

# ASSESSING THE FDI RESPONSE TO TAX REFORM AND TAX-PLANNING

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## Abstract

This paper considers the use of ‘forward-looking’ effective tax rates to estimate the impact of corporate tax reform on FDI flows, and signals the need to address increasingly common strategies of multinationals to minimize host and home country tax, when attempting to model representative financing and repatriation structures. Average effective tax rate (AETR) and marginal effective tax rate (METR) formulae are developed that incorporate various corporate tax-planning strategies, and illustrative results are derived to shed light on possible implications of moving away from standard financing and repatriation assumptions. The results suggest that AETRs/METRs based on standard assumptions, such as used in *Taxing Profits in a Global Economy* OECD (1991), need to be reconsidered, as effective tax rates may be significantly lower in certain cases, when tax-planning is accounted for. A central question is whether tax-planning is taken into account by investors when making investment decisions.

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## A. *Introduction*

This paper considers the use of ‘forward-looking’ effective tax rates (ETRs) to estimate the impact of corporate tax reform on FDI flows, and signals the need to address increasingly common strategies used by multinationals to minimize host and home country tax when attempting to model representative financing and repatriation structures.<sup>1</sup> Average effective tax rate (AETR) and marginal effective tax rate (METR) formulae are developed that incorporate various corporate tax-planning strategies, and illustrative results are derived to shed light on possible effects when moving away from standard financing and repatriation assumptions.

The results suggest that AETRs/METRs based on standard assumptions need to be reconsidered, as ETR values may be significantly lower in certain cases, when tax-planning is accounted for. A central question is whether tax-planning is taken into account by investors when making investment decisions. It may be that only basic tax provisions are accounted for, with tax minimizing strategies developed after investment decisions are made to maximize after-tax rates of return.<sup>2</sup> Where this is generally the case, then ETR measures exclusive of tax-planning effects may be appropriate for empirical work estimating the sensitivity of FDI to taxation. ETR measures exclusive of tax-planning may also be suitable for empirical work if such measures are correlated with ETR measures inclusive of tax-planning.<sup>3</sup>

While the framework developed below illustrates the possible effects of tax-planning on METR and AETR values, it does not provide formulae for ‘representative’ effective tax rates for different cases, as it remains unclear how prevalent various tax-planning strategies are, and how aggressively they are applied. In other words, much work remains to determine what tax measures tend to be factored in by investors when making their cross-border investment decisions. The analysis does however give some concern that estimates of the inbound/outbound FDI response to tax policy reform based on standard approaches and measures may be less than reliable, on account of questionable estimated tax elasticity values, and also because of considerable uncertainty over the percentage change in AETRs accompanying tax reform, taking into account tax-planning considerations.

Studies by the OECD and others computing forward-looking effective tax rates adopt financing and repatriation assumptions that appear to be increasingly inconsistent with developments including the growing use of intermediary tax haven finance subsidiaries and new financial instruments that encourage reliance on inter-affiliate interest, royalty and other payments deductible at source, as means to payout

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<sup>1</sup> This paper is drawn from chapter 5 of OECD (2007), *Tax Effects on Foreign Direct Investment: Recent Evidence and Analysis*. OECD Tax Policy Studies series, No.17.

<sup>2</sup> Another possibility is that tax-planning tends only to be factored in where host country tax rates are relatively high, making host country tax a particular concern.

<sup>3</sup> Increasing (convex) costs of tax-planning suggest that multinationals would generally find it efficient to tax plan only up to some degree. In general, tax-planning may be expected so long as the resulting tax savings (reduction in host/home country tax) exceeds the associated costs including obtaining professional tax-planning advice (see Grubert and Mutti (2001), *Taxing International Business Income: Dividend Exemption versus the Current System*, and Grubert and Altshuler (2006), *Corporate Taxes in the World Economy: Reforming the Taxation of Cross-Border Income*). Where planning typically systematically results in some partial reduction (say, 50 per cent) in the effective tax rate (ETR) on FDI, ETRs without tax-planning may closely track ETRs with tax-planning factored in (implying that ETRs without tax-planning may be reliable instrumental variables for ‘true’ ETRs where the latter include tax-planning effects). ETRs without and with tax-planning would tend to not move together, however, where tax-planning is targeted mainly at FDI where ETRs are relatively high. The consideration of various FDI cases in section E of this paper suggests that tax-planning is less attractive in certain cases (e.g. taxpayers resident in credit countries investing in a relatively low-tax host country).

active business income.<sup>4</sup> Unlike dividends, these payments reduce the amount of host country corporate tax, and are particularly attractive where they attract no or minimal further income tax. Such is the case where the recipient is an intermediate affiliate in a no/low tax jurisdiction, and the parent company is not subject to (or is able to avoid) anti-deferral or anti-exemption rules in the home country that would tax such income on a current basis. Even under a direct (non-intermediated) holding structure, home country tax may be avoided on inter-affiliate interest where hybrid securities rather than conventional debt are used.

Section B begins with a review of the basic partial equilibrium approach used by policy analysts to assess the FDI response to corporate tax reform, paying particular attention to financing and repatriation assumptions used. The review considers, as an example, an application of the U.K.'s APTAX model to estimate the response of inbound and outbound FDI to tax reform that lowers the statutory corporate income tax rate. The example is representative of the 'state of the art' of AETR applications employed in OECD countries to assess tax policy effects on FDI flows.

Section C provides a discussion of tax-planning considerations that have received, to date, little attention in AETR work. The analysis concentrates first on the case where a foreign operating subsidiary is held directly by a resident parent company, and then considers intermediated holding structures, and in particular 'triangular' structures where a foreign affiliate is held indirectly through a tax haven finance affiliate. Such structures, facilitating avoidance of home country tax on returns on FDI, may be countered by controlled foreign company (CFC)-type legislation that attributes to resident companies certain types of income passively received by a tax haven affiliate. However, where attributed amounts exclude dividends, interest and royalties paid out of active business income of a foreign operating affiliate, considerable scope for tax-planning exists. Even where such income would normally be caught (deemed to be passive income) under the scope of CFC rules, the use of so-called hybrid structures may be used avoid home country tax. Furthermore, not all countries have adopted such anti-avoidance provisions.

The review of basic tax-planning considerations is followed by consideration in section D of data that suggest the need to address tax-planning opportunities when modelling after-tax returns on FDI. Unfortunately, information is limited on cross-border financing structures including data showing the use and growth of 'triangular' structures involving tax haven finance affiliates, which may explain in large part why empirical studies of tax effects on FDI continue to assume conventional financial and repatriation policies. However, there is a growing literature, most notably from U.S. sources, which provide insights to developments in this area.<sup>5</sup> Section D presents data on the level and growth of earnings of controlled foreign companies in low-tax countries used by U.S. parent companies, which highlights the scale of offshore financial intermediation and suggests the need to account for this phenomenon when specifying representative financing parameters to arrive at representative tax burden measures.

Section E presents results from an investigation of the implications of tax-planning on average and marginal effective tax rate measurement, under a stylized set of tax and non-tax parameters chosen for illustrative purposes. The various tax-planning considerations addressed include: thin-capitalisation of high-taxed subsidiaries, 'double-dip' financing and the use of hybrid securities in place of conventional debt, and the use of tax haven finance affiliates and hybrid structures to avoid home country corporate income tax. The tax burden values are shown to be highly dependent on financing and repatriation assumptions, with negligible AETR values and negative METR values under more aggressive forms of

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<sup>4</sup> See for example OECD (1991), *Taxing Profits in a Global Economy*, Chennells, L. and R. Griffith (1997), *Taxing Profits in a Changing World*, and Hajkova, D. et al. (2006), *Taxation, Business Environment and FDI Location in OECD Countries*.

<sup>5</sup> See for example Altshuler and Grubert, (2006), *The Role of Governments and MNCs in the Race to the Bottom*.

tax-planning. The finding that AETR/METR results are sensitive to financing assumptions is not new. But what is perhaps striking is how different the values may be.

The final section F reconsiders AETR figures and analysis presented in section B, and discusses the sensitivity of results to financing and repatriation assumptions. The possibility that AETR values and estimated adjustments to those values following tax reform may be considerably different than what is predicted under a standard model (particularly when examining FDI from countries with dividend credit systems) suggests that more work be done to assess the need to incorporate implications of tax-planning to forward-looking effective tax rate measures used to infer tax reform effects on FDI. Such work could usefully draw on the insights and findings of Grubert (2004), analyzing the effects on tax-planning of backward-looking tax burden measures.<sup>6</sup>

### **B. Basic approach to assessing the FDI response to tax reform**

The basic approach under a partial equilibrium assessment of the FDI response to corporate tax reform is to combine an estimate of the sensitivity (elasticity) of FDI to the AETR on FDI, with a measure of the change in the AETR resulting from tax reform.<sup>7</sup> The basic approach may be represented as follows:

$$\frac{FDI_1 - FDI_0}{FDI_0} = \varepsilon^s x(AETR_1 - AETR_0) \quad (1)$$

where subscripts 0 and 1 show pre- and post-reform values; FDI measures a bilateral FDI flow, say from country A (home country) into country B (host country); AETR is a forward-looking average effective tax rate on FDI from country A into country B; and  $\varepsilon^s$  is a semi-elasticity estimate of the percentage change in the FDI flow accompanying a one percentage point increase in the AETR.<sup>8</sup> Equation (1) applies at the bilateral level, with AETRs depending on country-specific host and home country tax rules in national legislation, and (overriding) provisions stipulated in a bilateral tax treaty agreement (if one) between country A and country B.

Applications of (1) include an assessment by policy-makers in a given (host) country B of the inbound FDI response to one or more corporate tax policy changes in country B that alter the AETR on inbound investment from country A as well as other countries. For example, consider a corporate tax reform in country B that lowers the AETR on FDI into country B from country A from 30 to 25 per cent. Application of a mean semi-elasticity  $\varepsilon^s$  value of -5.9 would predict that FDI into country B from country A would increase by 29.5 per cent.<sup>9</sup> An assessment of the impact on total inbound FDI from all countries

<sup>6</sup> See Grubert (2004), *The Tax Burden on Direct Cross-Border Investment: Company Strategies and Government Responses*.

<sup>7</sup> AETR measures are relevant to FDI location decisions (whether or not to invest, where to invest amongst competing locations), while METR measures are relevant to scale decisions (how much to invest in a given location). Thus, where tax is a determinant of FDI flow, total FDI flows would depend on both AETR and METR values. Where location decisions have a greater impact on total FDI flows than scale decisions, AETRs may provide a better tax burden indicator than METRs to explain possible tax effects on changes in FDI flows.

<sup>8</sup> The semi-elasticity  $\varepsilon^s$  is defined as  $\partial \ln(FDI) / \partial AETR$ . When using an ordinary elasticity, measuring the percentage change in FDI resulting from a 1 percent change in AETR ( $\partial \ln(FDI) / \partial \ln AETR$ ), the right-hand-side tax rate difference term in (1) would measure percentage change  $(AETR_1 - AETR_0) / AETR_0$ .

<sup>9</sup> This elasticity estimate, based on work carried out for the OECD by de Mooij and Ederveen, and reported in Table 2.7 of OECD (2007), *Tax Effects on Foreign Direct Investment, Recent Evidence and Analysis*, is the typical (mean) estimated elasticity value of a broad range of empirical studies, where AETR is used as an explanatory variable to empirically assess the influence of tax on FDI.

(not just country A) would require that this exercise be repeated for each (significant) foreign country investing into A, measuring in each bilateral case the applicable AETR.<sup>10</sup>

An example of this approach is provided by the U.K using its APTAX-international model which calculates AETRs/METRs for cross-border investment, based on the neoclassical investment framework (user cost of capital approach). Results from an application of the APTAX model are presented in Table 1, which shows pre- and post-reform AETR values, and estimated inbound FDI response to a reform that reduces the statutory corporate tax rate in host country MiddleTax from 30 to 25 per cent. The APTAX model incorporates standard finance weights for the parent company for the three conventional types of finance: 35 per cent debt, 55 per cent retained earnings, and 10 per cent new equity (as in Figure 1 shown below in section C). The same weighting structure is assumed to apply at the foreign subsidiary level. Under the direct (non-intermediated) holding structure, foreign earnings are assumed to be immediately distributed as earned.

Pre- and post-reform AETR values are shown in Table 1 for FDI into MiddleTax by parent companies resident in LowTax where the corporate tax rate is 15 per cent, and by parent companies resident in HighTax where the tax rate is 40 per cent. For both inbound investor groups, results are shown for the case where the home country operates a dividend exemption system, and the case where the home country operates a dividend credit system. Pre- and post-reform AETR values are applied to estimate the impact of tax reform in MiddleTax on inbound FDI using the estimating formula (1) and a semi-elasticity value for AETR of 5.9 per cent ( $\epsilon^s = -5.9$ ).

**Table 1. Tax Reform Effects on Inbound FDI into MiddleTax**

	<i>Home country tax system</i>	<i>AETR pre-reform (CIT=30%)</i>	<i>AETR post-reform (CIT=25%)</i>	<i>% change in FDI into MiddleTax</i>
FDI from LowTax (CIT=15%)	exemption	24.26	20.10	24.54
FDI from HighTax (CIT=40%)	exemption	25.92	21.78	24.43
FDI from LowTax (CIT=15%)	credit	24.26	20.10	24.54
FDI from HighTax (CIT=40%)	credit	32.66	32.05	3.60

Source: APTAX model, HM Revenue and Customs, U.K.

Consider first the results for FDI into MiddleTax from countries operating exemption systems. Where both LowTax and HighTax have dividend exemption systems, MiddleTax (host country) taxation of distributed profit on FDI in MiddleTax is final, as dividends from MiddleTax are received tax free under exempt treatment. On the other hand, interest paid on inter-affiliate loans is subject to home country taxation, with a higher corporate tax rate applied to inter-affiliate interest received in HighTax. Thus the AETR on FDI from HighTax is higher than on FDI from LowTax (25.92 versus 24.26 per cent).

<sup>10</sup> In principle, elasticity estimates used in (1) to measure the impact on FDI flows from A to B should be based on regressions of FDI, from A to B, on the corresponding AETR. In practice, elasticity estimates specific to separate bilateral FDI flows are not available. Empirical work tends to be specific to certain countries, often ignores home country taxation (assumes host country taxation is final), and explains how host country FDI responds to host country tax reform without regard to where the capital is flowing from. In practice, available values (e.g. mean values of estimates drawn from different studies) are applied.

As taxation at source of profits on FDI in MiddleTax is final, the CIT rate reduction introduced by MiddleTax lowers the AETR on inbound investment both for investors from LowTax and HighTax. For investors from LowTax, the CIT rate reduction lowers the AETR from 24.26 to 20.10 per cent, implying an increase of 24.54 per cent in inbound FDI from investors in LowTax. For investors from HighTax, the same CIT rate reduction lowers the AETR from 25.92 to 21.78 per cent, implying an increase of 24.43 per cent in inbound FDI from investors in HighTax— about the same percentage change as predicted for investors in LowTax.

Consider next results for FDI into MiddleTax from countries operating dividend credit systems. For inbound investment from LowTax, the model finds results that are unchanged from those predicted where LowTax operates an exemption system. This occurs as, once again, host country taxation is final, but for a different reason. In this excess foreign tax credit case, investors in LowTax are able to fully offset home country tax on foreign dividends using foreign tax credits. Under provisions in LowTax to avoid double taxation of cross-border income, creditable foreign tax equals profit tax imposed by MiddleTax on profits earned in MiddleTax and distributed to LowTax investors. As the profit tax rate in LowTax is less than that in MiddleTax, creditable foreign tax is in excess of the amount required to offset LowTax tax liability on profits earned in MiddleTax and received by LowTax investors. Thus there is no tax imposed by LowTax on foreign profits distributed as dividends, while interest on inter-affiliate loans to MiddleTax subsidiaries continues to be taxed at the 15 per cent LowTax corporate rate. The predicted effects of the tax reform are thus the same as under the dividend exemption case. For investors from LowTax, the CIT rate reduction lowers the AETR on inbound FDI from 24.26 to 20.10 per cent, implying an increase of 24.54 per cent in inbound FDI from investors in LowTax.

However, a very different outcome is predicted when addressing inbound FDI from investors resident in HighTax applying a dividend credit system. Under this case, home country (HighTax) rather than host country tax rates determine the combined host/home country tax burden on FDI, implying that the rate reduction in MiddleTax has a muted effect. As the corporate tax burden in MiddleTax is relatively low, the foreign tax credit (pre- and post-reform) available to parent companies in HighTax matches and thus offsets the host country corporate tax burden (pre- and post-reform). Thus the drop in the corporate tax rate in MiddleTax, while reducing corporate tax paid in MiddleTax, reduces the available foreign tax credit for parent companies in HighTax, and thus increases the amount of corporate tax paid in HighTax. The home country tax adjustment offsets the host country tax reduction. As a result, the AETR on inbound investment from investors in HighTax is predicted to fall only marginally, from 32.66 to 32.05 per cent, implying a model FDI increase of 3.6 per cent.

Equation (1) may also be applied to consider the outbound FDI response to tax reform – for example, to gauge possibly higher outbound FDI by investors in MiddleTax, in certain cases, following a reduction in the statutory corporate tax rate from 30 to 25 percent.<sup>11</sup> The results of such an exercise, drawing again from the U.K.'s APTAX model, are reported in Table 2. As in the preceding application assessing inbound FDI effects, central assumptions of the model include a direct holding structure, conventional sources of finance, a fixed set of finance weights, and immediate distribution of profits.

Consider first the results where MiddleTax is assumed to operate a dividend exemption system. Where foreign dividends are exempt from home country tax, the lowering of the corporate income tax rate in MiddleTax has no effect on the tax burden on returns repatriated as dividends, with underlying profits subject to host country taxation alone. However, the reform lowers the tax rate on interest received by a parent company in MiddleTax on inter-affiliate loans to foreign affiliates. At the same time, the reform increases the after-tax cost of third-party debt capital raised by parent companies, by reducing the value of

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<sup>11</sup> Elasticity estimates used in (1) should be consistent with the relevant outbound FDI flows.

interest deductions. Under the assumed finance weights, these effects, the first tending to lower the AETR on outbound FDI, the second tending to increase it, cancel out implying no predicted FDI response.

**Table 2. Tax Reform Effects on Outbound FDI from MiddleTax**

	<i>Middletax (home country) tax system</i>	<i>AETR pre-reform (CIT=30%)</i>	<i>AETR post-reform (CIT=25%)</i>	<i>% change in outbound FDI from MiddleTax</i>
FDI into LowTax (CIT=15%)	exemption	11.96	11.96	0
FDI into HighTax (CIT=40%)	exemption	32.02	32.02	0
FDI into LowTax (CIT=15%)	credit	22.48	18.98	20.65
FDI into HighTax (CIT=40%)	credit	32.02	32.02	0

Source: APTAX model, HM Revenue and Customs, U.K.

Where MiddleTax instead operates a dividend credit system, the AETR on FDI into HighTax is also shown to be unaffected by the tax rate reduction. The reason is similar to that in the exemption case – no home country tax on foreign dividends received from HighTax, with home country tax fully offset by foreign tax credits, both pre- and post-reform. Underlying profits are thus taxed at the HighTax rate. The reduced tax rate lowers the taxation of foreign earnings paid out as inter-affiliate interest, but also increases the cost to the parent of debt finance, with these effects offsetting one another, leaving FDI unchanged.

The one case where the MiddleTax rate reduction is predicted to impact outbound investment is FDI into LowTax, where the effective tax rate on foreign earnings is determined by the home country tax rate. The 5 percentage point CIT rate reduction is shown to lower the AETR from 22.48 to 18.98 per cent, leading to a 20.65 percent increase in FDI outflows to LowTax. As reviewed below, this result may however overstate the outbound FDI response where the effective tax rate on foreign profit is determined more by host than home country tax rates, under tax-planning that limits home country taxation.

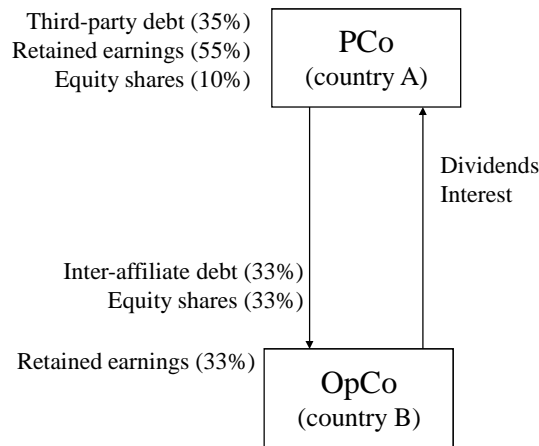
### **C. Consideration of cross-border tax-planning strategies**

The previous section illustrates how the standard AETR/METR model is applied to estimate the effects of corporate tax reform. This section considers the standard financing assumptions in cross-border AETR/METR models and questions whether critical information is omitted when attention is restricted to debt, retained earnings, and new equity (i.e. ignoring the use of new financial products such as hybrid instruments), fixed weights are assigned to these conventional sources of finance, and tax relief available from deferral and triangular (intermediated) holding structures is ignored.

#### *1. Standard financing structure*

When measuring AETRs and METRs on inbound/outbound FDI, the standard modelling practice is to assume a direct (non-intermediated) holding structure with fixed conventional forms of finance, as depicted in Figure 1, where a parent company (PCo) resident in country A raises capital through some combination of borrowed funds (third-party debt), retained earnings, and new equity, and invests the funds in a manufacturing subsidiary (OpCo) resident in country B, using some combination of inter-affiliate debt and new equity. The subsidiary uses the injected capital, plus its own retained earnings, to finance the purchase of productive (physical) capital. Furthermore, standard practice is to assume immediate payout of earnings, and thus immediate application of home country tax rules (i.e. tax deferral is ignored).

Figure 1  
**Standard financing structure**



The standard approach is to also assume a fixed set of financing weights for conventional sources of finance, and to hold these weights fixed for each home/host country combination, and over time. A number of studies, including recent studies, rely on financing weights applied in *Taxing Profits in a Global Economy*, OECD (1991), which was the first internationally-recognized publication reporting bilateral cross-border METRs for OECD countries. The fixed financing weights, indicated in Figure 1, assume that outbound FDI is financed 35 per cent by borrowed funds, 55 per cent by retained earnings, and 10 by new equity capital. At the level of the subsidiary, the financing of investment in physical capital is held fixed at 33 per cent for inter-affiliate loans, retained earnings, and new equity shares to the parent.<sup>12</sup>

***Issues raised by standard financing assumptions***

The assumption of conventional financing types, fixed weights, direct holding structures, and immediate payout of earnings – or more generally, financing and repatriation assumptions that assume no tax-planning – may be questioned where the purpose of AETR/METR modelling is to assess and apply representative tax burden measures.

A simple set of financing and repatriation assumptions and weights may be applied for a given host/home country combination, and held constant over time, where the objective is to analyze whether tax reforms in the host and/or home country have altered over time tax distortions to cross-border investment between the two countries, under the simple financing and repatriation structure assumed, holding all other factors constant. Simple financing and repatriation assumptions and weights may also be used for different host/home country combinations where the objective is to compare distortions to cross-border investment between different countries attributable to host/home country tax regimes and interactions (for the assumed financing and repatriation structure).

<sup>12</sup> The same weights are used in a number of subsequent studies, including updates of the OECD 1991 Taxing Profits in a Global Economy report: see Chennells et al (1997), Taxing Profits in a Changing World (1997), and Hajkova et al. (2007), Taxation, Business Environment and FDI Location in OECD Countries.

However, the use of simple financing and repatriation assumptions may result in misleading tax burden measures (and results derived from those measures) where the objective is to estimate the actual tax burden on cross-border investment. For example, where a significant percentage of FDI from country A into country B is structured through tax haven finance subsidiaries, or is financed using hybrid instruments or by other non-conventional means, the actual METR/AETR on FDI may be significantly lower than the value measured where tax-planning is not accounted for, and tax distortions favouring FDI may be understated. Reliance on simple financing and repatriation assumptions may be problematic, for example, where the objective is to use such measures in empirical work (e.g. to explain the influence of a given home or host country tax reform on cross-border investment between the two countries). Even where foreign affiliates are held directly and conventional sources of finance are used, holding financing parameters fixed across all host/home country combinations may be problematic, to the extent that multinational choices over financing and/or repatriation policies are influenced by tax considerations (e.g. thin-capitalization of high-taxed subsidiaries).

When modelling the tax treatment of returns under a direct (non-intermediated) holding structure, as in Figure 1, a key distinction is whether the home country operates a dividend exemption, dividend credit, or dividend deduction system, which in some cases depends on whether a tax treaty exists between countries A and B and the terms of the treaty (treaties also typically stipulate maximum non-resident withholding tax rates on dividends, interest, royalties, and other payments that are lower than statutory rates). Under a dividend credit system, an important consideration is the deferral of home country tax on foreign earnings until received by a parent as dividends (or capital gains). This basic form of tax-planning is ignored in most studies which assume immediate distribution and taxation of foreign earnings by the home country.

A further consideration is that subsidiaries resident in countries with relatively high statutory corporate tax rates tend to be more thinly-capitalized than subsidiaries in low-tax countries. This follows from the fact that the amount of tax relief tied to an interest deduction on a given amount of debt depends on the statutory tax rate applied to the relevant tax base. Thus a multinational may find it advantageous for a high-taxed subsidiary to undertake the bulk of third-party debt financing for the corporate group. As regards inter-affiliate debt, the incentive of a parent to capitalize a foreign subsidiary with debt rather than equity depends on the relative setting of statutory corporate tax rates, and also on the home country tax system (and holding structure).

Consider first the case where the host country statutory corporate tax rate exceeds the home country rate. Where the home country operates a dividend exemption system, inter-affiliate debt finance is generally preferable to equity finance on the basis of tax considerations. This follows as, under an exemption system, earnings paid out as dividends are subject to host country profit tax alone, while earnings paid out as interest (deductible against the host country base) are subject to home country profit tax alone.<sup>13</sup>

Where instead a dividend credit system applies, reliance on inter-affiliate loans is also attractive (more attractive) at low leveraging values, where a parent company is able to fully shelter home country tax on interest using excess foreign tax credits on dividend income. However, where leveraging reaches a critical value where the parent moves from an excess to insufficient foreign tax credit position, increased leveraging reduces host country tax, but also reduces the allowable foreign tax credit, implying no tax

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<sup>13</sup> The analysis in this section ignores possibly different rates of non-resident withholding tax on dividends and inter-affiliate interest (and royalties). This complication is addressed in the METR/AETR analysis which considers optimal leveraging strategies under different host/home country tax rate scenarios, and credit versus exemption systems.

savings overall.<sup>14</sup> Therefore, where the home country tax rate is relatively low, greater leveraging of a foreign subsidiary might be expected under a dividend exemption system, despite the greater tax relief that leveraging can bring at low leverage values under a dividend credit system.

Consider next the case where the host country statutory corporate tax rate is relatively low. In this case, and continuing with the assumption of a direct holding structure, a parent company subject to a dividend exemption system would be expected to make very limited use of inter-affiliate debt, given the preferential tax treatment of earnings repatriated in the form of dividends. Where instead a dividend credit system applies, and the parent is in an insufficient foreign tax credit position, reliance on inter-affiliate loans would not be expected to be significant, based on tax considerations alone, with differences in the amount of host country tax paid reflected in the available foreign tax credits.

Another central consideration is the treatment of inter-affiliate interest and royalty income, which may (or may not) be pooled with dividend income for foreign tax credit purposes. With treatment under a dividend credit system that pools income paid out of active business income, 'excess' foreign tax credits on foreign dividends (i.e. credits in excess of an amount required to eliminate home country tax on foreign dividends) may be used to shelter from home country tax foreign interest and royalty income received from foreign affiliates. When taking this consideration into account, the tax burden on FDI under a dividend credit system may be *lower* (not higher, as is often presumed) than that under a dividend exemption system. Conversely, if credit pooling provisions are not properly accounted for, problems arise in tax burden measurement.

The preceding issues concern modelling the financial structure and payout of foreign subsidiaries, as recipients of inbound FDI. Another consideration is the mix of funds used by parent firms to fund outbound FDI and whether reliance on a fixed set of financing weights for parents in different home countries and over time is representative.

Countries differ in terms of restrictions on interest deductions on amounts borrowed to fund FDI. Some countries rely on tracing rules, which aim to set off domestic interest deductions on amounts borrowed to fund FDI against domestic taxable income (if any) on FDI. Tracing rules may be easily circumvented, however, given the fungible nature of capital. Where tracing or similar rules do not apply, or where they do but are routinely circumvented, parent companies, and in particular those resident in high-tax rate countries, may be expected to rely heavily on debt finance to fund outbound FDI. Other countries have interest allocation rules which may be more effective in limiting the amount by which interest deductions on debt financed FDI offsets domestic taxable income.<sup>15</sup>

## *2. Triangular financing structure*

Under a direct (non-intermediated) holding, interest, royalties and certain other payments by a foreign operating subsidiary to its domestic parent are deductible at source, thereby reducing host country tax. However, receipts of these amounts normally attract home country tax, with some scope under a

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<sup>14</sup> In general, when considering direct investment, the leveraging value at which a parent would move from an excess foreign tax credit position to an insufficient foreign tax credit position would be higher, the greater is the difference between the host country tax rate and the (lower) home country tax rate. This follows as the larger is this difference, the larger is the amount of creditable foreign tax relative to deemed domestic tax on foreign source income.

<sup>15</sup> The U.S., for example, operates interest allocation rules which operate through foreign tax credit provisions. In particular, interest expense is allocated on a pro rata basis to foreign income (with regard to foreign versus domestic assets), which reduces the deemed amount of U.S. tax on foreign income, thereby limiting foreign tax credits.

dividend credit system to shelter foreign interest and royalty income from home country tax using excess credits on high-taxed dividend income (assuming such pooling of income for foreign tax credit purposes).

Triangular structures, that is, structures involving an intermediate affiliate typically located in a tax haven, providing inter-affiliate financing and possibly other conduit services, can fundamentally alter financing and repatriation options and tax results. As noted above, capitalizing a foreign subsidiary held directly with an inter-affiliate loan is attractive as a tax minimizing strategy if the host country tax rate is relatively high. In such cases, replacing equity with an inter-affiliate loan converts the effective tax rate on foreign earnings from the host country rate to the relatively low home country rate, assuming the home country operates an exemption system. Where the home country instead operates a dividend credit system, reliance on inter-affiliate loans is even more attractive to the extent that interest income can be sheltered from home country tax by excess foreign tax credits (for leveraging up to some optimal point). If however the host country tax rate is relatively low, then in general replacing equity with an inter-affiliate loan offers no tax relief. Under an exemption system, leveraging converts the effective tax rate on foreign earnings to the relatively high home country rate, while under a credit system, host country tax reductions resulting from interest deductions on an inter-affiliate loan are fully offset by reductions in foreign tax credits.

With a triangular structure, as illustrated in Figure 2, financing and repatriation strategies that reduce the host country tax base are generally more attractive where the taxpayer is able to avoid offsetting home country taxation. In the illustration, a parent company (PCo) in country A injects equity capital to establish a wholly-owned intermediate subsidiary (IntCo) in a ‘tax haven’ country C, to provide conduit financial and licensing intermediation. The intermediary is capitalized by the parent with equity (rather than debt) to avoid home country tax on interest income. IntCo invests the funds in an operating subsidiary (OpCo) in country B using a combination of equity shares and inter-affiliate loans, with the funds used to purchase plant, property and equipment. IntCo is also shown to license to OpCo intangible property (e.g. a patent), which may have been transferred to IntCo under a cost sharing arrangement where the ‘buy in’ for IntCo’s rights to the intangible reflects only a fraction of the R&D cost used to create it.

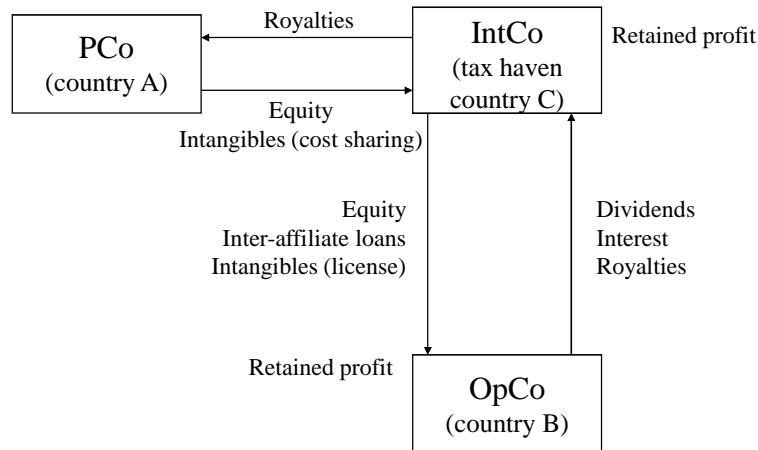
The intermediated structure provides tax savings to PCo on its multinational operations where it enables the avoidance of home country tax on foreign interest, royalty and other payments deductible against the host country corporate tax base, implying both host and home country tax savings. As noted, under a direct holding structure, while such payments are deductible at source, they may attract home country tax. The intermediated structure also allows PCo, if resident in a country operating a dividend credit system, to avoid home country tax on low-tax foreign source dividend income.

Given these considerations, incentives are created to more thinly capitalize foreign operating subsidiaries using inter-affiliate loans provided in the triangular case by tax haven finance intermediaries. The incentive to strip out earnings applies whether the home country operates a dividend exemption or dividend credit system, and regardless of the relative setting of statutory corporate tax rates in the home and host countries. Incentives are also created to over-charge (use non-arm’s length prices) on interest and royalties paid to IntCo, to provide greater host country tax savings.<sup>16</sup>

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<sup>16</sup> An important observation is that tax savings under the triangular structure do not require the use of non-arm’s length prices, as tax base shifting from OpCo to IntCo is achieved even where arm’s length prices are used. Over-charging OpCo on funds loaned to it, and on intangibles licensed to it, only adds to the amount of base shifting. Thus transfer pricing rules, requiring the application of arm’s length prices on inter-affiliate transactions, help contain – but by themselves do not eliminate – tax base shifting.

Figure 2  
**Triangular structure**



The avoidance of home country tax on earnings of OpCo received and retained offshore by IntCo assumes the absence of controlled foreign company-type (anti-deferral or anti-exemption) legislation in the home country that would tax PCo on a current basis on interest and royalty income received by IntCo, paid out of active business income of OpCo. However, many countries have not yet introduced such legislation. Moreover, for those that have, the anti-avoidance rules may not apply to such income, targeting instead income of foreign affiliates earned on portfolio holdings, and possibly other (e.g. foreign base company) income. In some cases, income attributed to the parent may be taxed at a preferential tax rate, rather than the basic corporate tax rate. Finally, as elaborated in the next section, where rules are in place that would tax on a current basis interest and royalty income paid out of active business income and passively received by a tax haven affiliate, hybrid entities may enable avoidance of these rules.

Aside from the possible application of controlled foreign company (CFC)-type rules, a further consideration is that certain other provisions may be in place to safeguard host and home country tax bases from base erosion depicted in Figure 2. The host country B may have thin-capitalization rules that limit the degree of leveraging of OpCo by IntCo, and thereby protect the host country tax base (depending on the design of the rules and scope for tax-planning to push the boundaries). The home country A may have interest allocation rules that limit interest deductions by PCo on funds borrowed to capitalize IntCo. Such rules would generally aim to limit interest deductions against domestic taxable income, where tax-planning results in limited inclusion of foreign income in the home country tax base. For example, certain countries allocate interest expense of resident companies between domestic and foreign income, on a pro rata basis based on domestic and foreign assets. Other countries limit the offset to home country tax by assigning on a pro rata basis some portion of interest expense to deemed foreign income, so that the limitation operates through foreign tax credit limitation calculations. Another approach followed by some countries is to rely on tracing rules which attempt to identify the use of borrow funds (difficult to prove, given the fungibility of capital) and assign interest expense on funds used to finance FDI to foreign income.

### *3. Hybrid entity financing structure*

Triangular structures facilitating the avoidance of tax on returns on FDI may be countered by controlled foreign company (anti-deferral/anti-exemption) legislation in the home country that attributes to resident parent companies certain types of income passively received by a tax haven affiliate, including dividends, interest and royalties paid out by operating subsidiaries. However, the reach of controlled foreign company (CFC) rules may be limited (e.g. due to international competitiveness concerns) to certain forms of passive income, in particular returns on portfolio assets, and in particular may exclude dividends, interest, royalties and other amounts paid out of active business income of a foreign affiliate. Where such amounts are excluded, considerable scope remains to lower host country profit tax, without offsetting home country tax consequences. In other words, depending on the scope of CFC legislation, it may or may not interfere with tax-planning of the type reviewed in the preceding section with reference to Figure 2.

Furthermore, even where CFC rules are in place with a broad reach that would tax (in the previous example) PCo on a current basis on foreign dividend, interest, and royalties paid by OpCo and received by the tax haven finance affiliate IntCo, so-called hybrid entities may be used to circumvent the application of the CFC rules. The hybrid entity structure is illustrated below in Figure 3.

To take an example, CFC rules in the U.S. would normally apply to tax PCo on a current basis on the dividend, interest and royalty payments by OpCo to IntCo. However, with the introduction in the U.S. In 1998 of so-called ‘check-the-box’ provisions, a U.S. parent may elect to have OpCo treated as a branch of IntCo for U.S. tax purposes (in Figure 3, OpCo is labeled BrIntCo as a branch of IntCo). As a result of this designation, payments by OpCo (the hybrid entity) to the tax haven finance subsidiary IntCo, as depicted in Figure 3, would be disregarded for U.S. tax purposes, with OpCo and IntCo treated as single corporate entity for U.S. tax purposes. OpCo is a ‘hybrid’ entity, in the sense that while it is regarded by the home country (country A) as a branch of IntCo, its articles of incorporation are such that OpCo is regarded by the host country (country B) as a separate legal entity (a subsidiary of IntCo, not a branch of IntCo). As a result, interest and royalty payments by OpCo to IntCo would be deductible in the computation of the country B corporate tax base. This treatment restores the tax savings described in the preceding section under the standard triangular structure free of CFC rules.

The hybrid entity structure is attractive in its treatment of interest and royalties. As an example of an application involving intangibles, consider a U.S. parent company that wishes to employ a patent in a Germany manufacturing business. The intangible may have been developed in the U.S. with the assistance of R&D tax credits. Licensing the intangible directly to a German affiliate would generate deductible royalty payments in Germany, and taxable royalty income in the U.S. (possibly sheltered in part by excess foreign tax credits on high-tax dividend income). With a direct licensing arrangement, tax-planning could involve charging royalties for the use of the intangible that are above (below) an arm’s length price in the case where the German statutory corporate tax rate exceeds (is less than) the U.S. rate.

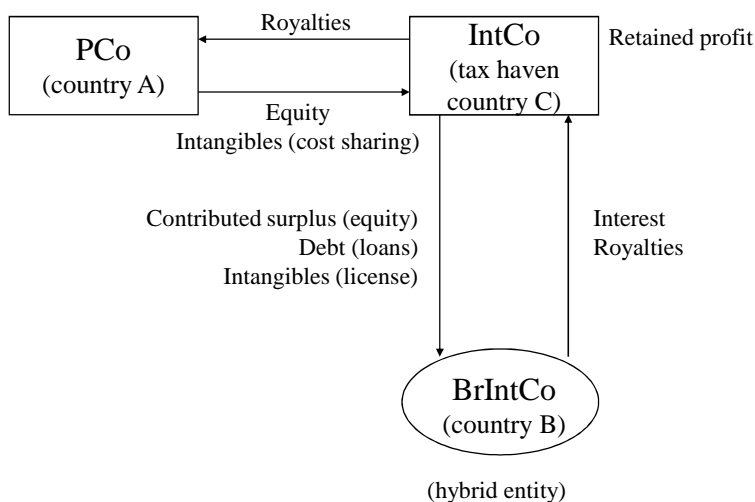
An alternative structure achieving considerably more tax savings would be for the U.S. parent to establish a licensing company in a no or low tax country, and transfer the intangible to that affiliate, which would then license the intangible to the German hybrid entity, so-designated under the U.S. ‘check-the-box’ provisions.<sup>17</sup> The advantage of this structure is avoidance of U.S. tax, while maintaining a royalty deduction in Germany. If the German entity was structured as a separate corporation for U.S. purposes, royalties paid to a licensing company in a no/low tax country (a CFC of the U.S. parent) would be caught under U.S. CFC rules. However, under the German hybrid entity designation, the royalty payments would

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<sup>17</sup> Selling the intangible to a low/no tax licensing subsidiary (or selling it directly to a German operating subsidiary) would give rise to taxable domestic source income. Licensing the intangible to the no/low tax (or German) subsidiary would give rise to taxable foreign royalty income (possibly sheltered by excess foreign tax credits).

be ignored for U.S. tax purposes. The income created by use of the intangible in Germany is treated as active business income of the licensing subsidiary, which would not be subject to tax in the U.S. until the profits were distributed to the U.S. parent. At the same time, the royalty payment would be deductible against the German tax base, with the German entity being recognized by the German tax authorities as a corporation (separate legal entity).

Figure 3  
**Hybrid entity structure**



#### 4. Hybrid instrument financing structure

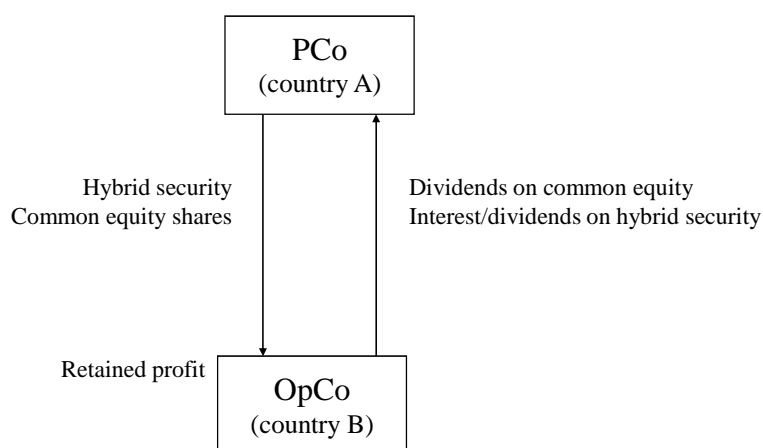
A central tax-planning advantage offered by triangular structures involving the use of tax haven finance affiliates, and hybrid entity structures avoiding the application of CFC rules, is the avoidance of home country taxation of interest income on inter-affiliate loans that would normally apply under a direct (non-intermediated) holding structure. Where tax on interest receipts can be avoided, host country tax savings related to the deductibility of interest are not offset by a corresponding taxable income inclusion.

However, inclusion in the home country tax base of interest income on an inter-affiliate loan made directly to an operating subsidiary assumes the use of a conventional debt instrument, rather than a hybrid instrument. A hybrid instrument is a security that is regarded as conventional debt by one country (e.g. the host country of an operating subsidiary issuing the hybrid security), while being regarded as an equity security by another country (e.g. the home country of a parent purchasing/investing in the security). This asymmetry achieves tax relief similar to that under a triangular or hybrid entity structure.

Use of a hybrid instrument is illustrated in Figure 4. Payments on a hybrid instrument issued by OpCo are treated as interest expense, and are thus deductible against the host (country B) tax base. With returns on investment in a hybrid security treated by country A as dividends, the returns would be exempt where the home country (country A) operates a dividend exemption system, or where the home country operates a dividend credit system and the parent PCo is in an excess foreign tax credit position and is thus able to use foreign tax credits generated on dividends received from OpCo to offset home country tax on

the hybrid instrument. In general, an excess foreign tax credit position would apply where the host country corporate tax rate on profit is high relative to the home country tax rate.<sup>18</sup>

Figure 4  
**Hybrid instrument financing**



While use of a hybrid instrument, like the use of a tax haven finance subsidiary, provides a means for a parent company to avoid home country tax on inter-affiliate interest, it should be remembered that a tax haven subsidiary enables avoidance across many income types, not just interest (e.g. royalties, profits shifted offshore through transactions with a tax haven subsidiary at non arm's length prices).

**D. Cross-border financing developments (observations from U.S. data)**

The preceding section sketches out certain financing and repatriation structures that may be used by multinationals to lower host and home country tax on FDI. A central question raised is whether the use of such structures is prevalent. While recent years have witnessed increased attention in policy circles and the media to offshore 'tax haven' activities of multinationals aimed at minimizing their global corporate tax bill, unfortunately very little information is publicly available that reports the scale and growth of the corresponding financial stocks and flows. This paucity of information reflects in part different approaches used in countries in the measurement and reporting in National Accounts of figures involving transactions with tax haven finance affiliates (also referred to as 'special purpose vehicles').

However, available data suggest the need to attempt to account for tax haven activities and more generally the tax-planning behaviour of multinational firms when assessing the tax burden on cross-border investment. This section considers data on the activities of controlled foreign companies of U.S. investors, drawn from tax returns filed by U.S. parent companies with foreign operations, as reported in *Tax Notes International*.<sup>19</sup> To the extent that these data are reflective of a global phenomenon, the data serve as an

<sup>18</sup> As with conventional debt, at some leveraging of a foreign subsidiary using a hybrid, foreign tax credits on earnings distributed as dividends would be insufficient to fully offset home country tax (at this point, increased reliance on hybrid financing offers no additional combined host/home tax savings).

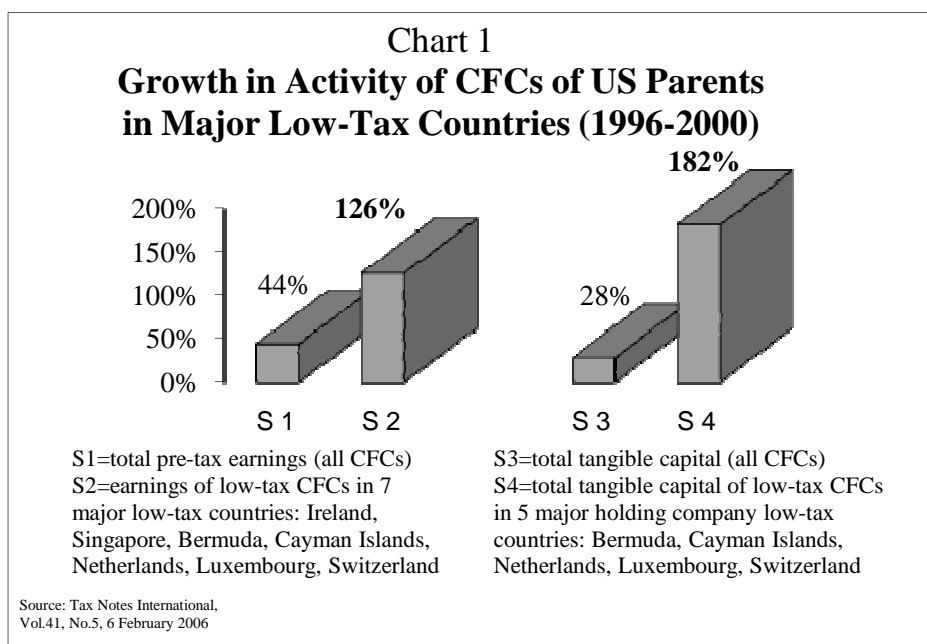
<sup>19</sup> See Altshuler, R. and H. Grubert (2006), *Governments and Multinational Corporations in the Race to the Bottom*.

impetus to further work to analyze trends in other country contexts, to be taken into account in tax burden analysis to inform tax policy making.

Chart 1 shows growth in the scale of activities of controlled foreign companies (CFCs) of U.S. parent companies in major low-tax countries over the period 1996-2000. The first bar shows growth in total pre-tax earnings of all CFCs (in all foreign countries) at 44 per cent. The second bar shows growth in pre-tax earnings of CFCs in seven major low-tax countries used by U.S. parent companies, including Ireland, Singapore, Bermuda, Cayman Islands, the Netherlands, Luxembourg and Switzerland. In terms of dollar amounts (Chart 1 reports growth), total pre-tax earnings of all CFCs in 2000 stood at 231 billion US dollars. Earnings of CFCs in the 7 major low-tax countries noted above accounted for 36 per cent of this amount (or 83 billion US dollars).

Dividends received by CFCs in these countries grew by over 200 per cent over this period. This accounts for about one-third of the total pre-tax earnings growth, with the remaining two-third reflecting growth in other receipts connected to tax-planning, as well as growth in real activity.

The third bar in Chart 1 shows growth in total tangible capital assets (plant, equipment, plus inventories) of all CFCs. The growth rate for total tangible capital assets is 28 per cent. The fourth bar shows growth at 182 per cent in tangible capital assets in five major holding company low-tax countries (Bermuda, Cayman Islands, Netherlands, Luxembourg, and Switzerland). By 2000, holding companies in these countries accounted for about 15 per cent of all capital held abroad by US parents.



Much of the growth in capital assets in these low-tax countries is through hybrid structures, where under U.S. ‘check-the-box’ rules operating entities in high-tax countries are designated as branches of holding company CFCs in low-tax countries (as reviewed in the previous section). Thus real capital of these operating entities shows up as real capital of the consolidated group based in low-taxed countries. Payments to holding company CFCs under the hybrid structure are ‘invisible’ for U.S. tax purposes.

To the extent that the U.S. experience reflects a global trend of increasing tax-planning by MNEs, the data reviewed above, which show significant offshore tax-planning in relation to U.S. outbound FDI, underline the importance of attempts to account for tax-planning in the measurement of representative tax burden indicators for FDI.

***E. Cross-border METR/AETR analysis – a focus on tax-planning effects***

This section explores the implications of tax-planning on cross-border METR/AETR measures. A number of cases are considered, including thin-capitalisation of high-taxed subsidiaries, ‘double-dip’ financing, hybrid instruments, and the use of tax haven finance affiliates and hybrid structures to avoid home country corporate income tax. In particular, the following six cases are examined:

1. retained earnings of the parent, used to purchase new equity shares of a foreign subsidiary;
2. retained earnings of the parent, used to purchase new equity shares and debt securities of a foreign subsidiary (thin capitalization of high-tax subsidiaries being optimal in certain cases);
3. third-party debt of the parent, used to purchase new equity shares of a foreign subsidiary;
4. third-party debt of the parent, used to purchase new equity shares and debt securities of a foreign subsidiary (‘double-dip’ financing, with interest deductions for the parent and sub),
5. third-party debt of the parent, used to purchase new equity shares and hybrid instruments of a foreign subsidiary, and
6. third-party debt of the parent, used to purchase new equity shares of a tax haven finance subsidiary, which invests the funds in new equity shares and debt securities of a foreign (operating) subsidiary. Earnings paid to finance sub invested indefinitely in passive assets.

Case 1 considers equity financed investment in a foreign subsidiary that is assumed to distribute its after-tax earnings (net of replacement investment) in full at the end of each period. The results may be considered as a limiting case, with tax rates on FDI into a low-tax country matching those that would apply to domestic investment (i.e. where a parent invests equity in some combination of equity shares and debt securities of a domestic subsidiary). Case 2 introduces inter-affiliate debt financing and emphasizes how the (optimal) degree of leveraging of a foreign subsidiary depends on the relative setting of host and home country statutory corporate tax rates, and on the type of international tax system of the home country (dividend credit versus exemption). Case 3 introduces (third-party) debt financing of FDI by the parent. Case 4 combines case 3 and case 2 to derive effective tax rates with double-dip financing. Case 5 considers effective tax rates when hybrid instruments are used, with reference to results derived for Case 4. Lastly, case 6 analyzes possible ETR results with a tax haven finance subsidiary.

To simplify the analysis in Case 6 and illustrate results possible with indefinite deferral of home country taxation, foreign operating earnings received by the tax haven sub are assumed to be held offshore indefinitely, invested in passive assets. The results, which assume the absence of anti-deferral/anti-exemption provisions, serve to highlight possibly very low effective tax rates on FDI, in comparison to possible effective tax rates on domestic investment. However, it should be pointed out that the assumption that *all* foreign earnings are a foreign subsidiary are held offshore is unrealistic, given the costs associated with tax-planning (e.g. obtaining tax-planning advice). In the presence of tax-planning costs, a multinational would be expected to retain earnings offshore provided that savings at the margin from deferral (e.g. avoidance of repatriation tax) are not more than offset by the costs incurred at the margin in keeping funds offshore (implying that some fraction of foreign earnings may be repatriated). The analysis in this paper takes the limiting case of no repatriation.

These various cases reflect a subset of financing (and repatriation) policies that may be followed. The objective of the analysis is limited to signalling the sensitivity of METR/AETR results to financing assumptions, and suggesting the need to consider whether certain financing structures should be used in analytical work as more representative of particular host/home country combinations.

The analysis develops AETR and METR measures for dividend exemption (territorial) and dividend credit (worldwide) systems for the six cases noted above. The tax burden measures are derived in a framework that considers the net present value (NPV) of investment in a foreign subsidiary, with the present value of pre-tax economic profit assessed on the basis of an assumed average pre-tax rate of return on capital. For a particular case, the net present value of pre-tax economic profit depends on the optimal capital stock, where the latter scale decision (the optimal amount to invest in a location) depends on an assessment of after-tax marginal costs and returns on investment, with reference to METRs. Where a parent company's decision of where to locate subsidiary operations is based on a comparison of the net present value of investment across competing locations, scale decisions and location decisions are taken simultaneously.<sup>20</sup> To make the model tractable, it is assumed that investment in a foreign subsidiary in a given location, if made, would proceed immediately to the optimal steady-state capital stock ( $K^*$ ) for that location (with the determination of  $K^*$  based on an assessment of marginal returns and costs).<sup>21</sup>

For each case examined, the first step considers the net present value of investment under a given financing and tax structure, expressed as a function of an assumed average pre-tax rate of return variable  $p$  and optimal capital stock value. The next step considers the equilibrium condition determining the optimal capital stock  $K^*$ , and the corresponding METR value. The third step considers various NPV measures to illustrate the influence of taxation on NPV (and location choice), including NPV expressed as a function of the AETR on investment.

METR and AETR formulae for cases 1-6 are provided in Tables 3-5.<sup>22</sup> In Table 3, the home country is assumed to operate a dividend exemption system. In Tables 4 and 5, the home country operates a dividend credit system, with Table 4 considering FDI into a high-taxed foreign affiliate, and Table 5 considering FDI into a low-taxed foreign affiliate.

#### *Illustrative METR and AETR results with tax-planning*

Charts 2-5 show illustrative AETR and METR results for the six cases examined, under a stylized set of tax and non-tax parameters (which may be varied within the model). The pre-tax rate of return is set at 20 per cent. The pre-tax rate of return on bonds (representing the opportunity cost of funds) is set at 10 per cent. A single homogeneous capital asset is assumed (multiple capital assets may be built into the model), with tax depreciation set equal to true economic depreciation at a declining-balance rate of 20 per cent. Non-resident withholding tax rates on interest and dividends are set at 5 per cent. For the AETR and METR results in these charts, the only tax parameter varying across countries is the statutory corporate income tax (CIT) rate, set at 30 per cent in the home country.

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<sup>20</sup> As the AETR for a particular investment (in a foreign subsidiary in a given location) depends on the optimal capital stock  $K^*$  for that location, a comparison of AETRs across alternative locations requires that the optimal capital stock for each location be determined to enable an AETR comparison.

<sup>21</sup> Convex adjustment costs for real capital are ignored. Also ignored are financing strategies that switch from one form of finance to another, as in the 'under-investment' model of Sinn (1991b), where a parent injects an initial amount of new equity capital into a newly created subsidiary, and then relies on (lower opportunity cost) retained earnings of the subsidiary to finance the adjustment to the optimal capital stock.

<sup>22</sup> An Annex detailing the derivation of the AETR and METR formulae presented in Table 3 is available from the author.

Charts 2 and 3 present AETR results. Chart 2 considers outbound FDI into a relatively high-tax country, where the host CIT rate is 40 per cent. In Chart 3, the host country CIT rate is relatively low at 15 per cent. In Case 1, considering straight equity financing where a parent company invests in new equity shares of a foreign subsidiary, the AETR on FDI in the high tax country (Chart 2) is 42.3 per cent under both a dividend credit and dividend exemption system. The AETR exceeds the 40 per cent host country CIT rate on account of host country withholding tax on dividends.<sup>23</sup> No home country tax is collected with tax on dividends offset by foreign tax credits in the first panel, and dividends exempt in the second panel.

In Chart 3, considering FDI in the low tax country, the 30 per cent AETR in case 1 captures the additional home country tax under a credit system on foreign dividends taxed at source at 15 per cent, under the standard assumption applied in AETR/METR analysis that the subsidiary immediately pays out its after-tax earnings (the possibility of deferral is ignored). Under a dividend exemption system, the AETR is only 19 per cent inclusive of dividend withholding tax.

Case 2 allows for leveraging (partial debt finance) of the foreign subsidiary, which is attractive as a means to minimize tax on FDI in a relatively high-tax country, with interest deductible at source and thus free of host country tax. Leveraging converts foreign dividend income subject to relatively high host country tax, into foreign interest income (free of host country tax), taxed at the relatively low home country tax rate. More specifically, under an exemption system, interest is subject only to home country tax at a relatively low rate, while under a credit system, interest may escape home (and host) country tax, at least up some (optimum) leveraging value, sheltered by excess foreign tax credits on infra-marginal dividends.

Partial leveraging of a foreign subsidiary (35 per cent debt, 65 per cent equity) in the high-tax country is shown in Chart 2 to lower the AETR from 42.3 to 35.7 per cent in the dividend credit case. The reduction in the AETR to 35.7 per cent results from host country tax relief from an interest deduction, and no offsetting home country tax, with inter-affiliate interest sheltered from home country tax by excess foreign tax credits on dividend income. At a sufficiently high (optimal) leverage value, foreign earnings paid out as interest would no longer be sheltered at the margin (with excess credits fully utilized). This optimal leverage value would depend on the difference between the host and home country CIT rates, as well as differences in rules in host and home country tax base rules. In general, the higher is the host country corporate tax rate relative to the home country rate, the higher is the optimal leverage value.

When investing from a home country with an exemption system, the AETR also falls, but not by as much, from 42.3 per cent to 40.1 per cent. The reduction is less, as tax relief from the interest deduction in the host country is partially offset by increased home country tax, with foreign interest income subject to tax. In contrast, as noted above, under a credit system with excess foreign tax credits sheltering interest income, this offset would not occur, at least up to some (optimum) leveraging value.

While leveraging a foreign subsidiary held directly is generally attractive when investing into the high tax country, the same cannot be said when considering FDI into the low-tax country. Under a credit system, leveraging provides no overall tax savings where host country tax relief from the interest deduction is simply offset by a reduced foreign tax credit. Under an exemption system, leveraging is unattractive as it converts dividend income taxed at the low host country rate of 15 per cent, into interest taxed at the relatively high home country rate. With these considerations in mind, the AETRs shown in Chart 3 for case 2 assume no leveraging of the foreign subsidiary (the leveraging parameter  $\beta$  is set to 0).

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<sup>23</sup> To focus on tax-planning effects, tax depreciation is assumed to match actual economic depreciation. Thus differences between the AETR and statutory CIT rate do not reflect differences between tax and economic depreciation. Similarly, non-zero METR values do not reflect differences between tax and economic depreciation.

**Table 3 - SUMMARY OF METR and AETR RESULTS under DIVIDEND EXEMPTION**

Financing case	NPV	User cost of capital c (METR=1-ρ/(c-δ))	AETR
<b>case 1</b>	$-(1-A^B)K^* + \sum_{s=1}^{\infty} \frac{(F(K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d)}{(1+\rho)^s}$	$\frac{(\frac{\rho}{1-w^d} + \delta)(1-A^B)}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - A^B(\frac{\rho}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 2</b>	$-(1-A^B)K^* + \sum_{s=1}^{\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*(1-w^d) + r\beta K^*(1-u^A)}{(1+\rho)^s}$	$\frac{(\frac{\rho}{1-w^d} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta(u^B + w^d(1-u^B) - u^A)}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - r\beta(u^B + w^d(1-u^B) - u^A) - A^B(\frac{\rho}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 3</b>	$\sum_{s=1}^{\infty} \frac{(F(K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d)}{(1+\rho)^s} - \sum_{s=1}^{\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s}$	$\frac{(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-A^B)}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - u^A r^* - A^B(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 4</b>	$\sum_{s=1}^{\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*(1-w^d) + r\beta K^*(1-u^A)}{(1+\rho)^s} - \sum_{s=1}^{\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s}$	$\frac{(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta(u^B + w^d(1-u^B) - u^A)}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - u^A r^* - r\beta(u^B + w^d(1-u^B) - u^A) - A^B(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 5</b>	$\sum_{s=1}^{\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*(1-w^d) + r\beta K^*(1-w^j)}{(1+\rho)^s} - \sum_{s=1}^{\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s}$	$\frac{(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta(u^B + w^d(1-u^B) - w^j)}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - u^A r^* - r\beta(u^B + w^d(1-u^B) - w^j) - A^B(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 6</b>	same as case 5	same as case 5	same as case 5

**Note:** F(K) is the foreign subsidiary's production function measuring output as a function of its physical capital stock K (with the optimal capital stock level denoted by K\*), assumed to exhibit declining marginal productivity of capital (with F<sub>K</sub>>0, F<sub>KK</sub><0); δ is the true (economic) rate of depreciation of capital, assessed on a declining-balance (geometric) basis; u<sup>B</sup> is the statutory corporate income tax rate in the foreign host country B; u<sup>A</sup> is the home country statutory corporate tax rate; w<sup>d</sup> is the host country withholding tax rate on dividends (the applicable repatriation tax rate on dividends in the dividend exemption and excess foreign tax credit cases); and ρ is the parent's discount rate (required rate of return on investment net of host/home corporate income tax). In the small open economy case ρ=r\*, where r\* is a 'world' rate of return determined exogenously to the model on international capital markets (which the parent takes as fixed). The variable A<sup>B</sup> (A<sup>A</sup>) measures the present value of depreciation allowances for tax purposes and investment tax credits (if any) provided by the host (home) country accompanying a one unit investment in real capital (formulas provided in separate Annex to the paper). The present value terms are a function of the rate of depreciation of physical capital for tax purposes in the host (home) country. In cases 4-5, interest rate on third-party debt r\*=ρ. Cases 1-6 correspond to those listed in the main text.

**Table 4 - SUMMARY OF METR and AETR RESULTS under DIVIDEND CREDIT SYSTEM, High-Taxed Foreign Affiliate ( $u^A < u^B + w^d(1-u^B)$ )**

<b>Financing case</b>	<b>NPV</b>	<b>User cost of capital c (METR=1-ρ/(c-δ))</b>	<b>AETR</b>
<b>case 1</b>	$-(1-A^B)K^* + \sum_{s=1}^{\infty} \frac{(F(K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d)}{(1+\rho)^s}$	$\frac{(\frac{\rho}{1-w^d} + \delta)(1-A^B)}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - A^B(\frac{\rho}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 2</b>	$-(1-A^B)K^* + \sum_{s=1}^{\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-w^i)}{(1+\rho)^s}$	$\frac{(\frac{\rho}{1-w^d} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta \frac{(u^B + w^d(1-u^B) - w^i)}{(1-w^d)}}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - r\beta(u^B + w^d(1-u^B) - w^i) - A^B(\frac{\rho}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 3</b>	$\sum_{s=1}^{\infty} \frac{(F(K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d)}{(1+\rho)^s}$ $- \sum_{s=1}^{\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s}$	$\frac{(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-A^B)}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - u^A r^* - A^B(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 4</b>	$\sum_{s=1}^{\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-w^i)}{(1+\rho)^s}$ $- \sum_{s=1}^{\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s}$	$\frac{(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta \frac{(u^B + w^d(1-u^B) - w^i)}{(1-w^d)}}{(1-u^B)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - u^A r^* - r\beta(u^B + w^d(1-u^B) - w^i) - A^B(\frac{r^*(1-u^A)}{1-w^d} + \delta)(1-w^d)}{p}$
<b>case 5</b>	same as case 4	same as case 4	same as case 4
<b>case 6</b>	same as case 4	same as case 4	same as case 4

**Note:** See notes to Table 3.

**Table 5 - SUMMARY OF METR and AETR RESULTS under DIVIDEND CREDIT SYSTEM, Low-Taxed Foreign Affiliate ( $u^A > u^B + w^d(1-u^B)$ )**

<b>Financing case</b>	<b>NPV</b>	<b>User cost of capital c (METR=1-ρ/(c-δ))</b>	<b>AETR</b>
<b>case 1</b>	$-(1-A^A)K^* + \sum_{s=1}^{s=\infty} \frac{F(K^*)(1-u^A) - (1-A^A)\delta K^*}{(1+\rho)^s}$	$\frac{(\rho+\delta)(1-A^A)}{(1-u^A)}$	$\frac{u^A(p+\delta) - A^A(\rho+\delta)}{p}$
<b>case 2</b>	same as case 1	same as case 1	same as case 1
<b>case 3</b>	$\sum_{s=1}^{s=\infty} \frac{F(K^*)(1-u^A) - (1-A^A)\delta K^*}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^A)K^*}{(1+\rho)^s}$	$\frac{(r^*(1-u^A) + \delta)(1-A^A)}{(1-u^A)}$	$\frac{u^A(p+\delta) - u^A r^* - A^A(r^*(1-u^A) + \delta)}{p}$
<b>case 4</b>	same as case 3	same as case 3	same as case 3
<b>case 5</b>	same as case 3	same as case 3	same as case 3
<b>case 6</b>	$\sum_{s=1}^{s=\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*(1-w^d) + r\beta K^*(1-w^i)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s}$	$\frac{\left(\frac{r^*(1-u^A)}{(1-w^d)} + \delta\right)(1-A^B)}{(1-u^B)} - r\beta \frac{(u^B + w^d(1-u^B) - w^i)}{(1-w^d)}$	$\frac{u^B(p+\delta) + w^d(p-u^B(p+\delta)) - u^A r^* - r\beta(u^B + w^d(1-u^B) - w^i) - A^B \left(\frac{r^*(1-u^A)}{(1-w^d)} + \delta\right)(1-w^d)}{p}$

**Note:** See notes to Table 3.

Case 3 assumes that a parent's source of funds for FDI is third-party debt. Like case 1, possible leveraging of a foreign subsidiary is ignored. Comparing case 1 and case 3 results, reliance on third-party debt is shown to reduce the AETR significantly. For FDI into the high-tax country, the AETR falls from 42.3 to 27.5 per cent under both credit and exemption systems. The AETR falls by half when investing in the low-tax country from a home country operating a credit system. The fall is more pronounced where an exemption system applies, as in this case earnings are taxed at the low host country CIT rate, while interest on the loan financing the investment is written off at the relatively high home country rate.

Case 4 considers 'double-dip' financing where two interest deductions are taken to finance FDI. The first dip (interest deduction), resulting from borrowing by the parent to fund FDI, reduces the AETR in all panels (high/low tax, credit/exemption system), as discussed in case 3. A second dip, arising where the parent loans some fraction of its borrowed capital to the subsidiary, is attractive in reducing tax on FDI into a high-tax country. As in case 2, leveraging converts relatively high-taxed foreign dividend income into foreign interest income, taxed at the relatively low home country tax rate under an exemption system, and free of both home and host country tax under a credit system, at least up to some optimum leveraging position (at which point taxation at the relatively low home country rate would apply). The results, with the foreign subsidiary leveraged 35 per cent debt (65 per cent equity), show the AETR falling from 27.5 per cent to 25.2 per cent under an exemption system, and to 20.8 per cent under a credit system with excess credits sheltering interest. In contrast, a second dip does not result in tax savings when considering non-intermediated FDI into a low-tax country, for the reasons considered in Case 2 (reduced foreign tax credits under a dividend credit system, and replacement of exempt dividends with taxable interest under a dividend exemption system). Thus in Chart 3, the case 3 results are repeated in case 4 where leveraging the subsidiary is an option but not one taken, due to the negative tax consequences.

As reviewed above, double-dip financing is an attractive tax-planning strategy in certain cases involving the use of conventional debt, depending on the effective tax rate on interest income in the home country, compared with the effective tax rate on profit in the host country. Case 5 considers the use of a hybrid instrument, where double-dip arrangements may be attractive in certain cases where conventional debt would not, with returns regarded by the home country as dividend income exempt from home country tax. With a hybrid, similar results are obtained as with conventional debt where interest can be sheltered. For example, the AETR at 20.8 per cent when investing into the high tax country under a credit system is the same as that for case 4 with conventional debt where excess credits fully shelter foreign interest on conventional debt from home country tax. In this case, the hybrid offers no special tax advantages (with returns received tax-free in both cases). However, a hybrid instrument is attractive relative to conventional debt under an exemption system that taxes interest on conventional debt as ordinary income, while treating returns on the hybrid as exempt dividend income. With the foreign subsidiary leveraged 35 per cent by a hybrid security (65 per cent equity), the AETR falls from 25.2 to 20.8 per cent under an exemption system.

When capitalizing a foreign subsidiary in a low-tax country, a hybrid instrument once again holds no particular advantage where the home country operates a credit system and the foreign subsidiary is held directly. With the parent subject to home country tax on pre-tax earnings whether distributed as dividends on conventional equity, interest, or as returns on a hybrid, and with host country tax and thus creditable foreign tax unchanged when a hybrid security is used as opposed to conventional debt, the AETR results are unchanged from case 4. Again, however, the hybrid offers advantages under an exemption system, with returns on the hybrid, unlike returns on conventional debt, avoiding home country tax. The AETR in this case is a low 1.6 per cent.

Last to consider is FDI financed through a triangular structure, where a parent borrow funds to capitalize an offshore finance subsidiary with equity, which is injected in an operating subsidiary using a combination of inter-affiliate debt and new equity. With no potential for offsetting home country tax

effects (e.g. no switching from an excess to insufficient foreign tax credit position, under a credit system), the foreign subsidiary is assumed to be leveraged 50 per cent with debt, and 50 per cent with equity.

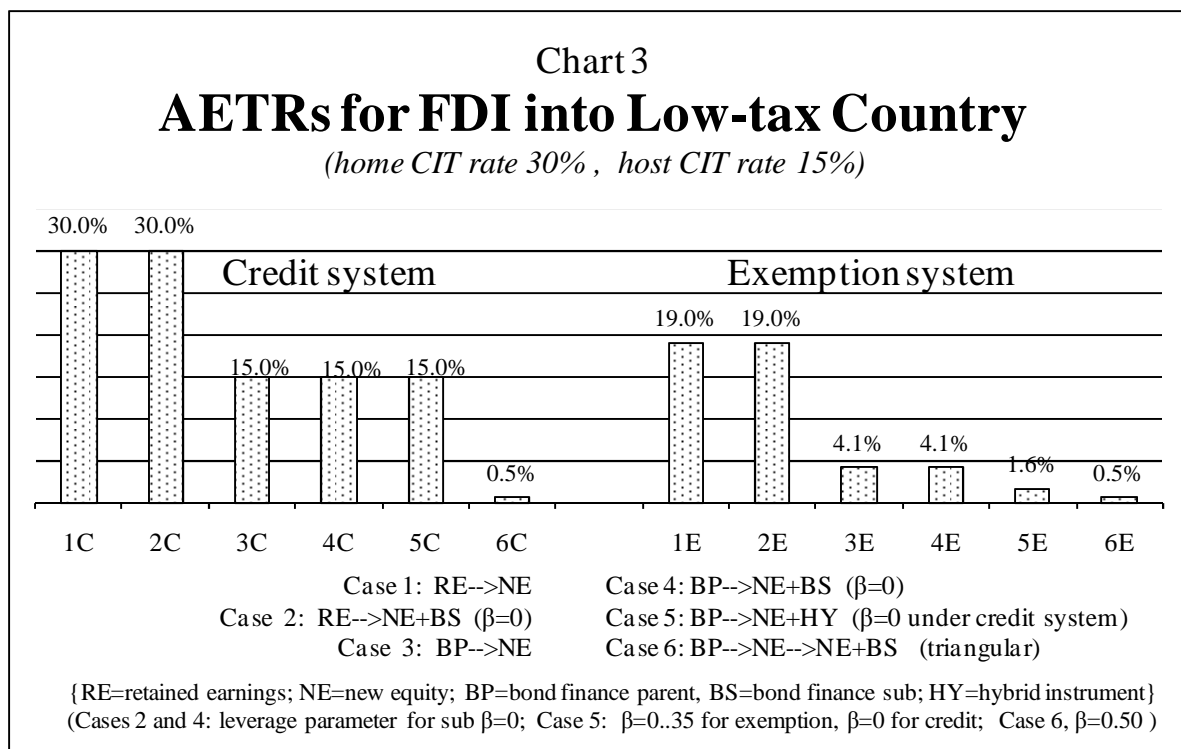
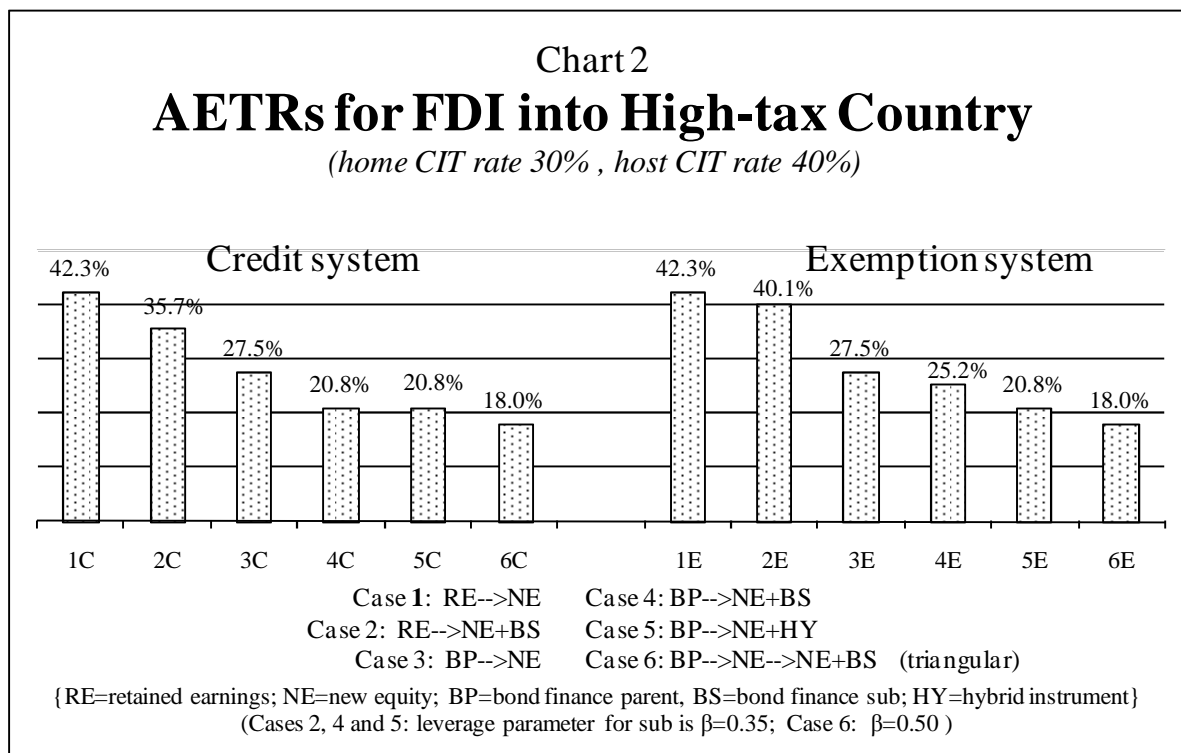
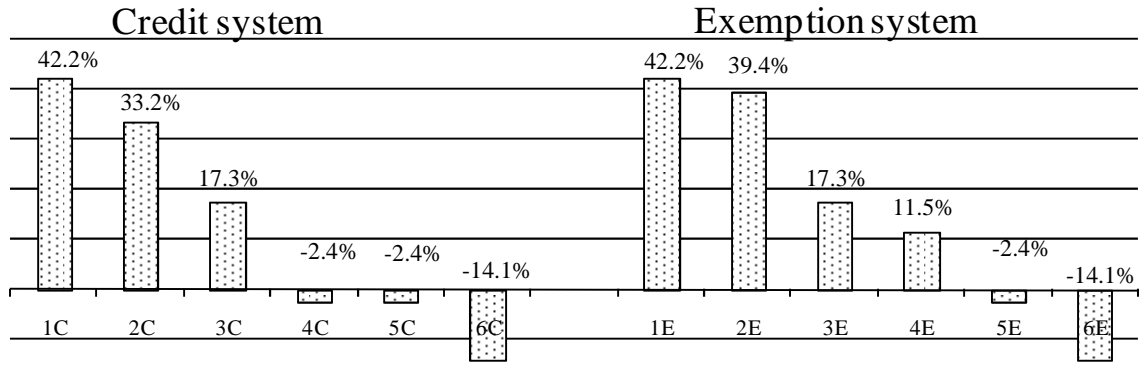


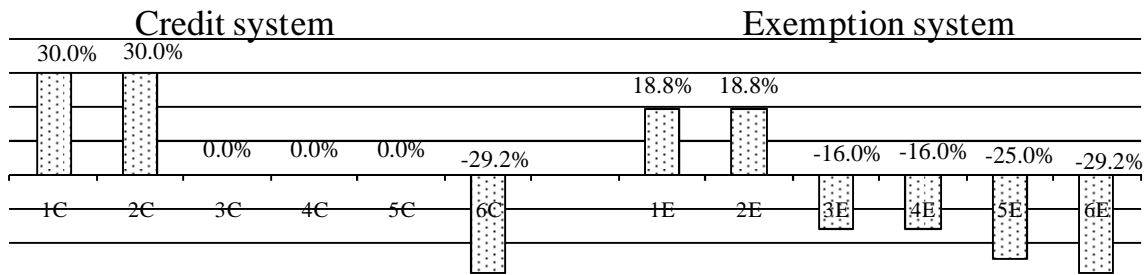
Chart 4  
**METRs for FDI into High-tax Country**  
*(home CIT rate 30% , host CIT rate 40%)*



- |                    |                                      |
|--------------------|--------------------------------------|
| Case 1: RE-->NE    | Case 4: BP-->NE+BS                   |
| Case 2: RE-->NE+BS | Case 5: BP-->NE+HY                   |
| Case 3: BP-->NE    | Case 6: BP-->NE-->NE+BS (triangular) |

{RE=retained earnings; NE=new equity; BP=bond finance parent, BS=bond finance sub; HY=hybrid instrument}  
 (Cases 2, 4 and 5: leverage parameter for sub is  $\beta=0.35$ ; Case 6:  $\beta=0.50$ )

Chart 5  
**METRs for FDI into Low-tax Country**  
*(home CIT rate 30% , host CIT rate 15%)*



- |                                  |   |
|----------------------------------|---|
| Case 1: RE-->NE                  | Case 4: BP-->NE+BS ( $\beta=0$ )                    |
| Case 2: RE-->NE+BS ( $\beta=0$ ) | Case 5: BP-->NE+HY ( $\beta=0$ under credit system) |
| Case 3: BP-->NE                  | Case 6: BP-->NE-->NE+BS (triangular)                |

{RE=retained earnings; NE=new equity; BP=bond finance parent, BS=bond finance sub; HY=hybrid instrument}  
 (Cases 2, 4 and 5: leverage parameter for sub is  $\beta=0.35$ ; Case 6:  $\beta=0.50$ )

The most pronounced effects are those considering investment into a low-tax country where the home country operates a credit system. (For FDI into a high-tax country where home country tax would not apply, either under a credit or dividend system, there is no home country tax to avoid). The avoidance of home country tax, combined with additional stripping of the host country tax base, causes the AETR to fall from 15 per cent, to 0.5 per cent. The same AETR value is shown under a dividend exemption system. Where home country taxation of returns is removed from the equation, effective taxation under a dividend credit and dividend exemption system is essentially the same.

METR results (relevant to scale decisions) corresponding to the various cases reviewed above are provided in Charts 4 and 5. METRs provide a measure of the tax distortion to the decision of how much to invest in a host country, should it be chosen as a location for FDI on the basis of a comparison across competing locations of the net present value of investment, where the relevant tax burden measure is the AETR. METR values, like AETR values, depend on the financial structure of the investment. METR values are reduced or unchanged across the six financing cases, for the reasons that the AETR values are reduced or unchanged, discussed above.<sup>24</sup> For Cases 1 and 2, the METR values in the four panels (high-tax credit, high-tax exemption, low-tax credit, low-tax exemption) are similar to the corresponding AETR values in Charts 2 and 3. Results diverge in the remaining cases, with negative METR values shown (indicating a tax distortion to invest more in a host country chosen as an investment location, relative to the no-tax case) in a number of cases, with the most pronounced tax distortions found under triangular structures, and also with the use of hybrid instruments, at least in certain cases.

#### ***F. Factoring tax-planning into assessments of the FDI response to tax reform***

The illustrative results reviewed in the previous section are provided to encourage policy analysts to consider whether in principle standard approaches to measuring cross-border AETRs/METRs should be revised to take account of corporate tax-planning. In particular, financing and repatriation assumptions commonly used may be unrealistic, at least in certain cases, suggesting that further work be devoted to determining when this is the case, and how the approach including the underlying econometric work might be improved. Such work might improve estimates of the response of inbound/outbound FDI to domestic tax reform and tax reform in other countries.

When measuring AETRs/METRs on FDI, the standard modelling practice, as previously noted, is to assume a direct (non-intermediated) holding structure with immediate payout to the parent (no scope for deferral or avoidance of home country tax), and the use of conventional types of finance with fixed weights applied for all host/home country combinations. An example of the standard approach is considered in section B, with illustrative results in Tables 1 and 2 showing pre- and post-reform AETR values and estimated inbound FDI and outbound FDI responses to a reform that reduces the statutory corporate tax rate in host country MiddleTax from 30 to 25 per cent.

It is useful to critically re-examine the results discussed in section B in the light of some of the considerations addressed above. A first observation is that, for a given tax elasticity of FDI ( $\epsilon^s$ ), the standard approach may significantly *understate* the inbound FDI response to a corporate tax cut from investors resident in relatively high-tax dividend credit countries. In Table 1, the five percentage point reduction in the CIT rate in MiddleTax is shown to have a relatively minor impact on the AETR on inbound FDI from HighTax operating a credit system, falling only slightly from 32.66 to 32.05 per cent,

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<sup>24</sup> The illustrative results considered in Charts 2-5 assume that tax depreciation matches true economic depreciation, and investment tax credits are not provided. Thus non-zero METR values reflect instances where the (combined host/home country) effective tax rate on foreign earnings paid out as dividends and/or interest on related-party debt differs from the effective tax rate at which the cost of funds is deducted (the home country tax rate in the case of FDI funded by third-party debt, a zero rate in the case of FDI funded by retained earnings of the parent).

with a corresponding 3.6 per cent increase in FDI. This result rests on the assumption that foreign profits of parent companies in HighTax are effectively taxed at the home country (HighTax) rate, which is unchanged by tax reform in MiddleTax. The estimated FDI response would be much higher than that predicted – approximately 7 times higher, at 24 per cent – if home country taxation of foreign profit is avoided. In other words, to the extent that in practice the home country tax burden on FDI does not differ significantly between dividend credit and dividend exemption countries, when taking into account tax-planning, a more pronounced AETR change and FDI response could be expected from investors in relatively high-tax credit countries.

In other cases, the standard approach may *overstate* the FDI response. With reference again to Table 1, the 5 percentage point corporate rate cut by MiddleTax is shown to reduce the estimated AETR on inbound FDI by 4 percentage points in the three cases where MiddleTax taxation of dividend income is final (i.e. the two exemption cases, and the excess foreign tax credit case). But the estimated AETR reduction depends on the amount of profit taxed at source by MiddleTax. To the extent that profits are stripped out free of corporate tax pre- and post-reform (e.g. through the use of loans from tax haven finance affiliate, hybrid instruments, and/or other channels) the less pronounced would be the AETR change and thus the smaller would be the predicted FDI response.

While these considerations suggest that ‘true’ AETR and FDI effects of tax reform may differ from what is predicted under a standard modelling approach, they do not point to a necessarily more accurate set of estimates for the various cases examined. Indeed, the discussion of tax-planning considerations in section E suggests a wide range of possible AETR values for a given host/home country combination (implying a wide range of possible FDI impact values), depending on the particular financing and repatriation policies chosen. On this point, it may be noted that even where one assumes that corporate tax-planning largely eliminates home country taxation of returns on FDI – so that only host country taxation of returns on FDI matters – this does not mean that one can focus exclusively on host country tax parameters. This follows from the fact that the tax burden on FDI depends on the tax treatment of the cost of finance, including the tax treatment of interest on third-party debt raised by parent companies to fund FDI. Thus, even if home country taxation of returns on FDI can be ignored, it remains necessary to consider the percentage of FDI funded by external debt raised by foreign parent companies (or other foreign affiliates), and the foreign CIT rates at which the interest expense on that debt can be written off.

Without detailed information on financing and repatriation policies at the firm level, attempts to factor in tax-planning may *understate* ‘true’ AETR values (as ignoring tax-planning may overstate values). While in principle certain financing and repatriation structures, if adopted, may largely eliminate host and home country tax, in practice such aggressive structures may be only partly followed, based on an assessment of marginal benefits and marginal costs (e.g. professional fees) of alternative structures. As these benefits and costs are firm-specific and unknown to the modeller, so too is the optimal (internal) solution to the optimal tax-planning structure at the firm and aggregate level. A further complication is that the relevance of tax-planning to FDI decisions may vary (to an unknown degree) depending on the type of investment and the particular host country.<sup>25</sup>

Furthermore, even where a ‘typical’ financing and repatriation structure is known, it may not be straightforward to model. To take an example, in Table 1, exactly the same pre- and post-reform AETR

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<sup>25</sup> Tax considerations including tax-planning are likely to be more important to investment location decisions involving more geographically mobile business activities (i.e. the less location-specific is business profit). Further, evidence of tax-planning (e.g. thin capitalization of a high-taxed subsidiary, and/or investment through a tax haven finance affiliate) does not necessarily imply relevance of tax-planning to location choice. A location decision may be made ignoring tax-planning (e.g. where host country tax considerations are similar), with tax-planning subsequently considered to achieve a tax efficient (tax-minimizing) result.

values and FDI results are calculated for FDI into MiddleTax from LowTax where LowTax operates a dividend exemption system, and where LowTax operates a dividend credit system. In both cases, the tax reform in MiddleTax reduces the AETR on inbound FDI from 24.26 to 20.10 per cent (predicted to increase inbound FDI by 24.54 per cent). The identical AETR values signal that interest on loans by parents in LowTax to subsidiaries in MiddleTax are treated in the model as being taxed at the 15 per cent home country rate. This treatment follows from the modelling approach taken to simplify calculations.<sup>26</sup>

Simplifying approaches may however leave out certain aspects important to actual tax burdens. For example, in dividend credit systems that allow pooling for foreign tax credit purposes of foreign dividend and interest income received from a foreign subsidiary, partial sheltering of foreign interest using excess foreign tax credits on dividend income would be possible. This means that where LowTax operates a credit system, a lower AETR would result (lower than under a dividend exemption system). Use in empirical work (estimating the sensitivity of FDI to taxation) of AETR measures that systematically overstate the AETR on FDI from countries with credit systems (e.g. U.S., U.K., Canada) could tend to bias tax elasticity estimates ( $\epsilon^s$ ), and thus bias estimates of the FDI response to tax reform (with reference to expression 1).<sup>27</sup>

Finally, it should be noted that use in econometric work of AETR measures that systematically overstate (or understate) the AETR on FDI could bias tax elasticity estimates ( $\epsilon^s$ ), and thus bias estimates of the FDI response to tax reform. To the extent that percentage differences in AETRs are also affected, so too would be estimated FDI response rates to tax reform.

The overall implication is that estimates of the FDI response to tax reform must be used with considerable care. The possibility that AETR values and estimated adjustments to those values following tax reform may be considerably different than what is predicted under a standard model (particularly when examining FDI from countries with dividend credit systems) suggests that more work should be done to investigate the implications of tax-planning to forward-looking effective tax rate analysis used to infer tax reform effects on FDI. Such work could usefully draw on the insights of work (e.g. by Grubert (2004)) analyzing the effects on tax-planning of backward-looking tax burden measures.

Lastly, it should be noted that while the preceding has focused on the application of AETRs to gauge the FDI response to tax reform, other applications may be possible and useful for policy analysis. For example, it may be helpful to consider what the possible range on AETR values could be on FDI (with or without tax reform), taking into account tax-planning. As noted above, the impact may be considerably less (or more) than what a standard approach would suggest. Another use of AETRs could be to compare the tax burden on capital in the incorporated sector with the tax burden on capital in the unincorporated sector, and with the tax burden on labour. In these contexts, the level of the AETR is relevant. The analysis in this section suggests that tax-planning may have important consequences for the AETR on cross-border investment across a range of cases (credit/exemption, FDI into low-tax/high-tax countries).

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<sup>26</sup> The APTAX AETR values reported in Tables 1 and 2 are an average of AETR values computed separately for each of the various financing combinations arising from the assumed sources of finance, and are then weighted (at the foreign sub level: 55% retained earnings; 10% new equity issued to the parent, and 35% inter-affiliate loan from the parent; at the parent level: 55% retained earnings; 10% new equity issued to shareholders, 35% third-party debt). Given this approach, where a foreign subsidiary is financed by equity or inter-affiliate loans, foreign tax credit (FTC) mixing possibilities for returns on equity and debt do not arise.

<sup>27</sup> While the AETR level may be significantly overstated by ignoring foreign tax credit mixing possibilities, estimates of the percentage change in the AETR may not be affected significantly. Where it is not, this implies that the consideration raised in this paragraph (scope for pooling of dividend and interest income) would tend to distort estimates of the FDI response to tax reform solely through a biased elasticity value.

## REFERENCES

- Altshuler, R. and H. Grubert (2003): Repatriation Taxes, Repatriation Strategies and Multinational Financial Policy. *Journal of Public Economics* 87, 73-107.
- Altshuler, R. and H. Grubert (2006): The Role of Governments and MNCs in the Race to the Bottom, *Tax Notes International*, vol.41, 5, 459-474.
- Altshuler, R., H. Grubert and T.S. Newlon (2001): Has US Investment Abroad Become More Sensitive to Tax Rates? In Hines (ed) *International Taxation and Multinational Activity*, 9-36. Chicago: Chicago University Press.
- Altshuler, R. and T.S. Newlon, 1993, The Effects of U.S. Tax Policy on the Income Repatriation Patterns of U.S. Multinational Corporations, in: Alberto, G., R.G. Hubbard, J. Slemrod, (eds.), *Studies in international taxation*, University of Chicago Press, pp. 77-115.
- Auerbach, A.J. and K. Hassett, 1993, Taxation and foreign direct investment in the United States: a reconsideration of the evidence, in: Alberto G., R. G. Hubbard and J. Slemrod (eds.), *Studies in International Taxation*, Chicago University Press.
- Auerbach, A.J. and J. R. Hines , Jr., 1988, Investment tax incentives and frequent tax reforms, *American Economic Review* 78, 211-216.
- Billington, N. (1999): The Location of Foreign Direct Investment: An Empirical Analysis. *Applied Economics* 31, 65-76.
- Chennels, L., and R. Griffith, 1997, *Taxing Profits in a Changing World*, The Institute for Fiscal Studies.
- Clark, W.S. (2000): Tax Incentives for Foreign Direct Investment: Empirical Evidence on Effects and Alternative Policy Options. *Canadian Tax Journal* 48, 1139-1180.
- Desai, M.A., C.F. Foley and J.R. Hines (2001): Repatriation Taxes and Dividend Distortions. *National Tax Journal* 54, 829-851.
- Desai, M.A., C.F. Foley and J.R. Hines (2004): Foreign Direct Investment in a World of Multiple Taxes. *Journal of Public Economics*, forthcoming.
- Devereux, M.P. and R. Griffith, (1998a), The taxation of discrete investment choices, IFS Working Paper 98/16.
- Devereux, M.P. and R. Griffith (1998b): Taxes and the Location of Production: Evidence from a Panel of US Multinationals. *Journal of Public Economics* 68, 335-367.
- Devereux, M.P. and R. Griffith (2002): The Impact of Corporate Taxation on the Location of Capital: A Review. *Swedish Economic Policy Review* 9, 79-102.

- Devereux, M.P. and R. Griffith (2003): Evaluating Tax Policy for Location Decisions. *International Tax and Public Finance* 10, 107-126.
- Devereux, M.P. and R.G. Hubbard (2003): Taxing Multinationals. *International Tax and Public Finance* 10, 469-487.
- Ederveen, S. and R. de Mooij (2003): To Which Tax Rates does Investment Respond? A Synthesis of Empirical Research on Taxation and Foreign Direct Investment. In *Tax Policy*, Banca d'Italia Research Department Public Finance Workshop, 327-354. Roma: Banca d'Italia.
- Fullerton, D. and M. King (1984), *The Taxation of Income from Capital: A Comparative Study of the United States, the United Kingdom, Sweden and West Germany*, Chicago: University of Chicago Press.
- Grubert, H. (1998): Taxes and the Division of Foreign Operation Income Among Royalties, Interest, Dividends and Retained Earnings. *Journal of Public Economics* 68, 269-290.
- Grubert, H. (2004): The Tax Burden on Direct Cross-Border Investment: Company Strategies and Government Responses, in Peter Birch Sorensen (ed.), *Measuring the Tax Burden on Labour and Capital*, Cambridge, Massachusetts, MIT Press (CESifo Seminar series), 129-170.
- Grubert, H. and R. Altshuler (2006): Corporate Taxes in the World Economy: Reforming the Taxation of Cross-Border Income, forthcoming. Forthcoming in J. Diamond and G. Zodrow (eds) *Fundamental Tax Reform: Issues, Choices and Implications*. MIT Press.
- Grubert, H. and J. Mutti (1991): Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision-Making. *Review of Economics and Statistics* 73, 285-293.
- Grubert, H. and J. Mutti (1995): Taxing Multinationals in a World with Portfolio Flows and R&D: Is Capital Export Neutrality Obsolete? *International Tax and Public Finance* 2, 439-457.
- Grubert, H. and J. Mutti (2000): Do Taxes Influence Where US Corporations Invest? *National Tax Journal* 37, 475-488.
- Grubert, H. and J. Mutti (2001): *Taxing International Business Income: Dividend Exemption versus the Current System*. Washinton, D.C.: American Enterprise Institute.
- Hajkova, D., G. Nicoletti, L. Vartia, and K.-Y. Yoo, (2006): *Taxation, Business Environment and FDI Location in OECD Countries*. OECD Economic Studies paper.
- Hines, J.R. (1996): Altered States: Taxes and the Location of Foreign Direct Investment in America. *American Economic Review* 86, 1076-1094.
- Hines, J.R. (1997): Tax Policy and the Activities of Multinational Corporations. In Auerbach (ed) *Fiscal Policy: Lessons from Economic Research*, 401-445. Cambridge: MIT Press.
- Hines, J.R. (1999): Lessons from Behavioral Responses to International Taxation. *National Tax Journal* 52, 305-322.
- Hines, J.R. and E. Rice (1994): Fiscal Paradis: Foreign Tax Havens and American Business. *Quarterly Journal of Economics* 109, 149-182.

- King, M.. (1974): Taxation and the Cost of Capital. *Review of Economic Studies* 41, 21-35.
- \_\_\_\_\_, (1977), *Public Policy and the Corporation*, London: Chapman and Hall.
- King, M., and D. Fullerton (1984): *Taxing Income from Capital*, University of Chicago Press.
- Mooij, R.A. de, and S. Ederveen (2003): Taxation and Foreign Direct Investment: A Synthesis of Empirical Research, *International Tax and Public Finance* 10, 673-693.
- \_\_\_\_\_, (2005): Explaining the Variation in Empirical Estimates of Tax Elasticities of Foreign Direct Investment. *Tinbergen Institute Discussion Paper* 108/3, 1-33.
- OECD (1991): *Taxing Profits in a Global Economy – Domestic and International Issues*. Paris: OECD.
- OECD (2001): Corporate Tax Incentives for Foreign Direct Investment. *OECD Tax Policy Studies* No. 4. Paris: OECD.
- OECD (2007): Tax Effects on Foreign Direct Investment: Recent Evidence and Policy Analysis, *OECD Tax Policy Studies* No. 17.
- Rousslang, D.G. (2000): Deferral and the Optimal Taxation of International Investment Income. *National Tax Journal* 53, 589-600.
- Sinn, H. W. (1987), *Capital Income Taxation and Resource Allocation*, Amsterdam, North Holland Publishing Company.
- \_\_\_\_\_, (1991a): Taxation and the Cost of Capital: The “Old” View, the “New” View, and Another View, in D. Bradford, ed., *Tax Policy and the Economy* 5, 25-54.
- Sorensen, P. (2004), Measuring Taxes on Capital and Labor: An Overview of Methods and Issues, in P. Sorensen, ed., *Measuring the Tax Burden on Capital and Labor*, CESifo Seminar Studies, The MIT Press.
- U.S. Department of Treasury (2000): The Deferral of Income Earned Through U.S. Controlled Foreign Corporations – A Policy Study, Office of Tax Policy, December.