussions and comments. We also thank conference participants at the Oxford University Centre for Business Taxation Summer Symposium (especially our discussant Clemens Fuest), the National Tax Association (especially our discussant Tim Goodspeed) and the International Institute of Public Finance (especially our discussant Simon Loretz) and seminar participants at New York University Law School (especially our commentators Bill Gale and Dan Shaviro), the University of Toronto Faculty of Law, Loyola of Los Angeles Law School (especially our commentator Alexander Wu) and Georgetown University Law Center for helpful comments. Any remaining errors or omissions are, of course, our own.

1. *Introduction*

As firms become increasingly global in the scope of their activities, the consequences of interest deductibility and related tax law provisions must be analyzed in a multi-jurisdictional setting. In particular, such an analysis must take account of the interaction of different countries' rules on interest deductibility, and the growing sophistication of MNCs in structuring their financing arrangements. The relevance of these issues has increased as firms have globalized and as policy-makers have focused their attention on these issues.¹

The optimal form that interest deductibility and associated restrictions should take in a multi-jurisdictional world has attracted increasing attention from scholars in recent years.² Graetz (2008) proposes a multilateral system of formulary apportionment of interest deductions across jurisdictions, based on the location of firms' assets or sales (see also Sullivan (2013)). The existing literature has primarily emphasized two efficiency margins. First, the tax-deductibility of debt, combined with the nondeductibility of dividends and other equity returns, implies that firms generally have an incentive to use more debt financing than might be thought to be socially optimal.³ This distortion, while present in a domestic setting, is exacerbated in a multijurisdictional setting if firms can deduct interest in a high-tax jurisdiction (or deduct the same interest payment in multiple jurisdictions) while using the borrowed funds to finance investment in a low-tax jurisdiction. The second margin relates to the choice and location of investment projects. In a purely domestic setting, the returns from debt-financed investments would typically be taxed at the same rates as that at which interest payments are deducted. In a multi-jurisdictional setting, however, it is possible that firms can deduct interest in a high-tax jurisdiction (or deduct the same interest payments in multiple jurisdictions) while using the

¹ More recently, the OECD's initiative on "base erosion and profit shifting" (BEPS) has also focused attention on the tax treatment of MNCs' interest expenses. Following their meeting in Los Cabos, Mexico in June 2012, the G-20 leaders issued a declaration proclaiming the "need to prevent BEPS" and expressed an intention to follow the OECD's work in this area.¹ This was followed by a major OECD report in February 2013 (OECD, 2013a) and subsequently by an action plan in July 2013 (OECD, 2013b). Item 4 of the OECD's action plan is to: "Limit base erosion via interest deductions and other financial payments" (OECD, 2013b, p. 17). Very recently, the OECD (2014) has released a discussion draft outlining various proposals to achieve this aim, as discussed in the postscript to this paper.

² At the same time, a growing empirical literature has analyzed MNCs' income-shifting via debt – e.g. Desai, Foley and Hines (2004), Mintz and Weichenrieder (2010), Büttner et al. (2012), Dharmapala and Riedel (2013) – as surveyed in Dharmapala (2014a).

³ This tax bias towards debt may, however, be ameliorated to some degree by a greater personal tax burden on interest income relative to equity returns, as in the well-known model of Miller (1977).

borrowed funds to finance investment in a low-tax jurisdiction. In these circumstances, investment in low-tax jurisdictions arguably enjoys an implicit subsidy.

This paper emphasizes a third margin which interest deductibility can impact – ownership neutrality among MNCs from different residence countries. In particular, capital ownership neutrality (CON) emphasizes that all multinational firms competing for the same investment should face similar tax burdens, regardless of their country of residence.⁴ A growing body of empirical literature analyzing the impact of tax regimes on cross-border mergers and acquisitions suggests that the efficiency consequences of ownership distortions may be quantitatively large (e.g. Feld et al., 2013; Bird, 2015). The analysis of Desai and Hines (2003) and the subsequent discussion in the literature has generally been conducted under the assumption that MNC investments are equity-financed. We depart from this focus by considering the case of debt-financed MNCs. This is an important case to consider because when MNC investments are debt-financed, the potentially differential deductibility of debt caused by differing home-country tax rates and various tax law provisions may potentially violate CON.⁵ This paper emphasizes ownership distortions given recent events in the market for corporate control where ownership advantages conferred by tax residence have gained much more salience. Of course, a complete analysis of the relevant tax policy issues would take account simultaneously of all of these margins (Weisbach, 2014). While cognizant of these limitations, this paper establishes how ownership distortions are impacted so that a broader analysis can proceed.

A simple example of a three-country world (based on Graetz (2008)) demonstrates that stylized approximations to the current international regime for the treatment of interest deductions lead quite generally to violations of CON. While perfect tracing rules (that seek to allow or disallow deductions based where borrowed funds are used) would in theory satisfy CON, the literature is clear on the point that such rules are conceptually flawed because of the fungibility of money. Thin capitalization rules also will not in general satisfy CON. Finally, a multilateral formula apportionment system (e.g. Graetz, 2008), while mitigating debt-related distortions, will not always satisfy CON.

⁴ The notion of Capital Ownership Neutrality (CON), as proposed by Desai and Hines (2003) (see also Devereux (1990)) is premised on the idea that the global activities of modern MNCs can best be explained by the link between ownership and productivity. They argue that an international tax regime that violates CON will potentially lead to significant inefficiencies as assets may end up in the hands of less productive owners.

⁵ Equity financing is an important feature of firm financing, and this paper abstracts from equity financing in order to focus on the deductibility of interest payments.

There are two forms of taxpayer “self-help” that in theory may satisfy CON. One is for all MNCs to borrow exclusively in the highest-tax country (assuming that the highest-tax country allows full deductibility for all MNCs’ interest expenses). Such a regime, however, is unlikely to be politically feasible. In particular, concerns about base erosion in the highest-tax country may be expected to lead to earnings stripping rules and to the disallowance of deductibility for borrowing that finances foreign investment; both of these would result in violations of CON. A second “self-help” solution is for all MNCs to engage in multiple-dip financing (in which they deduct the same interest payment in each jurisdiction). This may not be feasible because of tax law provisions that restrict multiple-dip financing. Even if it were feasible, the achievement of CON would be at the cost of dramatically exacerbating other debt-related inefficiencies.

We suggest several alternative regimes to address both the ownership distortions that we highlight, as well as other well-established problems of base erosion. These alternative regimes are extensions to a multinational setting of two general approaches to the neutral treatment of interest expenses – the comprehensive business income tax (CBIT), which would disallow all interest deductions) and the allowance for corporate capital (ACC), which would extend financing deductions to corporate equity); these have been widely discussed in the previous literature, but primarily in a domestic rather than multijurisdictional context. These regimes – a worldwide debt cap (WDC) and a net financing deduction (NFD) – provide solutions to ownership distortions and also address concerns about BEPS.

The WDC approach is based on the recent UK rule imposing a worldwide debt cap for purposes of deductibility by UK affiliates of multinational groups. Essentially, this cap restricts a multinational affiliate’s deductible interest to the total worldwide third-party interest payments of the multinational group. A regime in which all countries adopt a variant of this rule - that allows each MNC affiliate to deduct in each country an arbitrary fraction of the total worldwide third-party interest payments of the multinational group – would satisfy CON. Moreover, if a sufficient degree of multilateral cooperation is possible, then this system could choose the degree of preference for debt that countries deem to be optimal, and also achieve ownership neutrality with respect to both MNCs and domestic-only firms. If the arbitrary fraction of interest deductions that are allowed happens to be zero, then the WDC system is identical to a CBIT; thus, the WDC approach can be viewed as a generalization of the CBIT in a multijurisdictional setting.

The NFD regime involves each country allowing a deduction for aggregate corporate capital (debt plus equity), as in an ACC system. However, in a multijurisdictional setting, adjustments are required for injections of capital (whether in the form of debt or equity) into other affiliates within the same group. In particular, injections of capital into other affiliates are deducted from the capital base on which the deduction is allowed (for instance, if a parent borrows from a third party lender and injects this money as equity into a foreign affiliate, there will be no impact on the NFD allowed by the parent's residence country). We show that a regime in which all countries adopt the NFD will create neutrality between debt and equity, eliminate "mismatch" between the tax rates for income and for interest expenses, prevent base erosion via interest payments, eliminate the possibility of multiple-dip financing, and satisfy CON.

These solutions have the potential disadvantage of restricting other policy parameters. For instance, the NFD regime eliminates policymakers' ability to favor the use of debt over equity. Whether this matters depends on whether the tax preference for debt over equity is a well-considered policy choice. If there is no general efficiency rationale for a tax preference for debt, then the NFD regime's restriction of this policy parameter does not seem to be a serious shortcoming.

This paper is structured as follows. Section 2 presents some simple descriptive statistics highlighting the importance of debt financing for contemporary MNCs. Section 3 introduces the notion of ownership neutrality and shows how the current tax treatment of MNCs' interest deductions typically fails to satisfy CON. Section 4 describes the WDC system. Section 5 presents the NFD approach. Section 6 briefly discusses the recent proposals in OECD (2014), and Section 7 concludes.

2. *The Relevance of Interest Deductibility for Multinational Firms*

The relevance of interest deductibility for multinational firms can be assessed in various ways. According to the Federal Reserve reports on the balance sheets of nonfinancial corporations in 2014, credit market instruments as a financing source totaled \$7.6 trillion.⁶ This constituted forty seven percent of total liabilities or twenty one percent of total assets. In 2004, the BEA reported \$5.1 trillion of non-trade account liabilities for nonbank U.S. multinational

⁶ This data is available at: <http://www.federalreserve.gov/releases/z1/current/>

parents,⁷ which corresponds to forty two percent of all liabilities and thirty one percent of all assets. By 2009, the direct investment position of all U.S. multinational parents totaled \$3.5 trillion of which \$207 billion was characterized as intercompany debt. This figure represents the net of \$550 billion in U.S. parent receivables and \$342 billion in U.S. parent payables.

Empirical work on the capital structure of multinational firms has measured leverage at the affiliate level. Desai, Foley and Hines (2004) note that affiliate leverage for U.S. multinationals averages fifty five percent of total assets with less than twenty percent of this leverage being provided by U.S. parents. Büttner and Wamser (2013) report similar figures for German multinational firms with a ratio of debt to assets of sixty percent. Of this sixty percent, fourteen percent is provided by German parents and another ten percent is provided by other affiliates of the German multinational firm. These empirical efforts indicate that affiliate borrowing and intercompany loans are sensitive to tax rates differences and to thin capitalization rules, as found in the work by Blouin, Huizinga, Laeven and Nicodeme (2014).

3. The Problem of Ownership Neutrality among Debt-Financed MNCs

3.1. A Simple Three Country Model

The simple three-country example proposed by Graetz (2008, p. 487) provides a useful starting point. Consider a world that consists of three countries, labeled H (high), M (medium) and L (low), with tax rates of 35%, 25% and 15%. Assume that all three countries implement territorial tax systems – i.e. they do not tax dividends (often referred to as “repatriations”) from foreign subsidiaries to their resident MNC parents (however, this does not preclude some taxation of foreign-source passive income, as discussed below). All countries offer tax deductions for interest payments with particular rules for multinational firms discussed below. Each country has a resident MNC, labeled firm H, firm M and firm L. All three MNCs operate globally: each MNC has an affiliate in each of the three countries. We assume the residence country of each firm is fixed.⁸

For illustrative purposes, we focus on a scenario in which firm H and firm M are in competition with each other to purchase an asset located in country L that costs \$100. It is assumed that this investment is debt-financed, and that all firms can borrow on global capital markets at a pretax interest rate of 10% (regardless of the putative source of the debt). If debt

⁷ This data is available at: https://www.bea.gov/iTable/index_MNC.cfm

⁸ In practice, there may be scope for the manipulation of residence in response to tax and other considerations (e.g. Desai and Dharmapala, 2010).

were not tax-deductible, then the after-tax cost of debt would of course also be 10%, and would be equal for all firms (by assumption). Thus, the firm that can create the greatest value with the asset will acquire it. This situation would satisfy the notion of “ownership neutrality”, which holds when the tax system does not change the identity of firms that acquire particular assets. In our specific context, ownership neutrality is satisfied when all multinational firms that are competing for the same investment face the same after-tax cost of debt.

Suppose that each MNC is restricted to borrowing, and deducting interest, only in its home country. Then, firm H would face an after-tax cost of debt of 6.5%, while firm M would face a corresponding cost of 7.5%. In these circumstances, the less productive owner may be willing to bid more for the asset than would the higher-productivity owner. This problem of potential ownership distortions due to differential interest deductibility has occasionally been noted in the past, but has attracted very little scholarly attention, despite the large volume of literature on other debt-related distortions.

The simple framework we have used to illustrate the problem of ownership distortions assumes the asset in country L for which the MNCs are competing is in limited supply. We also adopt a global perspective, in which the social cost of ownership distortions is the difference in the productivity of assets in the hands of the different potential owners. For national welfare, the price at which the asset is sold (which may be determined by a bargaining process) is also potentially important, as are tax revenues received by different governments. While national welfare considerations are clearly important to policy discussions, our initial analysis of the problem of ownership distortions due to interest deductions focuses on a global perspective to better understand the efficiency costs and potential solutions. The possibility of multilateral cooperation noted in the Introduction also suggests that a global perspective may have some relevance.

3.2. Debt Market Equilibrium

The Graetz (2008) framework assumes an equilibrium in which the pretax interest rate is equalized across countries, even though corporate tax rates differ. To clarify the circumstances in which the assumption of equal pretax interest rates may be reasonable, we briefly sketch in this subsection a simple analysis of debt market equilibrium, based on extending the framework in Feldstein (1995) to an open economy setting.

Consider a model with a large number of households resident in the various countries. These households face a personal tax on interest income that can vary according to their country of residence (but that is applied uniformly to both domestic and foreign-source interest income). Households can lend freely in any country. In a simple two-period setting, households would take the after-personal-tax interest rate they face as given, and choose their level of savings to maximize utility. For instance, in a setting where households live for two periods but receive labor income only in the first period, they would choose period-1 savings (for retirement consumption in period 2) to equate the marginal utility of consumption in each period. The optimal savings choice would depend on the personal tax rate faced by the household, but not on the corporate tax rate faced by firms in that country (or any other country).

Assume also a large number of firms (i.e. corporate borrowers) with fixed residence in each country. Let i_j be the pretax interest rate faced by corporate borrowers resident in country j , and $f_j(K_j)$ be the (possibly country-specific) production technology available to firms in country j . Then, in a simple setting with only debt financing and certain other simplifying assumptions, firms will choose their capital stock K_j by setting $f'_j(K_j) = i_j$. Note that the corporate tax does not enter into this expression because of the deductibility of interest. In equilibrium, firms will choose an optimal size of their capital stock and (equivalently) an optimal level of borrowing, given the (pre-corporate-tax) interest rate they face. Households will choose their optimal level of savings, given the (after-personal-tax) interest rate that they face. The interaction of large numbers of households and firms will determine the equilibrium pretax interest rate faced by a firm in a given country.

In this setting, it can be shown that in any equilibrium in which firms in all countries receive debt financing, the pretax interest rates must be equalized: i.e.

$$i_H = i_M = i_L = i^*$$

where i^* depends on (a weighted average of) the personal tax rates faced by households. As the corporate tax rates in the various countries affect the optimization problems of neither households nor firms (i.e. corporate borrowers), it follows that i^* is independent of these corporate tax rates. This illustrates a fairly general set of circumstances in which the assumption of equal pretax interest rates may be reasonable. This discussion omits the importance of equity financing to motivate the circumstances of debt financing.

Suppose instead that lending takes place through financial intermediaries that are subject to the local corporate tax. Then, if the after-tax profits of financial intermediaries are equalized across countries, a financial intermediary in H would charge a higher pretax interest rate than its counterpart in L. However, note that the corporate tax paid by financial intermediaries applies only to the interest spread, not to all interest income, most of which would remain subject only to personal taxation at the household level. Thus, even in these circumstances, the extent of the capitalization of corporate taxes into pretax interest rates would be limited.⁹

3.3. *The Limitations of Existing and Proposed Solutions*

This section reviews various potential solutions to the basic problem outlined in Section 3.1. Some are features of current tax law in many countries, such as tracing rules and thin capitalization rules. Others – such as borrowing in high-tax countries or engaging in multiple-dip financing – represent “self-help” strategies adopted by MNCs that potentially affect the prevalence of ownership distortions and other debt-related inefficiencies. We discuss each of these possibilities in turn, and conclude that all have significant limitations as solutions to the problem of ownership distortions.

3.3.1. *Tracing Rules*

Tracing rules – which seek to determine the uses to which borrowed funds are put – play an important role in the tax laws of many countries. If perfect tracing rules can be implemented – i.e. that the \$100 borrowed to finance the investment in L can be transparently observed by all governments to have been borrowed for the purpose of making that particular investment - then, the likely outcome is that the interest will be deducted against L-source income only, regardless of whether firm H or firm M acquires the asset. The after-tax cost of debt will be 8.5% for each firm, and CON will be satisfied. In addition, there would be no mismatch problem (as interest payments are deducted at the same rate as that at which the income from the asset is taxed). A preference for debt over equity will exist, but only to the extent contemplated in country L’s domestic tax law.

While the tax laws of many countries seek to implement tracing rules of this type, it is now generally accepted in the scholarly literature that tracing is not a practical possibility for

⁹ If lending is highly “home-biased” and countries’ personal tax rates are highly correlated with their corporate tax rates, then it is possible that the capitalization of personal taxes into interest rates may closely replicate the capitalization of corporate tax rates. In such circumstances, the ownership neutrality problem that we highlight would be mitigated by capitalization, but so would the “mismatch” problem highlighted by Graetz (2008) and others.

most borrowing.¹⁰ When (as is typically the case) tracing is impossible or imperfect, the relative after-tax cost of debt for MNCs depends on specific rules and the particularities of the context and assumptions, as explored below.

3.3.2. *Universal High-Tax Borrowing*

Every MNC may choose to locate its debt in H and deduct it at 35% (for instance, by borrowing from a third-party lender through its affiliate in country H). Hodder and Senbet (1990) and Dharmapala (2009) develop models of firms' capital structure in a multijurisdictional setting that assume that all firms deduct their interest expenses in the country with the highest tax rate. Desai, Foley and Hines (2004) report evidence consistent with MNCs locating debt in higher-tax jurisdictions.

If all firms are successful in locating all their third-party debt in country H, then CON will be satisfied, as each firm deducts all of its debt at 35%. In addition to the various assumptions made above,¹¹ this requires that country H is willing to allow all MNC affiliates located there to fully deduct interest expenses, regardless of whether the borrowing finances investment in H or some other country, and regardless of whether the affiliate's parent is resident or nonresident in country H. A normative argument that country H should behave in this generous manner can be derived from the work of Hines (2008, 2009), who argues that residence countries of MNCs should not in general disallow interest deductions for borrowing that finances foreign activity (see also Becker and Fuest (2010)). Given existing earnings stripping rules and the disallowance of certain deductions, a regime of universal high-tax borrowing is very different from the reality that prevails today. In particular, a regime in which all MNCs borrow in the high-tax country is likely to be politically infeasible.¹²

¹⁰ For example, Graetz (2008, p. 489) states that: "Given the fungibility of money, knowing the purpose of borrowing is an impossible quest." Mintz and Weichenrieder (2010, p. 26) explain that: "This tracing approach has limited effect since companies could adjust borrowing to fund domestic investment and use cash to fund foreign investments. Financial institutions and other large multinationals with multiple investments easily follow such 'cash damming' practices."

¹¹ For instance, the assumption that each MNC has sufficient income in H (either currently or in the future *via* loss carryforwards) to be able to fully deduct its interest payments.

¹² When multiple-dip financing structures (described in more detail in Section 3.3.5 below) are available to MNCs, the normative force of this "universal high-tax borrowing" regime is significantly undermined, quite apart from questions of political feasibility. Firms using multiple-dip financing structures will be able to obtain a much larger subsidy than contemplated by any one country. In our example, each firm would be able to deduct its interest expenses at a rate of 85% (the sum of the three countries' tax rates), which far exceeds any one country's willingness to subsidize borrowing.

From the perspective of H's government, the inter-affiliate debt that would be used to implement borrowing in H and investing in L – for instance, the MNC's H-affiliate borrowing from a third-party lender, then injecting the funds into the L-affiliate as equity or debt – would be perceived as stripping earnings out of H. Thus, interest deductibility in H may be limited by earnings stripping rules, such as § 163(j) in the US. Typically, these rules take the form of disallowing interest deductions when they exceed some fraction (e.g. 50%) of income. There is also often a safe harbor expressed in terms of the ratio of debt to equity, to ensure that only highly leveraged affiliates are subject to the rule. Earnings stripping out of H may be viewed as being particularly objectionable when undertaken by a nonresident MNC. If country H imposes an earnings stripping rule only on affiliates of nonresident MNCs, then firm H will enjoy an obvious competitive advantage as a result of being fortunate enough to be resident in a high-tax country: it can borrow in H to finance the \$100 investment in L, and thereby enjoy a lower after-tax cost of debt than firm M (which cannot fully deduct interest on its borrowing in country H).

Even if H's earnings stripping rule is nominally nondiscriminatory with regard to resident and nonresident MNCs, it is likely that firm H will retain a competitive advantage. Assume that each firm's assets are located disproportionately in its country of residence, at least for historical reasons. Then, for a given amount of borrowing (such as the \$100 required for the investment in L), it is more likely that a resident MNC will fall within the permitted parameters of the earnings stripping rule. For example, assume that country H's earnings stripping rule disallows deductions exceeding 50% of income. Suppose that firm H earns \$90 of income in H, while firm M earns \$10 of income in H. If each borrows \$100 in H and pays \$10 of (pretax) interest, then firm H will be able to deduct all of its \$10 interest payment, while firm M will only be able to deduct \$5 of the \$10 of interest that it pays. Thus, in competing to purchase an asset in country L, firm H's after-tax cost of debt is 6.5% (it pays \$10 of interest and receives a deduction worth \$3.50), whereas firm M's after-tax cost of debt is 8.25% (it pays \$10 of interest and receives a deduction worth \$1.75). Thus, firm H will enjoy a competitive advantage in bidding for the asset in country L, and CON will be violated.¹³

¹³ If country H permits the carryforward of disallowed interest deductions, then firm M's after-tax cost of debt will be lower than 8.25%. However, as long as the carryforwards are not as valuable as a current deduction – because of the time value of money (given the absence of interest on carryforwards), or because of the possibility that firm M's H-affiliate will never earn enough income to fully deduct the interest – then, the after-tax cost of debt for firm M will be higher than 6.5%.

Even when both firm H and firm M can fully deduct their interest expense in H, the shadow cost to firm M will be higher whenever its operations are less concentrated in H than are those of firm H. For example, assume again that country H's earnings stripping rule disallows deductions exceeding 50% of income. Suppose that firm H earns \$90 of income in H, while firm M earns \$20 of income in H. If each borrows \$100 in H and pays \$10 of (pretax) interest, then each firm will be able to deduct all of its \$10 interest payment. It thus appears that CON is satisfied in this scenario. However, note that firm M's H-affiliate has now exhausted its interest deductions. If another investment opportunity elsewhere in the world that would entail borrowing in H were to emerge within the same tax year, then firm M would not be well-equipped to take advantage of it. Firm M would have to borrow in M or L, and would thus face a higher after-tax cost of debt than would firm H, which retains a substantial capacity to deduct additional interest payments. Thus, competing for the \$100 investment opportunity in country L entails a higher shadow cost in terms of foregone possible future investments for firm M relative to firm H. Firm M may thus forego the investment opportunity in L, ceding it to firm H. Under these circumstances, firm M effectively faces a higher cost of debt finance than does firm H.

In addition to the political pressure to curtail perceived earnings stripping, there is also likely to be pressure on government H to disallow deductions that are thought to be associated with foreign investment. This point can be illustrated by the recent and current debates in the United States on moving to a territorial system. Most such proposals envisage the disallowance of some portion of deductions thought to be associated with foreign earnings (e.g. US Department of the Treasury, 2007; Altshuler and Grubert, 2008). Hines (2008, p. 466) concludes that "from a U.S. tax reform proposal standpoint, exempting foreign income from taxation appears to be closely associated with limiting the deductibility of domestic expenses."

Disallowance along these lines by country H will generally lead to violations of CON. In particular, suppose that disallowance is based on the fraction of a multinational group's assets that are located abroad (given the impossibility of perfect tracing rules). For concreteness, suppose that 50% of each firm's assets are located in its residence country, and 25% in each of the other two countries. Then, country H would disallow 50% of firm H's interest expenses (leaving it with an after-tax cost of debt of 8.25%), while disallowing 75% of the interest expenses of firm M and firm L (leaving each with an after-tax cost of debt of 9.125%, assuming in each case that no additional deductions are allowed in any other jurisdiction). If affiliates of

foreign MNCs are disallowed deductions to a greater extent by country H, this would simply exacerbate the violation of CON. In the limit, a policy of disallowing deductions for affiliates of foreign MNCs would lead to a scenario in which each MNC borrows, and deducts interest payments, only in its home country. Then, firm H will face an after-tax cost of debt of 6.5%, firm M of 7.5%, and firm L of 8.5%.¹⁴

3.3.3. *Formula Apportionment*

Graetz (2008) proposes a system of multilateral apportionment of the worldwide interest expenses of MNCs. The worldwide interest expense of a MNC would be allocated in accordance with the location of the MNC's assets (for instance, if 50% of a MNC's assets are located in country H, 50% of its interest deductions would be allocated to country H). More recently, Sullivan (2013) proposes a system of formula apportionment based instead on the location of MNCs "gross profits" (earnings before interest and taxes). Implementing a system of formula apportionment would require a significant degree of multilateral cooperation, but it would arguably have a number of important advantages over the current regime. In particular, it would limit the extent to which firms could engage in tax arbitrage by borrowing in high-tax locations in order to generate income in lower-tax jurisdictions, and thereby avoid subsidizing such investments. It would also mitigate the heightening of debt-equity distortions due to such tax arbitrage.

The proposed formula apportionment systems would not, as a general matter, satisfy CON in all circumstances. For instance, consider a situation in which firm H holds half its assets in country H, the other half in country L, and has no assets in country M. Suppose also that firm M holds 50% of its assets in country M and the other 50% in country L. Assume that neither firm H nor firm M initially has any debt, and that each firm initially has \$900 of worldwide assets. These two firms compete for a debt-financed \$100 investment in country L. If firm H were to acquire the asset, then 45% of its interest deductions would be allocated to country H (and deducted at 35%) and 55% of its worldwide interest deductions would be allocated to country L (and deducted at 15%); its after-tax cost of debt would thus be 7.6%. If firm M were to acquire

¹⁴ As part of each firm's borrowing would finance investment abroad, it is possible that each government may disallow part of the interest deduction on the grounds that it is used to generate foreign income that is exempt from domestic taxation. Given the impossibility of perfect tracing, however, this disallowance would not be based on the actual use of funds, but on some arbitrary criterion, such as the fraction of assets held abroad. This type of disallowance would raise the cost of debt finance for each firm, but it would not in general eliminate the disparities across firms in the cost of financing.

the asset, 45% of its worldwide interest deductions would be allocated to country M (and deducted at 25%) and 55% of its worldwide interest deductions would be allocated to country L (and deducted at 15%); its after-tax cost of debt would thus be 8.05%. Firm H would thus enjoy a lower after-tax cost of debt.¹⁵

Additionally, any system of formula apportionment would face significant obstacles. The degree of multilateral cooperation and coordination required to agree on a formula and to implement the system would in many respects exceed that required for the WDC and NFD regimes discussed below. Even if these obstacles were to be overcome, a formula apportionment system would mitigate but not eliminate the distortions due to mismatch between income and interest expense and to the tax bias towards debt over equity financing. In contrast, the WDC and especially the NFD regimes offer the prospect of eliminating these distortions, as well as satisfying CON.

3.3.4. Thin Capitalization Rules

Thin capitalization provisions originally resembled the earnings stripping rules discussed above. In recent years, a new wave of what Kleinbard (2011, pp. 140f) terms “sophisticated” thin capitalization rules has emerged. These rules seek to ensure that a local affiliate’s debt-to-asset ratio does not fall too far out of step with the worldwide debt-to-asset ratio of the multinational group to which it belongs, and apply equally to affiliates of resident and nonresident MNCs. We use a stylized version of Germany’s thin capitalization rule as an illustration. The German thin capitalization regime imposes a “hard cap” on interest deductions of 30% of income. Above this level, multinational affiliates are permitted interest deductions only to the extent that their (local) debt-to-asset ratio is no higher than the multinational group’s worldwide debt-to-asset ratio. When the hard cap is binding, this regime creates outcomes that are quite similar in some respects to those of a formula apportionment system. Unlike formula apportionment, a thin capitalization rule does not require multilateral coordination.

To illustrate the consequences of thin capitalization rules for CON in a simplified manner, assume that the hard cap percentage is set to zero. Assume that all countries impose a

¹⁵ If the MNCs have sufficiently large amounts of preexisting debt, then there is a countervailing factor to be considered. In particular, a larger fraction of the preexisting (inframarginal) interest deductions of the firm that acquires the asset in country L will be allocated to country L, thereby lowering the tax subsidy to this preexisting debt. This effect tends to mitigate the difference in the after-tax cost of debt due to country H’s higher tax rate relative to country M. Indeed, Sullivan (2013, p. 1352 and Table 2, p. 1364) presents an example in which the two opposing effects exactly cancel out, and (using our terminology) CON would be satisfied.

similar thin capitalization rule, and apply it neutrally to resident and nonresident MNCs. Suppose that firm H has initial assets of \$900, of which \$600 is located in H and \$300 in M, and initially has no debt. If firm H were to borrow \$100 to purchase a new asset in country L, its worldwide debt would be \$100, and its worldwide debt-to-asset ratio would be 0.1. Then, of the \$10 of pretax interest, only \$6 could be deducted in H (to correspond to the 0.6 local debt-to-asset ratio of the H-affiliate), \$3 in country M, and \$1 in country L. Thus, the overall rate at which this interest payment would be deducted is:

$$(0.6)(35) + (0.3)(25) + (0.1)(15) = 30\%$$

The after-tax cost of debt for firm H would be 7%.

Suppose that firm M also has initial assets of \$900, of which \$300 is located in H and \$600 in M, and also initially has no debt. If firm M were to borrow \$100 to purchase a new asset in country L, its worldwide debt would be \$100, and its worldwide debt-to-asset ratio would be 0.1. Then, of the \$10 of pretax interest, only \$3 could be deducted in H (to correspond to the 0.3 local debt-to-asset ratio of the H-affiliate), \$6 in country M, and \$1 in country L. Thus, the overall rate at which this interest payment would be deducted is:

$$(0.6)(25) + (0.3)(35) + (0.1)(15) = 27\%$$

The after-tax cost of debt for firm M would be 7.3%. Thus, firm H would enjoy a competitive advantage in bidding for the asset in country L.

3.3.5. *Universal Multiple-Dip Financing Structures*

Double-dip and multiple-dip financing structures using conduit entities have been extensively discussed in the recent literature on MNCs.¹⁶ Figure 1 depicts a simple multiple-dip structure for firm H. The MNC's residence is not specified, and is not crucial for this simple example. Suppose that the MNC has affiliates in H, M and L, and wishes to finance an investment opportunity in country L using debt. The H affiliate borrows from a third-party lender. This money is then used to inject equity into an affiliate located in a tax haven jurisdiction. The haven affiliate then lends this money to the group's M-affiliate, which in turn uses it to inject equity into an affiliate in a second tax haven jurisdiction. This haven affiliate then lends the money to the L-affiliate, which uses it to finance the investment opportunity.

¹⁶ Mintz and Weichenrieder (2010) describe and analyze (both theoretically and empirically) the use by German-based MNCs of conduit financing structures. They find evidence of treaty shopping and of the use of inter-affiliate debt to obtain interest deductions in multiple jurisdictions.

Relative to more straightforward financing structures – such as borrowing from a third-party lender in country L – this multiple-dip structure potentially enables the MNC to deduct the interest paid to the third-party lender in all three nonhaven jurisdictions – H, M and L. Suppose that all MNCs are able to achieve deductions in all three countries. Recall our hypothetical scenario where firms H and M are competing for a \$100 investment in country L. As before, the successful firm is assumed to borrow the \$100 required for the investment from a third-party lender, and to pay 10% pretax interest. Under the rules we have posited, each firm is able to establish multiple-dip financing structures (as shown in Figure 1) that would enable this \$10 of pretax interest expense to be deducted in all three countries (H, M and L). Thus, the overall rate at which the \$10 of pretax interest expense would be deducted is the *sum* of the tax rates of the three countries:

$$(1)(35) + (1)(25) + (1)(15) = 85\%$$

In other words, the after-tax cost of debt is 2.5%. Importantly, this conclusion holds equally for firm H and firm M (and also for firm L) – each firm is able to achieve identical interest deductions, so that CON is satisfied.

Because achieving multiple-dip deductions depends on the interaction of complex features of different countries' tax laws, the extent to which firms have succeeded in using multiple-dip structures is unclear. In any event, it is clear that (relative to formula apportionment, thin capitalization rules, and the other approaches discussed above) universal multiple-dip financing would greatly exacerbate distortions along other dimensions. In particular, note that the overall rate at which interest payments can be deducted is potentially very large in relation to the tax rate of any one country. The incentive to use debt would thus be substantially greater than it would be under, for instance, formula apportionment, and the debt-equity distortion would be correspondingly more severe. These disadvantages of universal multiple-dip financing would seem to outweigh its benefits in terms of achieving CON.

Quite apart from the magnification of debt-related distortions due to universal multiple-dip financing, it is doubtful whether this practice would in fact achieve CON. For the interest payments in our example above to all be successfully deducted, several conditions must be satisfied. In particular, the home country should not disallow interest deductions for debt used to finance foreign investment. It is also important that there exist tax haven jurisdictions satisfying a number of criteria. One is the absence of withholding taxes on dividends; in Figure 1, if

withholding taxes had to be paid on dividends from havens 1 and 2, then this would reduce or eliminate the gains from the multiple deductions. Thus, it is being assumed here that there are a sufficient number of jurisdictions that have eliminated dividend withholding taxes either by treaty or under the rules of European Union (EU), or that treaty shopping by the MNC can achieve this objective. A further requirement is that residence countries do not impose “controlled foreign corporation” (CFC) rules that constrain the use of multiple dips. In the context of territorial systems, the term CFC rules refers primarily to exceptions from the source principle imposed by residence countries, typically for the purpose of taxing the passive foreign income of their MNCs.¹⁷

If the residence country taxes interest income earned by haven affiliates, this would make multiple dip structures less profitable, and would introduce new types of violations of CON. In our earlier example of firm H and firm M competing for an investment in country L, CON would not be violated. However, this is not true in general. For example, suppose that firm H and firm L are competing for an investment in country M. Then, firm H’s optimal debt financing strategy is to borrow in H, thereby deducting its interest payments to the third-party lender at 35%. However, additional deductions in M and L are not feasible, because the interest received by the conduit entities in the haven jurisdictions would be taxed by the home country (H) at 35%; this would more than offset the benefits from deductions at 25% (in M) and 15% (in L). Thus, firm H would be unable to utilize multiple dips, and its after-tax cost of debt would be 6.5%. Firm L, on the other hand, could also borrow in H (deducting interest payments to the third-party lender at 35%). It could also “double dip” in country M, deducting at 25%. However, the interest received in the haven affiliate (haven 1) would be taxed by the home country (L) at 15%. It would also be pointless to seek to achieve an additional deduction at 15% in L, as the taxation of haven 2 interest income by country L at 15% would eliminate this gain. Overall, firm L’s after-tax cost of debt would be 5.5%. Thus, with these “strong” CFC rules, it would enjoy a competitive advantage as a result of being resident in a low-tax country. This outcome for firm L is depicted in Figure 2.

4. *The Worldwide Debt Cap (WDC) Regime*

¹⁷ In the context of territorial systems, CFC rules refer primarily to exceptions from the source principle imposed by residence countries, typically for the purpose of taxing the passive foreign income of their MNCs - see e.g. Kleinbard (2011, p. 145) for a discussion.

There are two alternative ways to eliminate the asymmetric tax treatment of debt and equity (see de Mooij (2012) for a recent discussion). One is to end the deductibility of interest, and the other is to retain interest deductibility while introducing a deduction for the normal rate of return to equity. The former is associated with the “comprehensive business income tax” (CBIT) approach developed by the US Treasury (1992), while the latter involves an “allowance for corporate equity” (ACE) – a deduction at the risk-free rate of return, calculated using the book value of the firm’s equity. In this section, we examine an approach to the treatment of interest deductions in a multijurisdictional setting that can be viewed as a generalization of the CBIT approach. In Section 5, we propose an alternative approach to the treatment of interest deductions in a multijurisdictional setting that falls into the ACE tradition.

4.1. The Worldwide Debt Cap

As discussed in Section 3.3.5, the successful use of multiple-dip financing by all MNCs would lead to outcomes that satisfy CON, but that would greatly exacerbate various other debt-related distortions. In this section, we suggest an approach to the treatment of interest deductions in a multijurisdictional setting that harnesses firms’ incentives to use multiple-dip structures in order to achieve CON, while at the same time limiting the other debt-related distortions. We refer to this approach as the “worldwide debt cap” (WDC) regime.

As part of a process of reform that moved the UK from worldwide to territorial taxation, additional restrictions on interest deductibility by UK affiliates of multinational groups were imposed in 2009. The central provision, for these purposes, was a worldwide debt cap. Under this provision, a UK affiliate is unable to deduct for UK tax purposes interest expense that exceeds the worldwide third-party interest expense of the multinational group to which that affiliate belongs.¹⁸ In the UK, this debt cap was imposed in addition to existing earnings stripping rules and other anti-avoidance measures. There has also been no significant move so far by other countries to impose similar rules. However, to simplify the analysis, we consider here a scenario in which every country imposes a worldwide debt cap, with no other restrictions on interest deductibility. In particular, we assume that there are no restrictions (apart from the worldwide debt cap) on parents’ interest deductions for borrowing that finances equity injections into foreign affiliates, and no earnings stripping or thin capitalization rules. We also assume that

¹⁸ See the descriptions of the UK worldwide debt cap regime provided by Sullivan and Cromwell: www.sullcrom.com/publication_detail_1027 and by Latham and Watkins: www.lw.com/thoughtLeadership/uk-debt-and-tax-deductions

CFC rules are structured so as not to preclude the use of multiple-dip financing; this requires, in particular, that residence countries' CFC rules exempt haven affiliates' related-party interest income.¹⁹

Consider the consequences (within our simple three-country example) of an international tax regime in which all countries impose a worldwide debt cap as their only restriction on interest deductibility. Recall the scenario where firms H and M are competing for a \$100 investment in country L. As before, the successful firm is assumed to borrow the \$100 required for the investment from a third-party lender, and to pay 10% pretax interest. Suppose that, in conjunction with the worldwide debt cap, each country also disallows a fixed (arbitrary) fraction of interest expenses.²⁰ Importantly, we assume that this fraction is *unrelated* to the location of the firm's assets and activities. Thus, it is fundamentally different from the formulary apportionment system discussed earlier (Graetz, 2008; Sullivan, 2013). It more closely resembles a "revenue sharing" apportionment system (e.g. Mintz, 1999), although what is being shared among countries here are subsidies rather than revenues. It is also quite unlike the idea of disallowing a parent's interest expenses for debt that finances foreign activity, as the fraction of worldwide debt that is deductible is unrelated to the location of assets or earnings. The disallowance would be applied without distinction to all multinational affiliates located in the country, regardless of whether the parent is a resident or nonresident.

For example, let the fraction of worldwide third-party debt granted a deduction by country H be γ_H , and let γ_M and γ_L be defined analogously. Then, the overall rate at which interest payments can be deducted by any MNC is:

$$(\gamma_H)(35) + (\gamma_M)(25) + (\gamma_L)(15)$$

This holds for all MNCs, given that each firm is able to establish multiple-dip financing structures (as shown in Figure 1) that would enable it to deduct its interest expenses in each country (subject to the limitation imposed by the γ 's). Thus, CON is maintained under this more

¹⁹ One may reasonably ask why CFC rules might be structured in this way. The fundamental motivation to impose CFC rules within the framework of an otherwise territorial tax system is to address the problem of the location of passive assets. MNCs will typically hold some amount of cash-like or passive assets, the location of which is highly flexible. If the MNC's residence country exempts interest received on cash holdings held abroad, then there is an inescapable logic to locating those cash holdings in a zero-tax jurisdiction, and no significant practical difficulty in doing so. CFC rules that address this basic problem can be crafted to apply only to third-party debt earned in haven jurisdictions, ensuring that only "true" passive income is caught in this net.

²⁰ It is important to note that there is no intrinsic reason that worldwide interest expense must be *fully* deductible in each country, especially as countries currently disallow interest deductions on various grounds.

general system. However, the overall subsidy to debt-financed investment is obviously lower than when full deductions are allowed, and may be much lower if the rates of disallowance are sufficiently high (i.e. if the γ 's are sufficiently low). Indeed, if countries are sufficiently inclined to disallow deductions, this system (while satisfying CON) may also achieve *more* efficient outcomes with respect to the debt-equity choice and the choice of investment projects than does the existing international regime for the treatment of MNCs' interest deductions.

More generally, let n be the number of countries. We focus on a single multinational group that has affiliates in all n countries. As will become apparent, it is unnecessary to specify the residence country. Let $\gamma_i < 1$ be the fraction of worldwide debt for which country i allows a deduction. Let τ_i be country i 's tax rate. Let D_{ix} be the (net) debt issued by affiliate i to third-party lenders. Note that cash holdings (and thus retained earnings that are not immediately reinvested) are counted as negative debt, so it is possible that $D_{ix} < 0$ if cash holdings exceed borrowing. Let D_{ij} be the (net) debt issued by affiliate i to affiliate j . Equivalently, this can be defined as affiliate j 's holdings of debt in affiliate i , or as the amount lent by affiliate j to affiliate i . Note that the way we define this implies that if affiliate i were to lend to affiliate j , then D_{ij} falls while D_{ji} rises.

The WDC system entails that country i allows a local affiliate a deduction with value:

$$\text{Value of deduction in country } i = \gamma_i \tau_i (\sum_{j=1}^n D_{jx})$$

A multinational firm, by assumption, faces no obstacles under this system in establishing a multiple-dip financing structure across its n affiliates, and so will obtain deductions equal in aggregate to:

$$\text{Aggregate value of deductions} = \sum_{i=1}^n \gamma_i \tau_i (\sum_{j=1}^n D_{jx})$$

For an investment of $\$I$ in any location, the value of the deduction will be the same for all MNCs, regardless of the residence country tax rate. This eliminates ownership distortions among multinationals.

This system would require only a limited degree of multilateral coordination. It entails that international norms specify the broad structure of interest treatment (somewhat like the structure of double tax avoidance in the current international tax regime), with all countries adopting a worldwide debt cap. However, the γ 's can be chosen unilaterally by countries (as, of course, can tax rates). Thus, significantly less coordination would be required than, for instance, for formula apportionment.

Thus, a system based on a worldwide debt cap would have a number of significant advantages over both the current regime and various proposed alternatives. It also responds to two of the most widely expressed policy concerns relating to multinationals' interest deductions. The first is the widespread concern regarding earnings stripping out of higher-tax jurisdictions through the use of inter-affiliate debt. By completely ignoring all inter-affiliate debt for tax purposes, a worldwide debt cap system would eliminate the considerable amount of tax planning in which firms engage in order to strategically locate inter-affiliate debt. It would also eliminate the need for earnings stripping rules and thin capitalization rules.

Second, the worldwide debt cap system also addresses the widespread concern in higher-tax residence jurisdictions about domestic borrowing that is used to finance foreign investment. As discussed earlier, this issue is often framed in terms of denying domestic deductibility to borrowing that finances earnings that will be exempt from domestic taxation. The WDC system does not permit countries to disallow deductions based on the putative location of the use of funds or on the location of the firm's worldwide assets or income. However, it permits countries to consider the extent to which funds are likely to be used overseas in setting its γ . Thus, for example, smaller economies may choose to set smaller γ 's in the belief that a smaller fraction of an MNC's worldwide borrowing will finance investment in domestic activities. Note, however, that it is important that this disallowance of deductions is *not* based on any aspect of the behavior of the firm itself (as that would, in general, lead to violations of CON of the sort that have been discussed earlier with respect to other systems).

In addition, the worldwide debt cap system involves abolishing international tax law rules (such as the "strong" CFC rules described above) that inhibit the establishment of multiple-dip financing structures. Taken in isolation, this simplifies many aspects of the international tax regime. Instead of seeking to combat multiple-dipping, the worldwide debt cap system employs firms' growing sophistication in establishing such financing structures. However, at the same time, it curbs the adverse revenue consequences by means of the limitation on worldwide interest expense that can be deducted in any one country (that is, by use of the γ 's).

As noted above, the WDC regime can be viewed as a generalization of a CBIT. This is because it is based on a (partial) disallowance of interest deductions. In particular, if all countries were to set $\gamma = 0$, MNCs would not obtain interest deductions anywhere, and would in effect be subject to a CBIT system (which can thus be viewed as a special case of the WDC regime). It

may be argued that under a WDC regime, countries would have an incentive to lower their γ 's towards zero. For a country that is "small" in relation to MNCs' worldwide activity, doing so increases its revenue, while it does not drive away MNC investment (which depends on the global weighted average of the γ 's, which any individual "small" country cannot significantly influence). In other words, a WDC system might tend over time towards a CBIT, at least for MNC affiliates. This might be viewed as an advantage if it is thought that a CBIT would be optimal, but may be problematic otherwise.

While the WDC system would achieve CON and have a number of other significant virtues, it is also important to bear in mind that it would not solve all of the problems associated with the treatment of multinationals' interest deductions. Two issues stand out in particular. The first is the overall (global) degree of tax preference for debt. Under the worldwide debt cap system, the degree of tax preference for debt among multinationals will depend on the sum of the γ 's chosen unilaterally by the world's governments. This sum is not under the control of any single policymaker, and is thus unlikely to coincide (except purely by accident) with any considered notion of the socially optimal preference for debt finance. The current regime is also characterized by governments independently choosing their degree of debt preference, while there is currently much greater scope for firms to manipulate their interest deductions through inter-affiliate debt, multiple-dip structures, and other mechanisms.

Second, the proposed system is intended to achieve CON among MNCs; it does not address the separate but related issue of competitive neutrality between MNCs and purely domestic firms.²¹ It is important to note that a worldwide debt cap system does not guarantee that MNCs and domestic-only firms will face the same after-tax cost of debt. It is possible that either MNCs would be favored or that domestic-only firms would be favored. This depends on whether governments allow full deductions for domestic-only firms (while restricting deductibility for MNCs to a fraction γ), and on the relative magnitudes of domestic tax rates and the sum of γ 's across countries.

The worldwide debt cap serves to illuminate many of the problems associated with the tax treatment of interest expenses in a multi-jurisdictional world. These problems are much more

²¹ It might be argued that the latter is not an issue of much significance. Modern theories of multinational firms emphasize that the common ownership of assets dispersed across multiple locations is of greatest value to the most productive firms (typically those with substantial intangible assets). Thus, it is possible that the relatively productive firms that end up becoming multinationals and the relatively less productive firms that remain purely domestic will rarely compete for the same assets.

severe and difficult to resolve than might appear at first sight, particularly when the CON criterion is used as a benchmark. In the next subsection, this thought experiment is elaborated further by considering a multilateral version of the worldwide debt cap that would retain the advantages highlighted above, while also solving the remaining problems associated with multinationals' interest deductions.

4.2. *A Multilateral Version of the Worldwide Debt Cap System*

Sufficient international coordination can address both the issues of the overall degree of debt preference faced by MNCs and the relationship between the after-tax cost of debt faced by MNCs and that faced by purely domestic firms. The first step in a multilateral solution to the treatment of MNCs' interest deductions is for governments to reach some sort of agreement about the extent to which they wish to favor debt financing. Suppose, for instance, that all governments were to agree that the optimal subsidy rate is 16% (a number that is chosen purely for illustrative purposes; note that in the absence of positive externalities, the optimal subsidy may well be zero). This could be implemented through a worldwide debt cap system by assigning γ 's across countries to satisfy the following criteria. First, the γ 's would (as above) be independent of the behavior of any firm, for example being based on countries' population or economic size. Second, the γ 's would be chosen so that the sum of tax rates across countries, weighted by the appropriate γ 's, equals 16%. Note that for any set of arbitrary weights associated with each country, it is possible to multiply these weights by a constant to obtain a weighted sum of 16%. If countries are willing and able to perform this task, then all MNCs would enjoy worldwide interest deductibility at a rate of 16%, under the same assumptions as in Section 4.1. This of course satisfies CON, but it does so not at some arbitrary degree of global debt preference, but rather at the putatively optimal level of global debt preference on which countries have agreed.

The next step is for all countries to commit to offering interest deductions to their purely domestic firms at the same rate of 16%. Under this regime, all MNCs everywhere in the world and all purely domestic firms in all countries of the world face the same after-tax cost of debt. Not only is CON satisfied among MNCs, but there is also neutrality in ownership patterns between MNCs and purely domestic firms in all countries. Of course, achieving multilateral coordination on this scale represents a formidable challenge. Note, however, that the demands on international coordination made here are not in substance very different from that which would

be required for multilateral formula apportionment. As with formula apportionment, countries preserve their ability to set their own tax rates (pertaining to income and to all expenses other than interest).

5. *The Net Financing Deduction (NFD) Approach*

An “allowance for corporate equity” (ACE) extends deductibility to equity returns, offering a deduction at the risk-free rate of return for corporate equity. This proposed system has a wide range of neutrality properties leading some to prefer an ACE system relative to a CBIT.²² For instance, the Mirrlees Review in the UK (Mirrlees *et al.*, 2011) advocates an ACE, primarily in order to exempt the normal rate of return on capital from taxation and thereby implement what amounts to a cash-flow or consumption tax on economic rents. De Mooij (2012) also advocates the introduction of an ACE system, emphasizing the achievement of neutrality between debt and equity financing.

An ACE would use as its base the book value of equity, subtracting equity participation in other firms (see e.g. de Mooij, 2012, p. 504). Thus, a multinational parent’s ACE would be based on the value of the equity in its domestic operations. Subsidiaries would receive ACE deductions in the jurisdiction in which they operate, rather than in the parent’s home country (assuming that the ACE system is established universally). It follows that an ACE does not create a violation of ownership neutrality for equity-financed investments (if firms H and M are competing to purchase a subsidiary in L, the latter will deduct its ACE in L at L’s tax rate, regardless of the buyer’s identity). On the other hand, the ACE does not solve the problem of CON for debt-financed investments, given that it leaves in place existing deductions for interest payments.

The “Allowance for Corporate Capital” (ACC) approach is a variant of the ACE. The key difference is that whereas an ACE adds a deduction for the normal return to equity to the existing interest deduction, an ACC allows a deduction for aggregate capital (i.e. debt plus equity) at the same rate, typically the risk-free rate of return.²³ The NFD (as formulated here) is a variant of the ACC. It also draws on a recent proposal by Devereux (2010) that is intended to restrict interest deductibility in a high-tax residence country in circumstances where the borrowing finances

²² Note also that in general the implementation of a CBIT approach faces significant transition difficulties with regard to the treatment of existing debt, and faces various other obstacles (see e.g. de Mooij, 2012).

²³ The ACE/ACC approaches have long been discussed in the economic literature on the design of neutral business taxes (see e.g. Boadway and Bruce, 1984; Devereux and Freeman, 1991). Note that they may be viewed as taxing economic rents while exempting the “normal” return on capital.

foreign activity. In particular, where a UK parent borrows in the UK, interest deductibility in the UK would be restricted to the portion of the debt that finances domestic activity. That is, deductibility would be denied to the extent that the UK borrowing finances an injection of equity (or debt) into a foreign affiliate (Devereux, 2010, p. 117).

Let n be the number of countries. We focus on a single multinational group that has affiliates in $k \leq n$ countries. As will become apparent, it is unnecessary to specify the residence country. Let r_i be the rate at which country i allows a deduction for capital; in the ACC framework, this should ideally be the risk-free rate of return, but its precise determination is immaterial for the claim that we make. Let τ_i be country i 's tax rate. Let D_{ix} be the (net) debt issued by affiliate i to third-party lenders. Note that cash holdings (and thus retained earnings that are not immediately reinvested) are counted as negative debt, so it is possible that $D_{ix} < 0$ if cash holdings exceed borrowing. Similarly, let E_{ix} be the (net) equity issued by affiliate i to common stockholders (i.e. to any shareholder that is not itself an affiliate of this multinational group). Let D_{ij} be the (net) debt issued by affiliate i to affiliate j . Equivalently, this can be defined as affiliate j 's holdings of debt in affiliate i , or as the amount lent by affiliate j to affiliate i . Note that the way we define this implies that if affiliate i were to lend to affiliate j , then D_{ij} falls, while D_{ji} rises. Let E_{ij} be the (net) equity issued by affiliate i to affiliate j . The remarks above apply here as well.

The NFD involves country i allowing a deduction of the following amount for affiliate i :

$$\text{Value of deduction} = \tau_i r_i [D_{ix} + E_{ix} + \sum_{j=1}^k (D_{ij} + E_{ij})]$$

(Recall that this setup entails that if affiliate i lends to another affiliate j , there is a decrease in D_{ij} – i.e. the value of deductions is lower, other things equal, for an affiliate that injects capital into another affiliate). Let

$$S_i = [D_{ix} + E_{ix} + \sum_{j=1}^k (D_{ij} + E_{ij})]$$

be the “stock” of capital of affiliate i .

Suppose that all countries adopt an NFD system (albeit with potentially varying r_i and τ_i). Then, it can be shown that an investment of I in country i will generate a deduction of $\tau_i r_i I$, regardless of the form of financing. To establish this, consider an exhaustive list of cases:

- i) Affiliate i issues $\$I$ of debt to a third-party lender: D_{ix} increases by I and so the value of the incremental deduction is $\tau_i r_i I$. Note that the use of $\$I$ of retained earnings by affiliate i would also generate the same incremental deduction, as the reduction in cash holdings of

$\$I$ entails an increase of I in D_{ix} . This point also applies to all the cases below that involve third-party debt.

ii) Affiliate i issues $\$I$ of equity to a third-party shareholder: D_{ix} increases by I and so the value of the incremental deduction is $\tau_i r_i I$.

iii) Affiliate $j \neq i$ issues $\$I$ of debt to a third-party lender, and then lends $\$I$ to affiliate i . For affiliate j , $\Delta S_j = \Delta D_{jx} + \Delta D_{ji} = I + (-I) = 0$: i.e. the increase in third-party debt is offset by the decrease in D_{ji} , so that affiliate j does not experience any change in its deductions under the NFD.

For affiliate i , $\Delta S_i = \Delta D_{ij} = I$: thus, affiliate i 's deduction increases by $\tau_i r_i I$.

This conclusion is unaffected by interposing an arbitrary number of intermediary conduit affiliates between j and i . For example, suppose that j lends to affiliate m , which then lends to affiliate i . As before, $\Delta S_j = \Delta D_{jx} + \Delta D_{jm} = I + (-I) = 0$ and $\Delta S_i = \Delta D_{im} = I$, while: $\Delta S_m = \Delta D_{mj} + \Delta D_{mi} = I + (-I) = 0$. Thus, the only deduction anywhere in the multinational group is i 's deduction of $\tau_i r_i I$. This point about conduit affiliates applies equally to the cases below.

iv) Affiliate $j \neq i$ issues $\$I$ of debt to a third-party lender, and then injects equity of $\$I$ into affiliate i .

For affiliate j , $\Delta S_j = \Delta D_{jx} + \Delta E_{ji} = I + (-I) = 0$: i.e. the increase in third-party debt is offset by the decrease in E_{ji} , so that affiliate j does not experience any change in its deductions under the NFD.

For affiliate i , $\Delta S_i = \Delta E_{ij} = I$: thus, affiliate i 's deduction increases by $\tau_i r_i I$.

As discussed previously, this conclusion is unaffected by interposing an arbitrary number of intermediary conduit affiliates between j and i .

v) Affiliate $j \neq i$ issues $\$I$ of equity to third-party shareholders, and then lends $\$I$ to affiliate i .

For affiliate j , $\Delta S_j = \Delta E_{jx} + \Delta D_{ji} = I + (-I) = 0$: i.e. the increase in third-party equity is offset by the decrease in D_{ji} , so that affiliate j does not experience any change in its deductions under the NFD.

For affiliate i , $\Delta S_i = \Delta D_{ij} = I$: thus, affiliate i 's deduction increases by $\tau_i r_i I$.

As discussed previously, this conclusion is unaffected by interposing an arbitrary number of intermediary conduit affiliates between j and i .

vi) Affiliate $j \neq i$ issues $\$I$ of equity to third-party shareholders, and then injects equity of $\$I$ into affiliate i .

For affiliate j , $\Delta S_j = \Delta E_{jx} + \Delta E_{ji} = I + (-I) = 0$: i.e. the increase in third-party equity is offset by the decrease in E_{ji} , so that affiliate j does not experience any change in its deductions under the NFD.

For affiliate i , $\Delta S_i = \Delta E_{ij} = I$: thus, affiliate i 's deduction increases by $\tau_i r_i I$.

As discussed previously, this conclusion is unaffected by interposing an arbitrary number of intermediary conduit affiliates between j and i .

It follows from this result that different firms (whether multinational or domestic-only) competing for the same investment in country i will obtain the same deduction ($\tau_i r_i I$) regardless of the source of their financing (and, in particular, for multinationals, regardless of the tax rate in their residence country). This eliminates ownership distortions (i.e. satisfies CON). It also solves the “mismatch” problem (i.e. the ability of multinationals to borrow in high-tax jurisdictions to finance investment in low-tax jurisdictions). In addition, it solves the earnings stripping problem: for instance, a parent injecting equity into a tax haven affiliate and then borrowing from the latter does not generate any tax deductions. The perceived problem of domestic deductions for borrowing that funds foreign investment would also not be an issue under the NFD regime. This system also eliminates the ability of MNCs to engage in multiple-dip financing. Unlike tracing rules, the NFD is not vulnerable to “cash damming” strategies, as it looks only to the stock of capital in a given time period.²⁴ It is also unaffected by MNCs' choice of whether to label a capital flow to an affiliate as “debt” or “equity.”

Most fundamentally, the NFD eliminates debt-equity distortions for both domestic and multinational firms. However, it does not allow policymakers to subsidize debt (if that is what we interpret them as wishing to do), even if there happen to be positive externalities of debt. How significant a limitation this would constitute depends very much on how we conceptualize the rationale for the existing favorable tax treatment of debt. This tax preference appears to have

²⁴ For example, suppose that Firm H wishes to make a $\$1000$ investment in country L. If its affiliate in country L borrows $\$1000$ from a third-party lender, this will generate a deduction $= 1000(0.15)r_L = 150r_L$. A “cash damming” strategy may involve, for instance, the parent borrowing $\$1000$ from a third-party lender while using $\$1000$ of retained earnings to inject equity into the affiliate in country L. The parent's increased debt is offset by its increased equity in the L affiliate; thus, there is no increase in the deduction it obtains in country H. The affiliate in L experiences an increase of $\$1000$ in its stock of capital, which generates a deduction of $150r_L$ (precisely the same as that generated by this affiliate borrowing from a third-party lender).

its origins in the accounting treatment of interest payments. Under accounting conventions, interest is an expense associated with earning income, just like wages and the cost of raw materials. It therefore appears natural for interest payments to be deductible under accounting rules. Historically, this treatment of interest was imported into tax law from accounting, along with many other accounting concepts. This does not in itself fully explain the asymmetric treatment of interest and equity returns, which appears to have its origins in the efforts of accounting rules to measure the income of a business from the perspective of the equityholders.

Recently, a small theoretical literature has emerged elaborating on possible normative justifications for the preferential treatment of debt (e.g. Gordon 2010; John, Senbet and Yang, 2012; He and Matvos, 2012). On the other hand, economists have been arguing for decades for an end to the preferential treatment of debt, implicitly rejecting the notion that debt confers positive externalities that warrant Pigovian subsidies. Under this latter approach, the key limitation of the NFD – namely, that it fails to provide policymakers with the opportunity to subsidize debt – appears much less of a problem. Indeed, it may constitute an advantage by ending the historical legacy bequeathed by the importation into tax law of equityholder-centered accounting concepts.

6. *The OECD proposals*

OECD (2014) provides a discussion draft outlining two proposals pursuant to Item 4 of the OECD’s BEPS action plan (to limit BEPS via interest payments). One is referred to as involving “fixed-ratio” rules (OECD, 2014, pp. 47f). These rules only utilize financial information regarding a single MNC affiliate in isolation, and would disallow interest deductions when some specified ratio (for example, of interest payments to earnings) is exceeded. Fixed-ratio rules closely resemble the earnings stripping rules discussed in Section 3.3.2, and would in general violate CON for essentially the same reasons as do current earnings stripping rules.

The second type of policy proposal consists of groupwide tests (OECD, pp. 27f). These require financial information on the entire MNC group to which an affiliate belongs (and thus resemble the WDC approach discussed in Section 4). Two major principles guide these groupwide tests. The first is that intra-group debt is disregarded (as in the WDC approach). The second is that interest deductions should be allocated among the affiliates of a group in a manner that matches the distribution of the group’s economic activity. Two different forms of groupwide tests are discussed. The first involves groupwide allocation, and closely resembles the formulary

apportionment system proposed by Graetz (2008). The second involves group ratio rules (OECD, p. 29), which impose caps on an affiliate's interest deductions in a way that reflects that affiliate's share of the group's worldwide economic activity (measured by the earnings of each affiliate relative to the group's worldwide earnings).

To illustrate group ratio rules, recall the example in Section 3.3.3 where firm H holds half its \$900 of assets (and earns half its worldwide income) in country H, with the other half in country L. Suppose that it initially has no outstanding debt and uses \$100 of third-party debt (sourced in H) at a 10% interest rate to finance an acquisition in L. Then, firm H's attempt to deduct \$10 of interest in H would be restricted by the groupwide ratio rule. In particular, as 45% of its worldwide earnings are sourced in H, it would be able to deduct no more than \$4.50 of interest at country H's 35% rate. Suppose that firm M is in an analogous position (with \$900 of assets and with half its activity in M and the other half in L). Firm M would then be restricted by a groupwide ratio rule to deducting no more than \$4.50 at country M's 25% rate, and would be unable to deduct any interest at country H's 35% rate. In general, these types of groupwide ratio rules – which bear a strong resemblance to the thin capitalization rules analyzed in Section 3.3.4 – will give rise to ownership distortions in a scenario where firms H and M are competing to acquire the \$100 asset in country L.

A crucial difference between the groupwide rules and the WDC approach in Section 4 is that the former allocate interest deductions based on measures of economic activity rather than in a way that is exogenous to firms' behavior. This creates the potential for distortions in the location of economic activity that do not exist under a WDC regime, as well as creating the potential for the differential treatment of different MNC groups based on the location of their economic activity. The OECD clearly acknowledges “minimizing distortions to the competitiveness of groups” (OECD, 2014, p. 10) as being among its objectives, albeit subsidiary to the primary aim of reducing BEPS. Given that one of the insights of our paper is that multiple-dip financing may in some circumstances promote rather than undermine ownership neutrality, it is clear that there are some difficult tradeoffs to be made in choosing among policies to combat BEPS in a principled manner.

7. Conclusion

The increasingly global scope of multinational firms' operations, their growing financial sophistication, and the growing interest among policymakers in the taxation of MNCs (as

reflected in the OECD's BEPS initiative) have prompted considerable current interest in the tax treatment of MNCs' interest deductions. This paper analyzes the tax treatment of interest expenses in a multijurisdictional setting with a particular emphasis on the ownership distortions which appear increasingly important in the market for corporate control.

Using this perspective, we argue that the differential deductibility of debt entailed by various current tax law provisions leads to potential distortions in the patterns of asset ownership across MNCs and that various proposed solutions have significant limitations. We suggest alternative regimes – a worldwide debt cap (WDC) and a net financing deduction (NFD) – that address the ownership distortions that we highlight, along with the widely-discussed problem of base erosion. However, these regimes have the potential disadvantage of restricting other policy parameters. While acknowledging the limitations of focusing exclusively on one margin where distortions occur, this analysis tries to exemplify the advantages of using consistent general principles (whether CON or others) in the analysis of tax policy debates that can often come to be dominated by immediate political and practical exigencies.

References

- Altshuler, R. and H. Grubert (2008) "Corporate Taxes in the World Economy: Reforming the Taxation of Cross-Border Income" in J. W. Diamond and G. R. Zodrow (eds.) *Fundamental Tax Reform: Issues, Choices and Implications*, Cambridge, MA: MIT Press, pp. 319-354.
- Becker, J. and C. Fuest (2010) "Foreign Income and Domestic Deductions – A Comment" *National Tax Journal*, 63, pp 269-277.
- Bird, A. (2015) "Domestic Taxes and Inbound Acquisitions" Working paper.
- Blouin, J., H. Huizinga, L. Laeven and G. Nicodeme (2014) "Thin Capitalization Rules and Multinational Capital Structure" IMF Working Paper 14/12.
- Boadway, R. and N. Bruce (1984) "A General Proposition on the Design of a Neutral Business Tax" *Journal of Public Economics*, 84, 231-239.
- Büttner, T., M. Overesch, U. Schreiber and G. Wamser (2012) "The Impact of Thin-Capitalization Rules on the Capital Structure of Multinational Firms" *Journal of Public Economics*, 96, 930-938.
- Büttner, T. and G. Wamser (2013) "Internal Debt and Multinational Profit Shifting: Empirical Evidence from Firm-Level Panel Data" *National Tax Journal*, 66, 63–96.

- De Mooij, R. (2012) “Tax Biases to Debt Finance: Assessing the Problem, Finding Solutions” *Fiscal Studies*, 33, pp. 489-512.
- Desai, M. A. and D. Dharmapala (2010) “Do Strong Fences Make Strong Neighbors?” *National Tax Journal*, 63, pp. 723-740.
- Desai, M. A., C. F. Foley, and J. R. Hines, Jr. (2004) “A Multinational Perspective on Capital Structure Choice and Internal Capital Markets” *Journal of Finance*, 59, 2451–2487.
- Desai, M. A. and J. R. Hines, Jr. (2003) “Evaluating International Tax Reform” *National Tax Journal*, 56, 487-502.
- Devereux, M. (1990) “Capital Export Neutrality, Capital Import Neutrality, Capital Ownership Neutrality and all that” Working paper.
- Devereux, M. (2010) “Proposals for Controlled Foreign Corporations (CFC) Reform: A Tale of Two Principles” *British Tax Review*, No. 2, pp. 111-119.
- Devereux, M., & Freeman, H. (1991) “A general neutral profits tax” *Fiscal Studies*, 12(3), 1-15.
- Dharmapala, D. (2009) “The Impact of Taxes on Dividends and Corporate Financial Policy: Lessons from the 2000’s” in A. D. Viard (ed.) *Tax Policy Lessons from the 2000’s*, American Enterprise Institute Press, 2009, pp. 199-233.
- Dharmapala, D. (2014a) “What Do We Know About Base Erosion and Profit Shifting? A Review of the Empirical Literature” *Fiscal Studies*, 35, 421-448.
- Dharmapala (2014b) “Base Erosion and Profit Shifting: A Simple Conceptual Framework” *CESifo DICE Report – Journal for Institutional Comparisons*, 12, 8-14.
- Dharmapala, D. and N. Riedel (2013) “Earnings Shocks and Tax-Motivated Income Shifting: Evidence from European Multinationals” *Journal of Public Economics* 97, 95-107.
- Feld, L., M. Ruf, U. Scheuering, U. Schreiber and J. Voget (2013) “Effects of Territorial and Worldwide Corporation Tax Systems on Outbound M&As” ZEW - Centre for European Economic Research Discussion Paper No. 13-088.
- Feldstein, M. (1995) “The Effect of a Consumption Tax on the Rate of Interest” NBER Working Paper #5397.
- Gordon, R. H. (2010) “Taxation and Corporate Use of Debt: Implications for Tax Policy” *National Tax Journal*, 63, pp. 151-174.
- Graetz, M. J. (2008) “A Multilateral Solution for Income Tax Treatment of Interest Expenses” *Bulletin for International Taxation*, November, 486-493.

- He, Z. and G. Matvos (2012) “Debt and Creative Destruction: Why Could Subsidizing Corporate Debt be Optimal?” NBER Working Paper #17920.
- Hines, J. R., Jr. (2008) “Foreign Income and Domestic Deductions” *National Tax Journal*, 61, pp. 461-475.
- Hines, J. R., Jr. (2009) “Reconsidering the Taxation of Foreign Income” *Tax Law Review*, 62, 269-.
- Hodder, J. E., and L. W. Senbet (1990) “International Capital Structure Equilibrium” *Journal of Finance*, 45, 1495–1516.
- John, K., L. W. Senbet and G. Yang (2012) “Why is Debt Tax-Deductible? Incentives and Public Policy” Working paper.
- Kleinbard, E. D. (2011) “The Lessons of Stateless Income” *Tax Law Review*, 65, 99-172.
- Miller, M. H. 1977. Debt and taxes. *Journal of Finance* 32, 261–75.
- Mintz, J. M. (1999) “Globalization of the Corporate Income Tax: The Role of Allocation” *Finanzarchiv*, 56, 389-423.
- Mintz, J. M. and A. Weichenrieder (2010) *The Indirect Side of Direct Investment: Multinational Company Finance and Taxation*, Cambridge, MA: MIT Press.
- Mirrlees, J. A., S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (2011) *Tax by Design: The Mirrlees Review*, Oxford, Oxford University Press.
- OECD (2013a) *Addressing Base Erosion and Profit Shifting*, Paris: OECD.
- OECD (2013b) *Action Plan on Base Erosion and Profit Shifting*, Paris: OECD.
- OECD (2014) *Public Discussion Draft BEPS Action 4: Interest Deductions and Other Financial Payments*, Paris: OECD.
- Sullivan, M. (2013) “A Proposal for the Tax Treatment of Interest in a Territorial System” *Pepperdine Law Review*, 40, 1345-1364.
- US Department of the Treasury (1992) *Integration of the Individual and Corporate Tax System: Taxing Business Income Once* Washington, DC: USGPO.
- US Department of the Treasury (2007) *Approaches to Improve the Competitiveness of the U.S. Business Tax System for the 21st Century* Washington, DC: USGPO.

Figure 1: An Illustration of Multiple-Dip Financing

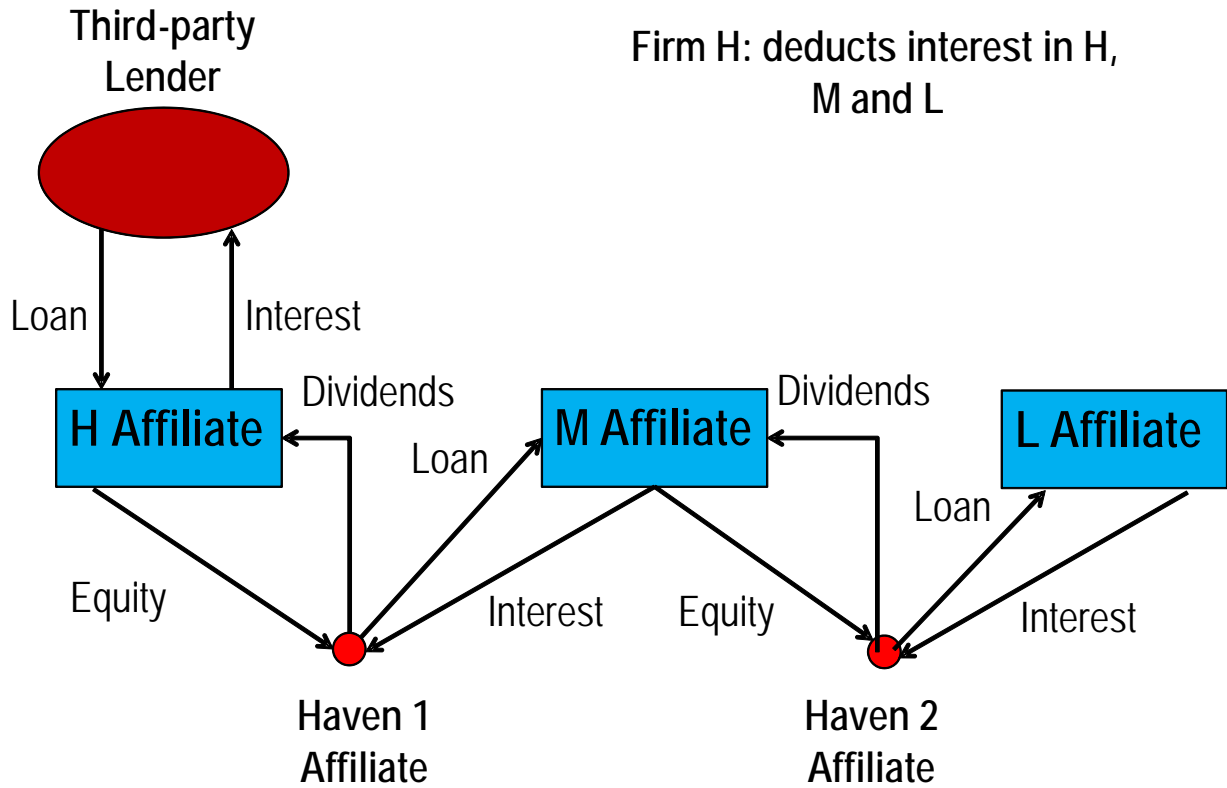
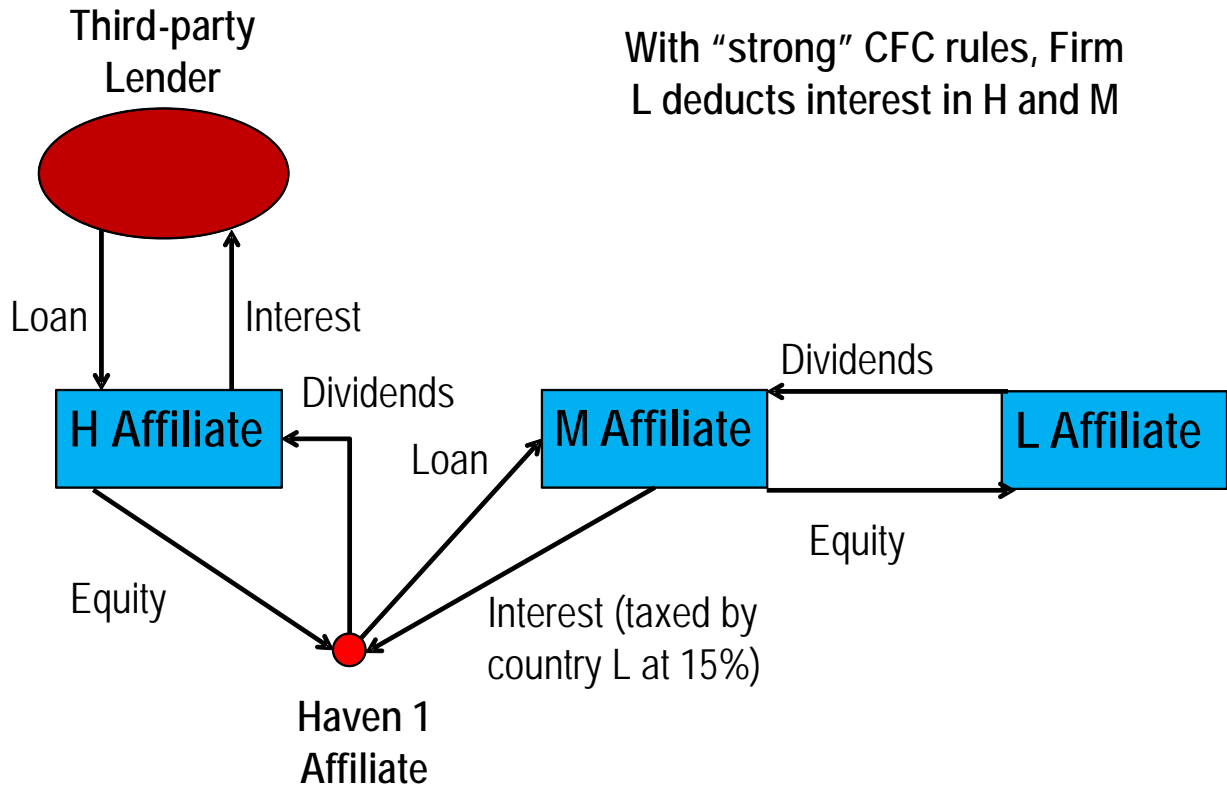


Figure 2: An Illustration of the Limits to Multiple-Dip Financing in the Presence of “Strong” CFC Rules



Readers with comments should address them to:

Professor Dhammika Dharmapala
dharmap@uchicago.edu

Chicago Working Papers in Law and Economics
(Second Series)

For a listing of papers 1–600 please go to Working Papers at
<http://www.law.uchicago.edu/Lawecon/index.html>

601. David A. Weisbach, Should Environmental Taxes Be Precautionary? June 2012
602. Saul Levmore, Harmonization, Preferences, and the Calculus of Consent in Commercial and Other Law, June 2012
603. David S. Evans, Excessive Litigation by Business Users of Free Platform Services, June 2012
604. Ariel Porat, Mistake under the Common European Sales Law, June 2012
605. Stephen J. Choi, Mitu Gulati, and Eric A. Posner, The Dynamics of Contract Evolution, June 2012
606. Eric A. Posner and David Weisbach, International Paretianism: A Defense, July 2012
607. Eric A. Posner, The Institutional Structure of Immigration Law, July 2012
608. Lior Jacob Strahilevitz, Absolute Preferences *and* Relative Preferences in Property Law, July 2012
609. Eric A. Posner and Alan O. Sykes, International Law and the Limits of Macroeconomic Cooperation, July 2012
610. M. Todd Henderson and Frederick Tung, Reverse Regulatory Arbitrage: An Auction Approach to Regulatory Assignments, August 2012
611. Joseph Isenbergh, Cliff Schmitt, August 2012
612. James Melton and Tom Ginsburg, Does De Jure Judicial Independence Really Matter?, September 2014
613. M. Todd Henderson, Voice versus Exit in Health Care Policy, October 2012
614. Gary Becker, François Ewald, and Bernard Harcourt, “Becker on Ewald on Foucault on Becker” American Neoliberalism and Michel Foucault’s 1979 *Birth of Biopolitics* Lectures, October 2012
615. William H. J. Hubbard, Another Look at the Eurobarometer Surveys, October 2012
616. Lee Anne Fennell, Resource Access Costs, October 2012
617. Ariel Porat, Negligence Liability for Non-Negligent Behavior, November 2012
618. William A. Birdthistle and M. Todd Henderson, Becoming the Fifth Branch, November 2012
619. David S. Evans and Elisa V. Mariscal, The Role of Keyword Advertising in Competition among Rival Brands, November 2012
620. Rosa M. Abrantes-Metz and David S. Evans, Replacing the LIBOR with a Transparent and Reliable Index of interbank Borrowing: Comments on the Wheatley Review of LIBOR Initial Discussion Paper, November 2012
621. Reid Thompson and David Weisbach, Attributes of Ownership, November 2012
622. Eric A. Posner, Balance-of-Powers Arguments and the Structural Constitution, November 2012
623. David S. Evans and Richard Schmalensee, The Antitrust Analysis of Multi-Sided Platform Businesses, December 2012
624. James Melton, Zachary Elkins, Tom Ginsburg, and Kalev Leetaru, On the Interpretability of Law: Lessons from the Decoding of National Constitutions, December 2012
625. Jonathan S. Masur and Eric A. Posner, Unemployment and Regulatory Policy, December 2012
626. David S. Evans, Economics of Vertical Restraints for Multi-Sided Platforms, January 2013
627. David S. Evans, Attention to Rivalry among Online Platforms and Its Implications for Antitrust Analysis, January 2013
628. Omri Ben-Shahar, Arbitration and Access to Justice: Economic Analysis, January 2013
629. M. Todd Henderson, Can Lawyers Stay in the Driver’s Seat?, January 2013
630. Stephen J. Choi, Mitu Gulati, and Eric A. Posner, Altruism Exchanges and the Kidney Shortage, January 2013
631. Randal C. Picker, Access and the Public Domain, February 2013
632. Adam B. Cox and Thomas J. Miles, Policing Immigration, February 2013
633. Anup Malani and Jonathan S. Masur, Raising the Stakes in Patent Cases, February 2013
634. Ariel Porat and Lior Strahilevitz, Personalizing Default Rules and Disclosure with Big Data, February 2013
635. Douglas G. Baird and Anthony J. Casey, Bankruptcy Step Zero, February 2013
636. Oren Bar-Gill and Omri Ben-Shahar, No Contract? March 2013
637. Lior Jacob Strahilevitz, Toward a Positive Theory of Privacy Law, March 2013
638. M. Todd Henderson, Self-Regulation for the Mortgage Industry, March 2013
639. Lisa Bernstein, Merchant Law in a Modern Economy, April 2013
640. Omri Ben-Shahar, Regulation through Boilerplate: An Apologia, April 2013

641. Anthony J. Casey and Andres Sawicki, Copyright in Teams, May 2013
642. William H. J. Hubbard, An Empirical Study of the Effect of *Shady Grove v. Allstate* on Forum Shopping in the New York Courts, May 2013
643. Eric A. Posner and E. Glen Weyl, Quadratic Vote Buying as Efficient Corporate Governance, May 2013
644. Dhammika Dharmapala, Nuno Garoupa, and Richard H. McAdams, Punitive Police? Agency Costs, Law Enforcement, and Criminal Procedure, April 2015
645. Tom Ginsburg, Jonathan S. Masur, and Richard H. McAdams, Libertarian Paternalism, Path Dependence, and Temporary Law, June 2013
646. Stephen M. Bainbridge and M. Todd Henderson, Boards-R-Us: Reconceptualizing Corporate Boards, July 2013
647. Mary Anne Case, Is There a Lingua Franca for the American Legal Academy? July 2013
648. Bernard Harcourt, Beccaria's *On Crimes and Punishments*: A Mirror of the History of the Foundations of Modern Criminal Law, July 2013
649. Christopher Buccafusco and Jonathan S. Masur, Innovation and Incarceration: An Economic Analysis of Criminal Intellectual Property Law, July 2013
650. Rosalind Dixon & Tom Ginsburg, The South African Constitutional Court and Socio-economic Rights as "Insurance Swaps", August 2013
651. Maciej H. Kotowski, David A. Weisbach, and Richard J. Zeckhauser, Audits as Signals, August 2013
652. Elisabeth J. Moyer, Michael D. Woolley, Michael J. Glotter, and David A. Weisbach, Climate Impacts on Economic Growth as Drivers of Uncertainty in the Social Cost of Carbon, August 2013
653. Eric A. Posner and E. Glen Weyl, A Solution to the Collective Action Problem in Corporate Reorganization, September 2013
654. Gary Becker, François Ewald, and Bernard Harcourt, "Becker and Foucault on Crime and Punishment"—A Conversation with Gary Becker, François Ewald, and Bernard Harcourt: The Second Session, September 2013
655. Edward R. Morrison, Arpit Gupta, Lenora M. Olson, Lawrence J. Cook, and Heather Keenan, Health and Financial Fragility: Evidence from Automobile Crashes and Consumer Bankruptcy, October 2013
656. Evidentiary Privileges in International Arbitration, Richard M. Mosk and Tom Ginsburg, October 2013
657. Voting Squared: Quadratic Voting in Democratic Politics, Eric A. Posner and E. Glen Weyl, October 2013
658. The Impact of the U.S. Debit Card Interchange Fee Regulation on Consumer Welfare: An Event Study Analysis, David S. Evans, Howard Chang, and Steven Joyce, October 2013
659. Lee Anne Fennell, Just Enough, October 2013
660. Benefit-Cost Paradigms in Financial Regulation, Eric A. Posner and E. Glen Weyl, April 2014
661. Free at Last? Judicial Discretion and Racial Disparities in Federal Sentencing, Crystal S. Yang, October 2013
662. Have Inter-Judge Sentencing Disparities Increased in an Advisory Guidelines Regime? Evidence from Booker, Crystal S. Yang, March 2014
663. William H. J. Hubbard, A Fresh Look at Plausibility Pleading, March 2015
664. Tom Ginsburg, Nick Foti, and Daniel Rockmore, "We the Peoples": The Global Origins of Constitutional Preambles, April 2014
665. Lee Anne Fennell and Eduardo M. Peñalver, Exactions Creep, December 2013
666. Lee Anne Fennell, Forcings, December 2013
667. Stephen J. Choi, Mitu Gulati, and Eric A. Posner, A Winner's Curse?: Promotions from the Lower Federal Courts, December 2013
668. Jose Antonio Cheibub, Zachary Elkins, and Tom Ginsburg, Beyond Presidentialism and Parliamentarism, December 2013
669. Lisa Bernstein, Trade Usage in the Courts: The Flawed Conceptual and Evidentiary Basis of Article 2's Incorporation Strategy, November 2013
670. Roger Allan Ford, Patent Invalidity versus Noninfringement, December 2013
671. M. Todd Henderson and William H.J. Hubbard, Do Judges Follow the Law? An Empirical Test of Congressional Control over Judicial Behavior, January 2014
672. Lisa Bernstein, Copying and Context: Tying as a Solution to the Lack of Intellectual Property Protection of Contract Terms, January 2014

673. Eric A. Posner and Alan O. Sykes, Voting Rules in International Organizations, January 2014
674. Tom Ginsburg and Thomas J. Miles, The Teaching/Research Tradeoff in Law: Data from the Right Tail, February 2014
675. Ariel Porat and Eric Posner, Offsetting Benefits, February 2014
676. Nuno Garoupa and Tom Ginsburg, Judicial Roles in Nonjudicial Functions, February 2014
677. Matthew B. Kugler, The Perceived Intrusiveness of Searching Electronic Devices at the Border: An Empirical Study, February 2014
678. David S. Evans, Vanessa Yanhua Zhang, and Xinzhu Zhang, Assessing Unfair Pricing under China's Anti-Monopoly Law for Innovation-Intensive Industries, March 2014
679. Jonathan S. Masur and Lisa Larrimore Ouellette, Deference Mistakes, March 2014
680. Omri Ben-Shahar and Carl E. Schneider, The Futility of Cost Benefit Analysis in Financial Disclosure Regulation, March 2014
681. Yun-chien Chang and Lee Anne Fennell, Partition and Revelation, April 2014
682. Tom Ginsburg and James Melton, Does the Constitutional Amendment Rule Matter at All? Amendment Cultures and the Challenges of Measuring Amendment Difficulty, May 2014
683. Eric A. Posner and E. Glen Weyl, Cost-Benefit Analysis of Financial Regulations: A Response to Criticisms, May 2014
684. Adam B. Badawi and Anthony J. Casey, The Fannie and Freddie Bailouts Through the Corporate Lens, March 2014
685. David S. Evans, Economic Aspects of Bitcoin and Other Decentralized Public-Ledger Currency Platforms, April 2014
686. Preston M. Torbert, A Study of the Risks of Contract Ambiguity, May 2014
687. Adam S. Chilton, The Laws of War and Public Opinion: An Experimental Study, May 2014
688. Robert Cooter and Ariel Porat, Disgorgement Damages for Accidents, April 2015
689. David Weisbach, Distributionally-Weighted Cost Benefit Analysis: Welfare Economics Meets Organizational Design, June 2014
690. Robert Cooter and Ariel Porat, Lapses of Attention in Medical Malpractice and Road Accidents, June 2014
691. William H. J. Hubbard, Nuisance Suits, June 2014
692. Saul Levmore & Ariel Porat, Credible Threats, July 2014
693. Douglas G. Baird, One-and-a-Half Badges of Fraud, August 2014
694. Adam Chilton and Mila Versteeg, Do Constitutional Rights Make a Difference? August 2014
695. Maria Bigoni, Stefania Bortolotti, Francesco Parisi, and Ariel Porat, Unbundling Efficient Breach, August 2014
696. Adam S. Chilton and Eric A. Posner, An Empirical Study of Political Bias in Legal Scholarship, August 2014
697. David A. Weisbach, The Use of Neutralities in International Tax Policy, August 2014
698. Eric A. Posner, How Do Bank Regulators Determine Capital Adequacy Requirements? September 2014
699. Saul Levmore, Inequality in the Twenty-First Century, August 2014
700. Adam S. Chilton, Reconsidering the Motivations of the United States? Bilateral Investment Treaty Program, July 2014
701. Dhammika Dharmapala and Vikramaditya S. Khanna, The Costs and Benefits of Mandatory Securities Regulation: Evidence from Market Reactions to the JOBS Act of 2012, August 2014
702. Dhammika Dharmapala, What Do We Know About Base Erosion and Profit Shifting? A Review of the Empirical Literature, September 2014
703. Dhammika Dharmapala, Base Erosion and Profit Shifting: A Simple Conceptual Framework, September 2014
704. Lee Anne Fennell and Richard H. McAdams, Fairness in Law and Economics: Introduction, October 2014
705. Thomas J. Miles and Adam B. Cox, Does Immigration Enforcement Reduce Crime? Evidence from 'Secure Communities', October 2014
706. Ariel Porat and Omri Yadlin, Valuable Lies, October 2014
707. John Bronsteen, Christopher Buccafusco and Jonathan S. Masur, Well-Being and Public Policy, November 2014
708. David S. Evans, The Antitrust Analysis of Rules and Standards for Software Platforms, November 2014
709. E. Glen Weyl and Alexander White, Let the Best 'One' Win: Policy Lessons from the New Economics of Platforms, December 2014

710. Lee Anne Fennell, *Agglomerama*, December 2014
711. Anthony J. Casey and Aziz Z. Huq, *The Article III Problem in Bankruptcy*, December 2014
712. Adam S. Chilton and Mila Versteeg, *The Inefficacy of Constitutional Torture Prohibitions*, December 2014
713. Lee Anne Fennell and Richard H. McAdams, *The Distributive Deficit in Law and Economics*, January 2015
714. Omri Ben-Shahar and Kyle D. Logue, *Under the Weather: Government Insurance and the Regulation of Climate Risks*, January 2015
715. Adam M. Samaha and Lior Jacob Strahilevitz, *Don't Ask, Must Tell—and Other Combinations*, January 2015
716. Jonathan S. Masur and Eric A. Posner, *Toward a Pigovian State*, February 2015
717. Lee Fennell, *Slicing Spontaneity*, February 2015
718. Steven Douglas Smith, Michael B. Rappaport, William Baude, and Stephen E. Sachs, *The New and Old Originalism: A Discussion*, February 2015
719. Adam S. Chilton and Eric A. Posner, *The Influence of History on States' Compliance with Human Rights Obligations*, March 2015
720. Saul Levmore and Ariel Porat, *No-Haggle Agreements*, March 2015
721. Saul Levmore and Ariel Porat, *Rethinking Threats*, March 2015
722. Adam Chilton, *The Politics of the United States' Bilateral Investment Treaty Program*, March 2015
723. David S. Evans and Alexis Pirchio, *An Empirical Examination of Why Mobile Money Schemes Ignite in Some Developing Countries but Flounder in Most*, March 2015
724. Anthony J. Casey and Eric A. Posner, *A Framework for Bailout Regulation*, February 2015
725. Mihir A. Desai and Dhammika Dharmapala, *Interest Deductions in a Multijurisdictional World*, April 2015