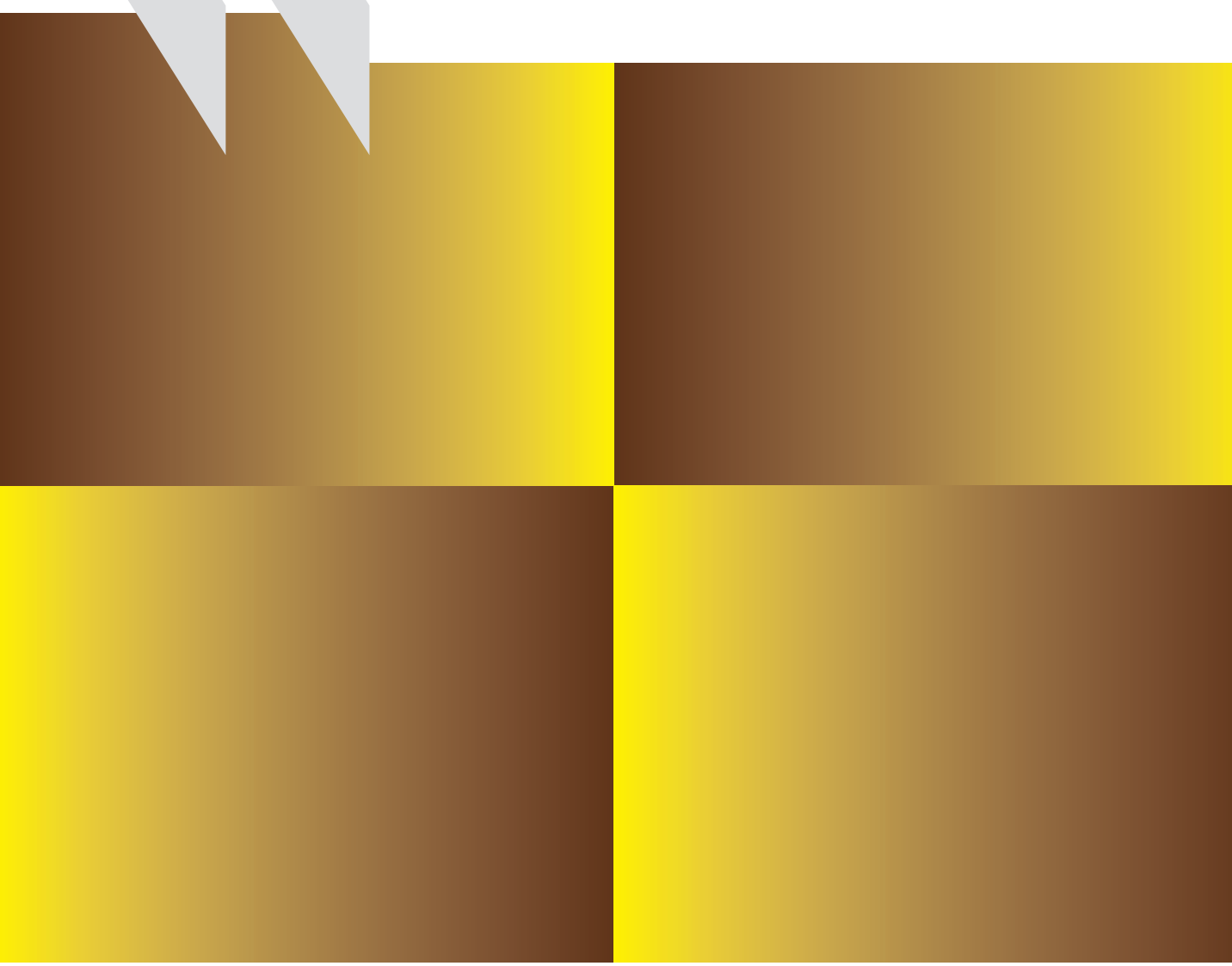
OECD Tax Policy Studies

Tax Effects on Foreign Direct Investment

RECENT EVIDENCE AND POLICY ANALYSIS



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No. 17

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Foreword

This publication reports the results of a 2005-06 project carried out by Working Party No. 2 of the OECD Committee on Fiscal Affairs, examining various aspects of the taxation and foreign direct investment (FDI). The project has three main objectives.

One main objective is to provide a review of empirical studies of the effects of taxation on FDI flows, with the aim of better understanding what factors explain variations in estimates of the sensitivity of FDI to taxation (variations in so-called "tax elasticities"). To this end, a literature review was carried out in 2005 by Professors Ruud de Mooij and Sjef Ederveen. Chapter 2 of this publication provides a summary review of their main findings. This review is preceded in Chapter 1 by an overview of various models or frameworks used by policy makers to analyse possible effects of tax and other factors on FDI decisions, including frameworks based on the neo-classical investment model. Also considered are insights drawn from the new economic geography literature.

A second main objective is to benefit from an exchange of views of Working Party No. 2 (WP2) tax policy officials on economic policy considerations guiding the treatment of cross-border investment (inbound and outbound FDI). The views of WP2 Delegates were gathered during a tour de table on the topic of taxation and FDI, held in 2005. Insights gathered from the tour de table are presented in Chapters 3 and 4, addressing inbound FDI and outbound FDI respectively.

While perspectives and positions vary across countries, to a large extent they are based on a common broad set of policy considerations, including revenue requirements, efficiency (welfare) considerations, fair domestic competition concerns, and possible responses to pressures for an internationally competitive tax system. For the most part, there is no attribution to countries on the points raised. The chapters also include, by way of introduction to the topics, some background discussion and analysis.

A third main objective of the project is to develop an approach for incorporating commonly-employed cross-border tax-planning strategies in standard models used to identify tax distortions to investment. In Taxing Profits in a Global Economy (OECD, 1991) a number of restrictive assumptions are made: non-intermediated (direct) holding structures; fixed financial weights that may be unrepresentative in certain cases; immediate repatriation of profits; no mixing of foreign tax credits in dividend credit systems to shelter foreign interest or royalty income; no account of hybrid instruments or hybrid entities.

The current publication, which considers applications of "forward-looking" average and marginal effective tax rates (AETRs/METRs) to estimate the impact of corporate tax reform on FDI flows, signals the need to address strategies commonly used by multinationals to minimise host and home country tax, when choosing representative financing structures to embed in these tax burden indicators. AETR and METR formulæ are derived that incorporate various corporate tax planning strategies, and a set of illustrative results are considered to examine the sensitivity of AETR/METR values to a move away from standard financing and repatriation assumptions.

The results suggest that AETRs/METRs based on standard assumptions need to be reconsidered, calling into question estimates of the tax elasticity (sensitivity) of FDI based on standard AETR/METR measures used as explanatory variables. The results also suggest that estimates of the inbound/outbound FDI response to tax policy reform based on standard measures may be less than reliable, not only on account of questionable tax elasticity estimates, but also because of considerable uncertainty over the percentage change in AETR/METR measures accompanying tax reform, taking into account tax planning considerations.

This publication has been prepared by W. Steven Clark, Head, Horizontal Programmes Unit, OECD Centre for Tax Policy and Administration, drawing on discussions and comments from Delegates of Working Party No. 2 of the OECD Committee on Fiscal Affairs. Guidance to the project provided by US Treasury economist Harry Grubert is gratefully acknowledged. The publication is released under the responsibility of the Secretary-General.

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Executive Summary

The project underlying this publication on policy considerations in the taxation of foreign direct investment (FDI) has three main objectives. The first is to provide a review of empirical studies of the effects of taxation on FDI flows, aimed at better understanding what factors explain variations in estimates of the sensitivity of FDI to taxation. This review is supplemented with an overview of various economic models used by policy makers to analyse possible tax effects on FDI decisions.

A second objective is to report considerations relevant to the development of policy in relation to the tax treatment of inbound and outbound FDI, identified during a *tour de table* roundtable discussion on the topic amongst OECD tax officials. While perspectives and positions vary from one country to another, to a large extent they are based on a common broad set of considerations including revenue requirements, efficiency (welfare) considerations, fair domestic competition concerns, and pressures to provide internationally competitive tax treatment.

A third objective is to develop an approach for incorporating commonly-employed cross-border tax-planning strategies in effective tax rate models used to identify tax distortions to investment. This work would relax a number of restrictive assumptions adopted in a previous OECD publication, *Taxing Profits in a Global Economy* (OECD, 1991) reporting effective tax rates on cross-border direct investment: non-intermediated (direct) holding structures; fixed financial weights that may be unrepresentative in certain cases; immediate repatriation of profits; no mixing of foreign tax credits in dividend credit systems to shelter foreign interest or royalty income; no account of hybrid instruments or hybrid entities.

Models for analysing tax effects on FDI

To guide tax policy in relation to FDI, policy analysts may rely on one or more economic models or frameworks to examine possible channels of influence. A selection of these includes: the OLI framework; the OECD policy framework for investment; the neo-classical investment model, and models derived from the new economic geography literature.

Under the OLI framework, FDI decisions involve an assessment of ownership, location and internalisation (OLI) conditions. Horizontal FDI involving production abroad can be expected in place of exports or licensing where OLI conditions are met. First, an MNE must possess *ownership advantages* (patents, know-how, trademark) conferring profit advantage over local firms in foreign markets. Second, FDI must offer *location advantages* (*e.g.* low trade, labour or energy costs, low tax burden) that make local production more profitable than exporting. Third, FDI must offer *internalisation advantages* that make undertaking a business activity directly through FDI more profitable than licensing to other firms in

foreign markets the right to use assets conferring ownership advantage, for example by safeguarding knowledge capital. Vertical FDI decisions over locating or outsourcing certain stages of production to a foreign location similarly centre around ownership, location and internalisation advantages.

The Policy Framework for Investment (OECD, 2005), targeted at policy makers in developing and transition economies, proposes guidance in ten policy fields including tax, in an effort to identify priorities and help develop effective policies. The tax chapter draws largely on survey studies to identify key issues in weighing the pros/cons of corporate tax incentives and alternative tax policies and design options to attract FDI, while also raising revenue from FDI to help finance infrastructure development.

In setting the tax burden on inbound investment, policy makers are encouraged to assess whether their host country offers attractive risk/return opportunities, taking into account framework conditions (*e.g.* political/monetary/fiscal stability; legal protection; public governance), market characteristics (market size, availability/cost of labour, energy, state of infrastructure) and the prevalence of location-specific profits. As emphasised in the tax chapter, host country framework conditions and market characteristics depend in part on past and current levels of public expenditures on programs in areas of critical importance to investors (*e.g.* education, infra-structure development). This link establishes the critical importance of collecting tax where possible on economic profit in order to finance public expenditures that strengthen host country fundamentals and attract FDI.

Perhaps the framework most widely used by public finance economists to analyse tax effects on domestic and cross-border direct investment is the neo-classical investment framework. A main attraction is its incorporation of main statutory tax parameters influencing capital costs and establishing the statutory tax burden on investment returns. In particular, parameter-based marginal and average effective tax rates (METRs/AETRs) derived from the neo-classical investment model may be analysed to determine the percentage change to these tax burden measures resulting from a single or package of corporate tax policy adjustments. When combined with empirical estimates of the sensitivity of FDI to these effective tax rates, the framework lends itself to estimating the long-run effects of corporate tax reform on FDI.

At the same time, such summary tax measures must be used with care as they ignore a number of factors influencing the actual tax burden on FDI (*e.g.* tax-planning, administrative discretion in deciding tax liabilities, other taxes not captured by the model). Some would also question, at least in certain cases, the central assumption of declining marginal productivity of capital. In particular, business concentrations may give rise to increased rates of return (increasing returns to scale at the industry level), with possibly very different policy implications.

Central predictions of the neo-classical theory of investment as regards tax effects on investment have been challenged in recent years by the new economic geography framework, emphasising the role of self-reinforcing business concentration (agglomeration) economies. Under the core-periphery (CP) model, market access effects may dominate and create incentives for firms to locate production in large markets, to reduce transportation costs, and to export to small markets. With firms profiting from concentration economies, a degree of inertia is predicted in the location choice of firms, implying a degree of fixity of economic profits that can be taxed up to some point without discouraging investment.

In a standard neo-classical investment model where capital stocks are adjusted such that after-corporate tax rates of return are equalised across locations, an increase in the tax rate in country A would cause capital to relocate from country A, causing pre-tax rates of return in A to rise, and in other countries to fall, until after-tax rates of return are again equalised. In contrast, under a CP model, the same tax rate increase may not lead to significant capital relocation if business concentration benefits of country A more than offset the higher tax burden. However should country A increase its tax rate significantly, business concentration economies may be more than outweighed by a higher tax burden, causing capital to relocate from country A. Business concentration economies imply that effects of tax rate changes will be non-linear – policy adjustments under certain conditions may have minimal impact on the location of capital, while subsequent adjustments may have dramatic effects. Thus the response of capital to past reforms may offer a poor guide to gauge the impact of similar reforms, and the (common) assumption of a linear relationship between FDI and tax may be inappropriate for statistical work.

Empirical evidence of tax effects on FDI

At the centre of policy debate over the appropriate setting of a host country's corporate tax rate on business profit is the difficult question of the sensitivity of FDI to corporate taxation. Addressing this question is critical to an assessment of how best to address competitiveness pressures and avoid capital relocation, while also central to cost/benefit assessment of tax relief, and to estimates of the revenue response to a corporate tax policy reform.

As reviewed above, frameworks based on the standard neo-classical investment theory predict increased (decreased) inbound FDI following a decrease (increase) in the host country corporate tax burden (if not offset by adjustments to home country foreign tax credits). However, this central prediction is challenged by the new economic geography literature which emphasises the importance of accounting for location-dependent profits from business concentration economies and increasing returns to scale at the industry level, where such profits can be taxed up to some point without encouraging significant capital relocation.

The central policy question of the sensitivity of FDI to taxation is thus an uncertain empirical issue, to be addressed if possible taking proper account of the influence of market size, trade (*e.g.* transportation) costs, and other factors affecting net profitability and investment location decisions. A recent contribution to this work is provided by Hajkova *et al*. (2006), who investigate the impact of tax on FDI while controlling for a number of policy and non-policy factors, and find that not controlling for such factors may lead to serious overestimation of tax elasticities.

A literature review carried out for the current project by Mooij and Ederveen (2005) finds most studies reporting a negative relationship between taxation and FDI, but with a wide range of estimates of the tax elasticity of FDI. The variability in elasticity estimates may not be surprising, given the degree of heterogeneity in the data employed. In other words, one might expect *a priori* that the sensitivity of FDI to taxation would vary and depend on host country conditions and policies (including the level of corporate tax rates), types of industries/business activities covered, the time period examined, and other factors. Indeed, the literature review suggests that the influence of tax on FDI is complex and depends on a number of difficult to measure factors, with additional empirical work required to better understand the role of taxation amongst key factors influencing FDI location decisions.

The literature review finds an average semi-elasticity value of –3.72 (measuring the percentage change in FDI in response to a 1 percentage point change in the tax rate). Distribution analysis finds a majority of semi-elasticities in the range of –5 and 0. Summary results for various studies (time series, cross section, panel and discrete choice) are provided in Table 0.1.

Table 0.1. **Summary statistics of empirical studies of the sensitivity of FDI to tax**

	Semi-elasticity			Ordinary elasticity		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Time series	–2.61	–2.75	6.03	–1.23	–1.28	2.87
Cross section	–7.16	–4.24	6.92	–0.85	–0.78	0.44
Panel	–2.73	–2.41	2.69	–0.78	–0.66	0.75
Discrete choice	–3.43	–2.80	6.42	–0.30	–0.19	0.51
All	–3.72	–2.91	5.92	–0.75	–0.57	1.55

Source: De Mooij and Ederveen (2005).

A META-analysis of results finds that the share of FDI that comprises real investment in physical capital is more responsive to taxes than other components of FDI. Evidence is not found showing that FDI from dividend exemption countries is more tax responsive than FDI from dividend credit countries, suggesting that tax-planning renders distinctions between these systems of little importance in terms of impacts on FDI. Furthermore, empirical results do not find intra-EU capital flows to be more responsive to host country tax differences (contrary to expectations that the elimination of barriers to the free flow of capital within the EU would make tax a more influential factor). Studies for intra-EU capital flows yield smaller semi-elasticities than studies based on US data. Lastly, studies using more recent data are found to produce larger semi-elasticities, indicating that FDI is becoming more responsive to taxation over time.

Taxation of inbound FDI – Policy considerations and perspectives

An important aim of the *Tax and FDI* project has been to benefit from an exchange of views of tax policy officials of OECD countries on considerations guiding the treatment of inbound and outbound FDI. For inbound FDI, policy interest may arise on account of the potential for a *net* increase in domestic income, shared with government through taxation of wage and salary income and profits of foreign-owned companies, and possibly other taxes on business (*e.g.* property tax). These flows must be additional and not represent displacement effects. FDI may also positively affect domestic income through spillover effects.

The prospect of these benefits creates pressure on government to ensure that its tax system is supportive of FDI. Counter to possible revenue requirements and fair domestic competition arguments for the taxation of profits on inbound FDI at the same effective rate as imposed on resident domestic-owned businesses, "international competitiveness" concerns and pressures are felt in virtually all countries to somehow accommodate a relatively low host country tax burden. Where inbound FDI is regarded as particularly mobile and sensitive to host country taxation, governments may be encouraged to target

tax relief to FDI to the exclusion of domestic-owned firms (*e.g.* through tax incentives, or through weak or lax enforcement of base protection provisions), or to reduce the tax rate on income from capital more generally.

Efficiency considerations

In recent years, the dynamics of international tax competition have been widely studied and debated, with an eye to assessing tax policy reaction to and potential efficiency effects of competition for a geographically mobile capital tax base. Under a basic tax competition model that ignores labour taxation, increased capital mobility is predicted to result in tax rates on capital income that are set inefficiently low from a public perspective. Other predictions include large countries competing less for capital through rate cuts, and higher per capita income in smaller countries with lower tax rates and higher capital/labour ratios.

Extending the analysis to include the taxation of immobile labour finds that it is optimal for a small capital-importing country facing a perfectly elastic supply of foreign capital to waive host country income tax on inbound FDI, with this tax being fully shifted onto labour. Under this situation, it is optimal for the host country to instead tax labour income directly, and avoid production efficiency losses that result from taxing capital income. Subsequent work finds that if economic profit cannot be fully taxed, then some host country taxation of inbound FDI by small capital importing countries is efficient.

When introducing trade costs and business concentration economies emphasised in the new economic geography literature, certain results from neo-classical models carry over, while other predicted effects are qualified. Where capital is more mobile, accompanying reduced trade costs or more generally when business concentration forces decrease, the optimal tax rate for a host country declines (consistent with the basic tax competition model.) Furthermore, the impact on location choice of tax rate differences between two countries is predicted to differ across industries that differ in terms of the importance of business concentration benefits. A further insight is that tax competition effects may differ depending on whether foreign capital benefits or not from the provision of local public goods.

Views on linkages between host country taxation and FDI

Inbound FDI is recognised as being attracted by macroeconomic stability; a supportive legal and regulatory framework; skilled labour and labour market flexibility; well-developed infrastructure; and business opportunities tied to market size (with profitability of the domestic market tied to the purchasing power of the population, and foreign markets reached via an extensive network of trade agreements). In other words, a number of non-tax factors are central drivers to FDI decisions. Sound tax policy establishes a basis for fiscal stability which strengthens the business climate. Additionally, in certain cases, tax may be an important factor influencing location decisions.

For policy-makers and academic researchers alike, accurate estimates of the FDI response to host country taxation are difficult to make, given the need to consider jointly tax and non-tax factors in different locations, and the prospect that the tax elasticity of FDI may vary considerably across business activities, host countries and time. Indeed, a complicating factor is that the possible impact of host country tax on FDI will differ across countries with varying host country characteristics (non-tax factors).

Part of the difficulty is not knowing with certainty what the relevant tax burden measure is to focus on. To some, relevant tax comparisons stop at the statutory "headline" tax rate. Others take the view that final effective tax rates are more important in explaining FDI than the statutory corporate tax rate alone, albeit with some uncertainty over the level of tax detail (including tax planning) accounted for.

In terms of empirically assessing tax effects on FDI, one view is that realised (backward-looking) average effective tax rates are the most relevant figure and that this measure is a better predictor than forward-looking marginal effective tax rates (*cf.* OECD, 1991) and much better than statutory tax rates which ignore tax-planning effects and special tax arrangements. This view suggests that effective rates inclusive of tax base provisions and tax-planning are factored in by investors.

While much attention is typically given to corporate income tax, the potential importance of other taxes must also be recognised. Taxes such as energy taxes and payroll taxes are important, and according to some officials, are becoming much more important. This is because companies "have already taken care of the corporate income tax", in the sense that corporate tax is paid at levels acceptable to managers. This observation lends weight to the perception that multinationals have many tax-planning techniques at their disposal, and may be able to effectively decide the level of host country tax on profit that they will pay.

Another key point on which there is broad agreement is that a low host country tax burden cannot compensate for a generally weak or unattractive FDI environment. There are numerous past examples of where poor infrastructure and other weak investment conditions have deterred FDI. Tax is but one element and cannot compensate for weak non-tax conditions. Also, where higher corporate tax rates are matched by well-developed infrastructure, public services and other host country attributes attractive to business, tax competition from low-tax countries not offering these advantages is not regarded by a number of policy-makers as seriously undermining the tax base.

While certain empirical studies find a strong negative relationship between host country taxation and FDI, others do not. Also, a number of large OECD countries with relatively high effective tax rates are very successful in attracting FDI. This suggests the importance of market size in attracting FDI and the presence of location-specific profits that governments are able to tax. It may also be observed that certain countries without a large domestic market have been very successful in attracting business, while ranking high in terms of their tax-GDP ratio. However, while their overall tax burden may be high, the tax burden on business may be moderate or relatively low and form part of an attractive investment strategy.

Responding to international tax competition

Increased attention is being given by countries to "tax competition" for inbound FDI, linked to the increasing mobility of capital and pressures to offer a competitive tax system. While it is often difficult to ascertain the relative importance of tax amongst other investment determinants in swinging location decisions, certain perceptions and approaches of policy-makers in addressing this area may be identified.

To begin, host country tax comparisons tend to be made with similarly situated countries, in terms of location and market size. A common view is that host country tax considerations are likely to matter more to location choice when other key investment determinants are roughly equivalent. Thus, while tax considerations generally are not a

principal factor determining FDI flows, the influence of tax on FDI decisions may be expected to be greater within the EU (than possibly other regions) to the extent that there is more or less a "level-playing field" in other policy areas [a view not supported, however, by the empirical (META) analysis noted above].

There is broad recognition that international tax competition is increasing, and that what may have been regarded as a competitive tax burden in a given host country at one time may no longer be (ignoring other factors) following rounds of corporate rate reductions in countries competing for FDI. However, recognising also that FDI depends largely on non-tax factors and policies (including education policies, infrastructure and labour market relations) which have evolved over time, it is generally difficult to assess the need for and effects of reductions in host country tax rates.

A number of alternative policy approaches in responding to tax competition can be identified in OECD countries. Many tax officials underline the attractions of reducing the statutory corporate income tax rate as a means to encourage FDI: a relatively simple tax adjustment to introduce; readily observed; directly relevant to investors who anticipate earning pure economic profits; efficiency improving when combined with base broadening; and reducing tax-planning pressure against the domestic tax base. For EU countries subject to State Aid rules and Code of Conduct rules prohibiting provisions that discriminate in favour of FDI, attention is focused back to the statutory rate as a broad-based mechanism to reduce the host country tax burden. However, such reductions tend to be expensive in terms of revenue foregone, may be observed as unfair, and may create tax arbitrage problems with the personal income tax system.

While the experience of some officials is that host country tax comparisons by investors often stop at the statutory tax rate, others take the view that other main tax provisions are also routinely factored into effective tax rate comparisons and should be given policy attention. Examples of general tax relief substituting for or supplementing statutory rate cuts include: ensuring tax base provisions (*e.g.* tax depreciation) are consistent with international norms; removing capital taxes; and providing generally-available tax relief of particular benefit to certain activities (*e.g.* ACE-type notional interest deduction).

Rather than reducing the burden of tax provisions of general application, certain countries prefer to explicitly target tax relief with the aim of encouraging additional FDI at a lower cost in terms of foregone tax revenue. Targeting mobile activities (*e.g.* shipping, films, export-oriented, head-office) is regarded by some policy makers as an attractive option. In considering reductions in the effective tax rate on the most mobile elements of the tax base, the tax treatment of interest and royalty income is increasingly under review, with some countries indicating the dependence of their future policy actions on the actions of others. Some tax systems target certain activities as a matter of national industry policy, while in others, activities are targeted only where there is believed to be market failure.

Many countries point to steps being taken to remove impediments to FDI (taken in isolation, or alongside adjustments to statutory tax provisions). Examples include steps to improve transparency and certainty of tax treatment. Officials in a number of OECD countries explain that they are giving increased attention to ruling procedures which help provide certainty of tax treatment in advance of a given investment or transaction. Tax treaties and mutual agreement procedures (MAPs) are also identified as key to certainty and stability in the treatment of cross-border investment.

Another main concern in the treatment of inbound FDI is responding to tax avoidance, viewed generally as a growing problem to address. While reductions in statutory CIT rates are generally helpful in terms of attracting FDI and reducing tax planning pressures, the scope for such reductions is limited. A main challenge is that tax savings may be realised in a given host country by shifting taxable profit of an enterprise to a related affiliate in a tax haven even if the host country corporate tax rate is low. As there are costs involved in tax-planning, limits to the amount of profit that may be shifted, and multiple opportunities to tax plan for a multinational operating in many countries with varying corporate tax rates, presumably tax-planning pressure on the tax base would be largely reduced at some non-trivial corporate tax rate. However, determining this threshold value or range of values is not immediately obvious, although there appears to be general agreement that the threshold is falling as statutory tax rates fall and professional tax-planning advice is more accessible.

Another challenge is striking an appropriate balance of policy considerations in devising rules that adequately protect the tax base (general and specific anti-avoidance provisions including thin-capitalisation and transfer pricing rules) without imposing excessive compliance costs on firms, or otherwise hampering normal business operations. In other words, just as tradeoffs are faced in adjusting the effective tax rate on FDI through statutory provisions, similar tradeoffs are faced in increasing the effective rate through more robust enforcement.

A central difficulty is accurately weighing up international competitiveness arguments that business will locate elsewhere unless the host country removes or significantly weakens the reach of its base protection measures (*e.g.* thin capitalisation rules). Where a given tax-planning structure is found to be outside the spirit or general intention of the tax rules, while possibly inside the letter of the law, governments may be reluctant to tighten the law, given uncertainty over the FDI response. In particular, concerns over international competitiveness, alongside claims by business groups that accommodating treatment is available elsewhere in other host countries, may condition a government's stance. Moreover, with increasing sophistication of business structures and operations, a real difficulty is in determining where tax should be paid in an economically rational way and distinguishing in legislation between avoidance transactions and arrangements, and legitimate ones.

At the same time, if policy leans too much in favour of accommodating business persuasion that the host government avoid complex or otherwise difficult base protection provisions, revenue goals may be compromised alongside weakened public perception of fairness in the tax system. These perceptions may further threaten tax revenue collection by encouraging non-compliance in other areas.

Taxation of outbound FDI – Policy considerations and perspectives

The *Tax and FDI* report also provides a review of policy considerations and perspectives guiding the taxation of outbound FDI, based on an exchange of views of OECD tax officials, where attention appears to be increasingly focused on pressures to provide competitive tax treatment and surrounding issues, including efficiency implications of alternative approaches to taxing foreign source income. This attention does not imply that revenue and

other considerations are judged to be unimportant; indeed, revenue constraints are implicitly in the background throughout debate amongst policy makers on the topic, as they constrain policy options in most countries. But the more controversial and difficult aspects appear to be those surrounding international competitiveness concerns, raising many questions where the answers are not obvious and where difficult tradeoffs are confronted.

Arguments for favourable tax treatment of outbound FDI often point to possible home country benefits: efficient access to foreign markets, production scale economies, and spillover benefits leading to increased net domestic income. At the same time, concerns may arise that these potential benefits will be outweighed by reduced domestic activity if outbound FDI substitutes for domestic investment. However, these concerns assume that the domestic capital stock can be maintained in the absence of outbound FDI. Where foreign markets are more efficiently reached and/or factors of production can be accessed at lower cost through a foreign presence, FDI may allow home-based companies to grow and achieve economies of scale otherwise not possible.

As with policy decisions over the treatment of inbound FDI, a number of considerations and constraints are normally balanced when setting rules over home country taxation of active business income earned on outbound FDI. Counter to possible tax revenue requirements and fair domestic competition arguments calling for the taxation of foreign profits and domestic profits at equivalent rates, international competitiveness considerations weigh heavily and effectively towards no or only limited home country taxation of foreign profits. Calls for preferential tax treatment of outbound FDI also find some support in the optimal taxation literature.

Efficiency considerations

The standard (basic) economic framework used to assess efficiency implications of taxing profit on FDI assumes that under competitive conditions and without taxation, investors will adjust capital stocks until (pre-tax) rates of return on domestic and foreign capital are the same. With taxation of investment returns, where investors equate after-corporate tax rates of return, the same outcome is predicted if the corporate tax rate on domestic profit equals the combined host and home country corporate tax rate on foreign profit, as under a dividend credit system (ignoring credit limitations). This analysis underpins the *capital export neutrality* (CEN) criterion.

The first main challenge to CEN considers variable domestic savings and provides support for *capital import neutrality* (CIN), aimed at maximising efficiency in savings decisions, realised where the marginal utility of savings is equated across investors. CIN requires that all individual investors, regardless of their residence, earn identical after-tax rates of return on their savings (and thus have the same incentive to save). Where countries exempt foreign profit from home country tax, arbitrage at the corporate level would tend to equate across countries rates of return net of host country corporate tax. Ignoring or in the absence of personal tax of foreign income, the conditions for CIN would be met under a dividend exemption system.

Subsequent analysis highlighting the importance of factoring in revenue requirements, taxes on labour income, and taxes on pure economic profit, offer only limited grounds to reject CEN, with scope for savings inefficiencies being limited to the extent that the level of domestic savings allocated to corporate equity does not vary significantly with the rate of taxation.

While the literature finds some support for taxing foreign income at domestic rates, the requisite conditions are difficult to meet and justify in practice. First, providing an unlimited credit for foreign tax creates incentives for capital importing countries to raise their host country tax burden. Thus foreign tax credit limitations are in order to avoid pure transfers of revenue. Second, with administrative and cash-flow problems accompanying current taxation of retained profit, deferred taxation of foreign income is called for. Third, home taxation of low-tax profits may not be feasible where this tax burden means that resident firms cannot compete with local/other producers not subject to this level of tax.

More recent contributions to the literature consider the implications of local competition. In a world without taxes, capital in a given location would tend to be owned by companies with superior production technologies. However, this outcome may not be observed, implying production inefficiencies, where different investors are subject to different home country tax rules. With a focus on local competition for the ownership of capital, and assuming perfect portfolio capital markets that equalise the cost of funds across firms, the *capital ownership neutrality* (CON) criterion requires that taxation does not disturb ownership patterns which, when free of tax considerations, would tend to maximise total world output through a competitive bidding process that generally results in firms with higher productivity outbidding others competing for capital. According to its proponents, CON can be achieved where countries adopt exemption systems so that all firms located in a given host country are subject to the same local (host country) tax rules.

In a recent paper, Grubert and Altshuler (2006) point out that the CON efficiency rule implicitly assumes that inbound investors face only local competitors operating in the same host location. While this may be the case for certain business activities earning location-specific rents, it will not be the case for geographically mobile business activities – those that may produce and meet output demand efficiently from any one of a number of locations, for example by employing mobile intangibles. In such cases, consideration must be given to effective tax rates in (all) host countries in which competing businesses are located, which may differ considerably across host countries.

Furthermore, both CON and CIN ignore effects of corporate tax-planning on effective tax rates, and in particular miss the fact that various forms and degrees of income shifting will result in different effective tax rates on profits for different competing investors, even where competition is localised in one country. Consideration of the implications of tax-planning and cross-border/global competition between investors operating from different locations lead Grubert and Altshuler (2006) to conclude that policy prescriptions under CEN as well as CIN and CON cannot provide production efficient results in all cases, and moreover policy cannot feasibly be adjusted to apply different rules in different cases. Income tax policy may however aim to counter outcomes that would result in very high or low (in some cases negative) effective tax rates that are not justified under any efficiency standard.

Policy perspectives and practices

Tax officials in a number of OECD countries underline the goal of tax neutrality (equivalent tax treatment of returns on domestic and foreign investment) as central to the adoption of a dividend credit system to tax the profits of foreign subsidiaries. Indeed, in some countries, capital export neutrality (CEN) is identified as the core principle underlying the adoption of a dividend credit system. When taxing foreign profit at the

same rate as domestic profit, resident investors are encouraged to structure investment plans on the basis of business (as opposed to tax) considerations aiming to maximise pre-tax rates of return.

At the same time, international competitiveness considerations influence policy adjustments to a greater or lesser extent, implying some compromises in leaning towards business demands for more lenient home country tax treatment, as provided elsewhere. In some cases, departures from the requirements for neutral treatment are such that they yield tax relief not dissimilar to (and in some cases greater than) that under a dividend exemption system.

Equivalent treatment of domestic and foreign source income requires current taxation at the home country corporate tax rate of pre-tax distributed and retained foreign profits, with full relief for underlying host country income and withholding tax. In practice, these conditions are viewed as unattainable for a number of reasons. It is instructive that one OECD country has recently moved to exempt foreign capital gains from tax, given widespread tax-planning aimed at claiming foreign capital losses against the domestic base, while escaping domestic tax on foreign capital gains.

Other reasons are cited by tax officials explaining why effective tax rates on outbound FDI may be lower than rates on domestic investment. A recent phenomenon is the use of "hybrid instruments", securities regarded by a host country as debt, and by a home country as equity. Also the absence or weak application of anti-deferral/anti-exemption (controlled-foreign company (CFC)) rules that permit the use of triangular structures involving finance affiliates in no/low-tax jurisdictions result in relatively low and possibly negative effective tax rates on FDI. Furthermore, even where CFC legislation is in place denying deferral of these amounts, various techniques (*e.g.* use of hybrid entities) may be used by taxpayers to circumvent application of those rules.

Most OECD countries operate dividend exemption systems, consistent with capital import neutrality (CIN) and capital ownership neutrality (CON) criteria. Exempt treatment may improve efficiency where it avoids a possible tax impediment to FDI by production-efficient domestic firms. By waiving home country tax on foreign business profit, resident investors may compete on equal tax terms with other investors in foreign markets, with all investors in a given host country subject to host country tax alone. At the same time, departures from neutral treatment of foreign and domestic profit under dividend credit systems may yield tax relief on FDI that is not dissimilar to that available under dividend exemption.

In addition to addressing the taxation of foreign profit, the tax treatment of inter-affiliate foreign interest and royalty income must also be considered when comparing the tax burden on outbound FDI and domestic investment. Common practice in home countries (with dividend credit or exemption systems) is to tax foreign interest and royalty income of resident companies, while providing a home country tax credit or deduction giving relief in respect of foreign withholding tax. While often overlooked, tax neutrality between domestic investment and FDI requires current taxation at the home country corporate rate of foreign interest and royalty income deducted at source (against foreign profit) and paid to a domestic parent company (or other related domestic affiliate), combined with an offset for foreign withholding tax. This respects the matching principle (that the receipt of payments deducted at source be taxed in the hands of the recipient) and recognises that foreign earnings may be

repatriated using a combination of returns including these inter-affiliate payments that unlike foreign dividends are deductible at source.

While home country taxation of foreign interest and royalty income (with relief for foreign withholding tax) helps align tax rates on domestic and foreign investment, effective tax rates may be relatively high (low) on FDI compared with domestic investment where foreign profit is taxed at a relatively high (low) effective host country rate. Where domestic and foreign tax rates differ, some degree of convergence may be achieved under credit systems through cross-crediting provisions of foreign tax credit rules that allow excess foreign tax credits on high-taxed foreign dividends to offset domestic tax on low-tax foreign income (and thereby reduce the overall tax burden on FDI). However, the ability to apply excess foreign tax credits (*e.g.* to offset home country tax on foreign royalty income) may mean effective tax rates on FDI in a given host country under a dividend credit system that are below rates that would apply under an exemption system.

International competitiveness concerns and policy responses

Increasingly, the international competitiveness of tax systems is being judged in terms of the treatment of not only inbound investment, but also outbound FDI, with the latter introducing a complex set of considerations and difficult tradeoffs. Discussions on the topic reflect on the willingness of countries to accept limits to the taxation of foreign source income, including deferral or the waiving of home country tax on income of foreign affiliates resident in low/no-tax jurisdictions, and how the limits of this willingness are being tested.

Virtually all OECD countries are willing to accept the basic international competitiveness argument that a domestic parent company with a foreign subsidiary located in a given host country to serve markets in that country and possibly other countries should not be subject to current home country tax on foreign active business profits derived from that location. This argument has been accepted by most countries for many years, often from the outset when their international tax rules were first introduced.

Relevant to a tax burden assessment is the treatment of interest and other expenses incurred to earn foreign income. In one country example with a dividend credit system, interest allocation rules and other overhead expense (*e.g.* R&D) allocation rules apply which may be viewed as onerous compared with other countries. The interest allocation rules, which operate through the foreign tax credit system, limit the amount of overhead expense that can be set off against domestic source income (and thereby increase home country tax) for companies that are in an excess foreign tax credit position. The policy recognises the fungible nature of financial capital, and may be seen as striking a balance between base protection and providing competitive tax treatment. It also recognises that this approach may be seen as fair and neutral, with taxpayers encouraged to allocate business expenses met in earning domestic and foreign income across home and host countries without regard to differences across countries in statutory tax rates (as in the absence of such provisions, taxpayers are encouraged to assign interest and R&D expense to host countries with relatively high statutory corporate income tax rates, to maximise the value of tax deductions).

While other countries have tracing rules to limit deductions against domestic taxable income of interest expense on funds borrowed to finance foreign direct investment, some are of the view that in practice these rules may be easily avoided. This may be viewed as problematic where foreign profits of a resident parent company are exempt from domestic

tax [with a domestic interest deduction not matched by a domestic tax base inclusion of income from FDI financed in full or in part by funds borrowed by the parent (implying a subsidy for foreign investment)].

Beyond the basic international competitiveness argument

In countries operating dividend credit systems, policy considerations including on-going pressure by business have resulted in tax treatment that permits relief from home country tax that goes well beyond what could be explained by the basic or "old" notion of the international competitiveness argument. The pressure arises for the most part by comparisons with other countries, including countries operating exemption systems (where similarly, tax relief afforded to foreign source income can extend well beyond exempting from home country tax undistributed foreign active business income).

Application of the basic competitiveness argument becomes difficult in cases where a foreign host country does not tax corporate profit or sets a very low effective rate, as the basic argument rests on the presumption of business reasons alone (unrelated to profit tax considerations) for locating operations in the host country, with deferred tax treatment provided to place competing firms on an equal tax-footing. Where business activities of a foreign subsidiary or transactions with local parties in the host country are relatively minor, application of a competitiveness argument to cover profit on foreign transactions including export sales from a no/low-tax jurisdiction requires re-interpretation. The host-country business presumption must effectively be dropped, with a revised argument relying on the grounds that other competing firms are provided in their home country with deferred or exempt treatment of profit on foreign base sales from no/low-tax host countries.

Policy makers report arguments by business, pointing to global competition and policies adopted elsewhere, that they should be free to make use of no/low-tax jurisdictions for *all* types of activities. International competitiveness pressures are encouraging countries to provide deferral for foreign dividends, interest and royalties deductible at source received by a related controlled foreign company in a no-low-tax jurisdiction. While some countries have so far resisted extending deferral and enabling conversion of normally taxable foreign income into tax-free surplus for certain mobile forms of income, there are indications that policy considerations including the mobility of capital and business calls for more lenient home country treatment are leading many if not most countries towards more lenient treatment, not less, across a broader set of income types, because other countries are doing the same.

These developments, giving up home country tax revenues, while facilitating the erosion ("hollowing-out") of host country corporate tax bases – by exempting interest, royalties and other amounts deductible at source – are inconsistent with equity and neutrality, but are viewed as being difficult to challenge given their acceptance by other governments, and fears over the mobility of capital.

Policy trends, constraints and options

Considering policy trends, a broad observation is growing pressure to provide an internationally competitive tax system. While neutrality and equity considerations may argue in favour of increased (not reduced) taxation of foreign source income, for example through introducing or tightening anti-deferral or anti-exemption rules, many countries

indicate that they generally are not in a position to move in this direction, given that other countries do not apply such rules, or apply less rigorous provisions.

Some officials face the concern that under current circumstances, including the general acceptance of low or no taxation, tightening-up CFC rules would cause more companies to seriously consider relocating *all* business activities to lower-tax countries without CFC rules, rather than shifting only certain activities offshore. One official explains that his country's CFC regime will be scaled back out of a concern that, if left unchanged, the CFC provisions would lead to a contraction of overseas business activities of its domestic companies, and reduced economic development.

Given constraints in applying rigorous CFC provisions, policy makers are encouraged to search for other means to stem domestic revenue losses. One area being examined in certain countries is the setting of the home country statutory corporate tax rate. A low tax rate benefits all corporations, while also reduces incentives to shift activities and tax base offshore. At the same time, given the relatively large tax revenue losses associated with each percentage point reduction in the basic statutory corporate tax rate, consideration may be given to reducing the effective corporate tax rate on specific mobile parts of the corporate tax base. One country is considering whether to give preferential tax treatment to interest and royalty income – as the future of CFC rules might be uncertain (given ECJ rulings). How policy will adjust depends largely on what other countries do.

Assessing the FDI response to tax reform and tax planning

The last chapter of the report considers the use of "forward-looking" effective tax rates to estimate the impact of corporate tax reform on FDI flows, and finds that standard forward-looking marginal effective tax rate (METR) and average effective tax rate (AETR) measures incorporate financing and repatriation assumptions that may be largely inconsistent with recent developments. These developments include 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 active business income.

Unlike dividends, deductible payments reduce the amount of host country corporate tax, and are particularly attractive where they attract no or minimal income tax. Such is the case where the recipient is an affiliate in a no/low tax jurisdiction, and the parent company is not subject to (or is able to avoid) controlled foreign company 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.

The analysis includes 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. The review considers, as an example, an application of the UK'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.

This review is followed by a discussion of tax-planning considerations that to date have received little attention in AETR work, both in the context of direct (non-intermediated) investment and FDI involving triangular structures involving low-tax jurisdictions. Data are reported on the level and growth of earnings of controlled foreign companies in low-tax countries used by US parent companies, highlighting the scale of offshore financial intermediation and suggesting the need to account for this phenomenon when specifying financing parameters to arrive at representative tax burden measures.

The report presents results from an investigation of the implications of tax-planning on average and marginal effective tax rate measurement. The various tax-planning considerations addressed include: thin-capitalisation of high-taxed subsidiaries, "double-dip" financing (enabling interest deductions taken by both a parent company and a foreign subsidiary) and the use of hybrid securities in place of conventional debt, and the use of tax haven finance affiliates and hybrid entities to avoid home country corporate tax. Tax burden values are shown to be highly dependent on financing assumptions, with negligible AETR values and negative METR values under more aggressive forms of tax-planning.

The final section considers the sensitivity of effective tax rate results to financing assumptions, including holding structures. The finding that AETR/METR results depend on financing assumptions is not new. But what is striking is how different the values may be. Moreover, the percentage change in the AETR on FDI resulting from tax reform may be much different than what standard analysis would predict, implying the possible need to revise estimates of the FDI response to tax reform, at least in certain cases where tax planning is taken into account when making investment decisions. The analysis suggests that AETRs and METRs based on standard assumptions need to be reconsidered, calling into question econometric estimates of the tax elasticity (sensitivity) of FDI based on standard AETR or METR measures used as explanatory variables. The results also suggest that estimates of the inbound and outbound FDI response to tax policy reform based on standard measures may be less than reliable, not only on account of questionable tax elasticity estimates, but also because of considerable uncertainty over the percentage change in AETRs accompanying tax reform, taking into account tax planning considerations.

The finding 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 recent work by Grubert (2004) analysing the effects of tax-planning on backward-looking tax burden measures.

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Chapter 1

Alternative Models for Analysing Tax Effects on FDI

A. Introduction

To guide the formulation of tax policy in relation to FDI, policy analysts may rely on one or more policy frameworks or economic models to consider possible channels through which tax influences FDI decisions. Certain of these may also be useful when attempting to estimate quantitatively the likely FDI response to tax policy reform. The purpose of this section is to review a number of partial equilibrium frameworks for analysing linkages between tax and FDI.[1]

Part B below reviews various frameworks for addressing possible effects of tax and other factors on FDI decisions including: the so-called OLI framework; the OECD policy framework for investment; the neo-classical investment model (arguably the framework most widely used by public finance economists to analyse the FDI response to tax policy reform); and models from the new economic geography literature. While the OECD Policy Framework, based largely on investor surveys, was developed primarily for policy-makers in developing economies aiming to attract FDI, certain issues raised may be of more general interest. This review of frameworks is followed by a review in Chapter 2 of main findings of a META analysis of empirical literature that investigates a range of estimates of the tax elasticity of FDI and considers factors that may systematically affect reported elasticity results.

B. Frameworks for analysing determinants of FDI

While far from providing an exhaustive account of models or frameworks that might be used by policy makers to infer tax effects on FDI, the following provides an overview of four: the OLI framework developed by Dunning (1981); the OECD Policy Framework for Investment: the "neo-classical investment model" pioneered by Jorgenson (1963) and elaborated by Auerbach (1979, 1983), King (1974, 1977), King and Fullerton (1984), Sinn (1987, 1991), Devereux and Griffith (1998a, 2003), as well as others; and the core-periphery (CP) model and extensions of the "new economic geography" literature associated with Krugman (1991), Fujita and Thisse (2002), Neary (2001) and Venables (1999).

1. OLI framework

Dunning (1981) argues that international production is the outcome of a decision-making process in which ownership, location and internalisation advantages work together (the so-called OLI conditions). In considering the drivers of FDI, it is useful under the OLI framework to distinguish *horizontal FDI* from *vertical FDI*, and then to consider how the OLI considerations influence both.

Horizontal FDI involves the replication in a foreign location of some production activity carried out in the home country of the direct investor where the investor already has a physical presence. In the case of manufacturing FDI, this would typically involve establishing a new manufacturing plant in a foreign market in order to be able to tap market demand in the region and better service customers there. The list of production activities carried out

through horizontal FDI generally would exclude certain services (*e.g.* management activities carried out at head office) that need not be recreated elsewhere.

As an alternative to horizontal FDI, an investor may instead, depending on OLI considerations, meet demand in a foreign market X through *exports* – that is, by increasing production in existing facilities and exporting to that market. Another alternative could be to *license* production technologies or assets to an unrelated party located in market X, which would undertake production and serve demand in market X.

Under the OLI framework, horizontal FDI would occur were OLI conditions (ownership, location and internalisation) are met. First, for FDI to be profitably undertaken, the MNE must possess *ownership advantages*. That is, the parent (direct investor) must possess a firm-specific "proprietary asset" – for example, patents, know-how (specific technological information or organisational skills conferring advantage), trademark or brand name – which other firms cannot access. Otherwise, other (local) firms in the market could produce the same product, while possibly enjoying other advantages. Such ownership advantages create an incentive to sell into foreign markets. The other conditions (location, internalisation) influence the choice between FDI over exports and licensing.

Second, undertaking FDI must offer certain *location advantages* that make FDI, enabling local production, more profitable than exporting. Location advantages could include avoiding costs linked to exporting final products to consumers (*e.g.* shipping costs, tariffs); avoiding transportation costs linked to shipping a product to a vertically-integrated production facility; accessing factor inputs at lower cost (*e.g.* relatively low wages relative to productivity, low energy costs); increasing product demand (brand loyalty) through establishing a physical presence; and benefiting from attractive government policies (an enabling regulatory environment, and relatively attractive host country tax burden). Lastly, it should be noted that for certain products (*e.g.* restaurant services, hotels), meeting foreign demand *requires* production from a foreign location.

Third, undertaking FDI must offer *internalisation advantages* that make undertaking a business activity directly through FDI more profitable than licensing proprietary assets (*e.g.* patents, know-how) to others. FDI rather than licensing may safeguard information and thus safeguard the value of knowledge capital. The creation of license contracts that protects against the dissemination and broader use of know-how is often difficult and expensive. Turnover of technicians, researchers and management may diffuse proprietary knowledge to competitors. Internalisation of production may help avoid such leakage, while also gaining certain efficiencies (recognising difficulties and expense in entering licensing agreements that cover all possible states and contingencies).

Vertical FDI involves locating (outsourcing) a stage of production process to a foreign location. An MNE may produce basic components of a good in the home country, and establish production of other components in another location, while undertaking assembly of all components in another. An example may be to locate capital-intensive production units in capital-abundant countries (low capital costs relative to wage costs) and labour-intensive production units in labour abundant countries (low wages relative to capital costs). As an alternative to vertical FDI, an investor may instead, depending on OLI considerations, undertake that stage of production in the home country or license production technologies to an unrelated party to carry out part of the business activities of the production chain.

As with horizontal FDI, considerations favouring vertical FDI centre around ownership, location and internalisation advantages. Again, there must be an ownership advantage that gives the firm some proprietary product or process that others do not have access to. The profitable undertaking of FDI to shift certain stages of production abroad would also require that the foreign host country offer certain location advantages and internalisation advantages.

In his work, Dunning (1981) does not give a detailed account of the various channels by which taxation might influence OLI conditions and FDI decisions. Perhaps most obviously, a host country's tax system may be an important factor in an investor's assessment of host country *location advantages*, where two main considerations could be the "direct effect" of host country taxation on the after-tax hurdle rate of return on investment, and the "budget effect" which recognises the basic role of tax in funding government programmes (*e.g.* infrastructure development, education) which, by lowering costs of accessing factors in the host country, help create an attractive location for FDI.

In addition to this observation, the OLI framework emphasises the relevance of a number of key decision margins driving FDI decisions and thus FDI flows. In particular, the framework identifies export sales and licensing arrangements as alternative options to FDI. Thus the framework highlights the need to account for considerations, including relevant tax aspects (*e.g.* tax relief for exports) relevant to the costs of relying on these alternatives, when assessing theoretically or empirically the relative importance of tax amongst other factors influencing FDI.

2. OECD policy framework for investment

The *Policy Framework for Investment* (OECD, 2005) proposes guidance in ten policy fields, including tax, to encourage policy makers to ask reaching questions about their economy, their institutions and policy settings, in an effort to identify priorities, develop effective policies, and monitor progress. The policy framework, targeted mainly at policy makers in developing and transition economies, draws largely on survey evidence, including recent surveys of investors in central, southern and Eastern Europe.[2]

In the tax area, a central challenge for policy makers endeavouring to spur investment, both foreign and domestic, is a careful weighing of relative advantages and disadvantages of corporate tax incentives and alternative tax policies and design options in attempting to meet the twin goals of attracting investment, while also raising revenue from FDI to help support infrastructure development important to direct investors.

Most would agree that a host country tax burden that is very high relative to other countries – influenced by statutory/legal provisions and by compliance costs – generally is discouraging to investment and in certain cases could be a deciding factor in not investing or reinvesting in a host country. The more difficult issue is when – that is, under what circumstances and by which means – can a relatively high (but not unreasonably) host country tax rate not discourage investment? And when may a relatively low host country tax burden discourage capital relocation, encourage additional investment, and swing location decisions in a country's favour? When, for example, could a reduced statutory corporate tax rate or tax incentive be expected to attract additional investment? By attempting to identify the factors that condition when taxation at desirable rates is possible, and whether host country tax relief can be expected to deliver additional investment, policy makers can assess

how best to design an overall policy approach, one with mutually reinforcing elements, to provide an environment encouraging to direct investment.

a) Assessing framework conditions, market conditions and location-dependent profits

One theme of the tax chapter is that, in setting the tax burden on inbound investment, policy makers should consider carefully whether the host country offers attractive risk/return opportunities, taking into account framework conditions, market characteristics and location-specific profits, independent of tax considerations. Also, while statutory tax provisions are clearly important, policy makers are encouraged to consider difficult to measure (yet potentially impeding) business compliance costs associated with the level of transparency, complexity and stability of the tax system.

i) Framework conditions

Important to potential investors are questions over costs and non-diversifiable risks associated with securing access to capital and profits, adjusting to macro-economic conditions, and complying with laws, regulations and administrative practices, including the following:

- How stable is the political system? How stable and accessible is the legal system protecting property rights including, in the foreign investor case, the right to withdraw capital and repatriate profits? Do capital controls exist?
- How stable is the monetary system and fiscal framework and what is the accumulated public debt? What are expectations over future inflation, interest and exchange rates?
- In what areas is public governance weak and where is corruption a problem?
- How significant are the costs and risks to business associated with the preceding considerations?

ii) Market characteristics

Also centrally important to investors are considerations of output and factor demand and supply:

- What is the domestic market size? How large is the domestic consumer market (number of households, average level and distribution of per capita income)? How large is the domestic producer market (number of firms, asset size, input requirements)? How large and accessible are markets in other (*e.g.* neighbouring) countries?
- What labour force skills are available in the host country and what employee benefits (*e.g.* social security) are provided by the state? What energy sources and raw materials are available in the host country? Are labour costs (wages plus mandatory employer social security contributions), energy costs, raw material costs high/low relative to competing jurisdictions?
- What is the state of the host country's infra-structure covering transportation services (airports, seaports, rail systems, roads), telecommunications (phone/fax/internet services), other services important to business? Are private costs of using/purchasing infrastructure services high/low relative to competing jurisdictions?

iii) Prevalence of location-specific profits

Assessments by investors of the risk/return on investment in a host country would normally factor in framework conditions and market characteristics of the country (or a region of the country where market characteristics vary by region). In setting the tax burden on inbound investment, policy makers are encouraged to assess whether their host country offers attractive risk/return opportunities, taking into account framework conditions (*e.g.* political/monetary/fiscal stability; legal protection; public governance), market characteristics (market size, availability/cost of labour, energy, state of infrastructure), and the prevalence of location-specific profits.

In considering location choice, a central question is, how location-specific are potential profits for a given level of risk? For certain investments, profit from meeting market demand for a final product or undertaking production part of a value-added chain may vary significantly across alternative locations, and in certain cases may be location-specific – that is, may require investment (*i.e.* a physical presence) in a specific location. With location-specific profit, costs in accessing required factor inputs (*e.g.* labour, raw materials, energy) and/or costs in delivering outputs are generally significantly higher from other locations. In the case of privatisations, profits are generally time as well as location-specific. Other examples include the extraction of natural resources, and the provision of restaurant, hotel and certain other services. In such cases, if the anticipated risk-adjusted return on capital meets or surpasses a required "hurdle" rate of return, investment can be expected.

Where profit is specific to a particular host country, tax comparisons across competing locations (states/countries) may not factor in, and the tax burden may be largely irrelevant to an investment decision. In principle, the tax burden on location-specific profit may be increased up to the point where economic profit is exhausted without discouraging investment. Thus, where an economy offers an abundant set of location-specific profits, policy makers may understandably resist pressures to adjust to a relatively low tax burden, to avoid tax revenue losses and windfall gains to investors and/or foreign treasuries. Reducing the effective host country tax rate to levels observed in certain competing countries, while possibly attracting capital in elastic supply, would give up tax revenues without impacting inelastic investment demand.

In contrast are examples where costs in accessing factor inputs and delivering outputs are roughly the same across a large number of geographically disperse candidate host countries, implying that profit is not location-specific. Examples include investment in intra-group financial services and certain head-office functions. Attracting these generally non-capital intensive activities requires satisfactory framework conditions, but local market characteristics (*e.g.* market size) tend to be relatively unimportant. Other examples are the manufacturing of pharmaceuticals and computer chips, where input costs may be similar across many alternative host countries, and delivery costs to global markets are low relative to profit. In such cases, candidate host countries may be unable to impose a relatively high host country tax burden where competing jurisdictions offer a no/low tax environment.

In between these extremes are investments where profit is location-dependent, but not specific to one country (*e.g.* required rates of return may be realised in a number of neighbouring locations), and trade costs are important. A location offering relatively attractive host country advantages, in terms of relatively low input costs, or delivery costs, or taxes on profit, could be expected to be more successful in attracting FDI. Relatively low input costs could be in relation to a large pool of suitably skilled labour. Relatively low

delivery costs could be realised with a large domestic market, and/or well-developed road, airport or seaport system, giving relatively low cost reach to neighbouring countries with large markets. Where relative advantages are significant, they could give rise to location-dependent profits that could be taxed without discouraging investment.

As emphasised in the *Policy Framework*, the relative attractiveness of a given host country as a location for investment depends on the host country framework conditions and market characteristics, which in turn depend on past and current levels of public expenditures on programs in areas of critical importance to investors (*e.g.* education, infra-structure development). This link establishes the critical importance, in particular for developing countries, of collecting tax where possible on economic rents in order to finance public expenditures that eventually strengthen host country fundamentals, and attract FDI.

These generalisations, while possibly helpful in shaping views over appropriate host country tax policies, gloss-over practical assessment difficulties, and must be qualified on several counts. Under the simplified predictions remain questions over how to assess the influence on business profits of varying market characteristics in competing locations. Where on balance investment conditions in a particular location are more attractive than those elsewhere, how much higher may the host country tax burden be set relative to other countries without significantly impacting investment? And if a competing country lowers its tax rate, how much capital relocation can be expected, and at what rate and in which sectors? There also remains the question of whether the now common use by MNEs of tax haven finance/holding companies effectively eliminates the influence of home country tax rules (in dividend credit countries) on the overall tax burden on outbound FDI, so that only host country taxation matters.

b) Assessment of host country statutory and compliance tax burden

In formulating policy as regards the tax treatment of FDI, the tax chapter of the Policy Framework encourages policy-makers to assess the tax burden on domestic profits using quantitative measures and qualitative information, taking into account the main statutory provisions and the effects of tax-planning strategies commonly employed by businesses (*e.g.* thin capitalisation, non-arm's length transfer prices) to lower the host country tax burden. Compliance costs from excessive complexity, non-transparency and unpredictability should also be factored in.

i) Effective tax burden measures based on statutory provisions

On the quantitative side, corporate marginal effective tax rates (METRs) and corporate average effective tax rates (AETRs) are commonly used to assess the net effect of (certain) main statutory provisions in determining effective tax rates by type of capital asset (machinery and equipment, buildings, inventories, intangibles), financing (debt, retained earnings, new equity) and by investor type (taxable resident, non-resident). Such measures may be finessed by factoring in effects of tax-planning strategies employed in the host country to strip out taxable profits (*e.g.* thin capitalisation, non-arm's length transfer prices) to tax havens.

An attraction of measuring corporate marginal and average effective tax rates is that they can be modelled with reference to statutory tax provisions alone, found in tax legislation and regulations (*i.e.* they do not require information on actual tax revenues collected). However, as such summary measures cannot readily incorporate the effects of

all relevant tax provisions bearing on the average host country tax burden; they need to be qualified with regard to such effects (*e.g.* the impact of rules governing the carry-forward of business losses).

Furthermore, where taxpayer-level information is available (*i.e.* taxpayer financial statements, tax returns), a stratified sample of corporations should be chosen and relevant micro-data examined in order to obtain measures of the tax burden on domestic firms, on an aggregate and disaggregate basis (profitable and taxable, profitable and non-taxable, non-profitable; small, medium and large with reference to total assets; main industry sector; region). As examined elsewhere, results based on micro-data provide a much stronger basis to analyse tax burdens across sectors and over time.[3]

ii) Factoring in compliance burden

Compliance costs should also be factored in, at least on a qualitative basis. Too often, policy makers assess a host country tax burden with reference to only the direct effects of statutory provisions. A more appropriate measure takes into account tax compliance costs, which in some cases may be quite significant, depending on the degree and sources of complexity, transparency and predictability.

- compliance burden linked to an excessively complex business tax system

  In addressing today's complex business structures and transactions, a certain degree of complexity in the tax system is to be expected. However, where investors view a tax system (laws, regulations and/or administration) to be excessively complex relative to other tax systems, or relative to an alternative approach, the added expense to project costs incurred in understanding and complying with the tax system would tend to discourage investor interest.

  Such a review would begin by identifying the various sources of complexity – including those linked directly to tax policy, those relating to mechanisms by which policy is implemented, and those linked to tax administration – and examining whether the degree of complexity is avoidable with consideration given to approaches adopted by other countries.

  One area to consider is whether the structure of the depreciation system for tax purposes (number of classes of depreciable capital cost, assignment of depreciation methods) is consistent with international norms. If the depreciation system has been characterised frequently by business as overly complex, then serious consideration should be given to possible simplification. A related tax policy issue is whether depreciation rates adequately reflect true economic rates of depreciation of broad classes of depreciable property (serving as benchmark rates) and account for inflation.

  As an illustration of possible trade-offs when addressing complexity, consider integration of corporate and personal income taxation of equity income to reduce or eliminate double taxation of domestic profits. Where double taxation relief is desirable (*e.g.* creates investment (host country benefits) that more than outweighs tax revenues foregone), it is important for policy makers to recognise the advantages that a simple approach could bring. In this example a relevant trade-off could be between efficiency, calling for a variable imputation tax credit at the personal level that depends on the amount of corporate tax actually paid on distributed income, and simplicity, which may call for partial inclusion of dividend income, or a fixed dividend tax credit based on a notional or assumed level of corporate tax.

- compliance burden linked to a non-transparent business tax system

  Another important aspect of tax compliance costs concerns transparency. In considering this issue, it must first be recognised that even a relatively simple system may lack transparency, as for example where tax laws and terms are unclear, tax returns and information materials are difficult to obtain, and taxpayer compliance support is weak. As with complexity, a lack of transparency contributes to project costs. It also raises concerns of fairness, and may lead to suspicion that the tax system is tailored to the interests of a subset of taxpayers, including those earning higher incomes, able to afford professional tax advice and possibly benefiting from special tax treatment. Perceptions of unfairness challenge tax systems based on voluntary compliance, as they tend to encourage non-compliance and transition of business activity to the "underground economy", raising revenue concerns and concerns of the weakening of government performance more generally.

  Policy makers are therefore encouraged to satisfy themselves that tax laws and regulations are drafted clearly and preferably by those trained in legal drafting of tax provisions. Tax returns, explanatory notes and information circulars should be readily available to taxpayers (*e.g.* electronically), and services should be available to provide advance rulings on the tax treatment of transactions where tax outcomes are unclear.

  Another important "transparency" issue is whether business tax liability in certain cases is established at the discretion of tax authorities (*e.g.* through individual rulings, or informal dealings), rather than through uniform application of tax laws and regulations. Where administrative discretion is provided, the policy reason for providing this discretion should be questioned, as a key concern at least in certain countries is whether administrative discretion contributes to or invites corrupt practices on the part of tax officials (*e.g.* the taking of bribes). Where it does, administrative discretion may contribute to investor uncertainty over final tax liability and the tax liability of other firms. Where corruption is a problem and administrative discretion contributes to project risk due to uncertainties over tax treatment, the potential benefits of such discretion (*e.g.* tighter control over tax relief) should be weighed against the various costs including those linked to reduced transparency.

- compliance burden linked to an unpredictable business tax system

  Non-transparency in the tax area contributes to investor difficulty in gauging with some degree of certainty the tax burden on returns to investment in a given host country. So too can frequent reforms of tax systems, even where they are relatively simple and transparent. While a certain degree of unpredictability may be associated with all tax systems, a system may be judged to be relatively or excessively unpredictable if the host country has a history of frequent and dramatic changes to important elements of the tax system, that is, elements bearing significantly on investment returns.

  Relevant questions on this issue include: what elements of the tax system have contributed to unpredictability and how can these be best avoided? Is responsibility for tax legislation governing the taxation of business income assigned to a single ministry of the central government (*e.g.* Ministry of Finance), recognising difficulties that arise where this is not the case? Are (all) income tax laws/regulations contained in a single body or act of legislation, recognising difficulties that arise where this is not the case? Is a single ministry, department, or agency of central government responsible for the administration of corporate income tax and personal income tax (*e.g.* with local/regional offices)? If

income tax legislation and administration are not centralised, what problems of co-ordination have arisen, what has been the impact on taxpayer tax compliance costs (in relation to complexity, predictability, transparency), and what reforms are desirable?

3. Neo-classical investment framework

Perhaps the framework most widely used by public finance economists to analyse tax effects, and in particular corporate tax effects, on domestic and cross-border direct investment is that based on the neo-classical investment theory, pioneered by Jorgenson (1963). The main virtue of the framework is that it can explicitly incorporate main tax parameters establishing the statutory tax burden on investment returns and the tax treatment of capital costs, and can be used to derive broad qualitative propositions about the long-term distorting effects of taxation on investment behaviour.

Moreover, parameter-based marginal and average effective tax rates (METRs/AETRs) derived from the neo-classical investment framework can be analysed to determine the percentage change to these tax burden measures resulting from a single or package of corporate tax policy shocks. When combined with empirical estimates of the sensitivity of FDI to these effective tax rates, the framework lends itself to estimating the long-run effects on FDI resulting from corporate tax reform.

Effective tax rate measures (METRs/AETRs) derived from the model, while providing helpful summary information, must however be used with care, as they ignore a number of factors influencing the true tax burden on FDI (*e.g.* tax-planning, administrative discretion in deciding taxes paid, importance of other taxes not captured by the model). Moreover, estimating the tax elasticity of FDI is problematic (see Chapter 3 for a review of data problems, identification problems, and Section 3 of this chapter discussing complications arising out of possible non-linearities). Bearing these limitations in mind, the framework offers a mechanism to explore distorting effects of taxation on domestic and cross-border investment. The following provides a short review of METR and AETR analysis and policy applications. A more detailed account is provided in Chapter 5 (and Annex A) of the paper.

a) Forward-looking METR

A marginal effective tax rate (METR) assessed for real direct investment (*e.g.* green-field investment in plant, property and equipment) is a summary measure of the distortion imposed by the tax system on a "marginal investment", defined as one that generates a return that is just enough to cover all the costs (as modelled) associated with an investment, and no more. It characterises an equilibrium position where economic profit (that is, profit in excess of the minimum return required by shareholders to commit funds) is exhausted.

The basic approach in assessing a METR applicable to a given investment type is to measure the "tax wedge" on returns modelled for that investment type – that is, the difference between pre-and post-tax returns – relative to the pre-tax return, assessed at the margin. The "tax wedge" may factor in not only corporate-level tax on profits, but also personal tax on investment returns. When focusing on possible tax distortions to the level of investment, attention may be limited to the "corporate tax wedge" if it is reasonable to assume that the cost of funds (in particular, the minimum return required by shareholders to commit some combination of retained earnings and new share capital) is determined independently of personal income tax considerations. With capital markets open and integrated in most countries, this assumption is commonly employed to assess possible corporate tax distortion to domestic and cross-border direct investment decisions by MNEs.

In such cases, the corporate METR is measured as follows:

$$METR = \frac{(F_K^* - \delta) - \rho}{(F_K^* - \delta)} = 1 - \frac{\rho}{(F_K^* - \delta)} = 1 - \frac{\rho}{c - \delta} \tag{1.1}$$

where ρ is the corporation's discount rate (*i.e.* the required (minimum) rate of return on the investment, net of corporate tax, determined by the after-tax rate of return on an alternative investment of equivalent risk); F_K^* measures the equilibrium (steady-state) pre-tax real return from an additional unit of capital at the margin where economic profit is exhausted [with a corresponding production function F(K)]; and δ is the true (economic) rate of depreciation of capital assessed on a declining-balance (geometric) basis.[4] The variable c denotes the user cost of capital (equal to F_K^*, as reviewed below).

The difference ($F_K^* - \delta$) is the pre-tax net rate of return on capital at the margin accruing to firm's shareholders, equal to the total return less the loss in value of the asset owing to physical depreciation (*e.g.* "wear and tear"). The numerator of the METR shown in (1.1) measures the corporate tax wedge between this rate of return, and the required after-corporate tax rate of return to shareholders ρ, expressed as a percentage of the pre-tax return. For example, if the pre-tax net return on the last euro of capital installed is 0.10 euros (net of depreciation), and the after-corporate tax return is 0.06 euros, implying a corporate tax wedge of 0.04 euros, then the (corporate) marginal tax rate is 0.4. A positive (negative) METR implies that investment is discouraged (encouraged) by the tax system (relative to the no tax case).

In principle, one can measure directly the economic rate of depreciation of a given type or group (aggregate) of types of physical capital (δ), and the mean (risk-adjusted) pre-personal tax expected rate of return of shareholders (ρ). However, the real return from an additional unit of capital at the margin (F_K^*) is generally unknown, in the sense that it cannot be measured directly. The approach taken by METR modellers is to infer this marginal return from capital stock equilibrium conditions derived from the neo-classical theory of investment, which may be applied to domestic and foreign direct investment cases.

i) Domestic direct investment

As elaborated elsewhere (see Jorgensen (1963), King and Fullerton (1984), Auerbach (1981), amongst others), under the neo-classical investment theory, managers of profit-maximising firms operating in perfectly competitive output and factor markets will invest in physical capital just up to the point where the following equilibrium condition holds, in the domestic investment case:

$$F_K^*(1-u) = (\rho + \delta)(1-A) \tag{1.2a}$$

or equivalently

$$F_K^* = \frac{(\rho + \delta)(1-A)}{(1-u)} = c \tag{1.2b}$$

with F_K^*, δ and ρ defined as above, and where u denotes the statutory corporate income tax rate, and A measures the present value of depreciation allowances and tax credits (if any) on a unit of investment, measured as follows:

$$A = \sum_{s=1}^{s=\infty} \frac{u\alpha(1-\alpha)^{(s-1)}}{(1+\rho)^s} + \xi = \frac{u\alpha}{\rho + \alpha} + \xi \tag{1.3}$$

where α is the declining-balance (or declining-balance equivalent) rate at which capital may be depreciated for tax purposes, and ξ is the investment tax credit rate. The summation term measures the present value of current and future depreciation allowances (deductions) for tax purposes associated with one currency unit of investment (see Box 1.1).

Box 1.1. **Net acquisition cost of physical capital**

The term A [shown in equation (1.3) in the main text] which simplifies to $u\alpha/(\rho + \alpha)$, may be more readily understood with reference to Table 1.1 below which shows the stream of depreciation allowances (or "capital cost allowances") associated with a unit of investment, depreciated for tax purposes at a declining-balance rate α. In Table 1.1, UCC denotes the undepreciated amount of capital cost for tax purposes. Summing the cells in the fifth column gives the summation term n equation (1.3), which can be shown to reduce to $u\alpha/(\rho + \alpha)$.

Table 1.1. **Computation of present value of tax depreciation (capital cost) allowances**

1 currency unit of investment

Period	Beginning period UCC	Capital cost allowance CCA)	Tax value of CCA	Present value at beginning of t of stream of CCA	End of period UCC
1	1	α	$u\alpha$	$u\alpha/(1 + \rho)$	$(1 - \alpha)$
2	$(1 - \alpha)$	$\alpha(1 - \alpha)$	$u\alpha(1 - \alpha)$	$u\alpha(1 - \alpha)/(1 + \rho)^2$	$(1 - \alpha)^2$
3	$(1 - \alpha)^2$	$\alpha(1 - \alpha)^2$	$u\alpha(1 - \alpha)^2$	$u\alpha(1 - \alpha)^2/(1 + \rho)^3$	$(1 - \alpha)^3$
n	$(1 - \alpha)^{n-1}$	$\alpha(1 - \alpha)^{n-1}$	$u\alpha(1 - \alpha)^{n-1}$	$u\alpha(1 - \alpha)^n/(1 + \rho)^n$	$(1 - \alpha)^n$

The example assumes no inflation.

The capital stock equilibrium condition (1.2) is intuitive and simply states that it is optimal for the firm to increase the size (scale decision) of its capital stock up to the point where the marginal benefit of an additional unit of capital just equals the marginal cost of an additional unit of capital, and no more. The marginal benefit, measured by the left-hand-side of (1.2), is the marginal revenue from an additional unit of installed capital, reduced by corporate tax on the return. The marginal cost, given by the right-hand side, is the product of two terms. The first term $(\rho + \delta)$ consists of the financing cost and the depreciation cost (reduction in value) associated with the use of a unit of installed capital over one period. The second term accounts for the reduction in the effective cost of acquiring one unit of physical capital owing to depreciation allowances and investment tax credits, which reduces the cost to (1 – A) units.

Substituting (1.3) into (1.2b), one can solve for the user cost of capital c (or equivalently F_K^*) for a given set of tax and non-tax parameters appearing in the equilibrium condition (1.2b). Substituting the user cost value c into the METR expression (1.1) allows one to assess whether the domestic corporate tax system on balance discourages, encourages or has neutral effects on domestic investment (indicated by a positive, negative or zero METR value).

ii) Foreign direct investment (FDI)

As reviewed in detail in *Taxing Profits in a Global Economy (OECD, 1991)*, the neoclassical investment framework may be readily applied to derive effective tax rates in the cross-border investment case, where the main additional considerations are:

- a broader set of sources of funds to consider in the funding of investment (debt, retained earnings, new equity capital of the subsidiary, with purchases by the parent of new equity shares of its sub financed by debt, retained earnings, new equity capital of the parent); and
- further taxation of host country profits at a "repatriation tax rate" that depends on *a)* whether the home country operates a credit or exemption system in the taxation of foreign dividends on direct investment, *b)* rates of non-resident withholding tax on dividends and interest; *c)* foreign tax credit provisions (including pooling/mixing possibilities) in home countries with credit systems.

In the cross-border investment case, the net present value (NPV) of investment, and optimal scale and location decisions (and corresponding METR and AETR values) depend not only on the source of funds, but also the type of home country tax system – in particular, whether the home country operates a dividend exemption system, or dividend credit system, and in the latter case, how host and home country tax burdens on foreign profits compare (*i.e.* whether the parent is in an excess foreign tax credit position, or insufficient foreign tax credit (excess limitation) position). As an example, consider the equity financed FDI case where a parent company in home country A, operating a dividend exemption system, analyses the profitability of establishing a foreign manufacturing subsidiary in host country B. As reviewed in Annex A, the NPV of an investment of K^* units of retained earnings of a parent company in new equity shares of the foreign subsidiary (used to purchase physical capital) is as follows:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d)}{(1+\rho)^s} + A^B K^* \qquad (1.4)$$

with F(K) and δ defined as above. In the cross-border direct investment case, the parent company's discount rate ρ is the parent's required (minimum) rate of return on capital invested in its foreign sub, net of host and home country corporate tax. In the small open economy case $\rho = r^*$, where r^* is a "world" rate of return determined exogenously to the model on international capital markets (which the parent takes as fixed). The parameter A^B measures the present value of capital cost allowances and investment tax credits (if any) provided by the host country (country B), u^B denotes the host country statutory corporate tax rate, and w^d is the non-resident withholding tax rate (repatriation tax rate) on dividends.

Given host country tax relief per unit of investment measured by A^B, the parent need only inject $(1 - A^B)K^*$ currency units (first and third right-hand-side terms of (1.4) combined) to finance the purchase of K^* units of physical capital. The model assumes that in the purchase of K^* units of physical capital, the subsidiary pays $(1 - A^B)K^*$ immediately in cash (injected by the parent), and pays the balance of the purchase price of K^*units over time as capital cost allowance relief accrues to the subsidiary.[5]

The second term of the NPV expression (1.4) captures the present value of the stream of returns to the parent net of host country corporate tax, with tax (depreciation allowance) relief provided in respect of replacement investment, and net of non-resident withholding tax on dividends, with net profit assumed to be fully distributed. In each period, physical

capital of the subsidiary that has depreciated over the period is replaced to maintain the capital stock at the optimum steady-state value K^*, with replacement investment financed by earnings of the subsidiary, net of host country profit tax. With capital depreciating at rate δ, replacement investment at the end of the first period, and at the end of each subsequent period, is δK^* units. As with the initial investment of K^* units, the model assumes that the subsidiary pays $(1 - A^B)\delta K^*$ immediately to the capital supplier (financed by retained earnings of the subsidiary), and pays the balance over time as capital cost allowance relief accrues to the subsidiary.

The optimal amount of capital to employ in the operations of a subsidiary located in country B, should the parent decide to proceed with the investment, may be determined with reference to (1.4). In particular, the optimal scale of investment (*i.e.* the optimal capital stock level K^*) is determined at the point where the net present value to the parent of the last unit of capital invested is zero (*i.e.* where economic profit falls is exhausted):

$$npv = -1 + \sum_{s=1}^{s=\infty} \frac{(F_K(K^*)(1-u^B) - (1-A^B)\delta)(1-w^d)}{(1+\rho)^s} + A^B = 0 \tag{1.5}$$

Solving gives the following equilibrium condition equating marginal costs and benefits of investment:[6]

$$F_K^* = \frac{(\frac{\rho}{(1-w^d)} + \delta)(1-A^B)}{(1-u^B)} = c \tag{1.6}$$

The main difference between equation (1.6) and that derived for the domestic investment case given by (1.2b) is the presence of the repatriation tax rate on dividends w^d. This additional tax raises the user cost of capital, and is predicted to discourage FDI.

b) Forward-Looking AETR

The preceding section addressed marginal conditions influencing the optimal scale of investment in country B. Now consider the corresponding average effective tax rate (AETR) measure of the type introduced by Devereux and Griffith (1998a), relevant to the location choice decision of whether to invest in country B (based on a comparison of the net present value of investment in competing locations).

The AETR may be derived (see Annex A) in a discrete time, multi-period framework, which accounts for taxation of marginal and infra-marginal returns on newly acquired capital, assumed to be held until fully depreciated.[7] An open economy scenario is considered where a parent firm's cost of funds (discount rate) is determined independently of domestic personal taxes on dividends and capital gains, and where inflation is ignored for simplicity.[8] The forward-looking AETR is an effective rate which, like the METR, takes into account key tax rate and base parameters, including tax depreciation allowances which may deviate from economic depreciation. The distinguishing feature of the AETR is that it is an average rate, reflecting an average of tax effects on all returns on investment, including infra-marginal economic profits subject to tax at the statutory corporate rate.

AETR analysis assumes a fixed pre-tax rate of return on physical capital, denoted by p, reflecting some assumed rate of pure economic profit.[9] For a given p, the NPV of investment (2.4) may be assessed as follows (see Annex A for details):

$$NPV = -K^* + \frac{(p - u^B(p+\delta) - w^d(p - u^B(p+\delta) + A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d)\ K^*}{\rho} \tag{1.7}$$

Using this result, the NPV on investment (2.4) may be expressed as a function of the AETR on investment, as follows:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1 - AETR) \tag{1.8}$$

$$PVY = \frac{pK^*}{\rho} \tag{1.9}$$

$$PVT = \frac{(u^B(p+\delta) + w^d(p - u^B(p+\delta)) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d)\ K^*}{\rho} \tag{1.10}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^B(p+\delta) + w^d(p - u^B(p+\delta)) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d)}{p} \tag{1.11}$$

where PVY measures the present value of pre-tax returns on investment (net of depreciation), and PVT measures the present value of tax on the investment.[10] In the formula for PVT, the base of the host country corporate income tax is the gross return on capital $(\rho + \delta)K^*$. The base for the repatriation tax is after-tax profit, equal to gross profit net of deprecation and home country corporate tax (*i.e.* the base of the repatriation tax is measured by $[pK^* - u^B(p + \delta)K^*]$.[11]

Where location choice depends on a comparison of the NPV on investment when operating from alternative location choices, the preceding analysis shows location choice to depend on PVY (dependent on the optimal scale amount K^*) and the AETR on investment in alternative locations.

4. New economic geography models

Central predictions of the neo-classical theory of investment as regards tax effects on investment have been challenged in recent years by the so-called "new economic geography" literature and policy considerations arising from it.[12] The following sketches out some of the considerations and main forces behind central results of the core-periphery model, considered the "backbone" of the new economic geography literature, and addresses in summary fashion the implications for tax policy as regards its effects on FDI. Certain qualifications are also reviewed.

a) Main elements of the core-periphery model

At its heart, the core-periphery (CP) model of the new economic geography literature (Krugman, 1991) emphasises the role of business concentration ("agglomeration") economies – that is, self-reinforcing economies derived from the concentration of business activity. As is often observed, a main location advantage for a host country is a large market size, which lowers trade (transportation) costs in shipping products to market. Insights are uncovered when recognising that market size, and in particular product demand in a market, is determined by the number of consumers and their disposable income.

A key additional observation is that total product demand depends on the number of available jobs, which in turn depends on the level of investment. Thus where a host country is successful in attracting investment for one or more reasons, this investment tends to initiate a virtuous circle, with new investment generating additional jobs, adding to disposable income, product demand and thus a larger market size, which in turn serves to attract yet additional investment, and so on.

The CP model incorporates this "market-access effect", whereby firms with a degree of market power, operating under imperfectly competitive conditions for one or more reasons (*e.g.* ownership of proprietary assets, such as knowledge capital) and earning economic profit, have the tendency to locate their production in locations with large markets, and export to small "peripheral" markets. A second business concentration effect, a "cost-of-living effect", is also incorporated, which recognises that business concentration tends to reduce the cost of goods in the region by reducing reliance on imports (with import prices incorporating higher shipping costs).[13] A third "market-crowding effect" works in the opposite direction, tending to encourage business dispersion (*i.e.* discourage business concentration). This effect captures effects of heightened competitive forces as more firms are attracted to the core – in particular, reduced scope for earning economic rents which reduces the wages that firms are able or willing to pay to workers and encourages firms to consider relocating to peripheral regions with relatively few competitors.

Where business concentration forces (market-access and cost-of-living effects) are stronger than business dispersion forces (market-crowding effect), a capital or labour migration shock can initiate a self-reinforcing cycle of migration that results in all capital and industrial workers moving to one region. In the opposite case, an initial equilibrium is stable in the sense an initial shock is corrected by dispersion effects.

The final central element of the CP model is that trade costs (*e.g.* transportation costs) determine the relative strength of business concentration forces and business dispersion forces, and thus determine whether policy shocks are self-reinforcing or self-correcting. Both business concentration forces and business dispersion forces are stronger the higher are trade costs, and weaken as trade costs decline.[14] Under the CP model construct, business dispersion forces weaken more quickly than business concentration forces as trade costs decline, so that at some "break point" level of trade costs, business concentration forces dominate and any migration shock will trigger a self-reinforcing cycle of migration predicted within the model to result in all industrial workers and industry (capital) locating in one region. While clearly representing extreme results, the model nevertheless helps broaden our understanding of possible policy effects on investment.

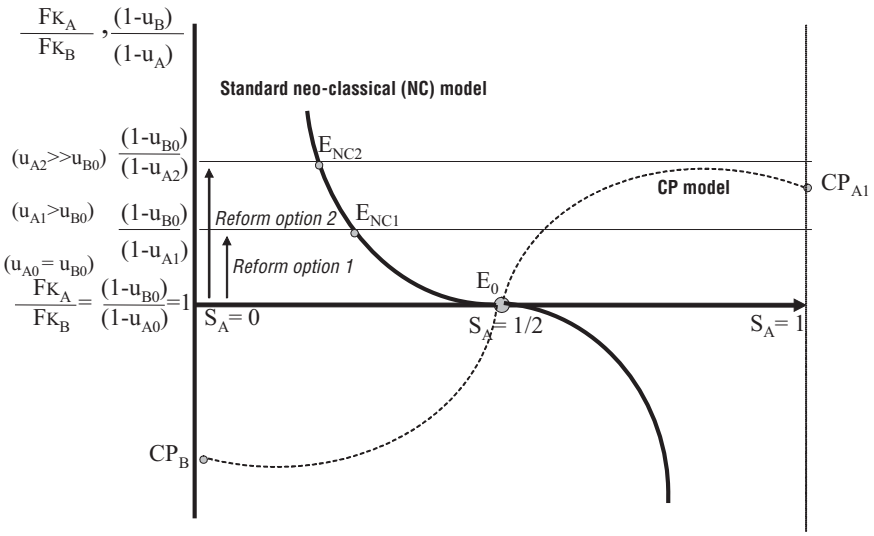
b) Tax implications of the CP model

With properties fundamentally different from those of the neo-classical investment model, it is not surprising that the tax policy implications differ fundamentally as well. Two central properties of the CP model dominated by concentration effects are inertia and non-linearity. Inertia, or quasi-fixity of capital – implying some "stickiness" of capital in response to a policy shock at least along some range – is caused by the tendency (noted above) for geographic concentration of business activity to alter economic conditions in ways that foster further concentration of business activity. With businesses profiting from concentration economies, inertia of capital means a certain fixity of economic profits that host countries may aim to tax. Non-linear effects are also predicted, where changes in the returns on capital may under certain conditions have minimal impact on the location of capital, while subsequent further changes may have dramatic effects.

Figure 1.1 illustrates predicted investment effects of asymmetric corporate taxation in countries A and B under the neo-classical investment (NC) model, and under the core periphery (CP) model.[15] The analysis assumes a fixed amount of capital (savings) allocated between country A and country B, initially with the same corporate tax rate. The horizontal axis (the bold bottom horizontal line) measures country A's share of capital investment,

Figure 1.1. **Predicted FDI response to asymmetric taxation**

With and without agglomeration forces



denoted S_A, ranging from zero (where the horizontal axis meets the vertical axis) to 1 on the far right-hand side ($S_A = 1$).

The vertical axis measures the ratio of the pre-tax return on capital in country A, relative to the pre-tax return on capital in country B, denoted by F_{KA}/F_{KB}. At the point where the horizontal axis meets the vertical axis, $F_{KA}/F_{KB} = 1$ or equivalently $F_{KA} = F_{KB}$. The vertical axis also measures the relative tax term $(1 – u_B)/(1 – u_A)$. Where the horizontal axis meets the vertical axis, $(1 – u_B)/(1 – u_A) = 1$ corresponding to $u_B = u_A$.

Assume initially that counties A and B have the same corporate tax rates ($u_{A0} = u_{B0}$). Thus the relative tax term initially is $(1 – u_{B0})/(1 – u_{A0}) = 1$. Under the neo-classical investment model, capital would be allocated across countries such that after-tax returns are equalised. With symmetric CIT rates, pre-tax rates of return would be the same. Furthermore, with identical production functions, capital would be allocated equally between country A and country B. The equilibrium can be expressed as $F_{KA0}(1 – u_{A0}) = F_{KB0}(1 – u_{B0})$ where F_{KA0} and F_{KB0} denote pre-tax returns on capital in A and B respectively. This symmetric equilibrium occurs at E_0 with $S_A = 1/2$.[16]

Now consider predicted effects of tax policy option 1 where country A raises its CIT rate to u_{A1} (with $u_{A1} > u_{B0}$). This reform increases the relative tax term to $(1 – u_{B0})/(1 – u_{A1})$ which exceeds one. In the neo-classical model, with identical pre-tax rates of return at the initial capital allocation, the after-tax return in country A would be lower than in country B post-reform. Capital would be predicted to migrate from country A to country B where net returns on capital are temporarily higher. With declining marginal productivity of capital, the capital shift would cause the pre-tax return on capital employed in country A (F_{KA}) to rise, and the pre-tax return in country B (F_{KB}) to fall, until post-tax returns are once again equalised. In Figure 1.1, the adjustment would be along the solid dark line from E_0 to the post-reform equilibrium E_{NC1} where $F_{KA1}(1 – u_{A1}) = F_{KB1}(1 – u_{B0})$. The dynamics of the neo-classical model are stable in the sense that as capital is relocated from country A to country B following the tax reform shock, returns on capital adjust so as to counter the

initial effect (that is to say, the return on capital in country B falls, while the return on capital in country A rises).

In contrast, in the CP model, the effect of asymmetric taxation may be markedly different. In particular, asymmetric taxation may have no effect on capital location; or the effects may be dramatic, depending on the degree of asymmetry and the relative strength of business concentration forces. As noted above, a key feature of the CP model is the tendency for business concentration forces to create conditions that strengthen these forces and deepen business concentration. Thus in the CP model, with initially identical CIT rates in both countries, a pre-reform equilibrium could be one where all capital is allocated to country A (marked CP_{A1}), or alternatively country B (marked CP_B).[17] For illustrative purposes consider an initial CP equilibrium with all capital invested in country A, at CP_{A1}.

A first observation is that the relationship between the relative return ratio (F_{KA}/F_{KB}) and the dispersion of capital measured by S_A, plotted by the dashed-line in Figure 1.1, is reversed compared to the neo-classical investment case. In particular, the slope is positive, indicating that the benefits of business concentration in one region relative to the other as measured by the relative return ratio tend to increase as the degree of concentration increases [in contrast, concentration of capital in the neoclassical investment model implies the opposite – in particular, a reduced rate of return on capital for increased capital stocks, tending to counter concentration (encourage dispersion)].

Now reconsider tax policy reform option 1 where country A raises its CIT rate above that in country B such that the ratio $(1 - u_B)/(1 - u_A)$ rises above one. As shown in Figure 1.1, since the real return ratio (F_{KA0}/F_{KB0}) at CP_{A1} exceeds the tax wedge ratio $(1 - u_{B0})/(1 - u_{A1})$ – or in other words, since the net return on capital in country A continues to exceed that in B [$F_{KA0}(1 - u_{A1}) > F_{KB0}(1 - u_{B0})$], the tax shock in this case has no impact on the location of capital. The point is that the existence of business concentration profits in country A, accompanying the concentration of capital in country A, mean that country A is able to impose relatively high tax on those profits without encouraging capital relocation.

However, the situation could be markedly different if instead country A were to increase its corporate tax rate to ($u_{A2} >> u_{B0}$), as at this tax rate, the business concentration economies of locating in country A are more than outweighed by the higher tax burden, causing capital to relocate from country A to country B. Depending on assumptions over the relative strength of business concentration forces and business dispersion forces (depending in turn on trade costs), the capital relocation could be significant (the limiting case being where all capital relocates to country B, with equilibrium CP_B) with the reduced tax base in country A meaning reduced tax revenues in country A, despite the increased CIT rate (a Laffer curve result).

A key policy conclusion to be drawn from the model is that business concentration economies imply that the impact of policy will be non-linear (as in the preceding example, where the first tax reform, in contrast to the second, resulted in no adjustment to the capital stock) – that is, changes in returns on capital may under certain conditions have minimal impact on the location of industry, while subsequent further changes may have dramatic effects. One implication is that the response of capital to past reforms may offer a poor guide to gauging the impact of similar reforms. Moreover, assuming a linear between FDI and tax may be problematic (*e.g.* misspecification of empirical models).

Notes

1. In general, major policy reform affecting the tax treatment of FDI would introduce not only investment but also general equilibrium (GE) effects, with the modelling of GE effects based in part on insights obtained from partial equilibrium analysis. The discussion in this report restricts itself to partial equilibrium analysis of tax effects on FDI.

2. See for example *A Survey on the Role of Taxation in Foreign Direct Investment in South East Europe*, (OECD, 2003), by Emerging Market Economies (EME) in co-operation with the OECD Centre for Tax Policy and Administration.

3. See "Using Micro-data to Assess Average Tax Rates", *OECD Tax Policy Studies No. 8*, OECD, 2003.

4. Units of capital are assumed chosen such that the price of a unit of physical capital is one currency unit. One unit of capital can then refer equivalently to one unit of physical capital or one unit of currency.

5. With K^* units of physical capital purchased by the subsidiary at the beginning of the initial period $s = 1$, in each period ($s \geq 1$) the subsidiary receives a capital cost allowance on that investment that provides tax savings valued in period s at $u^B\alpha^B(1-\alpha^B)^{s-1}(1-\xi^B)K^*$ units. This amount is paid to the supplier of physical capital, who receives only $(1-A^B)K^*$ on the sale in the initial period. The present value to the subsidiary (and the capital supplier) of this stream of payments is A^BK^*. The present value to the parent of this stream of payments is $A^BK^*(1-w^d)$.

6. The cross-border investment equilibrium condition (1.6) is a simplified version that ignores inflation and changes in exchange rates between host and home countries, and assumes that the cost of capital is not a function of personal taxation of investment returns. For a review of formulae incorporating these elements, see *Taxing Profits in a Global Economy* (OECD, 1991).

7. The modelling approach differs from that of Devereux and Griffith (1999, 2002), who derive the AETR by modelling a temporary (single-period) perturbation to the capital stock. Modelling returns and taxation over the life of newly acquired capital, rather than for a single period, adds little complexity (where capital adjusts immediately to the optimal capital stock level) and may be helpful in the interpretation of AETRs, and in comparing the use of AETRs to assess tax on total (including infra-marginal) returns relevant to investment location decisions, with the use of METRs to assess the implications of taxation on the optimal scale of investment, for a given location.

8. The framework is developed in Annex A for the cross-border investment case. Derivation of the domestic investment AETR follows directly. For a discussion of the implications of introducing personal taxes and inflation, see Devereux (2002).

9. The arbitrarily fixed pre-tax rate of return is the rate net of depreciation $\{p = [F(K^*) - \delta K^*]/F(K^*)\}$. Different AETRs may be computed for different pre-tax rates of return (*e.g.* 20 per cent, 10 per cent). The higher the pre-tax profit rate, the more pronounced is the effect of the applicable statutory corporate tax rate on the AETR value.

10. In the absence of repatriation tax ($w^d = 0$), the AETR reduces to $[u^B(p+\delta) - A^B(\rho+\delta)]/p$.

11. See Annex A for a discussion of the present value of tax (PVT) terms.

12. Papers elaborating the new economic geography literature include Fujita *et al.* (1999), Neary (2001), Borck and Pflüger (2006). For reviews of the literature, see Baldwin *et al.* (2003), Ottaviano and Thisse (2004).

13. Labour migration to country A from country B to take up employment or enjoy a lower cost of living in A initiates further migration to A by encouraging additional investment (as additional labour in A means increased purchasing power and thus increased market demand in A, stimulating investment in A, implying increased employment opportunity and further reductions in the cost of living in A (the opposite cycle would be observed in country B).

14. When trade costs are very high, market-access effects and cost-of-living effects are very strong, as are market-crowding effects. As regards the latter, the number of locally-based firms has a large impact on the level of competition for customers and thus on wages. When trade costs are negligible (*e.g.* with free trade), market-access and cost-of-living effects are weak, as is the market-crowding effect (competition is not localised).

15. The CP model depicted in Figure 1.1 considers the case where business concentration forces dominate business dispersion forces.

16. Any other allocation would cause capital stocks to adjust until symmetry is achieved. For example, if $S_A < (1/2)$, then under the assumption of declining marginal productivity of capital, $F_{KA0} > F_{KB0}$ and therefore $F_{KA0}(1-u_{A0}) > F_{KB0}(1-u_{B0})$. With mobile capital attracted to the location offering the

highest after-tax return, this situation would encourage capital to migrate from A to B until $F_{KA0}(1 - u_{A0}) = F_{KB0}(1 - u_{B0})$. With identical tax rates and production functions, this implies $K_{A0} = K_{B0}$ [or equivalently $S_A = S_B = (1/2)$].

17. If investment is initially allocated equally between A and B, a permanent or temporary shock that causes one unit of capital to migrate to country A (or B) would initiate the creation of agglomeration forces that would lead to all capital being allocated to country A (or B).

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Chapter 2

Tax Effects on FDI – Empirical Evidence

A. Introduction

At the centre of policy debate over the appropriate setting of a host country's corporate tax rate on business profit is the difficult question of the sensitivity of FDI to the effective tax rate. Addressing this question is critical to an assessment of how best to address competitiveness pressures and avoid capital relocation, while also central to cost/benefit assessment of tax relief, and to estimates of the revenue response to a corporate tax policy shock.

As reviewed in Chapter 1 (Section 3) of this publication, frameworks based on the conventional neo-classical theory of investment predict decreased (increased) investment following an increase (reduction) in the host country corporate tax burden (if not offset by lower home country tax). With open international capital markets tending to equate after-corporate tax rates of return across countries (net of host country corporate tax) at a "world" rate, an increase in the host country CIT rate in one country, by decreasing the net rate of return on capital employed there, would lead to a reduction in the host country capital stock, in turn driving up the pre-tax rate of return until equilibrium is restored.

However, the prediction that a relatively high (low) tax rate on corporate profits will necessarily discourage (encourage) FDI is challenged by the new economic geography literature, reviewed in Chapter 1 (Section 4), which suggests that this may not be the case. This literature emphasises the importance of accounting for location-dependent profits from business concentration economies (increasing returns to scale at the industry level, linked to low trade costs with close proximity to markets, tending to reinforce firm clusters). These considerations suggest that location-dependent profits can be taxed up to some point without encouraging significant capital relocation. Governments can tax the capital located in these agglomerations without inducing capital discouraging investment, because the tax largely applies to the location-specific rents, rather than to the margin of the investment.[1]

The central policy question of the sensitivity of FDI to taxation is thus an uncertain empirical issue, to be addressed if possible taking proper account of the influence of market size, trade (*e.g.* transportation) costs, and other factors affecting net profitability and thought to bear on investment location decisions. A recent contribution to this work is provided in Hajkova *et al.* (2006), which assesses the importance of taxation on FDI, extending previous panel data analyses mainly by controlling for a large set of additional policy and non-policy factors that may affect the attractiveness of a country for foreign investors. Consistent with previous findings, the estimation results suggest that corporate taxation has a non-negligible impact on FDI location choices. However, the results also suggest that analysis focusing only on taxation in home and host countries and omitting other characteristics of business environment (such as border policies and labour and product market settings) may lead to a serious overestimation of tax elasticities with the risk of drawing misguided implications for policy.

Given the importance to policy analysis and decision-making of information on the causal link between host country taxation and FDI, the OECD commissioned Professors Ruud

de Mooij and Sjef Ederveen to carry out a META analysis that would aim to explain the variation in empirical estimates in the literature on the elasticity of FDI with respect to company tax levels. This section reports the main findings of the META analysis reported in de Mooij and Ederveeen (2005), while providing some additional coverage on the studies investigated in their work. The review considers main problems encountered in empirical work (data, identification), various empirical approaches used to study tax effects on FDI, the range of elasticity estimates generated by different approaches, and other main findings on certain factors found (or not found) to systematically affect elasticity estimates.

As reviewed below, the literature review finds for the most part a negative relationship between taxation and FDI, but with a wide range of estimates of the tax elasticity of FDI, with evidence that various factors play an influential role in determining the strength of tax effects. The absence of a single consensus elasticity estimate may not be surprising, however, given the heterogeneity in the data employed. In other words, one might expect *a priori* that the tax elasticity of FDI would vary and depend on the host country conditions and policies (including the level of corporate tax rates), types of industries/business activities covered, the time period examined, and other factors. Indeed, the literature review summarised below, which finds as noted considerable evidence of a negative relationship between FDI and host country taxation, suggests that the influence of tax on FDI is complex and depends on a number of difficult to measure factors, calling on additional empirical work to better understand the role of taxation amongst key factors influencing FDI location decisions.

B. Main problems encountered in empirical work (data, identification)

In measuring empirically the sensitivity of FDI to taxation, a number of problems are encountered in relation to capital data, tax data, and identification, with some of the main difficulties sketched out below. In principle, the FDI capital data that policy makers typically wish to explain is data on the real (physical) capital stock (or investment flow) in the host country, beneficially owned by non-resident direct shareholders, while the tax data in principle aims to measure the actual tax burden on investment in different locations.[2] However, in practice the capital and tax data used by researchers are imperfect measures, given difficulties in obtaining information needed to construct ideal measures. Problems of identification are encountered as well, given difficulties in adequately identifying, measuring and incorporating key explanatory variables in addition to tax.

1. FDI capital and tax data problems

In measuring FDI, most studies rely on FDI financial flows (or corresponding FDI stocks) as opposed to measures of real (physical) capital. While some studies (mainly for the US) explain purchases of (real) plant, property and equipment (PP&E), these tend to be the exception rather than the norm, with most researches facing limited access to such series. A third modelling approach is to explain the number of counts on location choice (*i.e.* number of FDI projects rather than size).

FDI financial flow data for a given host country A as reported for example in *International Direct Investment Statistics Yearbook* (OECD), includes not only amounts used to purchase real property in country A, but also amounts reinvested abroad, for example in equity in country B. This occurrence would tend to overstate FDI in real capital in country B by investors in country A. It also includes FDI in the form of mergers and acquisitions (M&As) representing a change in ownership (from domestic to non-resident direct

investors) as opposed to an expansion of the productive capital stock. FDI financial flow data are also imperfect measures in that they do not account for the portion of new capital invested by non-resident direct shareholders that is financed by local debt or debt borrowed in third countries (the FDI measures include retained earnings, new equity transfers plus debt capital loaned by the foreign direct investor).

The interpretation of FDI financial data and elasticity estimates obtained from the use of such data is made more difficult by non-uniform practices in the reporting of FDI flows. For example, where a direct investor resident in country A invests in operations of a subsidiary in country B through country C (through a "special purpose (conduit) vehicle" in C), the FDI flow may be recorded as a direct investment from country A into country B in cases where the national accountant is aware of the conduit financing structure. This practice makes it difficult for empirical work examining the influence of tax on investment in country B by investors in country A. Country A tax considerations may be different in an intermediated as opposed to direct investment structure (*e.g.* possible application of controlled foreign company (CFC) rules); country C tax may factor in; and tax rates applied in host country B (*e.g.* non-resident withholding tax) on profit repatriations to country C may differ from tax rates applied on profit repatriations paid directly from country B to A.

With respect to the tax data, all studies rely on less than perfect tax burden measures. Some studies rely on statutory corporate income tax rates. To the extent that foreign direct investors look beyond the "headline" statutory tax rate in formulating FDI plans and consider provisions influencing the tax base, then some form of effective corporate tax rate would be called for. While most studies rely on an effective tax rate measure, a number of variants are used. Some studies utilise a forward-looking average effective tax rate (AETR) or marginal effective tax rate (METR), based on the neoclassical investment framework, while others rely on backward-looking rates computed at the aggregate, disaggregate or micro-level, relating corporate tax paid to some measure of corporate profit.

As reviewed in OECD (2000), forward-looking and backward-looking tax burden measures have their own particular advantages and disadvantages. In addressing the question of the most appropriate tax rate measure for inclusion in regressions, Swenson (1994) argues that average tax rates based on data are more informative than effective tax rates based on tax codes, as the latter do not pick up all elements of the tax code, including non-linearities, tax planning activities, complex tax provisions and discretionary administrative practices of tax authorities. In contrast to this view, Devereux and Griffith (1998a) maintain that forward-looking parameter-based effective tax rates are superior to *ex post* average tax rates because using the latter may create endogeneity problems. In particular, the tax measure may well reflect the underlying profitability of the location. Furthermore, Devereux and Griffith argue that average effective tax rates are more appropriate than marginal effective tax rates as real investment decisions are usually infra-marginal (i.*e.* generate infra-marginal profits). (Meta regressions of de Mooij and Ederveen (2005) analyse whether the choice of tax data indeed matters systematically for elasticity values.)

Some would stress that forward-looking rates are preferred measures, being based on current tax rates, in contrast to backward-looking rates influenced by prior year tax provisions and loss carry-forward claims. Forward-looking rates however capture only certain main tax provisions and generally rely on simplifying assumptions regarding financing and profit repatriation (*e.g.* ignore triangular structures, hybrid instruments, thin

capitalisation of highly-taxed subs, non-arm's length transfer prices and tax relief through administrative discretion). By relying on actual tax paid, backward-looking measures capture the net effect of numerous tax provisions, administrative practices, and tax-planning against the host country tax base. But difficulties are encountered in ensuring consistency between tax paid in the numerator (reduced by loss carry-forwards, and increased by domestic tax on foreign profit) and the profit measure appearing in the denominator. In principle, one would want an adjusted measure of the true amount of profit derived by direct investors (or the MNE group to which the direct investor belongs) on capital employed in the host country (*e.g.* gross of profit shifting from transfer pricing, and gross of interest on inter-affiliate loans where such interest is received tax free in a tax haven financing sub), but lack of data generally prohibits these type of adjustments.

2. Identification problems

Another type of problem faced in the empirical literature on tax and FDI involves identification. A basic regression equation explaining (aggregate) FDI as a linear function of an effective tax rate may give misleading or difficult to interpret results for a number of reasons.

First, aggregate FDI data will reflect numerous investment projects involving decisions over a number of considerations and margins [*e.g.* relating to ownership, location, internalisation considerations stressed in the OLI framework reviewed in Chapter 1 (Section 1)] where tax may factor in but in different ways. This renders it difficult to determine the impact of taxes on the international allocation of capital. Moreover, even when working with micro (firm-level) data, an FDI decision may compare net profits under several options (*e.g.* FDI *versus* production and export from the home country, or from subsidiaries operating in other countries), implying a more complicated set of decision margins that assumed.

Second, the impact of host country taxation on FDI may depend on the tax regime in the home country where the parent company resides. In particular, if the parent resides in a country that operates a dividend exemption system to avoid double taxation, host country taxation may be more likely to impact location decisions, compared to the situation where the home country operates a dividend credit system (taxing foreign dividends while providing a foreign tax credit to offset double taxation), at least in the so-called insufficient foreign tax credit case. Not controlling for this will yield elasticity estimates that are difficult to interpret.

Third, biased elasticity estimates will result where regression equations omit important non-tax variables correlated with the tax variable (*e.g.* transportation costs, influenced by the network of roads, airports, seaports and possibly other infra-structure financed by government). Where these variables are omitted, so that their effects are captured by the error term, the latter will not be independent, but correlated with the tax explanatory variable. Where this occurs and regression analysis suffers from omitted variable bias, difficult interpretation problems arise. Also, as originally pointed out by Newlon (1987), if effective tax rate measures are influenced by FDI flows and therefore cannot be taken as exogenous, biased elasticity estimates may result.[3]

Lastly, as discussed in the context of the new economic geography CP model, the relationship between an effective tax burden and FDI may be non-linear. As most empirical specifications assume a linear relationship, non-trivial identification problems may be present.

C. Summary of empirical studies and elasticity results

The existing empirical literature examining tax effects on FDI is considerably diverse and includes numerous studies. The review of this literature carried out by de Mooij and Ederveen provides a synthesis of main research results by transforming elasticities from a large sample of studies into uniformly defined elasticities and semi-elasticities, to compare findings across studies. The study aims to exploit the heterogeneity of approaches, using estimates from 31 empirical studies to develop a meta sample of 427 tax elasticities. These elasticities are regressed on variables relating to the underlying characteristics of the empirical studies (tax data, foreign capital data, and various control variables) to explore the systematic impact of the study characteristics on the size of the reported elasticities. Their work analyses for example whether controlling for the home country CIT rate or wage costs significantly matters for the reported elasticities.

The examination of elasticity results takes up the approach of Devereux and Griffith (2002) to divide the empirical studies on taxation and foreign investment in four main categories, distinguished with respect to the type of capital data used.

1. Time series data on FDI. This category contains early studies based mostly on US data, starting with the article of Hartman (1984).
2. Cross-section data on the allocation of assets by US multinationals. Studies by Grubert and Mutti (1991) and Hines and Rice (1994) are examples of this category.
3. Panel data on FDI. Starting with Devereux and Freeman (1995), a large number of recent studies have used this methodology.
4. Discrete choice models where count data on location choice is regressed on tax rate variables. Studies by Bartik (1985) and Papke (1991) were among the first using this methodology.

For comparative purposes, the findings of each study in the review are transformed into uniformly defined ordinary elasticities and semi-elasticities. The discussion below concentrates on semi-elasticity (so-called "tax rate elasticity") results, measuring the percentage change in FDI in response to a 1% point change in the tax rate (*e.g.* a decline from 30% to 29%), defined as $\partial \ln(FDI)/\partial t$. The ordinary elasticity results measures the percentage change in FDI in response to a 1% change in the tax, *e.g.* a decline from 30% to 29.7%. It is defined as $\partial \ln(FDI)/\partial \ln(t)$. In addition to reporting semi-elasticities, the authors also report whether these statistics are found to be significant at the 5% confidence level.

1. Time series data studies

Empirical time-series studies of the effect of taxation on FDI were pioneered by Hartman (1984), using data compiled by the US Bureau of Economic Analysis (BEA). Virtually all of the subsequent studies over the remaining decade focused on replicating and refining his approach using updates and improvements to the BEA data. Hartman (1984) estimates the following equation for FDI over the period 1965-79:

$$\ln(FDI_t) = a_0 + a_1 \ln(r(1-u)_t) + a_2 \ln(r^0(1-u)_t) + a_3 \ln((1-\tau_t)/(1-u_t)) + \varepsilon_t \quad (2.1)$$

where r(1 – u) measures the after-corporate tax rate of return on inbound FDI (determined as retentions plus distributions, interest and branch profits, net of US corporate and property tax), divided by the end of prior year FDI stock; $r^o(1 - u)$ measures the overall after-corporate tax rate of return on US capital stock (domestic plus foreign-owned); u denotes

the average US corporate tax rate (assumed to be the same for foreign and domestic firms), and τ denotes the average US corporate and personal tax rate on income from capital. Variables enter the equation in natural logs (ln) to facilitate elasticity computations.

The equation is estimated separately for FDI financed by retained earnings and FDI financed by new transfers of funds (new share issues plus loans from parents.) The equation simply relates FDI flows to two after-tax rate of return variables plus a relative tax term. The after-tax rate of return variables (backward-looking, average tax rates) are meant to proxy prospective rates of return on new FDI, with the second term introduced to help explain FDI in the form of acquisitions of existing assets, as opposed to expansions to existing foreign-owned operations or the establishment of a new US subsidiary or branch. The third (relative tax) term is introduced to allow for the possibility that tax changes that apply to US investors alone may affect FDI through their impact on asset prices *(e.g.,* an increase in the effective tax rate on US investors (τ) alone that reduces equity shares, with the tax rate on foreign investors unchanged, would be expected to increase FDI.)

Hartman's results find that the coefficients in the estimating equation have the expected signs ($a_1 > 0$, $a_2 > 0$, $a_3 < 0$) and are statistically significant, though the fit (explanatory power) is much better when the equation is used to explain investment financed by retained earnings, as opposed to new capital. This result is consistent with the "tax capitalisation" view that home country taxation influences (and thus should be taken into account when estimating) FDI financed by new equity, but not FDI financed by retentions.

Hartman's (1984) paper sparked the interest of a number of other researchers. Boskin and Gale (1987) re-estimate Hartman's model over a longer time-frame (1956-84) using revised average tax rate and after-tax rate of return estimates provided by Feldstein and Jun (1987). They also test alternative functional forms to the investment equation and find that estimated elasticities (sensitivity) of FDI to the after-tax rate of return variables are roughly similar, albeit slightly lower than what Hartman found.

Newlon (1987) discovers that the variable measuring the after-tax rate of return on FDI used in the preceding works by Hartman (1984) and Boskin and Gale (1987) had been miscalculated from the original US Bureau of Economic Analysis data. Using a corrected after-tax rate of return series, Newlon finds that the estimated coefficients are unstable and sensitive to the time period considered. When considering years 1965-73, he finds that the investment equation explaining transfers of funds fits better than the one explaining retained earnings, reversing the earlier findings. When the interval is changed to 1956-84, the equation explaining transfers of funds performs poorly, and no estimated coefficient if found to be significant.

Neither Hartman's (1984) work, nor the refinements to it by Boskin and Gale (1987), Newlon (1987) and later Young (1988) incorporate US withholding tax rates or foreign home country taxes. The exclusion of repatriation tax considerations from the analysis is potentially problematic, particularly in the case of FDI financed by new transfers from foreign parents. Slemrod (1990) addresses this concern by disaggregating FDI data over the sample period 1960-87 and calculating two separate US inbound investment series – one for investors from Canada, France, the Netherlands and (the former) West Germany, all treated as exemption countries, and another for Italy, Japan, and the UK which tax foreign (US) source income under a foreign tax credit system. His primary goal is to go beyond earlier investigations to address the question of home country tax influences.

First, however, Slemrod like his predecessors tests US host country tax effects. Unlike earlier studies, rather than using US average rate of return variables, Slemrod uses a measure of the marginal corporate income tax rate on fixed investment in the United States calculated by Auerbach and Hines (1988), introducing into the investment equation both current period and lagged values (under a "time to build" argument.)

In a break from earlier studies, Slemrod introduces as explanatory variables *i)* the unemployment rate in the US to capture business cycle effects on FDI; *ii)* the ratio of the aggregate GDP of the seven investing (home) countries to US (host country) GDP to capture the effects of changes in the relative size of the US economy; and *iii)* the real exchange rate of the US dollar against a GDP-weighted average of the investing countries currencies to capture the effect of changes in relative production costs in the US Slemrod adds a dummy variable equal to the number of years elapsed between data observation years and the benchmark survey year to account for the possible drift in the extrapolated data from true FDI values.[4]

Slemrod takes the "trapped equity" view that the repatriations tax rate on distributed earnings, if stable, should not influence FDI financed by retained earnings. Where however a subsidiary's desired investment exceeds it retained earnings and new share issues (parent company transfers of funds) are the marginal source of funds, the tax due on repatriation of earnings would be expected to matter. The neutrality result for a "mature" firm – facing a use-of-funds trade-off between retaining *versus* distributing earnings – arises because the repatriation tax reduces the present value of the returns on internal investment by the same amount that it reduces the opportunity cost of distributing the funds and investing them in an alternative investment.

Slemrod's empirical tests of host country taxation of FDI into the US offer mixed results. The regression coefficients show, as expected, a negative relationship between FDI financed by new fund transfers and the US marginal effective tax rate (METR.) The relevant (summed) tax coefficients are negative for all seven countries and significantly different from zero in four cases (not however for the FDI equation explaining investment from Canada.) However, the regressions for inbound FDI financed by retained earnings show no clear host tax effect emerging. Furthermore, the regressions generally do not find more significant host country tax effects for investors from exemption countries, which is somewhat surprising given that host country tax effects can be fully offset under certain conditions by home countries that operate foreign tax credit systems.

As noted above, Slemrod's main objective is to test for home country tax effects. In his regressions he introduces four new explanatory variables in each of the six FDI equations (for all capital exporting countries, except the Netherlands where the requisite data was not available) – a current period and two lagged values of a home country marginal effective tax rate (METR) incorporating corporate and personal taxation, and a tax difference term measuring the gap between the host US and home country statutory corporate income tax rates. Several propositions are tested.

First, Slemrod argues that, in theory, FDI from exemption countries should be positively related to home country taxation under the assumption that home country investment possibilities represent the opportunity cost of investing in the US. However, he finds no empirical support for this proposition, as in no exemption country is the home country's tax rate found to positively related to FDI.

In his commentary to Slemrod's (1990) article, Hartman argues that there is no clear reason to expect this positive relationship. If parent company internal cash flow is an important source of finance for US subsidiary investment, then high home country taxation, by reducing after-tax cash flow, may reduce US investment. Moreover, it is not clear in the context of US investment by a parent resident in a given (exemption or foreign tax credit) foreign country *(e.g.,* Canada) that the relevant comparison will be between the US tax rate and the foreign (home country) marginal tax rate. The relevant comparison for a Canadian parent considering expanding capacity in its US or UK affiliate might be between the US *versus* UK tax rate, for example.

Second, Slemrod tests whether FDI financed by new fund transfers from parents in foreign tax credit countries has a less positive or negative relation to home country taxation. Under the Hartman model, new fund transfers should be discouraged by higher repatriation tax rates. Thus, while higher home country taxation on domestic investment would tend to encourage FDI, higher home country tax on foreign source income of parents in a deficit of foreign tax credits position should operate to reduce and perhaps reverse this substitution effect. The results do not show that the effect of home country taxation is less positive (more negative) for foreign tax credit countries compared to exemption countries.

However, the results do tend to confirm the proposition that FDI financed by retentions should be invariant or positively related (substitution effect) to home country taxation. Also, the transfer of funds FDI equation for West Germany and Italy shows a significant negative coefficient on the statutory tax rate difference term, supporting the proposition that a relatively higher US tax rate should encourage higher borrowing in, and thus reduced transfers to, the host country. Slemrod suggests that the failure of the empirical work to support expected differences in FDI responses between exemption and foreign tax credit countries may be explained by data problems, noting difficulties in the measurement of METR statistics. Data problems as well as a mis-specified investment model may also explain the finding of a negative, statistically significant coefficient on the home country tax rate that disappears when the home country tax rate is introduced in the case of West Germany and Japan. Slemrod notes the possibility that tax-planning to avoid home country taxation may go far in explaining the lack of importance of home country tax effects, suggesting that host country tax effects dominate FDI decisions.

Table 2.1 summarises findings from the above-noted studies relying on time series data by Hartman (1984), Newlon (1987), Boskin and Gale (1987), Young (1988), and Slemrod

Table 2.1. **Summary of results from studies using time series data**

	Semi-elasticity			Ordinary elasticity			No. obs.	No. sign
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		
Hartman, 1984	–2.60	–3.46	2.30	–1.24	–1.65	1.10	6	3
Newlon, 1987	–0.42	–0.42	5.47	–0.20	–0.20	2.60	2	1
Boskin and Gale, 1987	–5.80	–2.68	7.56	–2.76	–1.28	3.60	12	4
Young, 1988	–1.05	–2.07	4.17	–0.50	–0.98	1.99	12	8
Murthy, 1989	–0.62	–0.71	1.00	–0.30	–0.34	0.48	4	2
Slemrod, 1990	–5.47	–3.51	14.36	–2.58	–1.52	6.84	58	24
Cassou, 1997	–7.46	–2.76	13.46	–3.55	–1.32	6.41	17	4
All	–4.91	–2.88	12.06	–2.33	–1.32	5.74	111	46

Source: De Mooij and Ederveen (2005).

(1990), as well as studies by Murthy (1989), and Cassou (1997). The mean value of the semi-elasticity is –4.91, with a median value of –2.88 indicating a skewness in the distribution to the left (negative values) owing to some extreme negative values. The standard deviation is large, with the majority of semi-elasticities in the range between –10 and +4. Less than half of the 111 reported elasticities is significantly different from zero (at the 5% confidence level). It should be pointed out that the procedure adopted by de Mooij and Ederveen incorporates all reported elasticities of studies included in the study. As a result, the study by Slemrod, which reports 58 elasticities, has by far the largest impact on the sample mean (the study by Newlon gives only 2 elasticities).

2. Cross section data studies

As emphasised by Auerbach and Hassett (1993), serious limitations confront the interpretation of results from time series studies, which for the most attempt to explain aggregate financial FDI flows. As noted, these flows include a number of different components (mergers and acquisitions, plant expansions as well as green-field investment) which are subject to a distinct set of tax considerations and may respond very differently to tax rates, implying that elasticity results are strongly influenced by the composition of the FDI aggregate.[5]

Beginning in the early 1990s, a number of studies exploited cross-section data in analysing US direct investment abroad. Grubert and Mutti (1991) were the firsts to examine tax effects on outbound direct investment expenditure in plant, property and equipment (PP&E), data more closely identified with "real" investment.[6] In particular, they explore the responsiveness to foreign (host) country average tax rates of US outbound investment in manufacturing in 33 countries, and find a significant semi-elasticity of FDI of around –1.7.

Later Hines and Rice (1994), using data on all majority-owned non-bank affiliates of non-bank US parent companies and for more countries including a large number of tax havens (73 host countries in total) find a higher semi-elasticity in the range of –3.3 and –6.6. In a subsequent study, Grubert and Mutti (2000) use firm-level data drawn from over 500 US tax returns to construct an aggregated data set to explain expenditures in PP&E by US MNEs in 60 locations. Using different specifications and different concepts of the average tax rate, the authors report significantly negative elasticities (see Table 2.2). Altshuler *et al.* (2001) exploit similar data, and using a similar specification as Grubert and Mutti (2000), find an elasticity for 1992 that exceeds the value for 1984, indicating that manufacturing FDI has become more responsive to taxes during the 1980s.

Table 2.2. **Summary of results from cross-section studies**

	Semi-elasticity			Ordinary elasticity			No. obs.	No. sign
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		
Grubert and Mutti, 1991	–1.71	–1.59	1.18	–0.69	–0.64	0.48	6	3
Hines and Rice, 1994	–10.71	–4.96	14.14	–4.30	–1.99	5.67	4	2
Hines, 1996	–12.37	–11.31	7.61	–0.77	–0.71	0.47	34	17
Grubert and Mutti, 2000	–3.95	–4.23	1.26	–0.96	–1.02	0.31	14	13
Altshuler *et al.*, 2001	–7.71	–2.58	0.77	–0.86	–0.82	0.23	70	13
All	–7.47	–4.27	7.41	–1.00	–0.78	1.41	78	48

Source: De Mooij and Ederveen (2005).

Hines (1996) builds a dataset for 1987 measuring inbound investment from seven foreign home countries, in plant, property and equipment in 50 US states. His approach is to explore the impact of US state corporate income taxes on the allocation of FDI, and in particular, on the share of inbound FDI by an investing country in each of the 50 US states. The modelling approach assumes that foreign countries with a dividend credit system will not respond to US tax rates under the (excess limitation) assumption that US tax will be offset by foreign tax credits in the home country. Hence, the estimated elasticity for countries with dividend exemption systems is derived conditional on a zero elasticity for investors subject to dividend taxation. The average semi-elasticity from this study is –12.37.

Table 2.2 summarises the results from these cross-sectional studies, where the mean value of the semi-elasticity is found to be –7.47, higher than the mean value of the time series studies. The authors explain that is result is driven by the inclusion of 34 elasticity results from the study by Hines (1996) where the estimated semi-elasticities are relatively large. The lower median semi-elasticity value of –4.27 for the cross-section studies suggests a skewed distribution due to some extreme negative values. More than half of the reported elasticity values (48 out of the 78) are found to be significantly different from zero.

3. Panel data studies

The next category of studies to report relies on panel data. Three studies included in the sample – by Swenson (1994), Billington (1999), and Broekman and van Vliet (2000) – use aggregate FDI data, while the other studies shown in Table 2.3 consider bilateral flows. In her work, Swenson (1994) emphasises the importance of general equilibrium effects. Using newly generated BEA data, she focuses on the effects of tax changes on pre-corporate tax rates of return. Her analysis draws on the work of Scholes and Wolfson (1990) which is critical of partial equilibrium approaches that assume fixed pre-tax returns. In practice, pre-tax rates of return and asset prices adjust to tax shocks which alter the relative attractiveness of various assets.

Table 2.3. **Summary results from panel data studies**

	Semi-elasticity			Ordinary elasticity			No. obs.	No. sign
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		
Swenson, 1994	1.26	2.72	4.25	0.36	0.76	1.00	10	36
Jun, 1994	–0.50	–1.26	3.17	–0.15	–0.35	1.08	10	1
Devereux and Freeman, 1995	–1.56	–1.55	0.12	–0.39	–0.39	0.03	4	1
Pain and Young, 1996	–1.51	–1.38	1.22	–0.75	–0.68	0.59	6	3
Shang-Jin Wei, 1997	–5.20	–5.00	0.64	–1.53	–1.47	0.19	5	5
Billington, 1999	–0.10	–0.10	0.01	–0.04	–0.04	0.01	2	2
Gorter and Parikh, 2000	–4.56	–4.64	4.25	–1.30	–1.33	1.22	15	10
Broekman and Vliet, 2000	–3.35	–3.51	0.77	–1.00	–1.05	0.23	3	3
Benassy-Quere *et al.*, 2001	–5.03	–5.01	3.03	–0.43	–0.42	0.24	4	3
Buttner, 2002	–1.52	–1.59	0.58	–0.44	–0.39	0.22	23	12
Benassy-Quere *et al.*, 2003	–5.37	–4.22	3.21	–1.59	–1.25	0.95	19	19
Desai *et al.*, 2004	–0.64	–0.64	0.02	–0.19	–0.19	0.01	2	2
Stoewhase, 2005	–5.26	–4.30	2.71	–1.53	–1.27	0.79	14	11
All	–2.94	–2.51	3.51	–0.84	–0.67	1.00	117	78

Source: De Mooij and Ederveen (2005).

For example, if the tax rate is increased on a particular class of capital asset (*e.g.,* capital employed in a given sector or capital held by a given investor group), the relative price of the asset would fall. The decline would reflect reduced after-tax returns on the stream of future pre-tax earnings at the existing level of the capital stock and along an adjustment path to a revised steady-state value. At the same time, demand for more lightly taxed assets would increase, causing their relative price to jump. A declining stock of highly-taxed capital would cause pre-tax rates of return on that capital to rise (assuming declining marginal productivity of capital), pushing its asset price up. And similarly, the relative price of the more lightly taxed assets would fall from their higher post-tax reform value as the stock of this class of capital expands. These adjustments restore the equality of post-corporate tax returns across assets. However, the equalised after-corporate tax rates of return do not translate into equalised after-shareholder tax rates of return given the heterogeneity of shareholder-level tax rates across investors.

This point is seized by Swenson (1994) who recognises that the provisions of the US Tax Reform Act of 1986 would have been differentially felt not only across industries, but also between domestic and foreign investors. The 1986 US tax reform increased the domestic corporate average tax rate, largely as a result of the introduction of more restrictive depreciation provisions. The increase in domestic corporate ATRs, which varied across industries, impacted directly on US investors. However, for foreign investors resident in countries with worldwide tax systems and relatively high corporate income tax rates (*i.e.,* rates in excess of the US rate), the increase in the US average corporate tax rate would be largely absorbed, offset by a higher foreign tax credit in the home country. In other words, increased US taxation of US source income earned by these foreign investors would result in a transfer of revenues from the foreign (home country) treasury to the US (host country) treasury, with the applicable tax rate for these investors being the home country tax rate both pre- and post-US tax reform.

Increased taxation for US domestic investors, *versus* largely unchanged taxation for a set of foreign investors, suggest possibly important general equilibrium effects. Scholes and Wolfson (1990) predict that one would observe increased inward FDI following the 1986 US tax reform. The increased foreign investor interest would follow lower asset prices (and thus higher rates of return) accompanying the switch by US investors out of assets subject post-reform to higher taxation.[7]

Swenson tests these predictions by observing the effects of US tax reform in 1981, 1982, 1984 and 1986, with the latter causing a reversal in reductions to corporate tax burdens, and with the effects applying differentially across a sample of 18 industries. FDI is measured using flow acquisitions and establishment data compiled by the BEA (Bureau of Economic Analysis) in response to criticism of its earlier FDI series that did not separate physical from financial asset purchases. Two sets of regression equations are estimated. The first pools together foreign investors subject to worldwide taxation and investors taxed under a territorial system, with a focus on exploiting cross-industry differences in US corporate ATRs over the period 1979-91. Investor pooling is required to test for cross-industry effects given that the industry data does not distinguish foreign investor classes. The following equation is estimated to test the proposition that FDI by industry (indexed by j) is positively related to the *domestic* average corporate income tax rate in that industry, denoted by ATR_j.

$$\ln(FDI_{jt}) = \alpha + \beta \ln(ATR_{jt}) + \gamma \ln(EX_t) + \sum \delta_t + \lambda_t T + \varepsilon_{jt} \quad (2.2)$$

The ATR is measured as US corporate income tax paid divided by US corporate (book) income.[8] Given that the proposed tax effects apply only to foreign investors resident in countries with worldwide tax systems, while the data pools foreign direct investors in both worldwide and exemption groups, the elasticity variable β would tend to underestimate the response of the worldwide tax system investor group. Also included as explanatory variables are the (trade weighted) US exchange rate (EX), industry dummies (δ) and a time trend (T).[9] The industry-level results tend to confirm the prediction, with the tax elasticity variable β found to be positive (a value of 1.13) and statistically significant.[10]

A second set of regressions provides a direct test of the effects of cross-country variation in tax methods. The Scholes and Wolfson (1990) theory predicts that US FDI would remain unchanged or fall in response to an increase in the US ATR for investors resident in countries with territorial systems including Canada, Germany, France and the Netherlands. In contrast, FDI would be expected to increase for investors resident in Britain or Japan, both countries with worldwide tax systems. The results tend to support the theory. The elasticity parameter measuring the response to increased US ATRs of investors subject to worldwide taxation is positive and significant, while that for investors taxed on a territorial basis, while found to be positive, is much smaller and insignificant in most investment equation specifications.[11] As in the industry-level tests, the parameter on the exchange rate variable is found to be negative and significant, indicating that US dollar depreciation encourages FDI.

Billington uses a panel of 7 OECD countries between 1986-93 with aggregate FDI inflows. He regresses the log FDI to the square of the statutory tax rates and reports significant but small elasticities. Broekman and van Vliet focus on aggregate FDI inflows in 15 EU countries using data from 1989-98. Using a simple linear specification, they report semi-elasticities in the order of –2.

Most panel studies use bilateral FDI flows for a number of years. Jun (1994) constructs a panel of FDI flows from 10 OECD countries into the US between 1980 and 1989. Using a linear specification and alternative tax measures, he primarily reports insignificant results. Devereux and Freeman (1995) adopt a panel of bilateral FDI flows between 7 OECD countries during 1985 and 1989. Using a linear specification, they regress FDI flows to the user cost of capital, derived from Devereux and Pearson (1995). Devereux and Freeman find small negative elasticity values, but most coefficients are not significant. Pain and Young (1996) focus on FDI from Germany and the UK into 11 locations during 1977 and 1992. They use a log specification and include lagged FDI in their estimation. Moreover, they stress the importance of the home country tax for the responsiveness of FDI to host country tax rates. The long-run elasticity in Pain and Young's study is significantly negative and large for the UK, but insignificant and small for Germany. Using a similar specification and bilateral FDI from 11 investing countries into 46 locations in 1991, Shang-Jin Wei (1997) finds significant negative elasticities.

The approach of Hines to estimate the elasticity for dividend exemption countries conditional on a zero elasticity for credit countries was taken up by Gorter and Parikh (2000) and by Benassy-Quere *et al.* (2001). Both studies use a panel of bilateral FDI flows between OECD countries and report significant tax effects.

Buettner (2002) adopts FDI flows financed by transfer of funds (not retained earnings) in the EU between 1991 and 1998. He uses alternative tax measures and a log-linear specification in which he includes also public expenditure variables. The results are mixed.

Benassy-Quere *et al.* (2003) use similar data as Buettner for FDI financed by transfer of funds in the OECD, but using a longer time frame between 1984 and 2000. For alternative specifications regarding control variables or subsamples, they report mainly significant elasticities. Finally, Stoewhase (2005) uses bilateral FDI data that are divided between three sectors: agriculture, manufacturing and services. He explains the share of FDI and exports by alternative tax parameters. Only for the manufacturing and service sectors does he find significant results. Finally, Desai *et al.* (2004) estimate a model using outward FDI stocks of US multinationals in the manufacturing sector in 1984 and 1992. They include both indirect tax variables and direct tax measures in their regression. For both taxes, they report significant elasticities.

Table 2.3 summarises the findings from panel studies, from which 117 elasticities are drawn. The mean value of the semi-elasticity is –2.9. Two-thirds of the elasticities reported are significantly different from zero. This is larger than for any other category of studies. Also the variability in results is rather small, with most semi-elasticities falling in the range between –5 and 0.

4. Discrete choice models

A fourth category of studies in the literature analyses the impact of the host country tax rate on the probability that a multinational chooses that location for its investment. Bartik (1985) uses, among other variables, state corporate income tax rates to explain the probability of locating new plants in each of the 50 states in the US, with his empirical work finding a significant negative elasticity. In the same spirit, Papke (1991) explains the location of plant births in 50 US states using effective tax rates on specific industries and finds very different elasticity values for the various industries. Devereux and Griffith (1998b) explore decisions of US firms that choose to locate in France, Germany or the UK. Using a logit model, they report a significant negative impact of forward-looking average effective tax rates on location. Backward-looking average tax rates computed from data are found to have no significant impact.

As noted previously, Hines (1996) explores the impact of state-level corporate income tax rates on the allocation of FDI across 50 US states in 1987. Using the same dataset, he also performs regressions based on a linear probability model to explain the number of locations, rather than the amount of capital invested. The applications find significant but somewhat smaller elasticity values, compared to FDI flows. Grubert and Mutti (2000) also report one regression explaining count data an number of locations, rather than FDI flows.

Swenson (2001) addresses concerns of Auerbach and Hassett (1993) over relying on a single tax explanatory variable to explain aggregate FDI (as components may face different tax considerations and respond differently to taxation) by separately treating 6 components of FDI: new plants, plant expansions, mergers and acquisitions, joint ventures, equity increases, and other FDI. The focus is on count data (on the number of investment projects), rather than the value of the investment, comprising 46 host countries investing in 50 US states. Like Hines (1996), Swenson uses state-level statutory tax rates as a proxy for effective tax rates. She finds that taxation appears to have a significant negative effect on investment in new plants and plant expansion for investors from most investing countries, indicating that real FDI declines following an increase in US state corporate tax rates. However a significant positive relationship is found between the tax rate and mergers and acquisitions. This finding suggests that the larger is the share

of mergers and acquisitions in aggregate FDI, the lower is the likely lhy it becomes less likely that the tax effect on aggregate FDI will be negative.

In a recent study, Buttner and Ruf (2004) follow Devereux and Griffith (1998) to explain the choice of location by German multinationals in other EU countries in the non-financial sector. Thereby, they use microdata on location choices obtained from the Bundesbank between 1996 and 2001. Buttner and Ruf use alternative measures of the tax rate, including statutory rates, average rates and average effective taxes. Moreover, they estimate a linear probability model as well as a logit model and explore alternative subsamples. They find mixed results regarding significance, while elasticities are small compared to other studies.

Stöwhase (2003b) uses count data on foreign activities of German multinational enterprises in eight European countries for the period 1991 to 1998. The activities are divided into investments in production facilities (final or intermediate goods) and investments in service functions (management and finance, research and development). He estimates the effects of statutory tax rates and backward-looking average tax rates on these two types of activities, controlling for market size (GDP), relative labour costs and public investment expenditures. He finds that investments in production facilities are negatively affected by the average tax rate and other variables relating to locational advantages, while statutory tax rates do not have an impact. On the other hand, investments in service functions are negatively affected by statutory tax rates, but are unaffected by average tax rates and the other variables. These results are interpreted as an indication that the location of service functions are more driven by the potential for minimising the worldwide tax burden through profit shifting activities (for which statutory tax rates are relevant) than by differences in locational advantages. The location of production facilities are, however, mainly driven by "real" factors, suggesting that different types of FDI react differently to taxation.

Table 2.4 summarises the main findings drawn from the studies using discrete choice models. The mean value for the semi-elasticity is –3.8 (somewhat lower than the mean elasticity value for studies relying on time series data, and for studies using cross section data, while slightly higher than the mean elasticity value for panel data studies). The results suggest that both the amount of capital invested and the choice of location are responsive to taxes. It should be noted that the study by Swenson (2001) has a large impact on the mean values, as 95 elasticities are drawn from her paper. Also the relatively large

Table 2.4. **Summary results from discrete choice models**

	Semi-elasticity			Ordinary elasticity			No. obs.	No. sign
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		
Bartik, 1985	–6.90	–6.55	1.42	–0.27	–0.26	0.06	3	3
Papke, 1991	–4.85	–4.85	5.59	–2.88	–2.88	3.32	2	1
Hines, 1996	–6.71	–3.43	8.65	–0.42	–0.21	0.54	12	4
Devereux and Griffith, 1998	–5.24	–5.88	2.47	–1.28	–1.43	0.60	10	8
Grubert and Mutti, 2000	–4.24	–4.24	n.a.	–1.01	–1.01	n.a.	1	1
Swenseon, 2001	–3.51	–2.81	7.40	–0.22	–0.18	0.46	95	34
Stoewhase, 2003	–7.36	–6.82	1.12	–2.10	–1.95	0.32	5	5
Buttner and Ruf, 2004	–0.42	–0.39	0.34	–0.13	–0.14	0.12	15	6
All	–3.80	–3.07	6.74	–0.41	–0.24	0.74	143	62

Source: De Mooij and Ederveen (2005).

difference between semi-elasticities and elasticities is explained by the large number of elasticities in the study from Swenson (2001) and the fact that her study, like Hines (1996), uses (relatively low) state-level statutory tax rates. Finally, in the discrete choice models, more than half of the reported elasticities are not significantly different from zero, again because of the large number of elasticities included from Swenson (2001).

D. META regression analysis of sample of empirical studies

Meta analysis – sometimes described as an "analysis of analyses" – is a research method to synthesise research results. While subject to certain limitations [see de Mooij and Ederveen (2006)], meta analysis constitutes a more systematic approach than a traditional literature review towards analysing the sources of quantitative variation in previously obtained research results. With an abundance of (primary) empirical studies, de Mooij and Ederveen are able to apply meta analysis to the studies on the effects of taxation and FDI, reviewed above.

To construct a meta sample, the elasticities reported in Tables 2.1 to 2.4 are merged after eliminating extreme values tending to skew sample distributions (for each category of studies, observations outside the range of plus and minus two times the standard deviation from the mean are removed, leaving 95% of the observations; this considerably reduces the standard deviation of the meta sample). The mean value of the semi-elasticity for the 427 tax elasticity estimates included in the sample is –3.72 (the mean ordinary elasticity is –0.75). Slightly more than half of all elasticity estimates are found to be significant, with the share of significant estimates being highest for panel studies and lowest for discrete choice models.

Table 2.5. **Summary statistics (where outliers have been removed)**

	Semi-elasticity			Ordinary elasticity			No. obs.	No. sign
	Mean	Median	Std. dev.	Mean	Median	Std. dev.		
Time series	–2.61	–2.75	6.03	–1.23	–1.28	2.87	105	44
Cross section	–7.16	–4.24	6.92	–0.85	–0.78	0.44	77	48
Panel	–2.73	–2.41	2.69	–0.78	–0.66	0.75	109	71
Discrete choice	–3.43	–2.80	6.42	–0.30	–0.19	0.51	136	55
All	–3.72	–2.91	5.92	–0.75	–0.57	1.55	427	218

Source: De Mooij and Ederveen (2005).

Distribution analysis shows the majority of semi-elasticities to be in the range of –5 and 0 (while most ordinary elasticities lie between –2 and 0). The results for the cross-section studies find the most pronounced responses of FDI to tax, with a mean semi-elasticity of –7.16.

Specification of the META regression

The meta regression equation used by de Mooij and Ederveen to explore systematic impacts of study characteristics on semi-elasticity results (and separately ordinary elasticity results) is:

$$y = \beta X + \varepsilon \tag{2.3}$$

where *y* is a vector of the semi-elasticities in the meta sample, and *X* is a matrix of dummy variables that control for various study characteristics, namely:

- the type of capital data used (cross section data, panel data, discrete choice data), and the specific measure of FDI [real plant, property and equipment (PP&E), merger and acquisition (M&A)];
- the type of tax data used (state-level statutory tax rate, METR, AETR, micro ATR, macro ATR);
- whether FDI is financed by retained earnings or new equity;
- whether FDI is from a home country with a dividend exemption or dividend credit system;
- the time period analysed (measured by the mean sample year);
- whether intra-EU FDI flows are explored or not;
- whether various other factors are controlled for (home country tax, wage costs, openness of economy, indicator of agglomeration, exchange rate).

The meta regression results (β values) estimate the effect of the various study characteristics relative to a benchmark set of study characteristics having the following properties: time series data; FDI financial flows (all FDI); use of (host country) statutory corporate tax rate; no distinction between FDI financed by retained earnings *versus* new equity; no distinction between dividend exemption *versus* credit systems; and no control variables.[12] The meta regression results for semi-elasticities are presented in Table 2.6. The first regression (I) explores the impact of capital data and tax data on estimated elasticity values, while the second, third and fourth regressions (II, III, IV) introduce dummy variables to control for other factors that various researchers have used to explain FDI (note above).[13]

1. Summary of meta regression results

The meta regression results (Table 2.6) find that discrete choice models produce smaller semi-elasticities than other studies. This finding is interesting, given the results in Table 2.5 that show an average semi-elasticity for discrete choice models (–3.43) that is larger than that found for studies using panel data (–2.73) and time-series data (–2.61). The meta regressions reveal that it is not the type of capital data that is responsible for relatively high elasticity values reported in discrete choice models, but other characteristics of the discrete choice models. For instance, a number of discrete choice models use an average effective tax rate (AETR) to assess tax effects. The meta analysis finds that the use of AETRs largely explains the relatively high elasticity estimates reported in discrete choice studies. By controlling for the type of tax data, the regressions in Table 2.6 reveal that discrete choice models themselves actually reduce the size of the semi-elasticity, rather than increase it.

a) Capital data

The finding that discrete choice models tend to produce smaller elasticity estimates is supported in separate regressions explaining the effects of study characteristics on ordinary elasticities (see de Mooij and Ederveen (2005) for meta regression results for ordinary elasticities). The results overall suggest that location decisions involving discrete investment decisions tend to be less sensitive to taxation than scale decisions over the amount to invest in a given location.

Table 2.6. **Regression results – Dependent variable: Semi-elasticity**

Regression	I		II		III		IV	
Constant	0.79		0.57		0.61		0.88	
Capital data (time series)								
Cross section	7.02	**	7.12	**	7.02	**	11.21	
Panel data	1.13		1.46		1.50		1.40	
Discrete choice	–3.10	**	–3.43	**	–3.09	*	–3.08	*
Specific FDI types (all FDI)								
PP&E	1.96	**	2.17	**	2.32	**	3.60	**
M&A	–7.54	**	–7.34	**	–7.20	**	–5.92	
Tax data (host stat CIT rate)								
State statutory rate	5.95	**	5.43	**	4.97	**	2.52	**
AETR	3.85	**	3.93	**	3.54	**	2.36	**
METR	1.43	**	1.68	**	1.44	**	1.15	**
Micro ATR	–0.02		–0.50		–0.69		–0.58	
Macro ATR	2.18	*	2.65	**	2.53	*	1.93	
Finance/Int'l system (no distinction)			0.85		1.25		0.99	
Exempt			0.14		0.25		0.50	
Credit			0.07		0.06		0.57	
Retained earnings			–1.33		–1.43	*	–0.42	
Transfers								
Time								
Average sample year								
Region (no distinction)			0.01		0.02		0.13	**
Within EU					–1.22	**	–1.60	**
Control variables (none)								
Home tax							0.34	
Wage							1.11	
Openness							–2.43	**
Agglomeration							–1.11	**
Exchange rate							0.87	
Regression description								
Number of observations	427		427		427		427	
Adjusted R-squared	0.46		0.46		0.46		0.48	
Durbin-Watson	1.89		1.93		1.96		2.06	

* Benchmark assumption is mentioned between brackets.
** Means statistically significant at the 10% and (5%) level.
Source: De Mooij and Ederveen (2005).

In contrast, cross section models yield systematically larger semi-elasticities (in absolute terms), a finding consistent with the relatively large average semi-elasticity (–7.16) for cross section studies reported in Table 2.5. The robust regression result for the cross-section dummy confirms that it is the type of capital data that largely explains the high semi-elasticity reported in cross-section studies, rather than other characteristics of these studies.

Elasticity estimates for studies explaining investment in plant, property and equipment tend to be systematically larger than for studies using financial FDI data (that includes green-field investment, mergers and acquisitions, and capital reinvested outside the recipient country), a finding that is robust for all specifications of the meta regression. Estimates based on M&A data produce smaller elasticities.[14] Overall the results suggest that the share of FDI that comprises real investment in physical capital is more responsive to taxes than other components of FDI. The finding that M&A produces relatively small

elasticities is consistent with ownership advantages being inversely related to the host-country tax.

b) Tax data

The coefficients for the various tax rates should be interpreted as their influence on elasticity values relative to those found in studies that use the host country statutory tax rate. With the exception of average tax rates based on micro data, all of the alternative tax rate measures tend to produce larger semi-elasticities. Coefficients for the AETR and METR are both positive and significant. Reliance on AETRs, which assess the tax burden on marginal and infra-marginal investment, is found to yield larger elasticity estimates than METRs, which assess the burden of tax at the margin (relevant to scale decisions). While AETRs continue to produce larger elasticties in regressions examining ordinary elasticities, the METR coefficients in these separate regressions are found to be statistically insignificant.

State statutory tax rates produce the largest semi-elasticities (consistent with the fact that state statutory tax rates are evaluated at very low tax rates, so that a one percentage point change in the tax rate translates into a relatively large percentage change). The negative but insignificant result for the average tax rates based on micro data is taken to suggest that these tax variables may be problematic in identifying the true impact of taxes on FDI (endogeneity problem). Finally, the regression coefficient for macro average tax rates is positive, although not always significant.

c) Exemption versus *credit system, and source of funds*

Host country taxation may be expected to have different effects on FDI, depending on whether the home country operates a dividend exemption or dividend credit system. If a parent company is located in a country that exempts foreign dividends (from all or treaty countries), a higher tax rate in the host country may be expected to discourage investment (as the tax hike lowers the net return on investment). Therefore, the probability to locate a plant in that country, and the optimal amount of investment in plant and equipment to undertake, is likely to be lower. For mergers and acquisitions, increased host country tax may have minor implications to the extent it affects domestic and foreign owners alike.

If a parent is located in a country that operates a dividend credit system (in combination with tax deferral), a higher host-country tax would tend to have more subtle effects on FDI. If the parent is in an excess credit position, a higher host country tax rate generally would not be offset by an increased foreign tax credit in the home country tax. Hence, the effect on real FDI would tend to be similar to that under an exemption system. If the multinational is instead in an excess limitation position, a higher host country tax rate may be offset by a higher foreign tax credit. Hence, the higher host country tax rate may not have implications for FDI. The effect on foreign ownership through M&As may even be positive because, in contrast to local owners, foreign owners are shielded from the higher host country tax rate by the credit system. Hence, local owners may find it attractive to sell their stakes to foreign multinationals.

The meta regression results do not find signficant support for these predictions. While FDI from investors in home countries exempting foreign dividends tend to produce larger elasticities than FDI from credit countries, this effects is not found to be statistically significant. In other words, evidence is not found for larger elasticities in the case of FDI from exemption countries. These empirical findings tend to give weight to those, such as Tanzi and Bovenberg (1990), who emphasise the effects of tax deferral, and excess foreign

tax credit positions of parents in countries with relatively low corporate tax rates (like the US), that tend to make distinctions between tax credit systems and tax exemption systems of little importance. This is also suggested by empirical findings of Slemrod (1990) and Benassy-Quere (2003), Altshuler and Newlon (2003), which show that many US multinationals appear to manage their income repatriations so that they face little home-country tax.

Limited statistical support is found for different semi-elasticities for retained earnings and transfer of funds. The (negative) coefficient on new equity is found to be statistically significant in only one regression (at the 10 per cent level), while the coefficient on retained earnings is insignificant throughout. Similarly, meta regressions for ordinary elasticities find no systematic influence of the source of finance on elasticity values.

d) Time, intra-EU FDI and other control variables

Studies using more recent data (measured by the mean sample year) are found to produce larger elasticities, indicating that FDI is becoming more responsive to taxation over time.[15] The time coefficient is significant only in regression IV that includes control variables (home country tax, wage costs, indicators of openness and agglomeration) drawn from the primary studies. The coefficient on the time dummy in the meta regression explaining ordinary elasticities is positive but insignificant.

Studies for intra-EU capital flows are found to yield smaller semi-elasticities than other studies (*e.g.* based on US data).[16] A negative coefficient is also found for the intra-EU dummy in the ordinary elasticity meta regression, with the result significant only in regression IV that includes control variables from the primary studies.

Finally, while the home country tax rate and the exchange rate tend to be irrelevant, openness and agglomeration indices are found to reduce the magnitude of semi-elasticities. The significance of the openness indicator is confirmed in the ordinary elasticity meta regression.

2. Fitted "typical" elasticities

Finally, the regression results are used by de Mooij and Ederveen (2005) to calculate fitted values for elasticities based on a specified set of study characteristics. Table 2.7 reports fitted semi-elasticities (based on results for regression I in Table 2.6). Thus the fitted values apply to financial (all) FDI, with no distinction between exemption and credit countries or use of funds, no specific region, and no distinction in control variables. Positive values measure a decline in FDI in response to a higher tax.

Table 2.7. **Typical semi-elasticities**

	Country STR	State STR	METR	AETR	Micro ATR	Macro ATR	Mean
Time series	0.79	6.74	2.22	4.63	0.77	2.97	3.02
Cross section	7.81	13.75	9.24	11.65	7.79	9.99	10.04
Panel date	1.92	7.87	3.35	5.77	1.90	4.10	4.15
Discrete choice	–2.31	3.64	–0.88	1.54	–2.33	–0.13	–0.08
Mean	2.05	8.00	3.48	5.90	2.03	4.23	4.28

Source: De Mooij and Ederveen (2005).

Notes

1. When the host country tax burden reaches a critical level, some companies (*e.g.* for which agglomeration benefits are lower) will find it optimal to relocate to the periphery. This erodes agglomeration benefits for remaining firms, tending to encourage other firms to relocate to the periphery. Furthermore, a market equilibrium may result with economic activity clustered in two neighbouring locations (rather than a single agglomeration) – in such cases, capital is predicted to be very responsive to differences in tax rates.
2. In general, policy makers would be interested in attracting not only real capital but also intangible capital. The review of the literature in this part concentrates on tax effects on real investment.
3. For example, when regressing inbound FDI financed by retained earnings on an after-tax rate of return variable measured as total net profit of foreign controlled companies divided by invested capital, a spurious correlation between FDI and the after-tax rate of return variable may be detected (taken to imply a negative correlation between tax and FDI), particularly where profit repatriations are low (where repatriations are zero, FDI by retentions and the numerator of the explanatory variable would be essentially the same).
4. BEA follows the procedure of extrapolating benchmark data (collected periodically (1959, 1974, 1980) forward to non-benchmark years, using sample data from quarterly surveys. Benchmark data, however, generally are not extrapolated backwards as a check of forward extrapolations of earlier years.
5. A further caution is that there are breaks in the time series on US inbound FDI regarding the identity of the home country providing the investment funds. The 1974 benchmark data shifted from a definition that in some cases used the "ultimate beneficial owner" approach which looked through an ownership chain, to one that consistently looked to the "first foreign entity in the ownership chain." This problem flags the difficulty in determining the relevant set of tax rates applicable to investment returns
6. The PP&E data are not, however, without difficulties. First, the asset measures are based on historical book values, rather than current price or market values. Second, the end-of-year depreciable assets reported by foreign affiliates resident in a given host jurisdiction may not be located in that jurisdiction. This problem is particularly important in the case of holding company and financial foreign affiliates located in tax havens.
7. As a corollary, these linkages predict that tax shocks that encourage domestic investment by domestic investors may reduce inbound FDI by certain investors. The relevant shareholder group would be foreign investors resident in countries with worldwide systems and relatively high home country tax rates that determine the combined host and home country tax rate on the foreign source income. Where the host country tax rate is higher than the home country rate, or where FDI is structured through a holding company in a low-tax jurisdiction (so that host country taxation is final), the prediction of reduced foreign investor interest would not apply.
8. The ATRs, provided by the private sector research group Tax Analysts, are derived using individual firm data that is aggregated to the industry level.
9. Froot and Stein (1991) argue that FDI should increase when the US dollar depreciates (*i.e.,* a negative correlation between FDI and the exchange rate EX) as this reduces the foreign currency cost of US assets. While a depreciating dollar also reduces the foreign currency value of expected profits, asymmetric information *(e.g.,* investor uncertainty over managerial behaviour) may explain why these two effects do not cancel. Another explanation is that investors may anticipate US dollar appreciation following a (perceived to be temporary) decline in the dollar's value.
10. Swenson tests the investment equation for lagged tax effects, including both current and prior year ATR variables. The lagged ATR variable has a small positive but statistically insignificant coefficient, which she explains by noting the importance of mergers and acquisitions activity in the FDI data and the likely immediate capitalisation (in asset prices) of tax effects impacting on existing (as opposed to newly acquired) capital assets.
11. The US domestic corporate ATR variable used in the investment equations is constructed by weighting the industry ATRs according to the industry contribution to aggregate US FDI in 1979.
12. For presentational purposes, a minus sign is attached to all semi-elasticities in the X matrix (transforming all negative semi elasticities into positive figures, and *vice-versa* for positive elasticity values). A positive coefficient for a dummy variable therefore means a higher elasticity in absolute terms).

13. In regressing the impact of tax on FDI, empirical studies should attempt to control as best possible for main factors influencing FDI. Controlling for variables that are correlated with the tax variable is particularly important, to avoid omitted-variable bias.

14. Higher host country taxes may encourage inbound M&As, to the extent that higher taxes depress equity values (lowering the cost of FDI), and foreign investors are able to offset higher host country taxes through higher foreign tax credits in their home country. Where this is the case, one would observe a positive correlation between host country taxation and M&As.

15. Altshuler, Grubert and Mutti (1998) find evidence of increased sensitivity of real manufacturing capital to host country taxation over time – consistent with international mobility of manufacturing capital (authors find that a host country tax reduction giving a 1% increase in the after-tax ROR results in a 1.5% increase in PP&E in 1984, *versus* a 2.8% increase in 1992).

16. Intra-EU capital flows might be expected to be more sensitive to host country differences to the extent that the elimination of barriers to the free flow of capital within the EU make tax a more important/influencing factor. However, the elimination of trade barriers might make exporting a relatively more attractive option, compared with establishing operations in a foreign market to meet demand in that market. Perhaps these two (and possibly other) effects cancel each other out.

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Chapter 3

Taxation of Inbound FDI – Policy Considerations and Perspectives

A. Introduction

This chapter and the next report policy considerations and perspectives of OECD tax officials as regards the taxation of cross-border investment, expressed during a "tour de table" discussion on the topic.[1] The coverage includes, by way of background information and introduction, a general review of some of the issues raised in policy circles, and a brief summary of some of the main findings on optimal taxation of cross-border direct investment as reported in the public finance literature. Issues raised in relation to the taxation of inbound investment are addressed in this chapter, with outbound investment addressed in Chapter 4.

The review of points raised in relation to the taxation of inbound FDI is organised around the following issues: possible benefits of inbound FDI; overview of policy considerations and tradeoffs in the taxation of inbound FDI; linkages between host country taxation and inbound FDI; the pros and cons of various responses to international tax competition; and lastly, addressing tax avoidance.

B. Possible benefits of inbound FDI

In general, policy interest in inbound FDI arises on account of the potential for FDI to yield a *net* increase in domestic income, shared by employees through wages and salaries from increased employment resulting from FDI, and by government through taxation.[2] Increased employment may result from FDI directly (the hiring of staff by foreign-owned companies), as well as indirectly where FDI increases demand for goods and services supplied by domestic-owned business. Government shares in the income generated by FDI by taxing wage and salary income, taxing the profits of foreign-owned companies and dividends and interest paid to non-resident (inbound) investors, as well as possibly imposing other taxes on business, such as property tax. As emphasised below, these flows must be additional and not represent displacement effects. Additionally, FDI may positively affect current and future domestic income through spillover effects.

Most directly, FDI may result in a net increase in domestic income from additional employment with a (foreign-owned) MNE, or with domestic firms that replace employees that take up employment with an MNE. Such effects are more likely the further removed the economy is from full employment. With full employment, the effect of FDI on employment may largely be to move jobs from one productive sector to another. Aside from direct and indirect additional employment resulting from MNEs, domestic income may be higher where MNEs on average pay higher wages than domestic firms. This consideration could mean a positive effect even where there is little or no increase in total employment.

If FDI crowds out domestic investment through a process of product competition or competition for scarce resources, there may be little positive effect on the domestic aggregate capital stock and employment, at least in the short-run. This implies that the amount of FDI or number of employees of MNEs cannot be taken as a direct indicator of whether domestic welfare is improved or not. If the main effect of FDI is a crowding out of

domestic firms, one could in principle argue that domestic welfare is reduced, with profits on an unchanged capital stock distributed to foreign instead of domestic investors.

In addition to these employment effects, FDI may generate significant spillover benefits in the economy (positive externalities), including more efficient use of resources and increased productivity in the economy more generally, where these benefits are not reflected in market prices. These externalities could result where FDI introduces new technology and human capital (skills) enhancement of employees. Furthermore, FDI may create positive spillover effects where it spurs domestic competition which in turn leads to more efficient use of resources (*e.g.* where FDI creates competitive pressures forcing domestic companies to innovate in order to be able to compete).

Possible benefits of FDI may vary significantly from one investment to another depending on the type of FDI and on the characteristics of the destination (host) country, with some evidence that the ability to absorb spillover benefits depends on the strength of market fundamentals. Potential benefits cannot be assessed simply by the amount of FDI. Greenfield investment, for example, is generally held out as more likely to generate host country benefits that the same euro amount of FDI by way of merger or acquisition, by creating more new jobs (although this is not always been the case – for example, where a large percentage of new jobs are filled by expatriates). Also, certain acquisitions are reported to have been found to be more beneficial than others in terms of new jobs and positive spillover effects. Another observation is that a positive impact on domestic income is unlikely (and a negative impact overall possible) where FDI is actually domestic capital recycled through so-called "round-tripping" encouraged by tax incentives for FDI, such as tax holidays (where previously invested capital is withdrawn offshore, and reinvested as "new" FDI to qualify for tax relief).

A further consideration is that FDI may generate additional tax revenues and thereby help a host government meet its revenue target without increased reliance on other taxes. As noted above, government shares in the gross (pre-tax) returns to FDI through income and other taxes on workers, corporations and their investors. Extra tax revenue from a net increase in domestic income resulting from FDI may allow less reliance on other taxes, which may be beneficial to the extent that this avoids distortions (efficiency losses) associated with higher tax rates on these taxes.

The prospect of these benefits from FDI creates considerable pressure on government to ensure that their tax system is supportive of FDI. Indeed, as emphasised during the roundtable discussions, "international competitiveness" concerns and pressures by certain interest groups for more favorable tax treatment of domestic profits of foreign- and domestic-owned companies are increasing in many countries, focusing ever-greater attention to questions over linkages between tax and investment and appropriate policy responses.

C. Overview of policy considerations in taxing inbound FDI

1. Main policy considerations and trade-offs

While inbound FDI is generally regarded as desirable, a number of policy considerations and constraints weigh in when deciding the appropriate host country tax burden to impose on FDI, and through what combination of measures and provisions. In general, these relate to the revenue needs of the host country, calls for fair (similar) treatment of domestic investment by domestic and foreign inbound investors, as well as international competitiveness concerns and corresponding efficiency considerations.

Some of these are briefly sketched out below, before turning to consider views of policy officials over linkages between host country taxation and FDI flows, factors that influence these linkages, and insights that can be drawn to help assess the pros and cons of alternative policy approaches, expected to vary across countries.

A main policy consideration obviously is a government's *revenue requirements*, with corporate income tax generally regarded as an appropriate tax in the mix, playing an important withholding function in the case of domestic shareholders (as a backstop to personal taxation of investment income), and also in the case of inbound FDI. Collection at the corporate level of domestic tax on domestic profits of foreign-owned companies may be viewed as appropriate by policy makers as partial compensation for host country benefits enjoyed by foreign investors (e.g. access to infrastructure, legal framework) and possibly other reasons. Where foreign-owned companies benefit equally from location benefits in the domestic country, as domestic companies, arguably the same effective corporate tax burden should apply.

In helping a host country raise tax revenues, the taxation of profits on inbound FDI may permit reduced reliance broad-based general consumption taxes and/or other taxes possibly falling disportionately on lower income tapxyaers. Thus taxation of inbound investment may help address equity goals. Taxation of corporate income on inbound investment may also be seen as desirable given the availability of foreign tax credits in the home country of investors resident in countries operating dividend credit systems (and thus the ability to shift some portion of host country tax onto foreign treasuries).

Additionally, "*fair*" *domestic competition concerns* would normally call for taxation of profits of resident businesses owned by inbound investors at the same effective corporate tax rate as that imposed on profits of resident domestic-owned companies. Where the host country tax burden is the same, foreign-owned and domestic-owned companies may compete on an equal tax basis. As noted below, this argument (which assumes little or no home country taxation of inbound investors) has an underlying efficiency basis.

Counter to revenue requirement and fairness considerations calling for host taxation of profits on inbound FDI at uniform rates, "*international competitiveness*" pressures may be operative in the direction of a relatively low host country tax burden. Where inbound FDI is regarded as particularly mobile and sensitive to host country taxation, with potential foreign direct investors free to choose amongst competing host countries as a location choice, governments may be encouraged to target tax relief to FDI (to the exclusion of domestic-owned firms) or to reduce the tax rate on income from capital more generally. In recent years, the dynamics of international tax competition have been widely studied and debated, with an eye to assessing tax policy reaction and potential *efficiency considerations* associated with competition for a geographically mobile capital tax base.[3]

2. Some main results from the "tax competition" and "new economic geography" literature

Under the basic tax competition models of Zodrow and Mieszkowski (1986), Wilson (1986) and others, increased capital mobility is predicted to result in reduced rates of tax on capital income that are set inefficiently low from the public perspective.[4] The basic model predicts that where countries differ in size, larger countries will compete less for capital through tax rate reductions, and therefore will have higher tax rates than small countries with size defined in terms of the number of residents.[5] As smaller countries have lower tax

rates, and thus a lower cost of capital in equilibrium, their firms are predicted to employ more capital per unit of labour, and therefore pay higher wage rates than in larger countries. Thus another prediction of the basic tax competition model is a higher per capita income in smaller countries.

The basic tax competition models consider (source-based) taxation of capital income only. When introducing taxation of non-capital income, Gordon (1986) shows that it is optimal for a small capital-importing country to waive host country tax on income on inbound investment. For a small capital-importing country, facing a perfectly elastic supply of foreign capital, any host country tax on income on inbound FDI is fully shifted onto labour (*i.e.* non-capital domestic factors of production) in inelastic supply (fixed). As the effect of host country capital income tax on labour is the same as that which would occur if labour income was taxed directly, it is optimal for the host country to tax labour income directly and avoid the production efficiency loss associated with taxing investment.

A key assumption driving the policy prescription for no host country tax on inbound FDI is that capital is perfectly mobile, implying an infinitely elastic (horizontal) supply of capital at the "world" rate of interest, while labour supply is taken to be fixed. Taxing labour thus has no impact on employment, while waiving tax on investment income avoids production efficiency losses from taxing returns on capital. Furthermore, since labourers own the capital in a representative consumer setting, income-distribution concerns are not present, enabling the government to choose the most efficient tax structure.

In contrast, Findlay (1986) finds that host taxation of income on inbound FDI by a small capital-importing country is optimal, consistent with maximising global economic efficiency. The seemingly conflicting results are reconciled by Bruce (1991), who shows that when non-capital factor incomes are taxed optimally and host country economic profits are fully taxed, then Gordon's (1986) conclusions hold – that is, a small capital-importing country should not tax inbound FDI. However, if economic profits cannot be fully taxed, then Findlay's (1986) conclusions hold – that is, taxation by a small capital importing country of income on inbound FDI is consistent with maximising global economic efficiency. Bruce (1991) concludes further that, since it is unlikely that economic profits can be fully taxed by host country authorities, Findlay's policy prescriptions are likely to have greater tax policy relevance. Bucovetsky and Wilson (1991) also derive efficiency results supporting source-based taxation.[6]

The tax competition literature and policy considerations drawn from it, briefly addressed above, focus attention on capital mobility, while ignoring trade costs and business concentration forces emphasised in the new economic geography literature. In neoclassical models underlying the standard tax competition literature, lowering the tax rate in a given country attracts capital, which tends to reduce pre-tax rates of return in the host country, tending to offset the initial forces of the tax rate reduction. As reviewed in Chapter 1, a key insight of the new economic geography literature is that business concentration forces render capital a quasi-fixed factor of production, where capital stocks are invariant to tax policy adjustment at least over certain ranges. Where capital does respond, the changes may be highly non-linear. As explored in Baldwin *et al*. (2003) these considerations have several important implications for tax competition and optimal host country taxation. Indeed, as sketched out below, a number of central conclusions from the standard tax competition literature are questioned, at least under certain conditions.

In the new economic geography model, capital mobility is explained in relation to trade costs. In particular, as trade costs decline, capital becomes more geographically mobile, and the optimal tax rate for a host country declines. (This result adds to, rather than contradicts, the basic tax competition model.) Optimal host country tax rates fall – that is, attracting capital is more difficult at relatively high tax rates – when business concentration forces decrease. A key prediction is that the impact on location choice of a given tax rate differential between two countries is predicted to differ markedly across industries that vary in terms of the importance or relevance of business concentration benefits. Thus empirical work that pools FDI across sectors may generate misleading results.

A further insight is that the dynamics of tax competition depend on whether capital owners are immobile, or move with real capital. In the basic (core-periphery) model of the new economic geography literature reviewed in Chapter 1, capital owners are assumed to migrate with capital, and thus location decisions take into account not only tax rate differences, but also differences in the provision of public goods (and price levels) across locations.[7] The assumption that capital owners move together with their capital produces unconventional but in some respects intuitive results (this assumption and the results stemming from it may conform most closely to SMEs where business owners move together with their investment capital, and to human or knowledge capital embedded in trained workers). For example, given that taxes are used to provide public goods, and the mobile factors (capital and owners) derive utility from the provision of public goods, higher tax rates are not discouraging to capital, at least up to some point. Furthermore, the basic CP model finds that the host country tax rate that is most attractive to the mobile factor is also the socially optimal rate, with capital and labour having identical preferences. This result may be contrasted with the emphasis of the standard tax competition literature that competition for capital leads to host country tax rates that are inefficiently low.

Another branch of the new economic geography literature considers the case where capital and its owners are spatially separated so that, as in the standard tax competition framework, foreign capital does not derive benefit from host country public goods.[8] In this case, tax competition is shown to be harmful (tax rates are set too low from a societal perspective) on account of the inter-national mobility of goods (as opposed to capital), with (Nash) equilibrium tax rates being lower the lower are trade costs. In certain cases, increased mobility of capital, by increasing the relative importance of business concentration effects, is predicted to make the location choice of investment less responsive to tax rates, and tax competition incentives reduced (rather than heightened, as under the standard tax competition model).

Lastly, as shown in Baldwin and Krugman (2000), some of the most controversial results are found when business concentration forces are most pronounced; that is, when all industry is clustered in a single region. One result is that tax competition bears on large and small countries differently, but in ways not predicted by the standard tax competition framework.[9] Large (rich) countries are constrained to charge tax rates that are lower than what the government would wish, while small (poor) countries are not constrained by international tax competition. That is, only tax rates of large countries are set too low, from a societal perspective.[10] Second, the predicated negative correlation between high taxes and capital/labour ratios predicted by the basic tax competition model may be reversed. Third, large (rich) countries may be importers of capital despite having higher tax rates.

The preceding brief review is provided to suggest that much work remains (at the theoretical level, and at the empirical level in works relying on reduced form equations drawing on theoretical models) to sort out in greater detail the possible influences of host country tax policy on inbound investment, and associated efficiency considerations.

3. Other efficiency considerations including spillover effects

Another consideration is spillover effects. The tax competition and new economic geography literature reviewed briefly above, calling for host country taxation of income on inbound FDI at least in certain cases, in general disregards possible production or spillover advantages that FDI might bring. To the extent that FDI does bring with it such advantages, the implications of more favorable host country tax treatment of FDI could be different.

However, assessing the benefits (relative advantages) of FDI is difficult. And because of this, it is difficult to establish the efficiency implications of equal or preferential tax treatment of FDI. Indeed, a central efficiency issue is *uncertain effects of FDI on net domestic income*, due to difficulties in measuring the effect of tax on FDI, and identifying and measuring corresponding spillovers. As reviewed in Chapter 2 and raised in the roundtable discussions, numerous problems are met in estimating the sensitivity of FDI to host country's tax burdens, and thus in gauging the additional amount of FDI that might accompany general or targeted host country tax relief.

While the bulk of empirical literature finds that FDI responds positively to host country tax relief, the elasticity estimates vary widely and depend in a complex way on difficult to measure host country conditions. Moreover, the FDI response to tax relief may vary non-linearly with the host country tax rate, making difficult the interpretation and application of elasticities estimated from linear specifications of the relationship between FDI and the host country tax burden. Considerably more difficulty would surround the measurement of spillover benefits from FDI (*e.g.* the value to attach to the dissemination in the domestic economy of "know-how" obtained from studying production processes of MNEs).

In summary, assuming that governments are primarily interested in maximising domestic welfare, tax relief to FDI should be offered only to the extent that foregoing tax revenues raises domestic welfare. However, in many if not most cases there is considerable uncertainty in estimating the net amount of FDI that would result from host country tax relief, and in measuring benefits of FDI in terms of net additional jobs, spillover benefits (difficult if not impossible to accurately assess) and tax revenues. With uncertain effects of FDI on net domestic income, efforts to assess the net impact on domestic income are frustrated. The largely uncertain effects of FDI on domestic income are therefore a central efficiency consideration and policy concern.

4. Accounting for windfall gains

A directly related efficiency concern is that host country tax relief provides to some extent *windfall gains to investors*. This recognises that some percentage of FDI benefiting from host country tax relief would have taken place (for non-tax reasons) in the absence of tax relief. Put another way, a net increase in FDI following general or targeted tax relief to FDI cannot be assumed to be all incremental – that is, only some portion of the FDI occurs due to provision of tax relief (an important fact to bear in mind when interpreting elasticity estimates).

Predicting the amount of incremental FDI *versus* non-incremental FDI enjoying windfall gains is difficult, as the sensitivity of FDI to tax can be expected to vary across business activities (some more geographically mobile and sensitive to host country taxation than others) and across host countries as some evidence suggests it does, while also depending on the mechanism by which host country tax relief is provided (*e.g.* statutory corporate tax rate cut, *versus* incremental investment tax credit).

Another efficiency concern is over the provision of *windfall gains to foreign treasuries*. Certain home countries of inbound foreign direct investors operate dividend credit systems that tax resident companies on their foreign source dividend income, while providing a direct foreign tax credit in respect of underlying host country corporate income tax paid on distributed profit, and an indirect foreign tax credit for withholding tax paid at source on profit distributions. These home country provisions, in place to avoid double taxation, mean that in certain cases a reduction in the host country tax burden on FDI will lower foreign tax credits claimed in the home country, and thereby increase home country tax revenue. In such cases, the inbound foreign direct investor does not realise the host country tax relief – it instead accrues to the foreign (home country) treasury. The tax relief, by not lowering the combined host/home country tax burden on FDI, may have little if any direct impact on FDI activity.

As with predicting incremental *versus* non-incremental FDI, estimating the scope for windfall gains to foreign treasuries is difficult where data is not available (*e.g.* figures are not compiled) showing the percentage amount of FDI stock held by investors resident in home countries operating dividend credit as opposed to dividend exemption systems. Even where these figures are available, the task is complicated by the fact that the tax burden on foreign investors subject to taxation in the home country under a dividend credit system will depend on whether the parent is in an excess or insufficient foreign tax credit position. Moreover, some percentage of investors in countries with a dividend credit system will not invest directly, but instead indirectly through a tax haven conduit in order to defer or avoid home country tax. To the extent that investors are increasingly able to avoid home country taxation through such channels, the scope for windfall gains accruing to foreign treasuries may be falling over time (to an uncertain level).

5. *Efficiency considerations with the use of alternative tax instruments*

In practice, arguments for preferential tax treatment would generally regard FDI as desirable, and view host country taxation as a business cost that, where relatively high, would hamper the ability of firms locating in the host country to compete (*e.g.* in foreign export markets) with companies based in other locations with a relatively low host country tax burden.[11] Preferential tax treatment may also be argued for as a means to compensate for relatively weak host country attractions in areas identified as critical to location choice (*e.g.* market size, infrastructure), despite clear evidence of such effects.

Where a host country is compelled to provide special tax relief for FDI, such targeting could be through statutory tax incentives for FDI (*e.g.* partial or full profit exemption for new FDI), or where this approach is not possible, through special tax arrangements administered on a company-by-company basis. Another approach is through intentionally weak enforcement of tax laws set out to protect the domestic tax base (*e.g.* limited enforcement of transfer pricing rules, in the case of FDI).

Efficiency considerations dependent on the choice of the tax relief mechanism will arise should the balance of considerations point towards providing tax relief to FDI. One possibility is to *target tax relief explicitly to FDI*, for example through a *tax holiday or partial profit exemption to "new" FDI*, an approach taken in a number of transition economies. As noted elsewhere (see OECD, 2001), experience suggests that such mechanisms are notoriously inefficient and expensive in terms of revenue loss given the avenues they create to enable non-taxation of non-targeted business income, while inviting rent seeking (corrupt) behavior on the part of officials assigned administrative discretion in deciding qualifying investment. Other mechanisms targeting tax relief to FDI may also be open to taxpayer abuse, while also adding considerably to tax administration costs.

Furthermore, the targeting of tax relief to FDI may create perceptions that the system is unfair, favoring foreign over domestic investors, and this perception may undermine voluntary compliance with the tax system. To the extent that non-compliance motivated by perceptions of unfairness, combined with tax-planning by domestic investors to access provisions targeted at FDI, leads to a serious erosion of the tax base, efficiency in the tax system may be reduced where the government has few options, at least in the short term, other than to raise tax rates on other bases (*e.g.* personal tax rates), with higher tax rates tending to drive up dead-weight losses in a non-linear fashion.

Another important channel through which tax relief may be targeted to FDI is via reductions in *non-resident withholding tax rates on dividends, interest, royalties and other cross-border payments*. Reducing non-resident withholding tax rates may operate to lower the cost to inbound foreign direct investors (and domestic firms) of accessing tangible and intangible property, and portfolio debt and equity capital, in cases where foreign suppliers would normally shift back withholding taxes, charging prices (required rates of return) grossed-up by the amount of host country withholding tax. Such reductions tend to improve the competitive position of domestic and inbound foreign investors operating under competitive conditions. Where withholding tax relief is fully passed on to investors, and their improved competitive position encourages FDI, increased net domestic income may result (again, difficult to measure). In such assessments, a key efficiency consideration is the extent to which tax relief is passed onto (realized by) investors.

Foreign suppliers of portfolio debt, for example, would normally shift back withholding tax on portfolio interest (*i.e.* gross-up interest rates charged by the amount of the tax). Withholding tax relief in such cases would be reflected in reduced borrowing costs for resident firms. For royalties, the degree of tax shifting and the efficiency considerations resulting from tax relief may be different. In particular, if the market for intangibles is competitive, some part and possibly all of the tax may not be shifted back when pricing royalty charges if foreign unrelated suppliers are able to claim an offsetting foreign tax credit (depending on profit margins). In such cases, a reduction in the host country withholding tax rate would be to the benefit of the home country of the foreign supplier on account of a reduced foreign tax credit. However, if the supplier cannot claim a foreign tax credit, or the market for intangibles is not competitive, tax relief could result in reduced charges to domestic taxpayers, and an improved competitive position encouraging FDI.

In related party transactions, as in the case of unrelated party transactions, the foreign supplier of property or capital (in this case, a parent company or another subsidiary) may or may not be able to offset non-resident withholding tax through foreign tax credits. Where a foreign tax credit is available, reductions in withholding tax rates would tend to

provide windfall gains to foreign treasuries. Where a foreign tax credit is available, reductions in withholding tax rates would tend to provide windfall gains to foreign treasuries. Where withholding tax cannot be fully credited (*e.g.* where the host country corporate tax rate is relatively high and the parent is in an excess foreign tax credit position), the burden of withholding tax (and thus withholding relief) would generally be shared by the corporate group. With the incidence of withholding tax not falling directly and fully on host country affiliates, relief from withholding tax on inter-affiliate royallty and interest may not influence inter-affiliate charges, as in the unrelated party case. Withholding tax relief may however factor positively into investment location decisions favouring the host country, by impacting the net profitability of investment.

A further consideration is that, in related party transactions, reductions in rates of interest and royalty withholding tax (deductible against the corporate tax base) may encourage the repatriation of earnings by way of inter-affiliate interest and royalty charges, rather than dividends. As reviewed in Chapter 5, incentives for base stripping in this way depend not only on withholding but also host and home country statutory corporate tax rates and other considerations. In certain cases, the implied revenue losses may be an important consideration in determining the efficiency of alternative approaches to attracting investment.

Given problems or limitations with tax relief targeted at FDI, policy-makers may be encouraged to consider *broad-based tax relief benefiting foreign and domestic investment*. This approach avoids the distortions and compliance problems with targeting corporate income tax relief to FDI, but at the cost of being generally more expensive in terms of revenue losses, for a given percentage change in the effective tax rate. Revenue losses from a reduction in the basic statutory corporate tax rate tend to be significant, particularly where the existing domestic capital stock and corporate tax base is large.

As considered below, a number of countries have a preference for reducing the statutory corporate tax rate as a means to encourage investment, both foreign and domestic, but are currently constrained from doing so, given the significant revenue loss that each one percentage point adjustment is estimated to entail. In contrast, more generous depreciation allowances limit revenue losses tied to existing capital where taxpayers are required to depreciate existing pools of capital at pre-reform depreciation rates, despite the additional complexity introduced by the maintenance of separate pools for each capital asset class. Certain countries have been considering tax reforms that would accelerate depreciation rates for certain classes of capital, and that these reforms would be attractive to FDI.

Also, while reductions in the basic statutory corporate tax rate applicable to (all) resident firms may attractive to FDI and desirable on several grounds, they pose certain constraints, aside from revenue losses which may be large. In particular, where the statutory corporate tax rate is significantly reduced, while the personal income tax rate schedule is left unchanged, taxpayer behavior may be distorted towards arranging affairs to take advantage of a large spread between corporate and personal income tax rates. For example, taxpayers that work for an incorporated business that they own may be encouraged to characterise salary income as profit. Taxpayers may choose incorporation over unincorporated business structure for purely tax reasons. These and other tax distortions imply certain efficiency losses.

D. Views on linkages between host country taxation and inbound FDI

The section presents views of policy makers on the relative importance of host country taxation in influencing inbound FDI, and the implications of market size and location-dependent rents to the setting of host country effective tax rates. It also addresses the importance of market fundamentals in terms of their central role in attracting FDI, and in terms of their influence on the ability of tax relief to impact FDI.

1. Tax alongside other determinants of FDI

In assessing the possible influence of tax on FDI, the importance of non-tax considerations to attracting investment must be recognised. One policy maker explained that inbound FDI is perceived by authorities to be attracted by macroeconomic stability, a supportive legal framework including favourable legal and administrative procedures, and business opportunities tied to market size (with profitability of the domestic market tied to the purchasing power of the population, foreign markets reached via an extensive network of trade agreements). Sound tax policy establishes a basis for fiscal stability which strengthens the business climate.

The results of research in one country show that other (non-tax) factors generally are much more important than the corporate tax burden. Key considerations that fundamentally drive FDI choice are: the regulatory regime, particularly important for certain sectors; access to markets; skilled labour combined with labour market flexibility, and good infrastructure (in recent years there have been some investment in infrastructure, particularly transport, because there were some lags in 70s and 80s). Other important factors include productivity and labour costs, in which this country judges itself to be competitive.

Cheap labour costs were identified as a driving consideration influencing an automobile company to establish a plant in one host country, where the statutory corporate tax rate at the time was relatively high at 45 per cent. The perception was that the tax treatment of business profit was clearly not the reason the company chose that country over other locations.

While there has been a surge in FDI to new EU-member states where effective tax rates on profits are relatively low, establishing a link between a low effective tax rate and increased investment is difficult, as investment decisions depend on a variety of factors in addition to tax, some of which point in favour of one jurisdiction over another (*e.g.* with regard to the quality of infrastructure, flexibility of labour markets, levels of human capital and wage costs).

2. General uncertainty over the sensitivity of aggregate FDI to tax

For policy-makers and academic researchers alike, accurate estimates of the FDI response to host country tax relief are difficult to make, given uncertainty over the tax burden measure to focus on (presumably the same measure considered by investors), the need to consider jointly tax and non-tax factors in comparisons across locations, and the prospect that the tax elasticity of FDI to taxation may vary considerably by host country, investor (taxable, tax-exempt, home country) and time.

Part of the difficulty is uncertainty over what the relevant tax rate is to investors. To some, relevant tax comparisons stop at the statutory tax rate. Others take the view that final effective tax rates are more important in explaining FDI than the statutory corporate tax rate alone. For example, during the 1990's, one country financed rate cuts partly by base

broadening in way that was consistent with reducing the overall effective tax rate on investment, with lower statutory and effective tax rates expected to attract investment.

Another view is that *realised* average effective tax rates are the most relevant figure to assess the tax burden on FDI and effects of tax on location choice, being a better predictor than forward-looking marginal effective tax rates [as used in OECD (1991)], and much better than statutory tax rates which ignore tax-planning effects and special tax arrangements. This view suggests that effective rates inclusive of tax base provisions and tax-planning are factored in by investors. Statutory tax rates are important to explain firm's profitability (in foreign locations), because the statutory tax rate determines the tax savings at the margin of shifting another dollar of profit to a particular country.

A complicating factor is that the possible impact of domestic tax legislation on investment will differ across projects and investors. Policy makers in one country perceive that investment by a large mobile phone company in that country, owned primarily by a pension funds in a large OECD country, is determined independent of tax policy in the host country. This view may reflect a general inability of tax to influence investment decisions where pure economic profits are earned, and the fact that non-tax considerations play a dominant role.

There is general recognition also that tax relief available to foreign investors when operating from a given host country depends in part on the tax treatment of foreign income in the home country of the investors [*e.g.* deferral opportunities where CFC regimes are not in place, or are in place but mechanisms are available to avoid the application of those rules (*e.g.* certain provisions in one country help ensure the attractiveness to investors of using one OECD country as a country to establish a holding company)].

While much attention is given to corporate income tax, some countries emphasise the importance of other taxes. One country pointed out that corporate income tax is not the only tax relevant to investors. Taxes such as energy taxes and payroll taxes are important, and according to some, are becoming much more important. This is because companies "have already taken care of the corporate income tax" – not in the sense that they no longer pay corporate tax, but that they pay corporate tax at a level that corporate managers think is acceptable. This observation lends weight to the perception that multinationals have many tax-planning techniques at their disposal, and may be able to effectively decide the level of host country tax burden that they will pay.

3. Evidence of location-specific rents and ability to tax

As reviewed in Chapter 2, while certain empirical studies find a strong link between host country taxation and FDI, others do not. It is also instructive that several large countries with high effective tax rates are very successful in attracting FDI. Large country size suggests the presence of location-specific rents that governments are able to tax.

It has been argued that low corporate tax rates in certain Asia-Pacific countries bring about some pressure to lower corporate income tax rates elsewhere. But where higher corporate tax rates are matched by well-developed infrastructure, public services and other host country attributes attractive to business, tax competition from low-tax countries not offering these advantages is not regarded by policy-makers as seriously undermining the tax base.

At the same time, certain countries without a large population or domestic market size have been very successful in attracting business, and yet rank high in terms of their

tax-GDP ratio. However, while their overall tax burden may be high, the tax burden on business may be moderate or relatively low and form part of an attractive business climate.

Some policy makers take the view that their countries' economies are performing well and are highly competitive in attracting investment, not because the tax burdens are relatively low, but because they offer other advantages such as a highly-skilled labour force or a large domestic market.

4. Importance of host country fundamentals

Another key point, on which there is widespread agreement, is that a low host country tax burden cannot compensate for a generally weak or unattractive FDI environment. There are numerous examples of where poor infrastructure and other weak investment conditions have deterred FDI. Tax is but one element and cannot compensate for weak non-tax conditions.

E. Responding to international tax competition

Increased attention is being given by OECD countries to "tax competition" for FDI – countries competing with one another through the setting of their host country tax burdens to attract and retain investment capital – linked to the increasing mobility of capital, and pressures to offer a competitive tax system. This focus has been motivated in part by observations of significant capital being invested in or relocated to jurisdictions where taxes are low and wages are low. Unfortunately for policy makers, it is difficult to ascertain in most cases the relative importance of a low tax burden, amongst other investment determinants, in swinging location decisions.

Pressure to provide more competitive tax treatment may arise when lower corporate income tax (CIT) rates are announced in other countries, creating political pressure to respond in kind, voiced by voters concerned about dislocation of FDI to lower-tax and more generally lower-cost countries (with the public tending to focus on jobs lost rather than gained by increased cross-border investment). Special committees have recently been established in several countries, tasked with providing the government with recommendations on improving competitiveness.

1. Comparisons with "similarly-situated" countries

Certain regional boundaries to tax competition for FDI are identified, at least for certain sectors, often with a focus on neighbouring countries of similar market size and level of economic development. For example, corporate tax policy in one country is developed with a close eye to tax policy in its large neighbouring country, with more than two-thirds of inbound FDI from that country. Other examples arise of a large neighbouring country being regarded as the main competitor for FDI. Tax rate comparisons are undertaken, for example, by one country with other large EU countries where certain factors other than tax relevant to location decisions (*e.g.* wage levels) are roughly similar.

A common view is that host tax considerations are likely to matter more to location choice and may be a determinative factor when other key investment determinants are roughly equivalent. Where non-tax considerations important to FDI are roughly the same, the key tax drivers to an investment decision, according to one view, are a statutory and marginal effective tax rate advantage, in the context of a transparent and predictable tax regime and a supportive tax treaty policy. So, while tax considerations generally are not a

principal factor determining FDI flows, the influence of taxation on FDI decisions may be expected to be greater within the EU (than possibly other regions) to the extent that there is more or less a "level-playing field" in other policy areas. In one developing country's view, the key tax considerations when non-tax factors are alike are a low statutory tax rate and specific tax incentives.

2. View that international tax competition is increasing

A number of OECD countries perceive that direct investment is becoming increasingly sensitive to taxation, while others take the view that the evidence on this is less than clear, at least for certain activities. At the same time, while a given host country tax burden may have been viewed as competitive at one time, it may no longer be, following rounds of corporate tax rate reductions in countries competing for FDI. For example, some years ago, the statutory corporate tax rate in place in one country was widely viewed as competitive, but now this has changed. A review of this country's tax system in 2002 advised that the government should be prepared to lower its statutory corporate tax rate, financing the rate cut through base broadening. Recognising that FDI depends largely on non-tax factors (with education policies, infrastructure and labour market relations having been high on the policy agenda in his country in recent years), some uncertainty exists over the need to reduce the statutory tax rate, at least at this time.

In another country example, increased tax competition in recent years has eroded the competitive advantage that it once enjoyed by virtue of an extensive established tax treaty network, combined with discretionary special tax arrangements and well-developed ruling practices. The competitive advantage previously enjoyed by this country is gradually disappearing as other countries expand their number of tax treaties, and given recent EU restrictions imposed on special tax arrangements between host countries and multinational companies, in favour of greater transparency in tax dealings. All tax changes in this country are viewed with an eye to assess how they impact on attracting FDI. However, like many other countries, *ex post* assessments of what tax effects on FDI have been successful are rarely undertaken.

3. Alternative approaches to responding to tax competition

A number of policy responses to tax competition are observed in OECD countries, including reductions in the basic statutory corporate tax rate (generally the most expensive approach), other forms of general tax relief, and direct targeting of tax relief to mobile activities, sectors, or areas of market failure (*e.g.* R&D). With efficiency concerns of some officials over targeting, and revenue losses resulting from broad-based relief, recent attention in certain countries has been on removing tax impediments in the tax system (*e.g.* taking steps to improve transparency) while leaving the statutory tax burden unchanged. The importance of ensuring a tax system supportive of FDI fundamentals is also emphasised.

a) Reduction in the statutory CIT rate

Many tax policy officials underline the attractions of reducing the statutory corporate income tax rate as a means to encourage FDI: a relatively simple tax adjustment to introduce; readily observed; directly relevant to investors who anticipate pure profits; efficiency improving when combined with base broadening; and reducing tax-planning pressure against the domestic tax base. Also, EU countries face a more limited set of

options than in the past to reduce the effective tax rate on investment, with State Aid rules and Code of Conduct rules prohibiting provisions that discriminate in favour of FDI. These developments tend to shift attention back to the statutory rate as a broad-based mechanism to reduce the host country tax burden. At the same time, such reductions tend to be expensive in terms of revenue foregone, may be observed as unfair, and may create tax arbitrage problems with the personal income tax system.

On the question of which corporate tax provisions matter most to investors, there is widespread agreement that comparisons of statutory "headline" corporate income tax rates are important. Indeed, some are of the view that the statutory corporate tax rate is *the* key tax variable bearing on location decisions. As firms anticipate earning pure economic rent, the taxation of rents as set by the statutory corporate tax rate is an important driver of investment decisions. A special committee recently established in one country to assess its position regarding international taxation concluded that the statutory CIT rate should be reduced to attract FDI. This perception of the importance of the statutory corporate rate continues to hold today, as reflected in an expressed view that the statutory tax rate is *the* only tax variable factored in by investors, given the complexities involving in computing effective tax rates.

A number of countries point to recent corporate tax rate cuts introduced to encourage investment. Continuing with this trend, certain countries indicate an intention to pursue future reductions in statutory corporate tax rates, with some aiming for more aggressive cuts than others. One senior official, indicating a general policy preference for statutory rate cuts, explains that if at some future date the corporate tax burden needs to be reduced further, he and his colleagues will argue that this should be done by reducing the basic statutory tax rate (for all kinds of investment), rather than by special incentives for certain sectors or investors. In a number of country cases, plans are to finance future rate cuts largely through base broadening. In one country example where the government is planning to reduce its statutory corporate rate further, certain tax incentives including investment tax allowances are currently under review to assess scope for base broadening.

As noted at the outset, statutory rate cuts do not present an ideal solution in all cases. Some take the view, for example, that there is little evidence that lowering the corporate tax rate to, say, 30 per cent, would discourage firms from locating elsewhere. Most agree that the threshold host country tax level discouraging capital relocation (conditional on host country characteristics) is complicated and unclear. Another recognised difficulty is that a reduction in the statutory corporate tax rate not matched by a reduction in the personal tax rate on earned income, for example under a dual income tax system, would invite shifting problems (*i.e.* incentives to reclassify personal income as corporate income). Also, as noted above, statutory rate reductions tend to be expensive in terms of foregone revenues on existing capital.

b) Other forms of general tax relief

While the experience of some officials is that host country tax comparisons by investors often stop at the statutory tax rate, others take the view that other main tax provisions are also routinely factored into effective tax rate comparisons and should be given policy attention. In one such country example, the policy goal has been focused on reducing both statutory rates and marginal effective tax rates through broad-based policy reforms, to ensure tax rate advantages with regard to both (primarily *vis-à-vis* its large neighbouring country, and within the context of a transparent and predictable system with

a supportive tax treaty policy). Examples of general tax relief substituting for or supplementing statutory rate cuts follow:

i) Ensuring tax base provisions consistent with international norms

In most host countries, officials are generally open to addressing tax relieving provisions that are largely inconsistent with tax relief available in other countries and are difficult to defend on policy grounds. As an example, officials in one country point out that they are willing to consider modifications to their tax depreciation rules in order to ensure that their country's tax system remains competitive. If most countries depreciate aircraft, for example, over 20 years, it is generally difficult to defend rules that depreciate aircraft over 35 years.

ii) Removal of capital taxes

Other examples of general tax relief recently introduced to attract investment include the removal of capital taxes. In two country examples, investors have complained about the negative impact on FDI of capital taxes, determined as a percentage of capital (rather than income) and non-creditable for foreign tax credit purposes. Recognising the impediments that capital taxes may impose in certain taxpayer situations, the central governments concerned in these two examples have indicated that they will phase out their capital taxes, to provide a more attractive environment for investment.

iii) General tax relief to the primary benefit of certain sectors

Also interesting to note under alternative forms of general tax relief are certain innovative ways of indirectly targeting mobile business activities and the associated tax base. In particular, some countries have recently moved to introduce measures of general application that in practice may advantage particular business activities. Given these examples, other countries are now considering similar policy adjustments to favour the most mobile parts of the corporate tax base.

An ACE-type deduction recently introduced in Belgium offers an example of a form of tax relief that is non-targeted, in that the notional interest deduction is available to all companies and thus may not be ruled offside under the EU Code of Conduct rules, yet may in practice benefit particular business activities more than others (in particular, those benefiting previously under Belgian co-ordination centre provisions).

Governments in other countries are now considering similar forms of tax relief. Discussions are currently underway with the EC to determine if such provisions are allowed under EU law. Some concern exists that such provisions could be ruled offside, judged to undermine the tax base of other member states. Provisions that are general in application, while being particularly advantageous in practice, through their design, to particular (mobile) businesses, are of increased policy interest given that ring-fencing (tax relief explicitly targeted at tax base erosion in other countries) is prohibited under EU Code of Conduct rules.

c) Targeted tax relief

Rather than responding to tax competition by reducing the burden of tax provisions of a general nature, certain countries prefer to explicitly target tax relief with the aim of encouraging additional FDI at a lower cost in terms of foregone tax revenue.

i) Explicit targeting of mobile activities

Targeting mobile activities (*e.g.* shipping, films, export-oriented, head-office) is regarded by some policy makers as an attractive option, given the significant revenue costs associated with broad based tax relief. The film industry, for example, is a popular target for tax assistance. Possible policy reasons for targeting this activity include the fact that the filming of movies is a mobile activity and thus potentially sensitive to host country tax differences. (Another possible reason for a tax incentive for films is that they provide publicity for the country, a positive externality for the host country not factored in by the private sector). Another example are rules that exempt foreign dividends of resident companies that are wholly-owned by non-residents, an approach targeted specifically at attracting head-office functions.

Certain countries tax at a lower effective rate companies that are export-oriented (firms that have worldwide markets and employ mobile intangibles), in an attempt to attract these mobile companies. In contrast, higher tax rates are levied on firms that serve the local market (taxing rents). In one country example, special tax treatment is provided for investment in resident companies provided that all of their final products are exported. Qualifying firms are provided with a full exemption from profits tax, special customs treatment, and a customs exemption for certain temporary imports.

In another country example, tax reform over the 1990s concentrated on reducing CIT rates to reduce incentives for tax avoidance and protect the tax base. More recently, increased attention has been given to increased mobility of the corporate tax base. While rate reductions have been helpful in this, policy makers are on alert that more may be required. In particular, consideration is being given to reducing the tax rate on the most mobile elements of the tax base, including special tax treatment to interest and royalty income. It was explained that how the government will adjust its policy in this area depends largely on what other countries do.

Preferential treatment of certain mobile sectors of the economy is confirmed in data. Internal studies in one country clearly show, for example, that foreign-owned resident companies with a worldwide market (with significant export sales, significant trade in intangibles) have a much lower average tax rate than domestically-controlled companies.

ii) Industrial targeting

Some tax systems target certain activities as a matter of national industry policy. An official of one country, outside the scope of the EU State Aid rules, explains that his government's system follows a course of explicitly targeting preferential tax treatment to sectors where national advantages or benefits of attracting FDI are believed to outweigh the domestic costs, including foregone tax revenues. This country has recently introduced special tax incentives for a number of specific sectors.

iii) Targeting market failure

In a number of other countries, activities are targeted only where there is believed to be market failure. An official of one country that targets R&D to correct for market failures (implying sub-optimal levels of investment in the absence of government support) explains that this form of targeting of activity may subsidise some industries more than others.

iv) Efficiency concerns and constraints with targeting

While recognising that instances of market failure may imply an inefficient allocation of resources, difficulties in identifying and measuring market failure caution some officials from endorsing policies that deviate from neutral treatment Some take the view that targeting by industry is likely to be inefficient, based on the perception that government cannot pick winners. Such concerns over distortions and fairness encourage the application of EU State Aid Rules. A cautious approach also recognises that tax incentives, once introduced, are difficult to contain. Certain problems may be identified with targeting foreign investment, with negative results encouraging greater reliance on general tax relief.

Restrictions on industrial targeting apply for countries within the European Union, with actions at the federal level to target specific industries constrained by EU law (State Aid rules and Code of Conduct rules), and with requirements that provisions apply equally to domestic and foreign investors. However, scope for targeting of activities remains at the sub-central level. A number of Free Economic Zones are provided in one country example at the local level.

Within the EU, restrictions under the State Aid rules and Code of Conduct rules require that tax relief be non-discriminatory in application. In particular, tax relief should not discriminate between domestic *versus* foreign investment by domestic firms, nor between domestic *versus* foreign shareholder interests in domestic firms.

In one EU country example, 10-year tax relief is provided to large investment projects (of 5 million euros and more) in strategic sectors (manufacturing, information technology, R&D activities, film making, agriculture, forestry, tourism) operating in special economic zones. The relief, including a tax holiday, exemption for property taxes, and a 5-20 per cent investment tax credit for investments in intangibles, has been approved by the European Commission, under regional State Aid rules. When entering the EU, this country was allowed to maintain its special economic zones until 2017, as the zones had been established a long time in advance.

In another example, tax competition pressures led to the introduction in 2000 and 2001 of a package of FDI incentives, including a 10 year tax holiday providing a corporate income tax exemption for new large investments. The net benefits of the incentives to the host country are reported as being unclear, and under EU State Aid obligations, are no longer being offered to new FDI. Officials also report suspected abuse of the tax holiday involving "round-tripping".

d) Removing impediments (leaving the statutory effective tax rate unchanged)

One response to tax competition is no direct immediate response, at least insofar as not adjusting the host country statutory effective tax rate (ETR).

i) Reducing ETR unnecessary and in conflict with other goals

Lowering the effective statutory tax burden may conflict with other policy objectives, for example revenue goals and maintaining an equitable division of the tax burden. No response could be driven by a view that reducing the host country tax burden is not necessary to attract and retain capital, and may be inconsistent with other policy goals. (For some countries more than others, due possibly to certain host country attributes, investment may be seen as largely insensitive to the host country tax burden, at least currently over some range. Scope may exist for collecting tax at an effective rate within

that range, which may help further equity goals and overall revenue targets. For other countries, where direct investment is viewed as less attached to the home country, policy interest may exist in targeting certain mobile activities while at the same time guarding against setting too high a basic corporate tax rate, one that encourages capital relocation.)

Also, as noted above, a number of countries view targeted reductions in ETR with caution. Corporate tax policy, as a general rule, may best approached by ensuring that investment is based on commercial rather than tax considerations, implying neutral treatment of profits derived in different sectors and by different investors, while considering adjustments with an eye to removing tax impediments, for example through reduced complexity and increased transparency.

Rather than indicating no response, many countries point to steps being taken to remove impediments to FDI, steps which may be taken in isolation or alongside other measures to attract investment. In one country, for example, a special bureau has been established to provide guidance to foreign investors on how to comply with that country's tax system.

*ii) Improve transparency, certainty (*e.g. *rulings, treaties)*

Significant attention is being given in policy circles to the importance of transparency and certainty of tax treatment, aspects that not only support good governance, but also help foster investment. As an illustration of this, the example may be given of where the availability of discretionary tax relief in one country has been identified by industry as an impediment to investment. Companies have indicated a preference for a simpler, more transparent system, and have requested that they be taxed under the ordinary tax system (which applies a low statutory tax rate to a broad tax base).

In other examples, in-house studies show that uncertainty in tax treatment can be a significant deterrent to investment. In this regard, it has been pointed out that some degree of certainty has been lost with the transfer of some taxing authority to the EU. Tax treaties and mutual agreement procedures (MAPs) are often identified as key to certainty and stability in the treatment of cross-border investment. Indeed, many countries indicate that they are examining ways to provide greater certainty and to strengthen their tax treaty network. One country explains that if a major investor from a non-treaty country wishes to invest in that country, authorities aim to negotiate a tax treaty with the relevant home country.

Officials in a number of OECD countries explain that they are giving increased attention to ruling procedures which, by addressing interpretation problems before they arise, help provide certainty of tax treatment in advance of a given investment or transaction. A new "international ruling" procedure for foreign-owned companies and domestic companies holding a foreign participation is being introduced in one country with the specific aim of attracting FDI. Other countries have also recently established new ruling procedure, with an eye to accommodating tax results that multinationals would obtain when investing elsewhere.

An official of one country explains that his country has a tradition of providing rulings (an administrative tool to interpret fiscal regulations according with taxpayer requests). The rulings, available to non-resident taxpayers, are not allowed to change the law or provide special fiscal treatment, but to provide certainty to taxpayers including official interpretations of tax laws and regulations. The tax agency in this country is being actively developed, with the introduction of a new set of rules and management mechanisms to

deal with international tax issues and non resident problems. Tax officials report that the tax agency is regarded within the country as one of the most advanced public administration bodies in the EU in the use and application of information-technology.

iii) Strengthen fundamentals

Given the importance of macroeconomic stability, a supportive legal framework, well-developed infrastructure, a well-trained labour force and other central concerns to attracting investment, it is widely recognised that all tax policy approaches to encourage FDI should run parallel with measures to build and support these market fundamentals.

Control of government finances is also identified as a key element, which helps provide stability in tax laws and thus greater certainty over tax treatment, as well as greater stability and less risk in the economy overall. In addition to noting the importance of a well-trained labour force, officials in one country underscore the importance of not only a pro-business environment adaptable to business needs in different sectors of the economy, but also the development of a social partnership (cooperative relationship) between trade unions and employers. Another provides evidence that improving fundamentals are required to attract FDI. Over the last few years, a significant amount of FDI has been attracted to this country due to increased transparency and stability in markets (without any special tax incentives targeted at FDI).

F. Responding to tax avoidance

Another main theme in the context of the taxation of inbound FDI is responding to tax avoidance, viewed generally as a growing and important problem to address, driven largely by corporate income tax rate differentials across jurisdictions that cannot be eliminated, calling for the need for strong base protection rules. Corporate tax planning aimed at minimising the amount of host country tax paid, or aimed at paying an "appropriate" amount of host country tax, is nowadays a common business strategy, increasingly the rule rather than the exception, with methods to achieve host country tax savings now widely advertised and increasingly accessible. The section provides a brief review of what rules are in place currently in a number of countries to discourage aggressive tax planning against the domestic tax base, and what developments are foreseen.

1. Importance of addressing tax avoidance

As previously noted, many countries view corporate tax as an important component of the tax system. Taxing corporate profit provides a backstop to personal taxation of income from capital, can be used to impose tax on foreign investors on domestic source income, while also providing other functions. To secure these functions, tax avoidance must be addressed. A tax official in one country explains that in the design of rules in his country, a broad objective is to encourage investment while at the same time raise a certain share of tax revenue, which the government regards appropriate as a target for a corporate tax. Avoidance is seen as something that undermines the ability of the system to deliver these objectives, and therefore determined efforts are in place to close loopholes, and undertake structural reforms when needed to close off the opportunities for abuse. Recent measures in this country include tightening existing regimes and introducing new rules to limit avoidance through artificial transactions.

2. Tax planning incentives driven by the CIT rate

Business incentives to tax plan against a host country tax base rest largely on the relative setting of the host country statutory corporate income tax rate. This recognises that host country corporate tax savings of leveraging a subsidiary in a given host country by an additional euro, for example, or manipulating transfer prices to shift an additional euro of profit to a country that does not impose income tax, are determined by the statutory corporate income tax rate, assuming no offsetting effects.[12] Thus adjusting to a lower statutory tax rate, while possibly introduced for other reasons (*e.g.* to attract and retain FDI) may be rightly seen as a policy measure serving to help protect the domestic tax base from corporate tax planning.

Reductions in statutory corporate tax rates have been introduced in a number of OECD countries with tax avoidance pressures in mind. In one country example, a main intention behind recent reductions in the statutory corporate tax rate by five percentage points has been to take tax-planning pressure off the domestic corporate tax base, with further rate reductions planned in 2007.

In another country that has traditionally maintained high corporate income tax rates, a main aim of past tax reforms involving corporate tax rate reductions has been to reduce tax avoidance, rather than attract foreign investment. During recent years, there has been a growing recognition that attracting FDI might be important and that there might be competition for corporate tax bases.

3. Limits to reliance on CIT rate reductions

While reductions in statutory CIT rates are generally helpful, both in terms of attracting FDI and reducing tax planning pressures, the scope for such reductions is limited (expensive, highly visible raising equity concerns, provision of windfall gains, complications arising with personal income tax).

A main challenge is that tax savings may be realised – whatever the host country statutory corporate tax rate – by shifting taxable profit of a given enterprise to a related affiliate in a country that does not impose corporate income tax at all. In other words, even if the host country corporate tax rate is very low, tax planning against the base may generate tax savings. As there are costs involved in tax-planning, limits to the amount of profit that may be shifted, and multiple opportunities to tax plan for a multinational operating in many countries with varying corporate tax rates, presumably at some non-trivial corporate tax rate, tax-planning pressure on the tax base would be largely reduced. However, determining this threshold value or range of values is not immediately obvious, although there appears to be general agreement that the threshold is falling as statutory tax rates fall and professional tax-planning advice is more accessible.

Not all tax officials reach the same conclusions regarding corporate tax rate levels that trigger aggressive tax planning. One official explains, for example, that his country does not expect that it will be a main target for tax planning with the reduction of its statutory CIT rate by almost ten percentage points, to roughly 25 per cent in 2005. Furthermore, according to the same official, differences of statutory CIT rates of 5 percentage points or less should not generate incentives to shift tax base between the relevant jurisdictions.

In general, policy makers face a number of constraints in (and uncertainty over the effects of) reducing their statutory corporate income tax rate, limiting how far they may rely on this mechanism to ward off tax planning. And while companies may agree that the

statutory tax rate in a given host country is reasonable, compared to rates applied in previous years and to rates in other countries offering similar advantages to business in locating there, significant private resources may continue to be directed at tax-planning in an effort to maximise shareholder profit. Indeed, it is often pointed out that the private resources so allocated to tax planning far outweigh the public resources being directed at countering it, with the imbalance getting no better and possibly worse, despite cuts in statutory tax rates in recent years.

4. Challenges in addressing aggressive tax planning

i) The need for strong base protection rules

A number of OECD countries have stepped up efforts to reinforce and supplement rules to counter tax planning to protect the tax base given the growing use of tax planning techniques.[13] As a recent example, the upstream taxing conditions of base protection provisions in Belgium have been strengthened to address financial structures enabling effective double non-taxation. Many countries have in place general anti-avoidance rules (denying tax relief for business transactions found to have mainly anti-avoidance rather than business objectives), as well as specific anti-avoidance provisions, including transfer pricing rules and thin capitalisation rules. Some countries have in place transfer pricing rules in line with the OECD guidelines, but not other domestic base protection measures (*e.g.* thin capitalisation rules), based on the perception that while tax planning no doubt takes place in their absence, specific provisions are not yet necessary.

ii) Difficulties with base protection rules (thin cap, transfer pricing)

Officials of several countries report difficulties in enforcing transfer pricing rules where the burden of proof of the use of non-arm's length pricing rests with the government, due to the complexities often involved and where there is a lack of information. Some have introduced strict transfer pricing documentation requirements, along with penalties in order to encourage compliance. The work by the OECD group on transfer pricing is held out as critically important in helping governments ensure a fair determination of taxable profits in cross-border transactions.

Problems are also met in administering thin capitalisation rules. One country reports a revised policy of discussing/negotiating the application of thin cap rules with individual companies, to avoid unintended effects. Another reports that his country has recently had to amend its thin capitalisation rule in response to a judgement by the European Court of Justice which held that its thin cap rules were in violation of the EC Treaty, and cannot be applied to EU residents. Other EU countries have been similarly affected, with one indicating that the success of its thin cap rules in containing domestic base erosions has been weakened owing to their now limited coverage to non-EU investors.

Officials underline the need to update and refine anti-avoidance rules in order to address difficulties as they emerge. One issue is how to fairly apply thin capitalisation rules across different sectors, recognising that certain sectors would be expected to be more highly leveraged for business (non-tax) purposes. Banks, for example, would normally be highly leveraged. In one country example, the debt/equity threshold of 2 under its thin cap rules (applicable only to companies owned by non-residents) is used as a benchmark, alongside another rule which allows the degree of leverage to vary depending on the type of business activity, sector, size of company and risks of the operation. If a taxpayer can

demonstrate that its debt/equity ratio reaches a particular value for business purposes, then its interest deduction may be allowed.

Under another system's thin cap rules, debt can be 75 per cent of total assets. But in addition, there is a worldwide debt/equity ratio rule that allows leverage to be as high as the company's worldwide debt/equity benchmark. The rules consider all debt, not only related-party debt, and apply only to foreign owned companies. For banks, a special lending exemption is provided that allows lending out to be offset by borrowing in. The rules are currently being reformed, as the definition of equity has been abused, primarily by foreign banks operating in his country.

Officials also point to the need to address in a timely manner loopholes in relation to anti-abuse provisions, while at the same time ensuring that the applications of these rules does not hamper normal business activities.

iii) Importance of complementary policies

In addition to thin capitalisation rules, transfer pricing rules, and general anti-avoidance provisions, complementary policies may be required to combat specific avoidance schemes. Examples include disclosure regimes that report on avoidance schemes; co-operation with other countries through information exchange; and on the administrative side, programs that target compliance activities towards areas that seem to be of highest risk, with foreign transactions being one of these areas.

iv) Keeping abreast of latest strategies

Policy makers report several challenges in addressing aggressive tax planning on inbound direct investment. To begin, simply keeping abreast of tax-planning developments and reacting in due time to stem excessive revenue losses is a difficult task. Countries actively aiming to contain tax avoidance acknowledge that government is unfortunately one, if not more, steps behind firms implementing new innovative strategies, with officials unable to react until the structures are in place, detected and then possibly ruled "offside".

Officials working towards protecting the corporate tax base typically acknowledge that they are outnumbered and lag behind tax planning specialists working in the private sector. In one country, where companies are now seen as far more aggressive than government in the tax planning area, and where there is recognition that the current tax system is too simple to address the complex financing structures in place today, a commission has recently been established to study the tax evasion problem.

At the same time, in addressing these challenges, difficulties are met in assessing the degree of tax avoidance, and the effectiveness of anti-avoidance legislation. In part, assessing the effectiveness of general and specific anti-avoidance measures in combating tax avoidance is difficult, since tax avoidance itself is difficult to quantify.

v) The need to balance policy goals

Another challenge is striking an appropriate balance of policy considerations. Just as tradeoffs are faced in adjusting the effective tax rate on FDI through statutory provisions, similar tradeoffs are faced in increasing the effective rate through more robust enforcement. If policy leans too much in favour of accommodating business persuasion that the host government avoid complex or otherwise difficult base protection provisions, revenue goals may be compromised, alongside weakened public perception of fairness in

the tax system. These perceptions may further threaten tax revenue collection by encouraging non-compliance in other areas.

On the other hand, a real difficulty is devising rules that adequately protect the tax base without imposing excessive compliance costs on firms, or otherwise hampering normal business operations. With increasing globalisation, and increasing sophistication of business structures and operations, a real difficulty is in determining where tax should be paid in an economic rational way. Combating tax avoidance is challenging because of the need to distinguish in legislation between avoidance transactions and arrangements, and legitimate ones. Combating tax avoidance cannot be achieved at the expense of undue compliance complexity or of making the tax system uncompetitive. Difficulties are met in drafting specific anti-avoidance legislation that limits itself to structures deemed offside, while not interfering with or adding undue compliance costs to acceptable business arrangements. Such rules must also not require inordinate administration costs or otherwise not be actively enforced by government. Indeed, for base protection measures to work effectively, taxpayers must perceive that the measures are enforced and routinely investigated during tax audits.

A related challenge is accurately weighing up "international competitiveness" arguments that business will locate elsewhere unless the host country removes or significantly weakens the reach of its base protection measures (*e.g.* thin capitalisation rules). Even if a given tax-planning structure is found to be outside the spirit or general intention of the tax rules, while possibly inside the letter of the law, governments may be reluctant to tighten the law, given competing policy interests in addition to avoiding revenue loss, ensuring an equitable sharing of the tax burden, and limiting investment distortions. In particular, concerns over "international competitiveness" alongside claims by business groups that accommodating treatment is available elsewhere, in other host countries, may condition the government's stance. While "international competitiveness" arguments are increasingly heard and reflected in tax rules governing the treatment of outbound investment, at the same time they may also largely condition the application of host country base protections on inbound investment as well.

Notes

1. The policy perspectives reported in this chapter do not necessarily reflect the views of individual member countries.
2. While in some cases resident investors and creditors take a portfolio interest in foreign-owned companies, income on such investment would not be incremental (additional) to the extent that, in the absence of FDI, the portfolio capital would be invested in an alternative domestic asset generating roughly the same return. However, to the extent that inbound FDI causes portfolio investment to swing from foreign assets to assets issued by resident foreign-owned companies, a net increase in domestic income could result (to the extent that domestic tax is collected on domestic portfolio investment, but little domestic tax is collected on returns on foreign portfolio investment, due to non-reporting of such income, or the domestic provision of foreign tax credits in respect of host country withholding tax (to avoid double taxation).
3. For an excellent survey on theories of tax competition, see Wilson (1999).
4. In the basic tax competition model with a fixed global capital stock, a reduction in one country's tax rate, which attracts investment to that country, harms other countries by decreasing their capital stocks. As this negative externality is not taken into account by a host country reducing its tax rate, tax rates and public expenditures are set at inefficiently low levels.
5. Large countries compete less vigorously for capital, as the cost of capital is less sensitive to tax rate changes for larger countries (able to influence pre-tax rates of return). Each resident is assumed to

have the same endowment of capital and labour. Thus "size" is measured by the supply of the immobile factor labour.

6. The preceding results are derived for the small capital-importing case. As shown by Bucovetsky and Wilson (1991), if countries are large enough to influence the equilibrium after-tax rate of return on capital, then the host country's optimal tax system includes a source-based tax on capital income.

7. This linkage is not dissimilar to that in Tiebout's (1956) theory of local public good provision and efficient tax competition.

8. Under the CP model, capital owners benefit from public goods only if they reside in the host country where those goods are provided. However, in practice, it may be that capital owners resident in home country A benefit from public goods provided in host country B where those goods/services lower the cost of conducting business in country B (rather than increase consumption of the country A investor directly). An example could be an extensive highway/railway system. Thus the results derived for the mobile capital owner case may carry over in some cases to apply to the situation where capital and its owners are spatially separated.

   Note also that another another branch assumes that the government's social welfare function differs from that of the mobile factor. As in the models assuming spatial separation of capital and its owners, tax competition is shown to be harmful (tax rates set too low from a societal perspective).

9. A stylized assumption built into the model, and reflected in the results, is that preferences for public goods are stronger when consumers are richer.

10. The tax rates of two countries (north) and (south) are determined as a Nash tax game. The north country (that initially has the core economic activity) sets its tax rate (t) in the first stage, while the south country sets its tax rate (t^*) in the second stage, and then migration and production occur in the third state. The tax game is solved last stage first. In solving the second stage, the south's objective function is discontinuous. If the south chooses a sufficiently high tax rate, no industry will move from north to south. If however the south chooses a tax rate low enough (t^{*b}) to attract (all) industry from the north (that is, to capture the core), it has a higher tax base and thus higher tax revenue for any given tax rate. The north is aware of its influence over the south's decision. The lower is the t chosen by the north, the lower will be t^{*b} and thus the less attractive will be the core-stealing option to the south. In the first stage, the north would want to set its tax rate such that the south will not find it worthwhile to attract the core. What the north is expected to do, then, is to push its tax rate low enough so that the south is indifferent between its unconstrained optimum without the core, and its constrained optimum with it. (This "limit tax" game is akin to the equilibrium of the Stackleberg oligopoly game where the leader "limit prices" a potential entrant).

11. While the same may be said of taxes imposed on domestic-owned businesses, new FDI may be viewed as more sensitive to host country tax burden differentials than domestic-owned businesses which already have a physical presence in the host country and would face non-trivial costs in relocating production to another country. (The same argument would not apply to domestic companies decisions over the location choice for new productive capacity).

12. This assumes non-binding host country thin capitalisation rules, and similarly, non-binding transfer pricing rules. It also assumes that a reduction in host country income tax is not offset by a reduction in foreign tax credits in the home country, where the home country operates an exemption system, or by application of anti-deferral rules.

13. In a given country and given year, some tax minimizing structures may be commonly used, having become conventional practice, while others may be newly introduced to test the limits of the tax law and tax administration. On the other side, differences may be observed across countries in the "rules of the game", reflecting a different balancing of policy considerations. What is viewed as "aggressive" planning in one context may be completely consistent with basic policy design in another.

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Chapter 4

Taxation of Outbound FDI – Policy Considerations and Perspectives

A. Introduction

This chapter provides a review of policy considerations and perspectives guiding the taxation of outbound foreign direct investment.[1] The review, based on a "tour de table" discussion amongst OECD tax officials on the topic of taxation and foreign direct investment, reveals that, as in other tax policy areas, the treatment of foreign source business income involves a balancing of policy considerations, including concerns over competitiveness and efficiency, domestic tax revenue requirements, equity and simplicity, with different country circumstances resulting in different weights being attached to competing objectives.

As discussed in this chapter, the attention of policy makers would appear to be increasingly focused on issues raised by calls for providing internationally competitive tax treatment, with discussions often factoring in efficiency considerations of alternative approaches This attention does not imply that tax revenue and other competing policy considerations are judged to be unimportant; indeed, revenue constraints are implicitly in the background throughout discussions amongst policy makers on the topic, as they constrain policy options in most countries. But the more controversial and difficult aspects appear to be those surrounding international competitiveness concerns, raising many questions where the answers are not obvious and where difficult tradeoffs are confronted.

B. Possible benefits of outbound FDI

Arguments for favourable tax treatment of outbound foreign direct investment (FDI) often point to the benefits of foregoing tax revenue on such investments. Possible home country benefits of FDI abroad could involve efficient access to foreign markets, production scale economies, and spillover benefits that would not otherwise be possible (*e.g.* from increased domestic investment, domestic production and exports), leading to increased net domestic income.

Depending on the type of FDI, there may be some concern that potential benefits will be outweighed by reductions in net domestic income resulting from domestic job loss and reduced taxation where outbound FDI is a substitute for domestic investment. Where outbound FDI substitutes for domestic investment, wage income may be lost if domestic labour market conditions are such that employees are unable to find other work at similar wages. Where employment is reduced, both net household income and personal income tax on labour income would decline.

Moreover, where outbound FDI substitutes for domestic investment, domestic corporate income tax on domestic profit could decline. Under exempt treatment of foreign dividends, no home country tax would be collected on foreign profit. Under a dividend credit system, little or no home country tax may be collected on foreign profit with the home country provision (to avoid double taxation) of foreign tax credits in respect of foreign host country corporate income tax and withholding tax. These reductions in corporate tax revenue would not be offset by reduced domestic interest deductions where

corporations are able to deduct against domestic taxable income interest paid on amounts borrowed to fund outbound FDI (that generates little if any home country corporate tax).

However, the preceding assumes that the domestic capital stock is reduced by outbound FDI, and can be maintained in the absence of FDI. Where foreign markets are more efficiently reached or factors of production are accessed at lower cost through a foreign presence rather than through exports, establishing foreign operations may allow companies to grow and achieve economies of scale otherwise not possible. Resulting production efficiency gains may mean an overall increase in net domestic income if not achieving these gains through foreign expansion would result in firms being unable to compete in foreign markets and domestic markets (against imports), leading to them scaling back or winding-up operations. Where domestic investment is strengthened and deepened as a result of FDI, other domestic business that transacts with MNEs would also benefit, generating additional employment and domestic income. Under this scenario, outbound FDI may lead to increased net domestic income.

C. Overview of policy considerations in taxing outbound FDI

1. Main policy considerations and trade-offs

As with policy decisions over the treatment of inbound FDI, a number of considerations and constraints are normally balanced when setting rules over home country taxation of active business income earned on outbound FDI. A main consideration when addressing revenue requirements, concerns over equity and fair domestic competition, international competitiveness concerns, and efficiency aspects of the taxation of profit on outbound FDI, is that such profit may be subject to host country taxation at effective rates that are well above or below the effective domestic corporate tax rate on domestic profit. This leaves policy makers to consider how best to treat foreign profits taxed at source at effective rates significantly different from domestic rates, and address scope for international double taxation (or double non-taxation), on the basis of a careful weighing of often competing policy considerations.

In assessing alternative approaches, consideration of the government's *revenue requirements* would normally factor in where a general policy objective is to include where possible a number of bases in the tax mix to fund public expenditure. Where foreign profits are taxed, the amount of domestic tax revenue collected on inbound FDI would depend on foreign tax credit limitation and credit "mixing" rules, as well as deferral opportunities and other tax planning possibilities. Taxation of corporate profits, both domestic and foreign source, may be viewed as appropriate as partial compensation for various benefits of incorporating in the residence country.

Horizontal and vertical *equity concerns* may also call for current taxation of foreign profits, with corporate-level tax required to ensure that such income is taxed as earned. Vertical equity concerns may be addressed where net home country tax collected on foreign profit enables reduced reliance on general consumption and/or other taxes possibly borne disproportionately by lower income taxpayers. Horizontal and vertical equity concerns may also be addressed to the extent that resident shareholders bear some part of the domestic corporate tax burden on foreign profits, for example where outbound FDI is financed by local domestic savings.[2] Where outbound FDI is financed by perfectly mobile portfolio capital requiring a fixed rate of return, the incidence of corporate tax would not be expected to apply at the margin to resident shareholders. However, if

outbound FDI generates significant economic rents on infra-marginal returns, the incidence of corporate tax would be felt (in terms of reduced after-tax rates of return) by resident shareholders. This may further equity goals to the extent that equity shares are held primiarly by upper income taxpayers.

Where resident firms with only domestic investment (*e.g.* in manufacturing operations) earning domestic and export sales must compete in domestic or foreign output markets with resident multinational firms with both domestic and foreign source income, a fair domestic competition argument may call for a combined host and home country tax rate on foreign profit that is no less than the effective tax rate on domestic profit. This call would be to ensure "fair competition" between firms with only domestic source income and those earnings foreign source profits as well. In other words, a cost advantage of a resident MNE, earning foreign profit subject to a relatively low rate of tax, may be seen to be an unfair benefit, placing domestic firms with only domestic source income at a competitive disadvantage.

As reviewed below, the literature exploring *efficiency considerations* offers limited guidance on the choice amongst alternative policy approaches for taxing cross-border investment income in a manner consistent with maximising global (or national) welfare. While some earlier studies offer support for the taxation of foreign profit at a combined (host plus home country) rate equal to the home country rate on domestic profit, others find support for exempting foreign profit from domestic tax. More recent work drawing attention to the implications of international portfolio capital markets, varying production technologies and efficiencies, the employment by MNEs of locational *versus* mobile intangibles and corresponding local *versus* global (cross-border) competition in product markets, as well as tax-planning activities, shows that no one single welfare criterion can be expected to provide an efficient allocation of resources in all cases.[3] This uncertainty, as one might expect, leads to increased focus on other considerations to guide policy-making.

Counter to possible revenue considerations, equity concerns, and fair domestic competition arguments calling for the taxation of foreign and domestic profits at equivalent rates, "*international competitiveness*" *considerations* weigh heavily and effectively towards no or only limited home country taxation of foreign profits. With domestic and foreign-based multinationals able to choose amongst competing host countries as a location for mobile business activities, preferential tax treatment of outbound investment may be seen as necessary to encourage inbound FDI and discourage capital relocation (*i.e.* by removing possible home country tax impediments to home country base operations). Also, as previously noted, calls for preferential tax treatment of outbound FDI also find some support in the optimal taxation literature, briefly summarised below.

2. Alternative efficiency criteria and policy implications

The standard economic framework used to assess efficiency implications of taxing profit on FDI is introduced by Musgrave (1963) who, unlike subsequent studies, ignores the possible effects of taxation on the level of savings and thus on the size of the global capital stock, as well as other considerations shown in subsequent work to be key to policy analysis. Her basic insight is that a fixed pool of capital is most productive when allocated across countries such that pre-tax rates of return are everywhere the same. Under competitive conditions and in the absence of taxation, investors in a capital exporting country will adjust capital allocated to outbound FDI until pre-tax rates of return on domestic and foreign

capital are the same. With the introduction of tax on investment returns, where investors compare after-corporate tax rates of return, the same outcome is predicted if the corporate tax rate on domestic profit equals the combined host and home country corporate tax rate on foreign profit.

Consider the small capital exporting case, where a country's outbound FDI is too small relative to the total foreign capital stock to impact the pre-tax rate of return on foreign capital, which can be assumed to be 10 per cent for illustrative purposes.[4] Assume further that the domestic (home country) corporate tax rate is 40 per cent. If profit on FDI is subject to a combined host/home country tax rate of 40 per cent, FDI earns an after-tax rate of return of 6 per cent on the fixed 10 per cent pre-tax return. This establishes a required after-tax rate of return on domestic investment of 6 per cent. Thus, domestic investors will invest in domestic capital only up to the point where it yields an after-tax rate of return of 6 per cent (investing the remainder of their savings abroad as FDI), implying an equilibrium pre-tax rate of return on the domestic capital stock of 10 per cent. With pre-tax rates of return on domestic and foreign investment equalised at 10 per cent, the greatest global income is obtained for a fixed amount of total savings.

Musgrave's work (1963) emphasising production efficiency is supportive of *capital export neutrality (CEN)* – taxing profit on FDI such that the effective combined host and home country tax rate equals the effective tax rate on domestic investment – as a policy approach that maximises global output and global welfare. Subsequent refinements to the underlying analysis, which to a varying extent challenge the policy prescription of CEN, include: allowing domestic savings to respond to changes in after-tax rates of return; introducing budget constraints and the taxation of labour income and economic profits; considering the implications of fixed after-tax rates of return set in international capital markets; introducing varying production technologies; addressing different dimensions to product competition (local *versus* global); considering the implications of tax-planning; and also considering how policy prescriptions may change depending on whether governments aim to maximise global welfare, or national welfare.

The first main challenge to CEN is by Horst (1980) who modifies Musgrave's model to allow domestic savings to respond to after-tax rates of return. With variable domestic savings, taxation by the home country of foreign profits from FDI, which operates to offset production inefficiencies (welfare losses) caused when the tax burden on domestic profit exceeds that on foreign profit – introduces a savings distortion and associated welfare losses. Thus, in the Horst model, which takes the domestic tax rate as fixed and considers variations in the combined host/home country tax rate on foreign profit, domestic policy makers face a trade-off between production efficiency losses and savings efficiency losses.

Horst finds that global welfare losses are minimised by accepting some of both production and savings distortions, consistent with the theory of second best. In Horst's model, global welfare is maximised where the combined host/home country tax rate on foreign income T is positive but less than the domestic tax rate t, with the optimal tax rate on foreignincome shown to depend on the rate-of-return elasticities of the demand for capital and the supply of savings in the two-country model.[5] If the supply of domestic savings is inelastic (fixed) in each country, pure residence-based taxation is found to be optimal. If the demand for capital is completely inelastic in each country, then pure source-based taxation is optimal. More generally, with elastic demand and supply, the optimal tax

rule moves away from equal taxation of foreign and domestic profit to one of preferential taxation of foreign income with (T < t).[6]

Horst's analysis which takes into account possible tax distortions to domestic savings casts doubt on CEN as a policy objective, and offers support for *capital import neutrality (CIN)*. Capital import neutrality aims at maximising efficiency in savings decisions, realised where the marginal utility of savings is equated across investors, which requires that all individual investors, regardless of their country of residence, face the same after-tax rate of return on their savings (and thus have the same incentive to save). Where countries exempt foreign profit from home country tax, arbitrage at the corporate level would tend to equate across countries rates of return net of host country corporate tax. Ignoring or in the absence of personal income tax of foreign income, the conditions for capital import neutrality would be met under a dividend exemption system.[7]

Subsequent analyses by Razin and Sadka (1991), Bruce (1992) and Keen and Piekkola (1997) highlight the importance of factoring in revenue requirements, taxes on labour income and taxes on pure economic profit, considerations which are shown in these works to lend support to CEN as welfare maximising, at least where labour taxes and economic profits can be taxed optimally. Certain pitfalls of Horst's analysis are illustrated by Rousslang (2000), and Mackie and Rousslang (2000), who elaborate the implications of these considerations and extend further the analysis.

Where non-capital taxes are ignored, as in Horst (1980), host/home country revenues may be maintained and efficiency gains realised by increasing (decreasing) marginally the tax rate in countries where investment demand is relatively inelastic (elastic). For a given domestic savings schedule, this adjustment may result in higher total savings, and thus a higher global capital stock, than an equal tax rate policy that equalises pre-tax rates of return. In other words, the production efficiency loss may be more than offset by the efficiency gain from reducing the distortion to total savings and investment.[8]

However, Bruce (1992) and later Keen and Piekkola (1997) show that the overall efficiency gain predicted by Horst (1980) cannot be expected when taking into account losses in revenue from taxes on non-capital factor incomes (limiting the scope to reduce the savings distortion).[9] Bruce (1992) shows that when non-capital incomes (non-capital factor incomes and economic rents) are taxed optimally, capital income should be taxed on a residence basis. Similarly, Keen and Piekkola (1997) show that when non-capital incomes are taxed optimally and countries cooperate to maximise global welfare, taxing foreign profit at a lower rate than domestic profit (T < t) generates production efficiency losses that may not be offset by reduced savings distortions. These results lend support to earlier analysis by Razin and Sadka (1991) who found that small capital exporting countries aiming to maximise national welfare would adopt residence-based taxation so long as each country can optimally adjust its tax rates on non-capital incomes. Furthermore, this approach adopted with national welfare in mind would also maximise global welfare.

Mackie and Rousslang (2000) consider the case of a small capital exporting country acting unilaterally to maximise global welfare, with a fixed national budget constraint, domestic savings used to finance domestic and foreign direct investment, and taking as fixed host country tax rates in capital-importing countries. CEN is found to maximise global welfare if non-capital factor incomes are taxed optimally and host countries waive host country income tax. If the host country taxes inbound investment, then the capital exporting country should set a combined host/home country tax rate that is at least as high

as the domestic tax rate ($T \geq t$). If the host country taxes inbound investment and non-capital factor incomes cannot be taxed optimally, then the optimal home country tax rule may involve foreign profits being subject to a combined host/home country tax rate that either exceeds the domestic tax rate ($T > t$) or is less ($T < t$). On balance, these considerations examining conditions for the optimal allocation of domestic savings offer limited grounds to conclude that a policy that aims to impose a similar tax burden on foreign and domestic investment could not be expected to maximise global welfare. While CEN may generate savings inefficiencies, the scope for welfare losses may be quite limited if the level of domestic savings allocated to corporate equity does not vary significantly with the rate of tax on capital income.[10]

The preceding review of capital export neutrality and capital import neutrality addresses policies and constraints in maximising *global* welfare with a focus on the allocation domestic savings. Under a third efficiency criterion, *national neutrality* (NN), the welfare objective is to maximise *national* welfare. This criterion recognises that the home country return on domestic investment by resident investors is the total return on investment, shared between investors and the home country government through corporate income tax. In contrast, the home country return on outbound FDI is the total return net of host country tax. Thus under a standard efficiency framework, national welfare is maximised where the marginal pre-tax rate of return on domestic investment just equals the marginal after-host country tax rate of return on FDI. In operational terms, this result may be achieved where the home country provides investors with a foreign tax deduction (rather than foreign tax credit) in respect of host country tax on returns on FDI (*i.e.* foreign income is included in the tax base net of host country corporate profit and withholding tax). Mackie and Rousslang (2000) show that a home country tax deduction for host country tax maximises national welfare of a capital exporting country if domestic savings are sensitive to after-tax rates of return and if non-capital incomes can be freely adjusted and taxed optimally.

While the literature reviewed above lends support to the taxation of foreign income at domestic rates to maximise production efficiencies, with relief for host country tax in the form of a tax credit (CEN) or tax deduction (NN), the requisite conditions are difficult to meet and justify in practice. First, providing an unlimited tax credit for foreign income and withholding tax would create incentives for capital importing countries to increase their host country tax burden, as this would increase host country revenues without affecting the combined host/home country tax burden on inbound FDI. Thus foreign tax credit limitations are in order to avoid pure transfers of tax revenue from home to host countries, while recognising that relatively high foreign tax rates combined with limited foreign tax credits may discourage FDI in high-tax countries. Second, with administrative and cash-flow problems accompanying current (accrual) taxation of retained foreign profit, deferred taxation of foreign income would be called for, with deferral tending to encourage FDI in relatively low-tax countries. Third, imposing home country tax on profits earned in relatively low-tax host countries may not be feasible in cases where the additional burden means that resident firms cannot compete with local companies or other foreign investors in low-tax countries not subject to the same level of taxation – implying that the foreign profit (in principle subject to home country tax) may not be realised. This third point, which is central to the "international competitiveness" argument, is addressed in work subsequent to that reviewed above, which focuses initially on local competition (limited to firms operating in (producing from) a particular host country) and advances the so-called

capital ownership neutrality (CON) criterion. The most recent central contribution to the literature by Grubert and Altshuler, 2006 broadens the analysis further to consider global competition accompanying the employment of mobile intangibles.

More generally, the efficiency literature based on standard models does not encompass a number of developments that now may be centrally important to consider, including the large and growing role played by international portfolio capital markets in funding FDI, the implications of (local) competition amongst firms with non-uniform production technologies (some more efficient than others), the employment by MNEs of locational *versus* mobile intangibles and corresponding local *versus* global (cross-border) competition in product markets, as well as tax-planning activities.[11]

Desai and Hines (2003) discuss the implications of local competition, with a focus on mergers and acquisitions (M&As) rather than greenfield FDI. They first observe that much FDI is in the form of mergers and acquisitions, with productivity differences across firms influencing ownership patterns.[12] In their model, different bidders for foreign investment, with equal access to portolio capital financing at a given world interest rate, differ in terms of their production technologies, including intangibles that they employ, and the home country tax systems that they face.[13] In a world without taxes, a competitive bidding process would normally result in capital being acquired by firms with superior production technologies – those able to maximise the value of a given stock of productive capital, and thus able to offer more in the acquisition of it. However, this outcome may not be observed where different bidders/investors are subject to different home country tax rules. To take an example, a multinational resident in an exemption country may be able to pay more for and thus acquire a target foreign company, when in competition with a potential investor resident in another country subject to worldwide taxation. The outcome is production inefficient where the latter investor possesses a superior production technology, and yet cannot match or exceed the amount offered for the foreign company, owing to the higher home country tax burden on returns on the investment.

With a focus on local competition for the ownership of capital, the *capital ownership neutrality* (CON) criterion requires that taxation does not disturb ownership patterns which, when free of tax considerations, would tend to maximise total world output through a competitive bidding process that generally results in firms with higher productivity outbidding others competing for capital. According to its proponents, CON can be achieved where countries adopt exemption systems so that all firms located in a given host country are subject to the same local (host country) tax rules.[14] Under CON, exempting foreign profits from home country tax is consistent with maximising global as well as national welfare. With profits in a given location being subject to the same host country tax burden, and all investors facing the same required after-corporate tax rate of return determined in international portfolio capital markets, investors compete on the basis of their production efficiency. Furthermore, CON would regard FDI as a complement to rather than a substitute for domestic investment. For example, FDI that facilitates the exploitation of an intangible may create increased demand for the domestic production of intangibles.

While recognition of competition amongst and productivity differences between firms has helped sharpen the debate over policy supportive of production efficiency in the case of cross-border investment, it does not resolve the issue. In particular, it

provides only limited support for exempt treatment of foreign profits, as it addresses only local competition, while at the same time ignores effects of corporate tax planning.

In a recent paper, Grubert and Altshuler (2006) point out that the CON efficiency rule implicitly assumes that inbound investors operating in a given host location face only local competitors – that is, compete for the ownership of capital in product markets only with firms operating in the same host location. Where this is the case and all home countries follow a foreign profit exemption rule, then firms operating in a given host location may compete on an equal tax basis (ignoring tax planning opportunities), subject to host country taxation alone. While this may be the case for certain business activities earning location-specific rents, for example the provision of restaurant services employing locational intangibles such as a recognised trademark and requiring a local physical presence in the place of consumption, it will not be the case for all. For firms carrying out geographically mobile business activities – those that may produce and meet output demand efficiently from any one of a number of locations (*e.g.* the production of computer chips) – and earning profits that are not location-dependent by employing mobile intangibles (*e.g.* a patent to a computer chip design), competition will tend not to be local, but cross-border and possibly global, involving firms located in many countries.

In such cases, consideration must be given to effective tax rates in (all) host countries in which competing business activities are located, which may differ considerably across host countries. In other words, CON and CIN implicity assume the first case of location-specific rents (as well as perfect capital mobility), while in practice strictly local competition may apply to only some subset of investment activity. This subset may be small and shrinking over time, to the extent that the number of product markets where competition is amongst geographically dispersed businesses locations is large and expanding over time.

Furthermore, CON and CIN ignore effects of corporate tax-planning on effective tax rates, and in particular overlook the fact that various forms and degrees of income shifting will result in different effective tax rates on profits for different competing producers/investors, even where competition is localised in one country (Grubert and Altshuler, 2006). The implication is that CON cannot be assumed to be achieved where home countries accept exempt treatment of foreign profit.

With cross-border tax planning, the effective tax rate on profits realised in a given host country B by a foreign operating subsidiary of a parent company in country A may be significantly lower than the effective tax rate for purely local competitors. This may result, for example, where the parent (inbound investor) capitalises its operating subsidiary in country B in part using an inter-affiliate loan provided by a finance subsidiary (intermediary) located in a tax haven country C, which allows taxable profit in country B to be stripped out free of tax. This result is achieved with interest on the loan being deductible at source, in the host country, and received tax-free by the tax haven finance subsidiary. Use of non-arm's length (NAL) transfer prices on related-party transactions between operating and tax haven finance subsidiaries may also be used to strip out taxable profit. These and other forms of tax planning may achieve effective tax rates on inbound FDI in host country B that may differ significantly from the effective tax rate for local firms in country B owned directly by residents of country B, and from

effective tax rates on profits of foreign-owned competing firms whose parent companies are subject to affective anti-deferral/anti-exemption provisions.

To take another example, consider an operating subsidiary in country B capitalised (directly) in part by its parent in country A using a hybrid security regarded by country B tax authorities as debt, but by country A tax authorities as equity, with the result that returns on the hybrid are free of profit tax in country B (deductible interest) while also being exempt in country B under dividend exempt treatment. Where another home country D would regard such an instrument as debt (taxable), profits of subsidiaries in country B of parents in country D could be subject to a higher effective tax rate than profits of subsidiaries of parents in country A. Such differences in home country tax rules imply non-uniform effective tax rates on inbound FDI under adoption of a dividend exemption approach, tending to violate CON and CIN. Scope for different effective tax rates applicable to competing business activities is of course multiplied where competing firms are located in more than one country, imposing different effective tax rates, subject to varying degrees of tax planning.

Consideration of the implications of tax-planning and cross-border/global competition between investors operating from different locations lead Grubert and Altshuler (2006) to conclude that policy prescriptions under CEN as well as CIN and CON cannot provide production efficient results all cases, and moreover policy cannot feasibly be adjusted to apply different rules in different cases. Income tax policy may however aim to counter outcomes that would result in very high or low (in some cases negative) effective tax rates that are not justified under any efficiency standard.

D. Policy perspectives and practices

1. Treatment of foreign dividend income

Tax officials in a number of OECD countries underline the goal of tax neutrality (equivalent tax treatment of returns on domestic and foreign investment) as central to the adoption of a dividend credit system to tax the profits of foreign subsidiaries. Indeed, in some countries, capital export neutrality (CEN) is identified as the core principle underlying the adoption of a dividend credit system. When taxing foreign profit at the same rate as domestic profit, resident investors are encouraged to structure investment plans on the basis of business (as opposed to tax) considerations aiming to maximise pre-tax rates of return. At the same time, international competitiveness considerations influence policy adjustments to a greater or lesser extent, implying some compromises in leaning towards business demands for more lenient tax treatment of foreign income, as provided elsewhere. In some cases, departures from the requirements for neutral treatment are such that they yield tax relief not dissimilar to that (and in some cases greater than) under a dividend exemption system.

Officials of one country whose international tax system was adopted on the principle of capital export neutrality explain that their system was selected so as to encourage corporate managers to invest funds in the most profitable ventures. Indeed, this country's controlled foreign company (anti-deferral) regime is based on a policy of pure capital export neutrality, targeting not only passive but also active business income, although consideration is currently being given to provide deferral for qualifying active business income of affiliates currently caught under the regime, given that this is the

standard approach followed by other countries with controlled foreign company legislation.

International tax systems in certain other countries have been similarly developed around the principle of capital export neutrality, aiming to tax income of a given type at the same effective tax rate irrespective of the country in which the income is sourced. While deferral of home country tax on low-tax foreign active business income runs counter to this principle, controlled foreign company (CFC) rules, attributing certain undistributed earnings of foreign subsidiaries established in tax havens to resident corporate shareholders, may be cited as supportive of this neutrality approach. However, these anti-deferral rules are under intense scrutiny and in some countries are scheduled to be relaxed, with mounting business pressure to roll back their application on the basis of international competitiveness arguments.

Equivalent treatment of domestic and foreign source income requires current taxation at the home country corporate tax rate of pre-tax foreign profits, both distributed and retained abroad, with full relief for underlying host country corporate income tax (indirect foreign tax credit) and withholding tax applied at source (direct foreign tax credit). In practice, fully equivalent treatment is not possible, with deferral of home country tax being a main exception. Countries that tax business profits of foreign subsidiaries typically impose corporate tax only when those profits are received as dividends by a resident (parent) company, which may be considerably later than when the foreign profits are generated. Home country taxation of foreign profits is deferred for "international competitiveness" reasons, and possibly production efficiency reasons, while at the same time simplifying tax administration, given difficulties in taxing accrued but unrealized capital gains.

In countries where capital gains on foreign earnings are subject to home country tax, tax is typically imposed only when shares of foreign affiliates are sold and the gains are realised. It is instructive that one OECD country has recently moved to exempt foreign capital gains from tax, given widespread tax-planning aimed at claiming foreign capital losses against the domestic base, while escaping domestic tax on foreign capital gains. Previously, international tax rules in this country taxed capital gains and losses realised on foreign shares, including shares in foreign affiliates. However, in practice the results were problematic as taxpayers were deducting foreign capital losses against taxable domestic gains, while transferring foreign shares with accumulated gains to foreign affiliates in no/low tax jurisdictions, to realise the capital gains offshore. This strategy could produce significant tax savings where proceeds on the transfer of shares receive rollover treatment or were at less than fair market value. Given the revenue losses resulting from this form of avoidance, the government removed capital gains/losses on foreign subsidiaries from the tax net, thereby denying deductions for losses on shares of foreign affiliates.

Other reasons are cited by tax officials as to why the effective tax rate on outbound FDI may in some cases be considerably less than the effective tax rate on domestic investment. A relatively recent phenomenon is the growing use of "hybrid instruments" – that is, securities regarded by tax officials in one country as debt, and by those in another as equity. Where a parent company capitalises a foreign subsidiary using a hybrid security regarded by the host country as debt, while being regarded by the home country of the parent as equity, deductible interest paid on the security may be received in the home

country as tax-free or tax-sheltered dividend income. This could occur where the home country operates a dividend exemption system; or operates a dividend credit system that allows foreign dividend income to be received as tax-free surplus/profit in certain cases (*e.g.* where received from a treaty country); or allows excess foreign tax credits on high-tax dividend income to offset home country tax on other dividend income including income on a hybrid. In systems that exempt or otherwise shelter foreign dividend income, use of hybrid instruments causes symmetry or matching to break-down.

Officials also point out that an absence of anti-deferral rules or the application of limited or weak controlled-foreign company (CFC) rules that permit the use of "triangular structures" involving finance affiliates in no/low-tax jurisdictions may result in relatively low and possibly negative effective tax rates on FDI. Triangular structures enable extended deferral of home country tax on foreign profit (*i.e.* deferral beyond the year in which foreign operating profits are paid out). Triangular structures also allow deferral and in some cases avoidance of home country tax on foreign earnings paid out as interest and other charges deductible against the host country tax base. Furthermore, even where CFC legislation is in place denying deferral of these amounts, various techniques (*e.g.* use of hybrid entities) may be used by taxpayers to circumvent application of those rules.

The preceding discussion highlights tax-planning opportunities that limit the effective tax rate on foreign direct investment. Certain other provisions may work in the opposite direction. In particular, most countries operating dividend credit systems have foreign tax credit limitation rules that limit foreign tax credit claims to the pro rata (notional) amount of home country tax imposed on foreign source income, with countries differing in terms of "mixing" possibilities that allow excess credits on high-tax dividend income to offset home country tax on low-tax income. The limitation rules guard against incentives that would otherwise exist for foreign capital-importing countries to increase host country tax, without discouraging inbound FDI, with a host country tax increase offset by a higher foreign tax credit provided by capital exporting countries.

As shown in Table 4.1, most OECD countries operate dividend exemption systems, consistent with capital import neutrality (CIN) and capital ownership neutrality (CON) criteria. As noted in Section C, exempt treatment may improve efficiency where it avoids a possible tax impediment (relatively high home country taxation) to FDI by production-efficient domestic firms. By waiving home country tax on foreign business profit, resident investors may compete locally on equal tax terms where all investors/producers in a given host country are subject only to the same host country tax system.[15] A tax exemption for foreign profit provides tax treatment in line with what business would regard as appropriate under a basic international competitiveness argument. Also as previously noted, in countries operating dividend credit systems, departures from neutral treatment of foreign and domestic profit may yield tax relief on FDI that is not dissimilar to that available under dividend exemption.

2. Treatment of foreign interest and royalty income

In addition to addressing the taxation of foreign profit (*i.e.* dividends and capital gains), the tax treatment of inter-affiliate foreign interest and royalty income must also be considered when comparing the tax burden on outbound FDI and domestic investment. Common practice in home countries operating dividend credit or dividend exemption systems is to tax foreign interest and royalty income received by resident companies, while providing a home country tax credit or deduction to give relief in respect of foreign

Table 4.1. **Tax treatment of foreign direct dividends of resident corporations, OECD countries, January 2005**[1]

Home country	Source country	
	Treaty country	Non-treaty country
Australia	Exemption	Exemption
Austria	Exemption	Exemption
Belgium	Exemption of 95%	Exemption of 95%
Canada	Exemption	Credit
Czech Republic	Credit	deduction
Denmark	Exemption	Exemption
Finland	Exemption	Exemption
France	Exemption of 95%	Exemption of 95%
Germany	Exemption of 95%	Exemption of 95%
Greece	Exemption	Credit
Hungary	Exemption	Exemption
Iceland	Exemption	Exemption
Ireland	Credit	Credit
Italy	Exemption of 95%	Exemption of 95%
Japan	Credit	Credit
Korea	Credit	Credit
Luxembourg	Exemption	Exemption
Mexico	Credit	Credit
Netherlands	Exemption	Exemption
New Zealand	Credit	Credit
Norway	Exemption	Exemption
Poland	Credit	Credit
Portugal	Exemption	Credit
Slovak Republic	Exemption	Exemption
Spain	Exemption	Exemption
Sweden	Exemption	Exemption
Switzerland	Exemption	Exemption
Turkey	Exemption	Exemption
United Kingdom	Credit	Credit
United States	Credit	Credit

1. This table provides information on the tax treatment by OECD countries of foreign dividend income of resident corporations paid out of active business income. In general, tax treatment depends on qualifying criteria (*e.g.* minimum ownership level, minimum holding period, the source country, the host country tax rate). The table reports the most generous treatment of foreign direct dividends in each case.

Source: OECD Secretariat.

withholding tax. While often overlooked, tax neutrality between domestic investment and FDI requires current taxation at the home country corporate rate of foreign interest and royalty income deducted at source (against foreign profit) and paid to a domestic parent company (or other related domestic affiliate), combined with an offset for foreign withholding tax. This respects the matching principle (that the receipt of payments deducted at source be taxed in the hands of the recipient) and recognises that foreign earnings may be repatriated using a combination of returns including these inter-affiliate payments that unlike foreign dividends are deductible at source.

While home country taxation of foreign interest and royalty income (with relief for foreign withholding tax) helps align tax rates on domestic and foreign investment, effective tax rates may be relatively high (low) on FDI compared with domestic investment if foreign profit is taxed at a high (low) effective host country rate, relative to domestic profit. Where domestic and foreign tax rates differ, some degree of alignment may be

achieved in dividend credit systems through cross-crediting provisions of foreign tax credit rules that allow excess foreign tax credits on high-taxed foreign dividends (*i.e.* credits in excess of the amount used to fully offset domestic tax on high-taxed income) to offset domestic tax on low-tax foreign income. The ability to apply excess foreign tax credits to offset home country tax on foreign royalty income may mean effective tax rates on FDI under a dividend credit system that are below rates that would apply under an exemption system.

The preceding points concern interest and royalty income paid directly by a foreign operating subsidiary to its parent. In the context of interest and royalty income paid to an intermediary tax haven subsidiary, it is sometimes argued that application of anti-deferral or anti-exemption [*i.e.* controlled foreign company (CFC)] rules would be inconsistent with CIN and CON efficiency criteria calling for similar tax treatment of all investors in a given location. However, in certain cases similar tax treatment may *require* CFC-type rules to apply to inter-affiliate interest, royalties and other deductible payments. This recognises that where an investor, free from CFC-type rules in the home country, invests in a host country through an intermediate tax haven finance subsidiary, profit paid out as inter-affiliate interest (or through non-arm's length interest or royalty charges) would reduce the effective host country tax rate on host country profit, with this income received tax-free by the finance subsidiary. As the effective host country tax burden for the inbound investor would be less than the tax burden for local host country investors and other foreign investors that do not tax plan in this way, a similar tax burden on all direct investment in the host country would not result. Application by the home country of CFC-type rules to inter-affiliate interest income and other payments to the tax haven finance subsidiary could help achieve similar tax treatment by limiting incentives for such base stripping.[16]

One final point to recall is that the use of hybrid securities to capitalise foreign subsidiaries introduces an asymmetry that can move international tax systems, in particular exemption systems but also dividend credit systems (at least in certain cases), further away from conditions where effective tax rates on domestic and foreign direct investment are similar. The asymmetry arises with an interest deduction taken by the foreign subsidiary against the host country tax base not being matched by a home country tax base inclusion. The inclusion is avoided where interest payments, regarded as dividend receipts by the home country, are either exempt (under a dividend exemption system) or sheltered by excess foreign tax credits (under a dividend credit system).

E. International competitiveness concerns and policy responses

Increasingly, the international competitiveness of tax systems is being judged in terms of the treatment of not only inbound investment, but also outbound FDI, with the latter introducing a complex set of considerations and difficult tradeoffs. Considerations include the treatment of foreign dividends and foreign branch profits, capital gains/losses on shares of foreign affiliates, and foreign interest, rents and royalties paid by foreign subsidiaries, as well as the treatment of hybrid instruments.

Additional complexity is introduced when addressing the treatment of returns passed through a corporate chain, involving possibly controlled foreign companies in low/no-tax jurisdictions where anti-deferral (or anti-exemption) rules may apply in the home country. Discussions amongst policy makers on the topic reflect on the willingness of countries to accept deferral and in some countries the waiving of home country tax on income of

foreign affiliates resident in low tax jurisdictions, and how the limits of this willingness are being tested. Discussions also reveal consider flexibility possible under dividend credit systems to provide competitive tax treatment (*e.g.* relative to dividend exemption systems). Consideration of the tax treatment of overhead expenses in earning foreign source income also factors in.

Foreign tax credit provisions in dividend credit systems may provide considerable scope for mixing high- and low-tax foreign source income. This is to the advantage of taxpayers, while also helping achieve neutrality by averaging foreign tax rates. Such averaging may include the application of excess foreign tax credits on dividends from subsidiaries in high-tax countries to shelter not only low-taxed foreign dividends but also royalty income. This treatment is attractive relative to credit systems that do not allow this type of mixing, and to exemption systems where excess foreign tax credits generally do not arise and thus are not available to shelter certain foreign income (*e.g.* foreign royalties). While systems that pool foreign income and creditable tax by country (rather than by type or class of income) may be viewed in certain cases as restrictive, some officials note that per country rules may be circumvented by mixer companies operating in countries with preferential regimes.

In another country example, "onshore" mixing of high- and low-tax foreign source income is now allowed, whereas recently it was not. Prior to this change, resident investors had to set up offshore mixer companies in countries with preferential tax regimes, in order to blend high- and low-tax foreign source income. This shifting offshore of headquarter-type activities was viewed by tax policy officials as an unfortunate loss of economic activity and tax base. The recent adjustment to policy maintains the competitive advantages to taxpayers of mixing, while bringing home the associated business activity.

While cross-crediting rules in a given country may be viewed by taxpayers as generous, certain other provisions may not. For example, one country with generous mixing rules also operates interest allocation rules and other overhead expense (*e.g.* R&D) allocation rules which may be viewed as onerous compared with other countries. The rules, which operate through the foreign tax credit system, limit the amount of overhead expense that can be set off against domestic source income where the taxpayer earns also foreign source income (possibly generating little net domestic tax revenue). The policy recognises the fungible nature of financial capital, and may be seen as striking a balance between base protection, and providing generous tax treatment. It also recognises that this approach may be viewed as fair and efficient, with taxpayers encouraged to allocate business expenses met in earning domestic and foreign income across home and host countries without regard to differences across countries in statutory tax rates (as in the absence of such provisions, taxpayers are encouraged to assign interest and R&D expense to host countries with relatively high statutory corporate income tax rates, to maximise the value of tax deductions).

While other countries have tracing rules to limit deductions against domestic taxable income of interest expense on funds borrowed to finance foreign direct investment, some are of the view that in practice these rules may be easily avoided. This may be viewed as problematic where foreign profits of a resident parent company are exempt from domestic tax [with a domestic interest deduction not matched by a domestic tax base inclusion of income from FDI financed in full or in part by funds borrowed by the parent (implying a subsidy for foreign investment)].

1. Tax relief under the "basic" competitiveness argument

A number of OECD countries point to revenue considerations, equity, and fair domestic competition concerns (between resident MNEs and SMEs with only domestic investment), as well as tax neutrality considerations, calling for similar tax burdens on returns on foreign and domestic investment. But pressures for internationally competitive tax treatment, and in particular, pressure to limit home country tax on foreign income, are identified as limiting scope for addressing these objectives, in some countries more than others. The pressure is difficult to resist, given acceptance of CIN/CON as a policy framework in many countries operating exemption systems, and with concessions on the taxation of foreign profit provided by other (credit) countries.

Indications are that virtually all OECD countries (with the possible exception of one) are willing to accept the basic international competitiveness argument that a domestic parent company with a foreign subsidiary located in a given foreign host country to serve markets in that country and possibly other countries should not be subject to current home country tax on foreign active business profit derived from that location (see Box 4.1). This argument has been accepted by most countries for many years, often from the outset when international tax rules were first introduced. Moreover, recent literature examining efficiency implications of alternative approaches to taxing foreign income considers how waiving current taxation of foreign profits of resident companies may further production efficiency, at least in certain cases.

On the basis of these and possibly other arguments, countries with dividend credit systems are generally prepared to defer home country tax on foreign active business income until foreign dividends are received by resident taxpayers, while countries with exemption systems are prepared to waive taxation of such income, partly also on the basis that where host and home country corporate income tax rate and base provisons are roughly similar, relatively little tax if any would be collected (net) under the alternative (dividend credit) system.

However, in many countries operating credit systems, policy considerations including on-going pressure by business have resulted in treatment that permits relief from home country tax that goes well beyond what could be explained by the basic or "old" notion of the international competitiveness argument. The pressure arises for the most part by comparisons with other countries, including countries operating exemption systems where tax relief afforded to foreign source income may extend well beyond exempting from home country tax foreign active business income.

2. Implications of foreign (tax haven) base companies

Application of the basic competitiveness argument becomes difficult in cases where the foreign host country does not tax corporate profit, or sets a very low effective rate, as the basic argument rests on the presumption of business reasons alone (unrelated to profit tax considerations) for locating operations in the host country, with deferred or exempt tax treatment provided in order to remove a possible tax impediment and place competing firms including foreign subsidiaries of resident parent companies on an equal tax-footing.

Where a foreign subsidiary is located in a tax haven and, in addition, derives its income primarily from transactions (*e.g.* sales) with parties outside the tax haven (*i.e.* outside the local market of the foreign subsidiary), then the host country "business reason" test is not met, and the basic competitiveness argument does not apply. In its

Box 4.1. **The basic ("old") international competitiveness argument**

For the purpose of addressing current practices and pressures, the basic international competitiveness argument may be posed as follows: a parent company in home country A with a manufacturing subsidiary (operating subsidiary) located in country B should not be subject on a current basis to home country tax on operating profits derived by the subsidiary in country B. Home country corporate tax should be deferred until foreign profits are paid out and received by the parent, or waived entirely (exempt treatment) to allow the parent to derive advantages from locating in country B (*e.g.* access to low cost inputs and emerging product markets, establishing a business presence) and compete on an equal basis with other manufacturing companies located in country B, including those owned by residents of country B, and those owned by inbound foreign direct investors from other countries.

The basic argument may be illustrated by an example where country A taxes on a current basis domestic and foreign profit at 40 per cent. Country B taxes profit on business activity in country B at a rate of 20 per cent. Companies resident in country C, which exempts foreign profits, are subject to country B tax alone at 20 per cent on profits earned by foreign subsidiaries in country B. Country D taxes resident companies on profits of foreign subsidiaries at 35 per cent, but defers tax until foreign profits are received as dividends, and provides a foreign tax credit to avoid double taxation. Thus parent companies in country D are subject to country B tax at 20 per cent on profits earned in country B, paying an additional 15 per cent in country D tax if and when the profit is distributed. This additional tax may be deferred indefinitely to the extent that foreign profit is retained indefinitely.

On the basis of these considerations, a parent company resident in country A could understandably argue that paying on a current (accrual) basis an additional 20 per cent in home country corporate tax on subsidiary profits earned in country B could make it difficult to compete with other firms located in country B paying only 20 per cent. Country A's tax treatment of foreign profit should depend on the tax treatment provided by other countries in order to not impede the ability of its resident companies to invest in and access foreign markets on an efficient basis, achieve economies of scale, and protect and grow their market share.

Ceding to this argument recognises that revenue and neutrality goals, and fair domestic competition may be compromised by deferral (in particular where a foreign host country tax burden is very low or negligible), but domestic jobs and domestic income may be protected. This could be the case where firms would choose, if not granted deferral, to shift parent operations to other locations where the competitiveness argument is accepted.

The basic competitiveness argument may cover profit from sales to related and unrelated parties by subsidiaries in foreign host countries (country B in the example above), as well as export sales to unrelated parties in other (*e.g.* neighbouring) countries, recognising that foreign-owned firms in country B may compete in these markets. Given business arguments against and administrative problems with enforcing a law that limits deferral to profit derived from sales to parties in the host country and in neighbouring countries alone, pressure would be expected for the provision of home country tax deferral or exemption for host country sales and (all) export sales from production from host country business operations.

place, calls for deferred or exempt treatment of such income are replaced with a revised argument that points to the provision by other home countries of deferred or exempt treatment of profit on foreign basic company income from operations in no/low-tax host countries (see Box 4.2).

Box 4.1. **The basic ("old") international competitiveness argument** *(cont.)*

The basic competitiveness argument may cover foreign sales of services as well as goods, and may have full weight where provided to parties in the same host country as the foreign subsidiary/service provider (with application of the basic competitiveness argument to exports of services from a foreign base may be more compelling where the services are related to, and provided together or bundled with goods). However, the argument may be perceived as weaker but yet accepted for financial and other services that are particularly geographically mobile and can be provided to serve global markets from different locations at roughly the same business cost (so that business reasons for providing services from a foreign location rather than the home base are less compelling). Similarly, the argument may be weaker but accepted in the context of foreign manufacturing and export of goods that can be produced and shipped to global markets from different locations at a similar business cost (*e.g.* the production of micro-chips, pharmaceuticals).

Where core business operations of a multinational group are geographically mobile and are established in a no/low-tax jurisdiction, the basic competitiveness argument may not be enough to carry support for home country tax deferral or exemption. Support may be lacking even where a foreign no/low-tax location is host to a large established business presence if the bulk of that business serves primarily non-residents outside the host country, and a shared central factor in the location choice for these companies is a low host country corporate tax burden.

Application of the basic competitiveness argument also becomes difficult where foreign operating subsidiaries transact with related domestic companies, as this creates scope for converting domestic taxable profit into tax deferred or exempt foreign profit. Thus where preferential tax treatment is provided, transfer pricing rules would be required to counter incentives to artificially avoid home country tax on domestic profit. In recognition of the difficulties encountered in ensuring use by business of arm's length prices in all cross-border related party transactions, home countries may be reluctant to provide tax deferral in such cases.

Another dimension of the basic competitiveness argument concerns the treatment of foreign profit distributed to another foreign affiliate, rather than a domestic parent (where it could be subject to tax). If deferral of home country tax is provided to avoid cash-flow problems that current taxation could entail, and to increase the amount of earnings available for retention (which may be a cheaper source of funds to the parent than raising new equity), then a case for deferral may no longer apply where profits are distributed to a foreign affiliate within the corporate group (in the same way that current taxation would apply if profit is distributed to the parent). If, however, the case for deferral rests on tax treatment available in other home countries, then the case for deferral may hold where deferred treatment is available in other countries in respect of inter-affiliate dividends.

In one country, which introduced its controlled foreign company (anti-deferral) rules in 1972, policy-makers have been willing since the inception of these rules to provide deferral of home country tax, for business competitiveness reasons, in respect of active business income earned by foreign subsidiaries in countries where the host country corporate tax rate is lower than the home country rate. However, providing deferral gives tax policy officials cause for concern, as it creates an incentive for companies to shift business functions including production and services to jurisdictions offering low tax and low factor cost.

Box 4.2. **The tax haven base company competitiveness argument**

The basic international competitiveness argument is premised on the existence of business reasons, aside from profits tax, for locating or acquiring core business operations (*e.g.* manufacturing) in foreign countries (*e.g.* efficient access to input or output markets, establishing a foreign presence). Deferral or exemption from home country corporate tax is necessary to allow resident companies with foreign operations to compete with other companies located in foreign host countries imposing lower corporate tax rates, without a home country tax impediment. Accepting the argument means accepting revenue losses implied by deferral, and providing resident multinational firms with a competitive advantage relative to resident firms with only domestic investment and profits subject to corporate tax at a relatively high domestic tax rate. These considerations may be accepted under an expectation that deferred/exempt treatment will discourage multinationals from choosing alternative locations for the parent company where deferred/exempt treatment of foreign profit is granted, and will thereby secure domestic jobs and income.

The basic competitiveness argument seeks a tax solution (home country tax deferral or exemption) to a tax impediment to locating core business activities in foreign countries which are attractive, aside from tax considerations. A cornerstone of the argument is that, in the absence of a home country tax impediment, business would choose to locate activities in foreign countries where deferral is sought for business reasons, apart from minimising profits tax.

In contrast, what may be referred to as the "tax haven base company competitiveness argument" supports home country tax deferral or exemption for profits of foreign subsidiaries in no/low-tax countries ("tax havens") used as locations for distribution activities serving global markets, where those activities are located there for primarily tax reasons. The activities could include sales as well as minor processing and packaging, ancillary to core production activities and contributing minimally to a total value added chain. Separating the location of these activities from core business activities that generate the bulk of value-added (*e.g.* requiring a significant physical presence) may lower the overall tax burden on profits by lowering or eliminating the tax burden on these mobile parts of the production/distribution chain. The tax savings achieved would be enhanced where products are sold to tax haven distribution centres at non-arm's length (below market value) prices. Home country tax deferral or exemption is called for under this argument even where the distribution activities in the host country would not be part of a business plan in the absence of tax considerations, and would cover cases where tax reasons are central to establishing offshore distribution operations.

As with other competitiveness arguments, the tax haven base company competitiveness argument calling for deferral or tax exemption rests on the fact that other countries provide similar treatment – in this case, deferred tax or exempt treatment of profit earned in no/low-tax jurisdictions on transactions outside the local (host country) market The argument calls for similar treatment in order to retain parent headquarter and possibly other business activities carried out by domestic companies.

The attraction to business of locating in low-tax jurisdictions for tax reasons is reported by officials to be increasing over time. In particular, certain activities that may be classified as a real business activity, eligible for deferral, may no longer require maintaining office facilities or other installations. For example, financial and other service activities today can easily be shifted offshore without incurring substantial cost. In one country where the catalogue of activities that are treated as "real activities" currently does not include foreign

base company income derived in no/low-tax jurisdictions, companies are arguing that current taxation of foreign base company income in a no/low-tax jurisdiction inhibits their ability to compete in the global market place. By pointing to global competition and to tax policies adopted elsewhere, business is arguing that is should be free to make use of no/low-tax jurisdictions for all types of activities (while accepting current taxation of pure passive investment income in portfolio securities held offshore).

In particular, business questions why anti-deferral rules would extend to cover income from services rendered by one foreign affiliate to another, and income from services rendered between a domestic and a foreign affiliate. Business claims that income that has been irregularly shifted offshore can be taxed by properly applying transfer pricing rules and principles such as the arm's length principle. However, while this result may be realised in some cases, the argument assumes that tax authorities will be able in each instance to ensure that prices applied in related-party transactions result in offshore profits that are not in excess of amounts that would arise from transactions between unrelated parties operating at arm's length. For many transactions, in particular those that involve intangibles, the task is very difficult and may be impossible to ensure in many cases, even assuming available resources to audit all related-party transactions.

Policy-makers underscore the fact that defining income subject to controlled foreign company (CFC) taxation must be done with greatest care. Yielding to business demands could mean creating additional opportunities for tax deferral or tax avoidance to taxpayers who are able to use deferral opportunities. As a tax system as a whole has to guarantee a certain level of equity and fairness, deferral of foreign base company income without certain limits seems not to be acceptable to tax authorities in certain countries who do not see much room for scaling back the scope of their CFC provisions.

One country's CFC rules is sometimes described as relatively "tough", taxing on a current basis not only pure passive income as under CFC rules in other countries, but also foreign base company income where the underlying business activities typically involve packaging and other minor value added, but with a significant mark-up. For example, if a resident company books a sale to a German customer through a foreign base company (re-invoicing operation) in a tax haven, leaving some margin profit (*e.g.* a 5-10 per cent) in the tax haven, the profit of the tax haven sub is taxable currently in the home country, under its foreign base company income rules.

In contrast, current taxation does not apply (deferral is provided) under the CFC rules in certain other countries. Officials of one OECD country confirm that their CFC rules exempt not only profits from genuine commercial businesses located in a preferential tax regime, but also foreign base company trading income booked in a preferential tax regime provided that some threshold percentage of profits are distributed to resident shareholders within the year.

3. Implications of tax haven conduit companies

International competitiveness pressures encouraging policy-makers to provide deferral for foreign base company income are also encouraging countries to provide deferral for foreign dividends – as well as foreign interest, royalties and other amounts deductible at source – when received by a related controlled foreign company in a no-low-tax jurisdiction.[17]

While some countries have so far resisted extending deferral and enabling conversion of normally taxable foreign income into tax-free surplus for certain mobile forms of income, there are indications that policy considerations including the mobility of capital

and business calls for more lenient home country treatment are leading many countries towards more lenient treatment, not less, across a broader set of income types, because other countries are doing the same.

These developments, giving up home country revenues while facilitating the erosion ("hollowing-out") of host country corporate tax bases – by exempting interest and royalties deductible at source – are inconsistent with equity, fair domestic competition and neutrality goals, but are difficult to challenge given their acceptance by other governments, and fears over the mobility of capital. International tax rules in some countries aim at striking a balance between providing deferral, and protecting the domestic tax base, while others countries have in place rules that operate to protect both host and home country tax revenues.

Inter-company payments of financial income, including interest, royalties and dividends, paid by an operating CFC to a tax haven finance affiliate, are not caught under the CFC rules of certain OECD countries (*i.e.* deferral of home country tax is provided). In one country example where such income is treated as "tainted income" under CFC rules, it has been very difficult for taxpayers to obtain deferral of home country tax on such amounts – at least prior to the introduction of certain rules introduced for primarily domestic reasons ("domestic rules").

To illustrate, consider the case where a parent company injects equity into a tax haven finance subsidiary, which in turn lends the funds to a CFC (*e.g.* manufacturing company) located in a high-tax country. Without CFC-type rules, profit stripped out as interest, paid to the finance subsidiary, would be received tax-free, with no current home country tax consequences for the parent where the funds are retained offshore. Income of the finance subsidiary would normally be caught under the CFC rules of the country considered in this example, and taxed on a current basis, implying no special tax advantage from using the tax haven sub. Denying deferral for these inter-affiliate payments received by CFCs in tax havens is a special feature of this country's CFC rules, which may not be an element of other countries' CFC rules.

However, the introduction of certain domestic rules have facilitated the use of hybrid entities (treated as a corporation in one country, and a branch in another) to circumvent home country CFC rules. In the example of a tax haven finance affiliate lending to a high-tax operating affiliate, if one of these is a disregarded hybrid entity, then inter-affiliate payments of interest are disregarded for home country tax purposes. The two entities are regarded as part of a consolidated company and so there is no inter-company transaction which has to be reported to the home country tax authorities. This frees the parent of application of the comparatively tough CFC regime.

The hybrid entity phenomenon explains why so much money flows through certain countries which for some time have offered a favourable holding company regime. An analysis of the data has found that roughly half of the holding company payments were deductible payments (*e.g.* interest and royalty payments, deducted against the host country tax base). It would seem that use of hybrid entities is growing worldwide. An exception to this would be New Zealand, as its tax law generally treats hybrids as separate companies so the interest would be captured as CFC income.

In another country example, it was explained that CFC rules are in place to limit erosion of the domestic corporate tax base. This has meant attempting to distinguish between "business income", that is, income derived from the conduct of an active business (*e.g.* manufacturing activity), and "passive income", that is, income whose reporting can

Box 4.3. **The tax haven conduit company competitiveness argument**

Under the tax haven base company competitiveness argument, considered in Box 4.2, home country tax should be deferred or waived on profit of foreign subsidiaries established in no/low-tax jurisdictions serving global markets, providing goods or services to third parties. Deferral of home country tax, for example, on profits of "tax haven" foreign subsidiaries that purchase goods (intermediate inputs) from the parent company and resell them to unrelated parties, after (typically minor) modification (*e.g.* repackaging and labelling), would allow some margin of profit on the sale of final goods to be booked offshore, free of home country income tax. The margin booked offshore would depend on the true value-added offshore, dependent on business activity assigned offshore, and any artificial increase realised by under-paying for products or inputs purchased from the parent or other "onshore" relatied parties to minimise the amount of taxable profit booked onshore. The justification for providing deferral rests on the observation that other home countries offer deferral or similar tax treatment (*e.g.* profit exemption) in such cases.

What may be referred to as the "tax haven conduit company competitiveness argument" goes further by arguing that deferral should be provided in respect of profits of foreign subsidiaries in no/low-tax countries performing intermediary (conduit) functions for a corporate group. This category would include offshore within-group management services, licensing services, and finance company services, where both sides of cross-border transactions are with related parties, and scope for artificially booking profits offshore arises twice – by under-paying on goods, services and capital supplied by "onshore" related parties, while over-paying on goods, services and capital supplied by the offshore subsidiary to onshore related parties.

A key feature of offshore finance company loans is that they can be used to shift taxable profit offshore without a significant offshore presence *and* without the need to rely on non-arm's length prices (that is, without the need to use above-market intra-group interest rates). Capitalising manufacturing and other onshore operating subsidiaries with debt, rather than equity, allows profit to be withdrawn at source as deductible interest, with the tax deduction at source not offset by taxation of the interest when received offshore. As capitalisation of an operating subsidiary by a tax haven finance affiliate affects only the form in which operating profits are paid out at source, profit shifting through this channel may occur without the need to track the allocation of factors of production, and thus without the need to explain country assignment of value added.

Like the tax haven base company competitiveness argument, the tax haven conduit company competitiveness argument may point to the practice of other countries that exempt or defer home country tax on profits of tax haven finance subsidiaries and other conduit subsidiaries that intermediate intra-group transactions through no/low-tax jurisdictions. Similar treatment may be called for in order to retain parent headquarter and other mobile business activities. Furthermore, waiving home country tax may help improve allocation efficiency to the extent that it enables a lower effective tax rate on profits earned in relatively high tax countries and helps equalise effective tax rates across competing host locations. However, to the extent that base stripping is significant, and results in very low effective tax rates (*e.g.* relative to effective rates in the home country on domestic profits, or in other countries with little inbound FDI), resulting efficiency gains may be limited.

easily be shifted outside the country for purposes of achieving a tax benefit. The law defines certain activities of financial industries as passive income for this purpose. A challenge in drafting such rules has been to limit complexity and to ensure that CFC

provisions denying deferral do not apply to foreign income legitimately attributable to the activities of the foreign affiliate.

Continuing with the same example, interest received by a CFC on a loan to a foreign operating affiliate is treated as "business income" of the CFC if the interest is paid out of "business income" of the foreign operating affiliate. That is, where an inter-affiliate loan supports the earning of business income, deductible interest charges paid out of this income are also deemed to be business income, outside the scope of the country's CFC provisions, even though the interest income is passively received investment income. In contrast, interest received on a portfolio loan to an unrelated party, paid out of active business income of that party, is treated as tainted income of the CFC, subject to attribution to the domestic parent.

CFC rules are viewed by many policy officials as a necessary part of a tax structure that aims to tax on a current basis certain types of mobile income. While business sometimes argues that CFC rules are not required where transfer pricing rules are in effect, this claim overlooks the fact that income can be routed to "brass plate" companies to avoid tax even where arm's length pricing is observed. For example, if a parent company in country A injects equity capital in a tax haven foreign affiliate located in no/low-tax country C, which in turn loans the funds to a foreign affiliate (operating company) in high-tax country B, earnings of the operating company paid to the finance affiliate in country C in the form of interest shifts profit of the corporate group to the tax haven. Even where the interest rate charged on the inter-affiliate loan is an arm's length market rate, tax is avoided on operating profit paid out as interest, deductible in country B and received tax free in country C. Profit-stripping will be even greater where an above-market interest rate is used.

In another country example, CFC rules are described as having broad application aimed at preventing domestic companies from locating business activities in countries with preferential tax regimes for the purpose of tax avoidance. The CFC rules adopt a "jurisdictional" approach, according to which *all* income of a CFC resident in a country with a preferential tax regime is attributed to its domestic parent, making no distinction with regard to the nature of the income.[18] The same country introduced a general anti-avoidance rule aimed at denying tax benefits (*e.g.* deferral) in the case of business transactions that aim at tax avoidance – that is, transactions that lack valid economic reasons, and their only purpose is to avoid a tax obligation or to claim a tax relief. In practice, the effectiveness of such a rule relies on their capability of discouraging avoidance (which depends on the strength with which the rule is administered).

F. Policy trends, constraints and options

Considering policy trends in this complex area of income tax, one may observe growing pressure to provide an internationally competitive tax system. While neutrality and equity considerations may argue in favour of increased taxation, for example through the tightening (or introduction) of anti-deferral rules, or anti-exemption rules, or interest-allocation or other overhead expense allocation rules, many countries indicate that countries are generally not in a position to move in this direction, given that other countries are not. In other words, it is practically difficult to strengthen CFC rules if other countries are not doing the same. A number of countries indicate that they do not have anti-deferral or anti-exemption provisions (*e.g.* that would tax foreign interest and royalty

payments deducted against foreign host countries, routed to a tax haven) and were not considering their introduction.

Some officials underscore the concern that under current circumstances, tightening-up CFC rules would cause more companies to seriously consider relocating all business activities to lower-tax countries without CFC rules, rather than shifting only certain activities offshore. As a result, the pressure arising from low tax jurisdictions can hardly be countered by broadening or strengthening CFC legislation. At the same time, it is recognised that taking a more liberal stance on CFC rules may conflict with the principle of equity and fairness of the tax system. Given the general acceptance of low or no taxation, competition in the global market place may render CFC legislation increasingly inappropriate on its own to maintain equity in the tax system. In the present environment, the appropriate policy approach may be to have as low a corporate tax rate as possible benefiting all corporations, which also lessening the pressure on CFC systems.

At the same time, some countries are considering how best to relax their CFC rules, in order to avoid imposing an uncompetitive tax burden. In one example, CFC rules are scheduled to be relaxed to exclude from current attribution to domestic companies certain foreign base company (trading) income and holding company income, and certain passive interest and dividend income (passive income derived from business substantially carried on through a permanent establishment will be excluded).

One official explains that his country's CFC regime will be scaled back out of a concern that, if left unchanged, the CFC provisions would lead to a reduction in the country's international competitiveness, a contraction of overseas business activities of its domestic companies, and reduced economic development. The new rules aim to attach equal importance to discouraging tax avoidance by domestic companies, and ensuring that normal overseas business operations are not given unfavourable tax treatment, relative to that available in other countries.

It is also noted that for EU countries, a main current consideration is that the CFC rules of EU member countries may become subject to scrutiny of the European Court of Justice (ECJ), under the EC treaty freedoms. Taxpayers may argue, as recommended by tax advisers, that application of CFC rules – at least to the extent they are not limited to investment income only – may infringe upon their guaranteed right to set up a company in another member state. If accepted by the ECJ, member states would be deprived of their most important defensive measure against low tax regimes that are harmful neither under the EU Code of Conduct nor under the OECD's harmful tax project. Such a decision may direct investment to EU member countries, rather than to third countries, and thereby create another distortion.

Thus, given constraints on applying rigorous CFC provisions, policy makers are encouraged to search for other means to stem domestic revenue losses. One area being examined in certain countries is the setting of the home country statutory corporate tax rate, given that companies will find it less attractive to shift activities and tax base offshore for tax purposes the lower is the home country statutory rate. Some officials are of the opinion that focusing on statutory (as well as effective) corporate income tax rates may be more efficient than introducing or strengthening CFC rules.

At the same time, given the relatively large tax revenue losses associated with each percentage point reduction in the basic statutory corporate tax rate, consideration could be given to reducing the effective corporate tax rate on specific mobile parts of the corporate tax base. One country is considering whether to give preferential tax treatment to interest

and royalty income – as the future of CFC rules might be uncertain (given ECJ rulings). How policy will adjust depends largely on what other countries do.

Another country is examining ways to reduce the effective tax rate on foreign source income, a development being viewed positively by business wishing to see an improvement in the competitiveness of the country's tax system. Internationalising domestic companies is viewed as essential to improve the competitive position of domestic firms. It is noteworthy that this has led to pressures for the introduction of new tax relief for domestic investment to counter incentives that would be created to shift investment to other countries.

Notes

1. As in Chapter 3, the policy perspectives reported in this chapter do not necessarily reflect the views of individual member countries.
2. Where capital markets are segmented, some subset of domestic shareholders may have imperfect access to international capital markets paying portfolio investors a fixed "world" rate of return, and thus may be willing to accept an after-corporate tax rate of return below the world rate (the "trapped domestic savings" case).
3. Mackie and Rousslang (2000) and Rousslang (2000) provide a useful synthesis of the traditional literature developing capital export neutrality (CEN), capital import neutrality (CIN) and national neutrality (NN) criteria. More recently, Grubert and Altshuler (2006) reveal the limitations of competing criteria (CEN, CIN, NN and capital ownership neutrality (CON)) proposed to date in providing efficient resource allocation in all cases.
4. As noted in a recent study of the effects of deferral of US tax on foreign source income (see *The Deferral of Income Earned Through US Controlled Foreign Corporations – A Policy Study*, Office of Tax Policy, Department of the Treasury, December 2000), a number of authors (*e.g.* Ruffin and Fassekh (1986)) consider the "small country" case as an acceptable approximation for the US (*i.e.* the US is not considered large enough to influence global pre-tax rates of return), implying broad application of the "small country" assumption for the purpose of analysing efficiency effects of alternative approaches to taxing FDI.
5. Horst (1980) finds that a globally efficient capital allocation requires equalisation across countries of the social opportunity cost of capital, with this opportunity cost being a weighted average of pre- and post-tax rates of return. The weights (and thus the optimal tax rate on foreign income) depend on elasticities of the demand for capital and supply of savings schedules in the two-country model. Keen and Piekkola (1997) demonstrate that if non-capital taxes are factored in, the weighted-average rule is modified. In particular, the weights are shown to depend not only on the savings and capital demand elasticities, but also on the rates at which pure profits are taxed in the two countries. When pure profits are fully taxed, optimal residence-based taxation is a special case of the general weighted average rule.
6. Where the host country tax rate is positive, satisfaction of $(T < t)$ requires no additional home country tax (with T measuring the combined host and home country tax rate on foreign income).
7. As host country corporate tax rates vary across host country locations, pre-tax rates of return would vary across host country locations (with equalized after-corporate tax rates of return), tending to depress total output under the standard model (that is, global output could be increased if capital was shifted from countries with a lower host country tax rate to countries with a higher host country tax rate).
8. Total output from a given capital stock (investment from a fixed level of domestic savings) is maximised when capital is allocated across locations such that pre-tax rates of return are equalized. If total domestic savings is unaffected by taxation, then a policy of CEN, by equating pre-tax rates of return, maximises global output (ignoring access by domestic investors to international portfolio capital markets). However, if savings are sensitive to taxation, then a policy of differentiated tax rates may be optimal where this permits a lower tax rate on savings, and thus a smaller savings distortion. In the capital exporting case with variable domestic savings, savings are influenced by the after-tax rate of return on FDI (thus lowering the tax rate T on outbound FDI reduces the savings distortion).

9. For a given capital supply schedule, the more inelastic is investment demand, the larger is the percentage of a tax on investment returns borne by the local immobile non-capital factors (*e.g.* labour). Therefore when increasing (decreasing) marginally the tax rate on inelastic (elastic) investment demand, it becomes more difficult to raise total tax revenue, with more of the corporate tax revenue gain offset by a loss in revenue from taxes on non-capital factor incomes. See Rousslang (2000).

10. With a significant body of research indicating an inelastic response of domestic savings to after-tax rates of return (see for example Hall (1988), Elmendorf (1996)), this may be the case, at least in certain country contexts.

11. The implications to CEN of international portfolio capital markets are first addressed by Grubert and Mutti (1995). Grubert and Altshuler (2006) identify the efficiency and tax policy implications of mobile rents (accompanying mobile *versus* locational intangibles) and tax-planning.

12. While Desai and Hines (2003) address efficiency losses arising where different inbound investors are subject to different corporate tax rates on returns on a merger or acquisition, a similar situation can arise in the context of green field investment. In particular, an inefficient capital allocation is implied where green-field investors in a given location, competing for sales, face a similar cost of funds, but are subject to different corporate tax rates on their return on investment (*e.g.* dependent on their home country) In particular, investors subject to a relatively high tax rate may be placed at a competitive disadvantage and unable to compete, despite employing the same or possibly more efficient production technologies.

13. Recognition of the important role played by intangibles in influencing productivity differences across firms is found in the account by Desai (2006) of the CON criterion, in testimony provided before the Sub-committee on Select Revenue Measures, of the US Committee on Ways and Means (9 May 2006).

14. Depending on its design features and taxpayer behaviour, a dividend credit system may also achieve CON, at least in certain cases. Features of dividend credit systems that would support CON include: restricting foreign tax credits on foreign profits to deemed home country tax on foreign profits (no relief in respect of "excess" foreign tax credits on foreign dividends, implying that excess credits may not be used to shelter other foreign income); indefinite deferral of home country tax on low-tax foreign source income. Where foreign earnings are repatriated (*e.g.* to finance shareholder dividends) and home country taxation applies, CON would be violated.

15. As noted in Section C, under dividend exemption treatment, the effective host country tax rate may differ across investors to the extent that tax-planning activities differ across investors. Also, competition may be global rather than local.

16. Application of CFC rules would not ensure similar tax treatment, as tainted income would be taxed at the home country corporate tax rate, which may differ from the host country tax rate and corporate tax rate in other countries. However, to the extent that base stripping is curtailed, a similar (host country) tax burden would apply for all investors.

17. Normally, foreign dividends, interest and royalties paid by a foreign operating subsidiary would be subject to home country tax when received directly (on a direct parent-subsidiary holding structure). As noted in the main text, hybrid securities are being increasingly used to avoid home country tax in such cases.

18. The jurisdictional approach can be contrasted with the "transactional" approach used in other countries (*e.g.* Canada, the US), which attributes only certain types of tainted income.

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Chapter 5

Assessing the FDI Response to Tax Reform and Tax Planning

A. Introduction

This chapter 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, when attempting to model representative financing and repatriation structures, to address increasingly common strategies used by multinationals to minimise host and home country tax. 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 can be very different when tax planning is accounted for. Where the measures are used to explain tax effects on FDI, 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 minimising strategies developed after investment decisions are made, in order to maximise the after-tax rate of return.[1] 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.[2]

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 and adjustments 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 uncertainty in some cases 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 active business income.[3] Unlike dividends, these payments reduce the amount of host country corporate tax, and are particularly attractive in minimizing a multinational's global tax bill 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 UK'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 highlight 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 US sources, which provide insights to developments in this area.[4] Section D presents data on the level and growth of earnings of controlled foreign companies in low-tax countries used by US 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 stylised set of tax and non-tax parameters chosen for illustrative purposes. The various tax-planning techniques 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.[5] 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 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 in 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), analysing the effects on tax-planning of backward-looking tax burden measures.

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.[6] The basic approach may be represented as follows:

$$\frac{FDI_1 - FDI_0}{FDI_0} = \varepsilon^s x(AETR_1 - AETR_0) \tag{5.1}$$

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 ε^s is a semi-elasticity estimate of the percentage change in the FDI flow accompanying a one percentage point increase in the AETR (a "typical" AETR semi-elasticity of $\varepsilon^s = -5.9$ is reported in Table 2.7 in Chapter 2).[7] Equation (5.1) 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 (5.1) 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 ε^s value of –5.9 would predict that FDI into country B from country A would increase by 29.5 per cent. An assessment of the impact on total inbound FDI from all countries (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.[8]

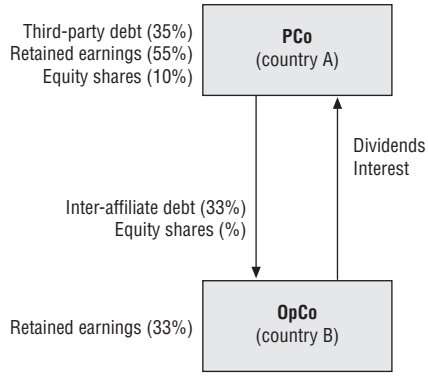
An example of this approach is provided by the UK using its APTAX-international model which calculates AETRs/METRs for cross-border investment, based on the neoclassical investment framework (user cost of capital approach).[9] Results from an application of the APTAX model are presented in Table 5.1, which shows pre- and post-reform AETR values, and the 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 5.1 below). 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.

Table 5.1. **Tax reform effects on inbound FDI into MiddleTax**

	Home country tax system	AETR pre-reform (CIT = 30%)	AETR post-reform (CIT = 25%)	% change in FDI into MiddleTax
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, UK.

Figure 5.1. **Standard financing structure**



Pre- and post-reform AETR values are shown in Table 5.1 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 (5.1) and a semi-elasticity value for AETR of 5.9 per cent ($\varepsilon^S = -5.9$). This elasticity value is shown in Table 2.7, Chapter 2, as the typical (mean) estimated elasticity value where AETR is used as a explanatory variable to empirically assess the influence of tax on FDI.

Consider first the results for FDI into MiddleTax from countries operating an exemption system. 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 that on FDI from LowTax (25.92 *versus* 24.26 per cent).

As taxation at source of profits (excluding inter-affiliate interest) on FDI in MiddleTax is final under dividend exemption, the CIT rate reduction introduced by MiddleTax lowers the AETR on inbound investment both for investors from LowTax and HighTax. Inter-affiliate interest is subject to unchanged home country tax, pre- and post-reform. 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 of distributed profit 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 dividends, 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 pre- and post-reform on profits earned in MiddleTax and received by LowTax investors. Thus there is no tax imposed by LowTax pre- and post-reform 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 an FDI increase of 3.6 per cent.

Equation (5.1) 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 per cent.[10] The results of such an exercise, drawing again from the UK's APTAX model, are reported in Table 5.2. As in the preceding application assessing inbound FDI effects, central

Table 5.2. **Tax reform effect on outbound FDI from MiddleTax**

	Home country (MiddleTax) tax system	AETR pre-reform (CIT = 30%)	AETR post-reform (CIT = 25%)	% change in outbound FDI from MiddleTax
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, UK.

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 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.

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 per cent 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 a standard AETR/METR model is typically applied to provide policy makers with estimates of the effects of corporate tax reform. This section considers the standard financing and repatriation 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 5.1, 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).

The standard approach that assumes a fixed set of financing weights for conventional sources of finance holds 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-recognised publication reporting bilateral cross-border METRs for OECD countries. The fixed financing weights, indicated in Figure 5.1, assume that outbound FDI is financed 35 per cent by third-party debt, 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.[11]

Issues raised by standard financing and repatriation 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 to a given host/home country combination, and held constant over time, where the objective is to analyse how tax reforms in the host and/or home country have altered tax distortions to cross-border investment between the two countries, under the simple financing and repatriation structure assumed, holding all other factors constant. The same set of financing and repatriation assumptions and weights may also be applied to 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).

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 weights 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-capitalisation of high-taxed subsidiaries).

When modelling the tax treatment of returns under a direct (non-intermediated) holding structure, as in Figure 5.1, a key distinction is whether dividend exemption, dividend credit, or dividend deduction system applies in the home country. Dividend treatment generally depends on whether a tax treaty exists between countries A and B and

where a treaty override exists, 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). Such detail is important to capture in empirical work. Under a dividend credit system, another 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-capitalised 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 would generally 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 capitalise 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). These considerations are ignored where a fixed set of financing weights are applied in all host/home country combinations.

Consider the use of inter-affiliate debt in the case where the host country statutory corporate tax rate is relatively high, exceeding 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 the (lower) home country profit tax rate alone.[12]

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, at the point where leveraging reaches a critical value where the parent moves from an excess to insufficient foreign tax credit position, increased leveraging reduces not only host country tax, but also reduces the allowable foreign tax credit, implying no tax savings overall.[13] 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 allowable foreign tax credits.

Another central consideration is whether inter-affiliate interest and/or royalty income 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 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. Where foreign tax credit pooling provisions are not properly accounted for, further 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 sources of finance 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. A key consideration in this regard is the treatment of third-party debt of a parent company.

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 (match) 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.[14]

2. Triangular financing structure

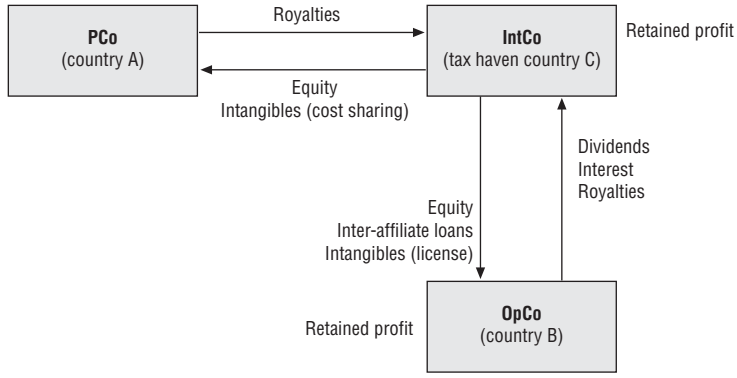
Under a direct (non-intermediated) holding, interest, royalties and certain other payments by a foreign operating subsidiary to its domestic parent are deductible at source, thereby reducing host country tax. However, receipts of these amounts normally attract home country tax, with some scope under a dividend credit system to shelter foreign interest and royalty income from home country tax using excess credits on high-taxed dividend income where such pooling of income is allowed 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, capitalising a foreign subsidiary held directly with an inter-affiliate loan is attractive as a tax minimising 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 do not lower overall tax where they are fully offset by reductions in foreign tax credits.

With a triangular structure, as illustrated in Figure 5.2, financing and repatriation strategies that reduce the host country tax base are generally more attractive, given the

ability 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 capitalised 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. IntoCo 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.

Figure 5.2. **Triangular structure**



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 capitalise foreign operating subsidiaries using inter-affiliate loans provided in the triangular case by tax haven finance intermediaries. The incentive to strip out earnings in this way 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. An important observation on this point 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 liscensed to it, only adds to the amount of base shifting. In other words, 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.

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 dividend, 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.

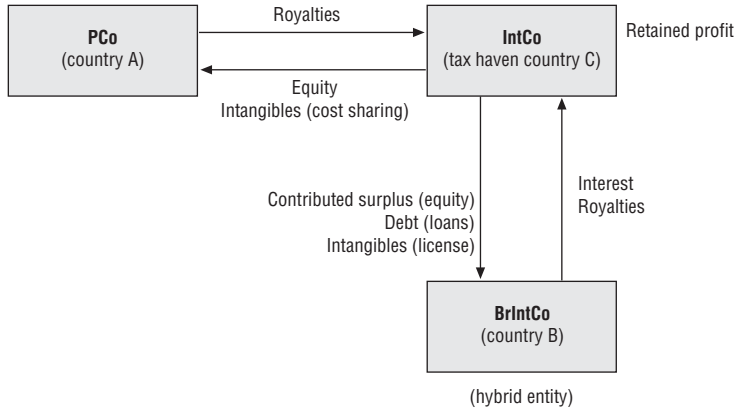
Aside from the possible application of controlled foreign company (CFC)-type rules, a further consideration with intermediation (as with a direct holding) is that certain other provisions may be in place to safeguard host and home country tax bases from base erosion depicted in Figure 5.2. The host country B may have thin-capitalisation 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 capitalise 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. As noted, certain countries allocate interest expense of resident companies between domestic and foreign income, on a *pro rata* basis based on domestic and foreign assets. Some 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 base protection operates through foreign tax credit limitation calculations. Another approach 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 5.2.

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 5.3.

Figure 5.3. **Hybrid entity structure**



To take an example, CFC rules in the US 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 US in 1998 of so-called "check-the-box" provisions, a US parent may elect to have OpCo treated as a branch of IntCo for US tax purposes (in Figure 5.3, 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 5.3, would be disregarded for US tax purposes, with OpCo and IntCo treated as single corporate entity for US 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 US parent company that wishes to employ a patent in a Germany manufacturing business. The intangible may have been developed in the US 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 US (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 US rate.

An alternative structure achieving considerably more tax savings would be for the US 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 US "check-the-box" provisions.[15] The advantage of this structure is avoidance of US tax, while maintaining a royalty deduction in Germany. If the German entity was structured as a separate corporation for US purposes, royalties paid to a licensing company in a no/low tax country (a CFC of the US parent) would be caught under US CFC rules. However, under the German hybrid entity designation, the royalty

payments would be ignored for US 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 US until the profits were distributed to the US parent. At the same time, the royalty payment would be deductible against the German tax base, with the German entity being recognised by the German tax authorities as a corporation (separate legal entity).

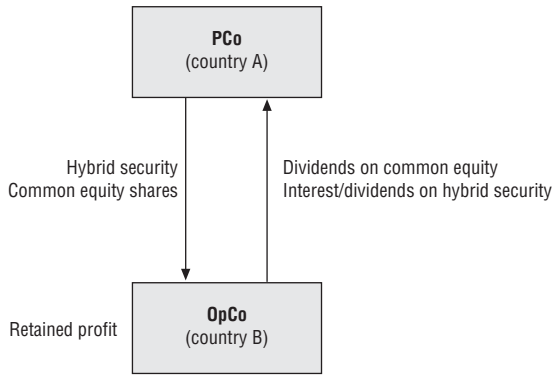
4. Hybrid instrument financing structure

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 5.4. 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 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.[16]

Figure 5.4. **Hybrid instrument financing**



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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 the use of a tax haven subsidiary provides greater scope for tax planning opportunities, enabling 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 US 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 minimising 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").

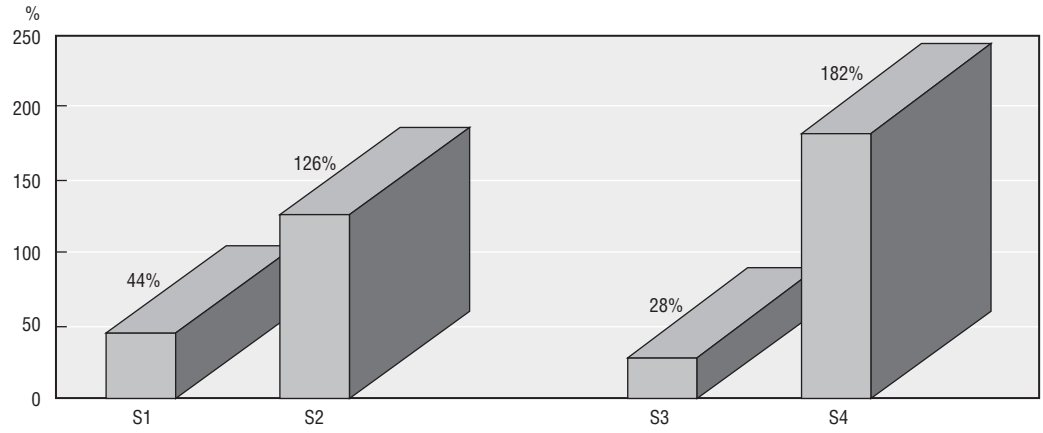
However, available data suggest the need to factor in the implications of tax haven activities and more generally the tax-planning behaviour of multinational firms when assessing the tax burden on cross-border investment. This section considers data on the activities of controlled foreign companies of US investors, drawn from tax returns filed by US parent companies with foreign operations, as reported in *Tax Notes International*.[17] To the extent that these data are reflective of a global phenomenon, the data serve as an impetus to further work to analyse trends in other country contexts, to be taken into account in tax burden analysis used to inform tax policy making.

Figure 5.5 shows significant growth in the scale of activities of controlled foreign companies (CFCs) of US 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 US parent companies, including Ireland, Singapore, Bermuda, Cayman Islands, the Netherlands, Luxembourg and Switzerland. In terms of dollar amounts, 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 Figure 5.5 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.

Figure 5.5. **Growth in activity of CFCs of US parents in major low-tax countries (1996-2000)**



S1 = total pre-tax earnings (all CFCs)
S2 = earnings of low-tax CFCs in 7 major low-tax countries: Ireland, Singapore, Bermuda, Cayman Islands, Netherlands, Luxembourg, Switzerland

S3 = total tangible capital (all CFCs)
S4 = total tangible capital of low-tax CFCs in 5 major holding company low-tax countries: Bermuda, Cayman Islands, Netherlands, Luxembourg, Switzerland

Much of the growth in capital assets in these low-tax countries is through hybrid structures, where under US "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 US tax purposes.

To the extent that the US experience reflects a global trend of increasing tax planning by MNEs, the data reviewed above, which show significant offshore tax planning in relation to US 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, with reference to Annex A which derives forward-looking parameter-based average and marginal effective tax rates under alternative financing structures and tax-planning strategies for FDI.

1. Selection of alternative financing structures

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 capitalisation 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 emphasises 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 analyses 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 of a foreign subsidiary are held offshore is unrealistic, given the costs associated with tax planning (*e.g.* obtaining tax planning advice). As analysed in Annex B, in the presence of tax-planning costs, a multinational would be expected to 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 chapter 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 particular financing assumptions, and suggesting the need to consider whether alternative (non-standard) financing and repatriation structures may 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

Table 5.3. **Summary of METR and AETR results under dividend exemption**

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

Notes: In Cases 1 and 2, A^B is measured by equation (A.1.2) in Annex A. In Cases 3 to 6, A^B is measured by equation (A.3.2) in Annex A. In Cases 4 and 5, interest rate on third-party debt $r^* = \rho$;
Case 1 = retained earnings of parent invested in equity shares of foreign sub;
Case 2 = retained earnings of parent invested in equity shares and debt securities of foreign sub;
Case 3 = third-party debt of parent invested in equity shares of foreign sub;
Case 4 = third-party debt of parent invested in equity shares and debt securities of foreign sub;
Case 5 = third-party debt of parent invested in equity shares and hybrid securities of foreign sub;
Case 6 = third-party debt of parent invested in equity shares of a tax haven foreign affiliate which invests the capital in equity shares and debt securities of foreign sub (earnings invested in passive assets held offshore indefinitely).

Table 5.4. **Summary of METR and AETR results under dividend credit system, high-taxed foreign affiliate [$u^A < u^B + w^d(1 - u^B)$]**

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

Notes: In Cases 1 and 2, A^B is measured by equation (A.1.2) in Annex A. In Cases 3 to 6, A^B is measured by equation (A.3.2) in Annex A. In Cases 4 and 5, interest rate on third-party debt $r^* = \rho$.
Case 1 = retained earnings of parent invested in equity shares of foreign sub;
Case 2 = retained earnings of parent invested in equity shares and debt securities of foreign sub;
Case 3 = third-party debt of parent invested in equity shares of foreign sub;
Case 4 = third-party debt of parent invested in equity shares and debt securities of foreign sub;
Case 5 = third-party debt of parent invested in equity shares and hybrid securities of foreign sub;
Case 6 = third-party debt of parent invested in equity shares of a tax haven foreign affiliate which invests the capital in equity shares and debt securities of foreign sub (earnings invested in passive assets held offshore indefinitely).

Table 5.5. **Summary of METR and AETR results under dividend credit system, low-taxed foreign affiliate [$u^A > u^B + w^d(1 - u^B)$]**

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

Notes: In Cases 1 and 2, A^A is measured by equation (A.1.30) in Annex A. In Cases 3 to 5, A^A is measured by equation (A.3.15) in Annex A.
In Case 6, A^B is measured by equation (A.3.2) in Annex A. In Cases 4 and 5, interest rate on third-party debt $r^* = \rho$.
Case 1 = retained earnings of parent invested in equity shares of foreign sub;
Case 2 = retained earnings of parent invested in equity shares and debt securities of foreign sub;
Case 3 = third-party debt of parent invested in equity shares of foreign sub ($\beta^* = 0$);
Case 4 = third-party debt of parent invested in equity shares and debt securities of foreign sub;
Case 5 = third-party debt of parent invested in equity shares and hybrid securities of foreign sub;
Case 6 = third-party debt of parent invested in equity shares of a tax haven foreign affiliate which invests the capital in equity shares and debt securities of foreign sub (earnings invested in passive assets held offshore indefinitely).

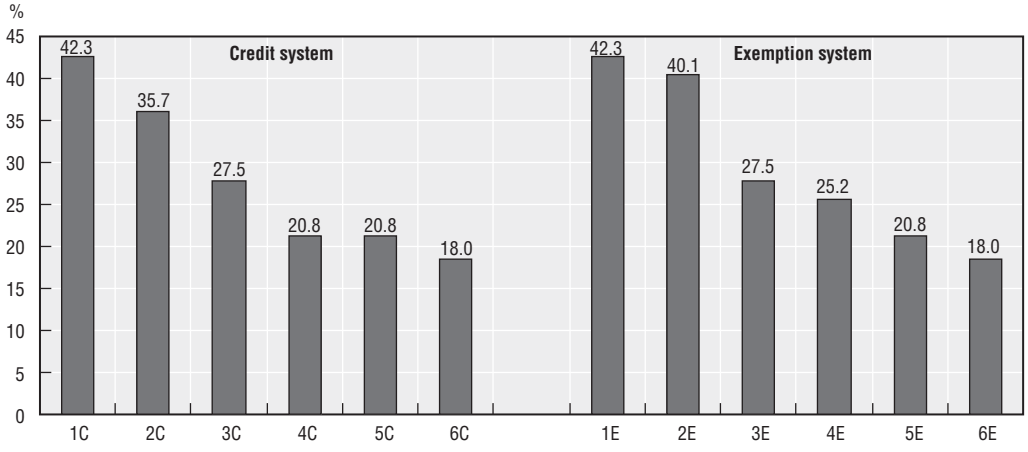
assessment of after-tax marginal costs and returns on investment, with reference to METRs. Where a parent company's decision of where to locate subsidiary operations is based on a comparison of the net present value of investment across competing locations, scale decisions and location decisions are taken simultaneously.[18] 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).[19]

METR and AETR formulae for Cases 1 to 6 are provided in Tables 5.3 to 5.5. In Table 5.3, the home country is assumed to operate a dividend exemption system. In Table 5.4, a dividend credit system applies and FDI is assumed to be in a high-taxed foreign affiliate, while in Table 5.5 the alternative situation is examined (FDI into a low-taxed foreign affiliate).

2. Illustrative METR and AETR results with tax-planning

Figures 5.6 to 5.7 show illustrative AETR and METR results for the six cases examined, under a stylised set of tax and non-tax parameters (which may be varied within the model). The pre-tax rate of return on capital 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 illustrated in these figures, the only tax parameter varying across countries is the statutory corporate income tax (CIT) rate, set at 30 per cent in the home country.

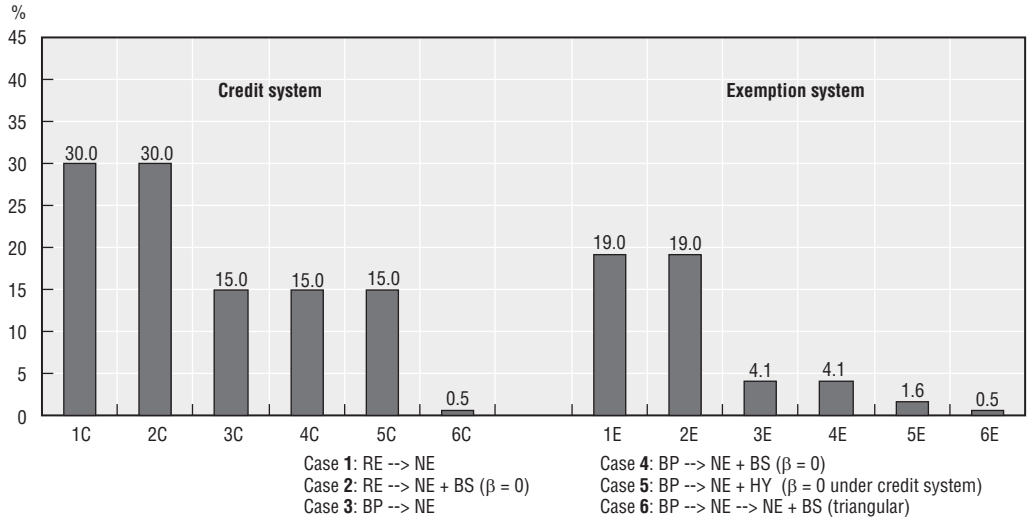
Figure 5.6. **AETRs for FDI into HighTax country**



[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**: $\beta = 0.50$)

Figure 5.6 considers outbound FDI into a relatively high-tax country, where the host CIT rate is 40 per cent. The opposite case is considered in Figure 5.7, where the host country CIT rate is relatively low at 15 per cent. In Case 1, considering straight equity

Figure 5.7. **AETRs for FDI into LowTax country**



[RE = retained earnings; NE = new equity; BP = bond finance parent, BS = bond finance sub; HY= hybrid instrument]
(Cases **2** and **4**: leverage parameter for sub is $\beta = 0$; Case **5**: $\beta = 0.35$ for exemption, $\beta = 0$ for credit; Case **6**, $\beta = 0.50$)

financing where a parent company invests in new equity shares of a foreign subsidiary, the AETR on FDI in the high tax country (Figure 5.6) 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.[20] 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 Figure 5.7, considering FDI into a 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 minimise 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 to 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 Figure 5.6 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 utilised). 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 Figure 5.7 for Case 2 assume no leveraging of the foreign subsidiary (the leveraging parameter β is set to 0).

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 with a home country tax deduction for financing costs. 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 Figure 5.7, 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, the second "dip" in 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 capitalising 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.

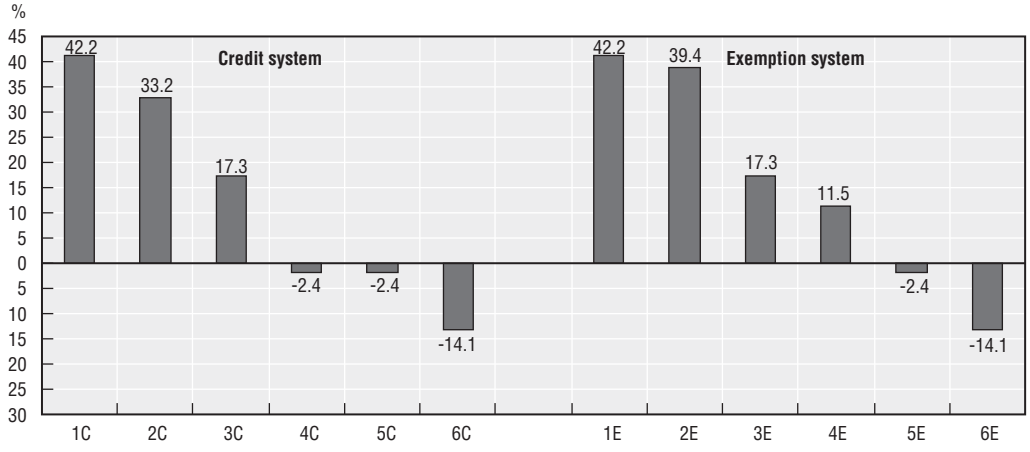
Last to consider is FDI financed through a triangular structure, where a parent borrow funds to capitalise an offshore finance subsidiary with equity, which is injected in an operating subsidiary using a combination of inter-affiliate debt and new equity. With no potential for offsetting home country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

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 Figures 5.8 and 5.9. As analysed in Annex A, 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, as discussed above.[21] 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 Figures 5.6 and 5.7. Results diverge in the remaining cases, with the most pronounced tax distortions found under triangular structures, and also with the use of hybrid instruments.

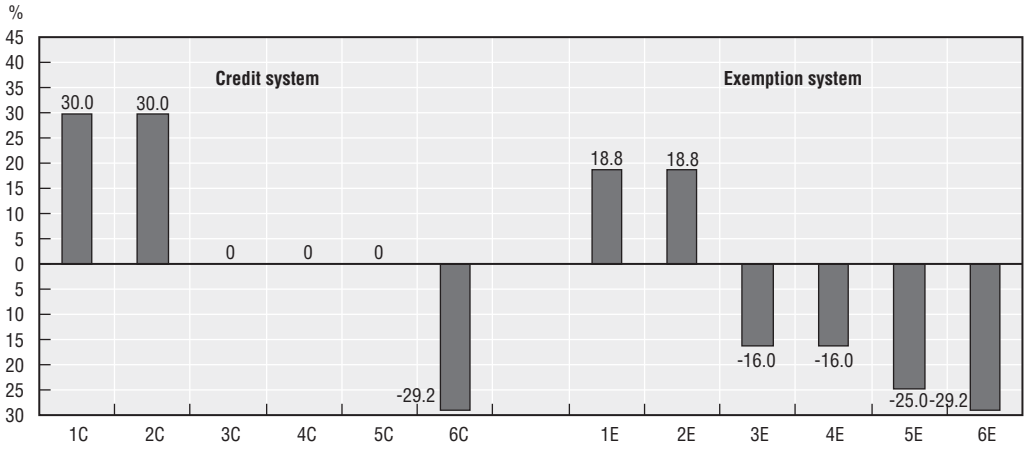
Figure 5.8. **METRs for FDI into HighTax country**



Case **1**: RE --> NE
Case **2**: RE --> NE + BS
Case **3**: BP --> NE
Case **4**: BP --> NE + BS
Case **5**: BP --> NE + HY
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**, $\beta = 0.50$)

Figure 5.9. **METRs for FDI into LowTax country**



Case **1**: RE --> NE
Case **2**: RE --> NE + BS ($\beta = 0$)
Case **3**: BP --> NE
Case **4**: BP --> NE + BS ($\beta = 0$)
Case **5**: BP --> NE + HY ($\beta = 0$ under credit system)
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**, $\beta = 0.50$)

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 AETR/METR measures and applications might be improved. Such applications could include the use of revised AETR values in applied empirical work estimating 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 5.1 and 5.2 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 (ε^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 5.1, 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, 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 5.1, the 5 percentage point corporate rate cut by MiddleTax is shown to reduce the estimated AETR on inbound FDI by 4 percentages 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.[22]

Furthermore, even where a "typical" financing and repatriation structure is known, it may not be straightforward to model. To take an example, in Table 5.1, exactly the same pre- and post-reform AETR 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.[23]

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.* US, UK, Canada) could tend to bias tax elasticity estimates (ε^s), and thus bias estimates of the FDI response to tax reform [with reference to expression (5.1)].[24] More generally, use in econometric work of AETR measures that systematically overstate (or understate) the AETR on FDI could bias tax elasticity estimates (ε^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)) analysing the effects of tax-planning on 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 instructive to consider the possible range of AETR values in the case of FDI (with or without tax reform), taking into account tax planning to be compared with AETRs on domestic investment. 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. The analysis in this section suggests that incorporating tax-planning may have important consequences for AETR measures for cross-border investment across a range of cases (credit/exemption, FDI into low-tax/high-tax countries).

Notes

1. 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.
2. Costs involved with tax planning suggest that multinationals would generally find it efficient to tax plan only up to some degree – for example, it may be optimal to avoid repatriation tax on some fraction (but not the full amount) of foreign earnings (see the discussion on this point in Annex B, which suggests that tax planning is carried out so long as the savings (avoidance of home country tax) exceed the associated costs including professional tax-planning advice). Where planning typically results in some partial reduction (say, 50 per cent) of the effective tax rate on FDI, ETRs without tax planning may closely track ETRs with tax planning factored in (in other words, 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 the statutory tax burden on returns is relatively high. The consideration of various FDI cases in Section E of this chapter suggests that tax planning is less attractive in certain cases (*e.g.* where investing in a low-tax country).
3. 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*.
4. See for example Altshuler and Grubert, (2006), *The Role of Governments and MNCs in the Race to the Bottom*.
5. The modified AETR and METR formulae underlying the results presented in Section E are developed in Annex A.
6. As discussed in Section 3 of Chapter 1, and analysed in detail in Annex A, 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 , 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 FDI flows.
7. The semi-elasticity ε^S is defined as $\delta\ln(FDI)/\delta AETR$. When using an ordinary elasticity, measuring the percentage change in FDI resulting from a 1 per cent change in AETR ($\delta\ln(FDI)/\delta\ln AETR$), the

right-hand-side tax rate difference term in (5.1) would measure percentage change $(AETR_1 - AETR_0)/AETR_0$.

8. In principle, the elasticity estimate used in (5.1) 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 estimtes drawn from different studies) are applied.

9. The neo-classical investment framework and user cost of capital formula for the domestic and foreign direct investment cases are discussed in Chapter 1, Section 3.

10. Elasticity estimates used in (5.1) should be consistent with the relevant outbound FDI flows. As footnoted previously (see Note 6), in practice modellers rely on available elasticity values (*e.g.* mean values of estimtes drawn from different studies). A second point to note is that a reduced home country CIT rate may encourage not only outbond FDI (by reducing the effective tax rate on FDI), but also domestic investment Equation (5.1) adresses cross-border investment alone.

11. 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*.

12. The discussion 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.

13. 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.

14. The US, for example, applies 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 US tax on foreign income, thereby limiting foreign tax credits.

15. 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).

16. As with conventional debt, at some degree of leveraging of a foreign subsidiary using a hybrid instrument, 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).

17. See Altshuler, R. and H. Grubert (2006), "Governments and Multinational Corporations in the Race to the Bottom", *Tax Notes International*, Vol. 41, No. 5, pp. 459-474.

18. 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.

19. 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.

20. 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.

21. The illustrative results considered in Figures 5.6 to 5.9 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).

22. 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 capitalisation 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-minimising) result.

23. The APTAX AETR values reported in Tables 5.1 and 5.2 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.

24. 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.

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ANNEX A

Average and Marginal Effective Tax Rates for FDI under Alternative Financing Structures and Tax-planning Strategies

This Annex derives forward-looking parameter-based average and marginal effective tax rates (AETRs and METRs) on cross-border investment, in a discrete multi-period framework, with a focus on alternative financing structures and tax-planning strategies for FDI. 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 in this Annex (with main results reported in Chapter 5):

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 capitalisation of high-tax subs 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);
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.

Table A.1. **Alternative financing structures**

Case	Holding structure	Parent company's source of funds	Foreign subsidiary's source of funds
1	Direct (non-intermediated)	Retained earnings	New equity issued to parent
2	Direct (non-intermediated)	Retained earnings	New equity and debt securities issued to parent
3	Direct (non-intermediated)	Third-party debt	New equity issued to parent
4	Direct (non-intermediated)	Third-party debt	New equity and debt securities issued to parent
5	Direct (non-intermediated)	Third-party debt	New equity and hybrid securities issued to parent
6	Intermediated (tax haven finance sub)	Third-party debt	New equity and debt securities (issued to finance sub)

Case 1 derives effective tax rate (ETR) measures for equity financed cross-border investment in a foreign subsidiary, 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 emphasises 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 2 and Case 3 analysis 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 analyses possible ETR results with a tax haven finance subsidiary. To simplify the analysis 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.

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 in Table A.1. 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.[1] 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).[2]

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.

Case 1. Retained earnings invested in new equity shares of a foreign subsidiary

Consider first the case where a parent company capitalises a foreign subsidiary with equity alone – that is, the parent purchases equity shares of a newly created subsidiary. In this case, the parent finances the purchase of shares using retained earnings (in Case 3, the parent borrows to finance the investment). The capital injection is sufficient to immediately acquire the optimal capital stock of the foreign subsidiary.

The investment decision (including the specification of the net present value of investment, and scale and location considerations) depends on the home country tax system – in particular, whether the home country operates a dividend exemption system, or dividend credit system, and in the credit case, how host and home country taxation compare (*i.e.* whether the parent is in an excess foreign tax credit position, or insufficient foreign tax credit (excess limitation) position). Section A considers the dividend exemption case. The METR and AETR results derived for this case also apply to the excess foreign tax credit case where home country tax on foreign profit is fully offset by foreign tax credits. Section B considers the insufficient credit case, where the tax burden on FDI is set by home country tax parameters, with the host country tax burden fully offset by foreign tax credits.[3]

A) Dividend exemption system/Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

1. Specification of NPV of investment

Consider a parent company resident in home country A analysing the profitability of establishing a foreign manufacturing subsidiary in host country B. Where the home country of the parent operates a dividend exemption system, or a dividend credit system where the host country CIT rate is relatively high compared to the home country rate (or more generally, where the parent is in an excess credit position with excess foreign tax credits fully offsetting home country tax on foreign profit), the NPV of an investment of K^* units of retained earnings of a parent company in new equity shares of the foreign subsidiary (used to purchase physical capital) is as follows:[4]

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d)}{(1+\rho)^s} + A^B K^* \qquad \text{(A.1.1)}$$

where F(K) is the foreign subsidiary's production function measuring output as a function of its physical capital stock, assumed to exhibit declining marginal productivity of capital (with $F_K > 0$, $F_{KK} < 0$); δ is the true (economic) rate of depreciation of capital, assessed on a declining-balance (geometric) basis; u^B is the statutory corporate income tax rate in the foreign host country B; w^d 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 $\rho = r^*$, 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^B measures the present value of depreciation allowances for tax purposes and investment tax credits (if any) provided by the host country accompanying a one unit investment in real capital, measured as follows:

$$A^B = \sum_{s=1}^{s=\infty} \frac{u^B \alpha^B (1-\alpha^B)^{(s-1)} (1-\xi^B)}{(1+\rho)^s} + \xi^B = \frac{u^B \alpha^B (1-\xi^B)}{\rho + \alpha^B} + \xi^B \qquad \text{(A.1.2)}$$

where α^B is the rate of depreciation of physical capital for tax purposes in the host country, assessed on a declining-balance (or declining-balance equivalent) basis, and ξ^B is the investment tax credit rate. The host country summary depreciation allowance parameter A^B assumes that depreciable capital costs are reduced in respect of investment tax credits (*e.g.* as under Canadian tax rules).[5]

Given host country tax relief per unit of investment measured by A^B, the parent company needs to inject only $(1 - A^B)K^*$ currency units [the first and third right-hand-side terms of (A.1.1) combined] to finance the initial acquisition of K^* units of physical capital.[6] The model assumes that in the purchase of K^* units of physical capital, the subsidiary pays $(1 - A^B)K^*$ immediately in cash (injected by the parent), and pays the balance of the purchase price of K^* units over time as capital cost allowance relief accrues to the subsidiary.[7]

The second term of the NPV expression (A.1.1) captures the present value of the stream of returns to the parent net of host country corporate tax, with tax (depreciation allowance) relief provided in respect of replacement investment, and net of non-resident withholding tax on dividends, with net profit assumed to be fully distributed. In each period, physical capital of the subsidiary that has depreciated over the period is replaced to maintain the capital stock at the optimum steady-state value K^*, with replacement investment financed by earnings of the subsidiary, net of host country profit tax. With capital depreciating at rate δ, replacement investment at the end of the first period, and at the end of each subsequent period, is δK^* units. As with the initial investment of K^* units, the model assumes that the subsidiary pays $(1 - A^B)\delta K^*$ immediately to the capital supplier (financed by retained earnings of the subsidiary), and pays the balance over time as capital cost allowance relief accrues to the subsidiary.

Also note that where the home country operates a dividend exemption system, or a dividend credit system and the parent is in an excess foreign tax credit position (so that no home country corporate tax liability arises) the applicable repatriation tax rate is the statutory host country non-resident withholding tax rate on dividends (or the treaty negotiated rate in the tax treaty case), denoted w^d.

2. METR [scale decision (optimal K^*)]

As indicated by (A.1.1), the net present value of investment in the foreign subsidiary depends on K^*, the amount of physical capital employed in the subsidiary's operations. The optimal amount of capital to employ in the subsidiary's operations, should the parent decide to proceed with the investment, may be determined with reference to (A.1.1). In particular, the optimal scale of investment is determined at the point where the net present value to the parent of the last unit of capital invested is zero (*i.e.* where economic profit falls is exhausted). This equilibrium condition may be expressed as follows:

$$npv = -1 + \sum_{s=1}^{s=\infty} \frac{(F_K(K^*)(1-u^B) - (1-A^B)\delta)(1-w^d)}{(1+\rho)^s} + A^B = 0 \qquad \text{(A.1.3)}$$

The numerator of the summation term is constant in all periods and thus may be readily solved. This gives the following steady-state condition:

$$\frac{(F_K(K^*)(1-u^B) - (1-A^B)\delta)(1-w^d)}{\rho} = (1-A^B) \qquad \text{(A.1.4)}$$

Multiplying through by $\rho/(1 - w^d)$:

$$F_K(K^*)(1-u^B) - (1-A^B)\delta = \frac{\rho}{(1-w^d)}(1-A^B) \qquad \text{(A.1.5)}$$

or alternatively,

$$F_K(K^*) = \frac{(\frac{\rho}{1-w^d} + \delta)(1-A^B)}{(1-u^B)} = c \quad \text{(A.1.6)}$$

The optimal capital stock K^* satisfies this equilibrium condition equating the pre-tax marginal product of capital with the user cost of capital (denoted by c), where economic profit is exhausted. Solving for the K^* value satisfying (A.1.6) requires specification of the production function $F(K^*)$.

However, the equilibrium condition (A.1.4) may be used to infer tax effects on the optimal scale of investment without specifying a production function. A common approach is to rely on the equilibrium condition to compute the marginal effective tax rate (METR) on investment, and to then to assess whether the METR statistic is positive or negative, and how the METR compares across different tax regimes, and under alternative financing assumptions, assuming a common production function across different cases. METRs may also be derived for different asset types.

The corporate METR, expressing the tax wedge between the pre-tax rate of return at the margin, measured net of depreciation, and the after-corporate tax required rate of return, as a percentage of the pre-tax marginal return, is as follows:

$$METR = \frac{(F_K(K^*) - \delta) - \rho}{(F_K(K^*) - \delta)} = \frac{c - \delta - \rho}{c - \delta} \quad \text{(A.1.7)}$$

with c derived using (A.1.6). A positive (negative) METR indicates that host/home country taxation is discouraging (encouraging) to the scale of FDI, relative to the no tax case. Moreover, where the METR under one set of tax rules is higher than that under another, the optimal scale of investment is predicted to be lower under the first (assuming the same underlying production technology).

3. *AETR and NPV of investment*

The preceding section concerns returns to physical capital at the margin. Consider the following measure of the average rate of return on physical capital, net of depreciation:

$$p = \frac{F(K^*) - \delta K^*}{K^*} \quad \text{(A.1.8)}$$

so that $F(K^*) = (p + \delta)K^*$. The average rate of return p depends on the subsidiary's production technology and optimal capital stock K^*, and captures total returns including infra-marginal economic profit.

For a given p (reflecting some assumed rate of economic profit, which may be held constant across investments to isolate tax effects), the NPV of investment (A.1.1) may be assessed as follows, after first reorganising terms:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*) - \delta K^* - u^B F(K^*) + A^B \delta K^*)(1-w^d)}{(1+\rho)^s} + A^B K^* \quad \text{(A.1.9)}$$

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(pK^* - u^B (p+\delta)K^* + A^B \delta K^*)(1-w^d)}{(1+\rho)^s} + A^B K^* \quad \text{(A.1.10)}$$

The numerator of the summation term is constant (with immediate adjustment to the steady-state capital stock, K^*). Thus the net present value formula reduces to the following:

$$NPV = -K^* + \frac{(pK^* - u^B(p+\delta)K^* + A^B\delta K^*)(1-w^d)}{\rho} + A^B K^* \quad \text{(A.1.11)}$$

or equivalently,

$$NPV = -K^* + \frac{(p - u^B(p+\delta) - w^d(p - u^B(p+\delta) + A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d))K^*}{\rho} \quad \text{(A.1.12)}$$

Using this result, we can express the NPV on investment as a function of the AETR, as follows:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1 - AETR) \quad \text{(A.1.13)}$$

$$PVY = \frac{pK^*}{\rho} \quad \text{(A.1.14)}$$

$$PVT = \frac{(u^B(p+\delta) + w^d(p - u^B(p+\delta)) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d))K^*}{\rho} \quad \text{(A.1.15)}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^B(p+\delta) + w^d(p - u^B(p+\delta)) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d)}{p} \quad \text{(A.1.16)}$$

where PVY measures the present value of pre-tax returns on investment (net of depreciation), and PVT measures the present value of tax on the investment.[8] In the formula for PVT, the base of the host country corporate income tax is the gross return on capital $(\rho + \delta)K^*$ (recall that p is the average rate of return net of depreciation). The base for the repatriation tax is after-tax profit, equal to gross profit net of deprecation and home country corporate tax {*i.e.* the base of the repatriation tax is measured by $[pK^* - u^B(p + \delta)K^*]$}.

The third numerator term in PVT measures the present value of tax relief (depreciation allowance plus investment tax credit), consisting of two parts. Consider the first part:

$$A^B \frac{\rho}{(1-w^d)}(1-w^d)K^* = \rho A^B K^* \quad \text{(A.1.17)}$$

This term captures the per period (flow) value to the parent of the tax savings on the initial investment. With the initial investment of K^* units generating tax relief at the outset in the amount A^BK^*, [implying that the parent company need only inject $(1 - A^B)K^*$ units of capital], the value of this savings (*e.g.* if invested in an alternative asset paying ρ) is ρA^BK^*.

The second part of the third numerator term measures the present value of tax relief on replacement investment (each period) in the amount of δK^*, with each unit of replacement investment generating a future stream of tax relief with a present value (in the period of investment) of A^B:

$$A^B\delta(1-w^d)K^* \quad \text{(A.1.18)}$$

The term $(1 - w^d)$ takes account of the fact that one currency unit of funds within the subsidiary has a value of $(1 - w^d)$ units in the hands of the parent, given repatriation tax on distributions of funds to the parent.

Where location choice depends on the NPV on investment, the preceding results show location choice to depend on PVY (dependent on the optimal scale amount K^*) and the AETR on investment.

4. NPV as a function of tax on economic profit

The AETR (A.1.16) measures the present value of tax as a percentage of the present value of total pre-tax returns including normal plus above-normal returns. The NPV can be expressed alternatively as a function of the effective tax rate on economic profit (above-normal returns). This characterisation may be helpful in understanding the influence of taxation on FDI decisions, and in comparing results in this section with results derived in Case 2 analysing debt financed investment by the parent.

The NPV formula (A.1.12) may be expressed alternatively as follows:

$$NPV = \frac{((p-\rho)-u^B(p+\delta)-w^d(p-u^B(p+\delta))+A^B(\frac{\rho}{(1-w^d)}+\delta)(1-w^d))K^*}{\rho} \quad \text{(A.1.19)}$$

This specification shows the NPV to depend on the difference between the average pre-tax rate of return on capital p and the parent's after-corporate tax rate of return ρ equal to the "world" interest rate ($\rho = r^*$), adjusted for tax.

Using this result, the NPV may be expressed as the difference between the present value of pre-tax economic profit (PVP) and the present value of tax PVT), as follows:

$$NPV = PVP - PVT = PVP(1-\frac{PVT}{PVP}) \quad \text{(A.1.20)}$$

with PVT given by (A.1.15), and the present value of pre-tax economic profit measured by:

$$PVP = \frac{(p-\rho)K^*}{\rho} = \frac{(p-r^*)K^*}{\rho} \quad \text{(A.1.21)}$$

with the average effective tax rate on pure economic profit assessed as:

$$\frac{PVT}{PVP} = \frac{(u^B(p+\delta)+w^{dEX}(p-u^B(p+\delta))-A^B(\frac{\rho}{(1-w^d)}+\delta)(1-w^d))}{(p-\rho)} \quad \text{(A.1.22)}$$

As noted, the AETR formula given by (A.1.16) expresses PVT as a fraction of the present value of pre-tax income, rather than pre-tax economic profit. Using pre-tax income (normal plus above-normal returns) in the denominator follows standard practice in measuring effective tax rates, while at the same time avoids possibly difficult-to-interpret high PVT/PVP ratios resulting where economic profit is low.

The NPV expression (A.1.20) shows that the net present value is positive (NPV > 0) where the average pre-tax rate of return exceeds the "world" rate of return on international capital markets, and where this difference exceeds the present value of (positive) tax liabilities.

5. Graphical illustration of the taxation of economic profit

Last to consider in this section is a graphical illustration of the optimal scale decision, which emphasises the importance of economic profit, and that taxation of that profit, in influencing the NPV on investment and thereby location choice. The illustration follows directly from the NPV formula (A.1.1), which can be written as follows:

$$NPV = \frac{(F(K^*)(1-u^B)-(1-A^B)\delta K^*)(1-w^d)}{\rho} - (1-A^B)K^* \quad \text{(A.1.23)}$$

Drawing in the last term and rearranging terms gives:

$$NPV = \frac{(F(K^*)(1-u^B)-(\frac{\rho}{(1-w^d)}+\delta)(1-A^B)K^*)(1-w^d)}{\rho} \quad \text{(A.1.24)}$$

or alternatively:

$$NPV = \frac{(F(K^*) - \frac{(\frac{\rho}{(1-w^d)} + \delta)(1-A^B)K^*}{(1-u^B)})(1-u^B)(1-w^d)}{\rho} \quad \text{(A.1.25)}$$

This formulation can be written more intuitively as follows:

$$NPV = \frac{(F(K^*) - cK^*)(1-\tau)}{\rho} = \frac{(p+\delta-c)(1-\tau)K^*}{\rho} \quad \text{(A.1.26)}$$

where c is the *user cost of capital* in this FDI case, as shown by (A.1.6), and where τ denotes the combined host/home country statutory tax rate on host country profits, consisting of the host country corporate income tax rate u^B plus withholding tax on after-tax profits:

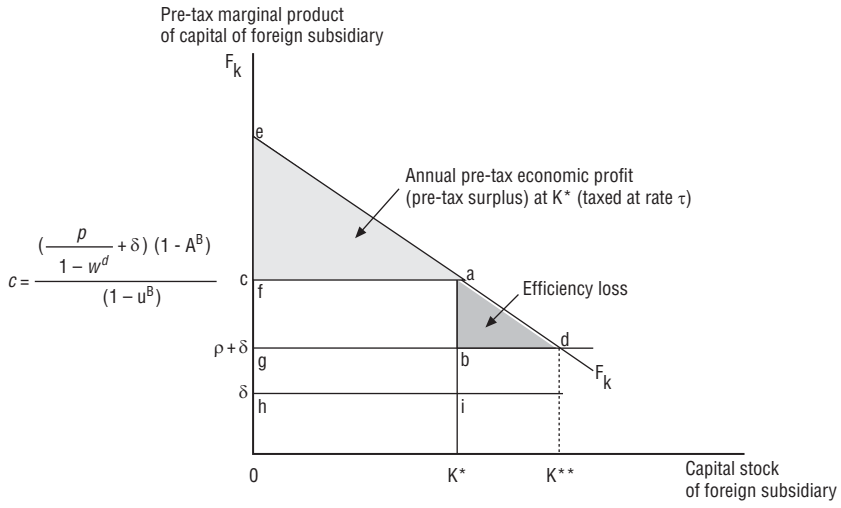
$$\tau = u^B + w^d(1-u^B) \quad \text{(A.1.27)}$$

In the NPV formula (A.1.23), the pre-tax amount of economic surplus earned in each period at the optimal capital stock K^* is measured by $[F(K^*) - cK^*]$, that is, total pre-tax income less the corresponding user cost measuring the return that the firm must earn on capital just to break-even, covering depreciation costs as well as taxation.

This annual pre-tax surplus amount is illustrated as triangle <e.f.a> in Figure A.1 below. The surplus amount is dependent on the underlying productivity of the investment [as captured by the production function F(K)], and by tax and non-tax parameters influencing the optimal level of investment K^*. The direct investors percentage share in this surplus each period depends squarely on the combined host/home country statutory tax rate tax rate on profit τ.

Also observe that the net present value of the after-tax surplus each year accruing to the parent from the investment of K^* units is equal to the sum of these amounts realised in each year, discounted by the parent's discount rate ρ.

Figure A.1. **Illustration of marginal and infra-marginal returns**



B) Dividend credit system with low-taxed foreign affiliate ($u^A > u^B$)

In dividend credit (worldwide) systems, resident corporations are provided a foreign tax credit to avoid double taxation of profits of foreign subsidiaries. In general, the credit is constrained to be the lesser of deemed host country tax on foreign profit, and a deemed amount of home country tax on that profit.[9] Under the commonly used deferral approach, home country tax is deferred on foreign active business income that is reinvested abroad (with corresponding adjustments to the foreign tax credit limitations). Under an accrual system, home country tax would apply to foreign profits as earned (whether distributed or retained), with a foreign tax credit provided for the full amount of underlying host country corporate income tax (as well as dividend withholding tax on distributions), subject to a home country tax limitation.

This section derives results under a dividend credit system where the home country CIT rate is relatively high compared to the host country rate (or more generally, where the parent is in an insufficient foreign tax credit position, with host country corporate and dividend withholding tax fully offset by home country foreign tax credits. (Section A addresses the excess foreign tax credit case). Rather than modelling tax deferral, the analysis assumes that foreign profit is taxed on an accrual basis, an approach consistent with production efficiency. The results may be considered as a limiting case, to be contrasted with results in subsequent cases that introduced various forms of tax relief on FDI. (An alternative assumption is that the subsidiary distributes its earnings in full, with a fraction of after-tax earnings reinvesting to cover replacement investment).

1. Specification of NPV of investment

In the insufficient foreign tax credit case examined in this section, the NPV of FDI in new equity shares of a foreign subsidiary, used to purchase K^* units of physical capital, is as follows:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^A) - (1-A^A)\delta K^*)}{(1+\rho)^s} + A^A K^* \qquad \text{(A.1.28)}$$

or alternatively,

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*) - \delta K^* - u^A F(K^*) + A^A \delta K^*)}{(1+\rho)^s} + A^A K^* \qquad \text{(A.1.29)}$$

where F(K), δ and ρ are defined as in Section A, u^A is the statutory corporate income tax rate in the home country A, and A^A measures the present value of home country tax depreciation allowances accompanying a one unit investment in real capital in country B:

$$A^A = \sum_{s=1}^{s=\infty} \frac{u^A \alpha^A (1-\alpha^A)^{(s-1)}}{(1+\rho)^s} = \frac{u^A \alpha^A}{\rho + \alpha^A} \qquad \text{(A.1.30)}$$

where α^A is the rate of depreciation of physical capital applied in the home country in respect of investment in real capital in country B, assessed on a declining-balance (or declining-balance equivalent) basis. It is assumed that the home country does not provide investment tax credits in respect of FDI.

Under accrual taxation, the parent is subject to tax on total pre-tax earnings of the subsidiary $F(K^*)$. In the insufficient FTC case, the parent claims a credit that completely offsets host country profits and withholding tax. With host country tax offset, depreciation relief is set by home country rules.

2. METR [scale decision (optimal K^*)]

The optimal level of investment may be derived using equation (A.1.28) as follows:

$$npv = -1 + \sum_{s=1}^{s=\infty} \frac{(F_K(K^*)(1-u^A) - (1-A^A)\delta)}{(1+\rho)^s} + A^A = 0 \quad \text{(A.1.31)}$$

Solving the summation term and rearranging terms gives:

$$F_K(K^*) = \frac{(\rho+\delta)(1-A^A)}{(1-u^A)} = c \quad \text{(A.1.32)}$$

This equilibrium condition, equating the pre-tax marginal product of capital with the user cost of capital (denoted by c), determines the optimal capital stock level K^*. The corresponding METR is determined according to equation (A.1.7).

3. AETR and NPV of investment

Substituting the average rate of return variable p [see expression (A.1.8) where $F(K^*) = (p + \delta)K^*$], and solving the summation term of the NPV expression (A.1.29):

$$NPV = -K^* + \frac{(pK^* - u^A(p+\delta)K^* + A^A\delta K^*)}{\rho} + A^A K^* \quad \text{(A.1.33)}$$

This NPV formula may be considered a special case of (A.1.11), where u^A replaces u^B, A^A replaces A^B and $w^d = 0$. Thus the NPV and AETR formula for the current case can be determined immediately using the results derived for the previous case (by setting $u^A = u^B$, $A^A = A^B$, $w^d = 0$). Thus, with reference to equations sets (A.1.13) to (A.1.16), we have the following results in the insufficient foreign tax credit case:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1 - AETR) \quad \text{(A.1.34)}$$

$$PVY = \frac{pK^*}{\rho} \quad \text{(A.1.35)}$$

$$PVT = \frac{(u^A(p+\delta) - A^A(\rho+\delta))K^*}{\rho} \quad \text{(A.1.36)}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^A(p+\delta) - A^A(\rho+\delta)}{p} \quad \text{(A.1.37)}$$

Case 2. Retained earnings invested in new equity shares and debt securities of a foreign subsidiary

In this second case, a parent company capitalises a foreign subsidiary with equity and debt. In particular, assume that a fraction β of injected funds are in the form of an inter-affiliate loan, with $(1 - \beta)$ of the investment being in new shares issued by the subsidiary. As in Case 1, assume that the parent relies on retained earnings as its source of finance for this investment. Let r denote the interest rate on the inter-affiliate loan (possibly different than the "world" interest rate r^*). Reliance on debt finance is shown to have the potential to materially affect NPV and AETR measures, at least in certain cases.

A) *Dividend exemption system/Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)*

1. *Specification of NPV of investment*

a) Dividend exemption case

Considering first the dividend exemption case, the NPV to the parent, under Case 2 financing, of investment at the subsidiary level of K^* units of physical capital is as follows:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-u^A)}{(1+\rho)^s} + A^B K^* \quad \text{(A.2.1)}$$

where F(K), δ , u^A, u^B, A^B, w^d and ρ are defined as in Case 1.[10] As above, β is the leverage parameter. Investment returns to the parent in the form of interest reduce the host country corporate tax base, while at the same time are drawn into the home country corporate tax base. The repatriation tax rate on interest is the home country statutory corporate tax rate u^A (with an indirect foreign tax credit offsetting host country withholding tax on interest). In other respects, the NPV formula is similar to that considered in Case 1.

The NPV formula (A.2.1) shows that inter-affiliate loans change the channels through which returns on FDI are received (interest *versus* dividends), which impacts the NPV on investment given the different tax treatment of these alternative channels and different host/home country tax rates. Unlike third-party interest, interest received by the parent from a foreign subsidiary is simply another form of repatriation, but subject to different tax rules which may be strategically used.

Optimal leveraging of the foreign subsidiary in the dividend exemption case

The NPV formula (A.2.1) may be written alternatively as follows:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B)(1-w^d) + r\beta K^*(u^B + w^d(1-u^B) - u^A)) - (1-A^B)\delta K^*(1-w^d)}{(1+\rho)^s} + A^B K^* \quad \text{(A.2.2)}$$

Using this expression, we have the following result related to the optimal degree of leveraging:

$$\frac{\partial NPV}{\partial \beta} = \frac{r(u^B + w^d(1-u^B) - u^A)K^*}{\rho} \quad \text{(A.2.3)}$$

In other words, loans by the parent to the subsidiary increase the NPV on investment only if the rate of host country tax relief from substituting away from dividends in favour of inter-affiliate interest as a channel to receive foreign earnings, given by $[u^B + w^d(1 - u^B)]$, exceeds the effective tax rate on interest, which in the dividend exemption case is given by u^A.[11] Where $[u^B + w^d(1 - u^B)] < u^A$, leveraging reduces the NPV on investment, with earnings repatriated in the form of interest attracting home country taxation at rate u^A, which exceeds the rate of host country tax relief from greater use of interest. In this case, the optimal value of leverage parameter is $\beta = 0$. However, where $[u^B + w^d(1 - u^B)] > u^A$, leveraging increases the NPV on investment by causing host country tax to fall (given interest deductibility and reduced dividend withholding tax) by more than home country tax is increased due to the interest inclusion. Under this rate structure it is optimal for the parent in the dividend exemption case to strip out all earnings in the form of interest (in the absence of thin capitalisation rules or other leveraging costs).

b) Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

Where the home country operates a dividend credit system, the parent would include in the home country tax base total pre-tax earnings of the foreign subsidiary [measured by $F(K^*)$, including the interest component].[12] Foreign tax credit (FTC) rules under most dividend credit systems would pool dividend and interest income (paid out of active business income). If the host country statutory corporate tax rate exceeds that the home country rate, and the parent is in an excess credit position, excess credits on dividend income may shield foreign interest from home country tax.[13] In this situation, there is no home country tax on dividend or interest income on investment in the foreign subsidiary (only host country taxation). The repatriation tax rate on interest would be the non-resident withholding tax rate on interest imposed by the host country, denoted here by w^i. These considerations are captured in the following NPV measure for the excess credit case:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-w^i)}{(1+\rho)^s} + A^B K^* \quad \text{(A.2.4)}$$

which may be expressed alternatively as:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B)(1-w^d) + r\beta K^*(u^B + w^d(1-u^B) - w^i)) - (1-A^B)\delta K^*(1-w^d)}{(1+\rho)^s} + A^B K^* \quad \text{(A.2.5)}$$

As elaborated below, where the host country statutory corporate tax rate exceeds the home country rate, whether the parent is in an excess or insufficient foreign tax credit position depends on the degree of leveraging of the foreign subsidiary.

Optimal leveraging of the foreign subsidiary in the excess credit case

Using expression (A.2.3), the impact of the leverage parameter β on the NPV on investment may be analysed as follows:

$$\frac{\partial NPV}{\partial \beta} = \frac{r(u^B + w^d(1-u^B) - w^i)K^*}{\rho} \quad \text{(A.2.6)}$$

This result shows that an inter-affiliate loan would increase the NPV on investment in the excess credit case under a "normal" rate structure where the rate of host country tax relief when relying on interest to repatriate foreign profits [$u^B + w^d(1 - u^B)$] exceeds the effective tax rate on interest w^i.[14] In other words, where the statutory corporate tax rate in a given host country is high relative to the home country CIT rate, and the parent is in an excess credit position, the return on FDI is improved by relying on an inter-affiliate loan to partly capitalise a foreign subsidiary in that location.

As leveraging parameter β increases above zero, the host country tax burden falls, as the increase in non-resident withholding tax on interest is more than offset by the reduced host country corporate tax and dividend withholding tax. At the same time, there is no offsetting increase in home country tax – the home country tax burden is unchanged, with home country tax on dividends and interest offset by foreign tax credits.

At some critical leveraging value β^c, the parent company's tax position would switch from excess to insufficient foreign credit (examined below in Section B). In particular, profit stripping would at some point result in host country tax on foreign earnings $F(K^*)$ falling to a level where the parent's FTC limit switches to the amount of home country tax on foreign earnings (despite a higher statutory corporate tax rate in the host country). As elaborated below, increasing the leverage parameter beyond this point reduces the amount of host

country tax paid, but the combined host/home country tax burden is unchanged, with reductions in host country tax offset by a reduced foreign tax credit.

2. *METR [scale decision (optimal K^*)]*

a) Dividend exemption system

The optimal level of investment in the dividend exemption case may be derived using (A.2.1), where the net present value of the last unit investment is zero (*i.e.* where economic profit is exhausted):

$$npv = -1 + \sum_{s=1}^{s=\infty} \frac{(F_K(K^*) - r\beta)(1-u^B) - (1-A^B)\delta)(1-w^d) + r\beta(1-u^A)}{(1+\rho)^s} + A^B = 0 \qquad \text{(A.2.7)}$$

Solving the summation term and rearranging terms gives:

$$\frac{((F_K(K^*) - r\beta)(1-u^B) - (1-A^B)\delta)(1-w^d) + r\beta(1-u^A)}{\rho} = (1-A^B) \qquad \text{(A.2.8)}$$

Multiplying through by ρ and expanding terms gives:

$$F_K(K^*)(1-u^B)(1-w^d) - r\beta(1-u^B - w^d(1-u^B) - (1-u^A)) - (1-A^B)\delta(1-w^d) = \rho(1-A^B) \qquad \text{(A.2.9)}$$

Simplifying and dividing through by $(1 - w^d)$ gives:

$$F_K(K^*)(1-u^B) + r\beta\frac{(u^B + w^d(1-u^B) - u^A)}{(1-w^d)} = (\frac{\rho}{(1-w^d)} + \delta)(1-A^B) \qquad \text{(A.2.10)}$$

Rearranging terms and dividing through by $(1 - u^B)$ gives finally:

$$F_K(K^*) = \frac{(\frac{\rho}{(1-w^d)} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta\frac{(u^B + w^d(1-u^B) - u^A)}{(1-w^d)}}{(1-u^B)} = c \qquad \text{(A.2.11)}$$

This term, equating the pre-tax marginal product of capital with the user cost of capital (denoted by c), determines the optimal capital stock level K^* in the dividend exemption case, with partial leveraging of the foreign subsidiary {with $\beta > 0$ only if $[u^B + w^d(1 - u^B)] > u^A$}.

The first user cost term is identical to that shown for Case 1 (straight equity financing of the foreign subsidiary), given by (A.1.6). The second term adjusts the first to account for (partial) financing of the foreign subsidiary by inter-affiliate debt. The user cost is lower with leveraging where the host country tax savings from an additional unit of profit being repatriated in the form of interest rather than dividends more than offsets the corresponding increase in home country tax resulting from the interest inclusion in the home country tax base. The host country savings are linked to the deductibility of interest plus reduced withholding tax on dividends.

b) Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

The equilibrium condition characterising the optimal scale decision in the excess credit case may be readily derived, using the preceding result (A.2.11), by comparing the NPV formulae for the dividend exemption case (A.2.1) and excess credit case (A.2.4), where the only difference is with regard to the effective tax rate on interest (u^A under dividend exemption, *versus* w^i under excess credits). Therefore, replacing u^A in (A.2.11) with w^i, we have:

$$F_K(K^*) = \frac{(\frac{\rho}{(1-w^d)} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta\frac{(u^B + w^d(1-u^B) - w^i)}{(1-w^d)}}{(1-u^B)} = c \qquad \text{(A.2.12)}$$

For both cases, the corresponding METR may be calculated using (A.1.7), substituting in the relevant user cost of capital c, shown above.

3. *AETR and NPV of investment*

a) Dividend exemption system

Using the average rate of return variable given by expression (A.1.8), the NPV of investment in the dividend exemption case (A.2.1) may be expressed as a function of the AETR on investment, as follows (first arranging terms):

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{(F(K^*) - \delta K^* - u^B F(K^*) + A^B \delta K^*)(1-w^d) + r\beta K^*(1-u^A - (1-u^B)(1-w^d))}{(1+\rho)^s} + A^B K^* \quad \text{(A.2.13)}$$

or alternatively,

$$NPV = -K^* + \frac{((p - u^B(p+\delta) + A^B(\frac{\rho}{(1-w^d)} + \delta))(1-w^d) + r\beta(u^B + w^d(1-u^B) - u^A))K^*}{\rho} \quad \text{(A.2.14)}$$

This NPV formula may be expressed alternatively as follows:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1 - AETR) \quad \text{(A.2.15)}$$

$$PVY = \frac{pK^*}{\rho} \quad \text{(A.2.16)}$$

$$PVT = \frac{(u^B(p+\delta) + w^d(p - u^B(p+\delta)) - r\beta(u^B + w^d(1-u^B) - u^A) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d))K^*}{\rho} \quad \text{(A.2.17)}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^B(p+\delta) + w^d(p - u^B(p+\delta)) - r\beta(u^B + w^d(1-u^B) - u^A) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d)}{p} \quad \text{(A.2.18)}$$

b) Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

In the excess credit case, the NPV of investment given by (A.2.4) may be expressed as a function of the AETR on investment, with regarding to the preceding results, by comparing the NPV formulae (A.2.1) and (A.2.3), where the effective tax rate on interest is u^A under dividend exemption, *versus* w^i under excess credits. Therefore, replacing u^A with w^i in equations (A.2.14) to (A.2.18) we have the following results in the excess foreign tax credit case (with PVY unchanged):

$$NPV = -K^* + \frac{((p - u^B(p+\delta) + A^B(\frac{\rho}{(1-w^d)} + \delta))(1-w^d) + r\beta(u^B + w^d(1-u^B) - w^i))K^*}{\rho} \quad \text{(A.2.19)}$$

$$PVY = \frac{pK^*}{\rho} \quad \text{(A.2.20)}$$

$$PVT = \frac{(u^B(p+\delta) + w^d(p - u^B(p+\delta)) - r\beta(u^B + w^d(1-u^B) - w^i) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d))K^*}{\rho} \quad \text{(A.2.21)}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^B(p+\delta) + w^d(p - u^B(p+\delta)) - r\beta(u^B + w^d(1-u^B) - w^i) - A^B(\frac{\rho}{(1-w^d)} + \delta)(1-w^d)}{p} \quad \text{(A.2.22)}$$

B) Dividend credit system with low-taxed foreign affiliate ($u^A > u^B$)

Where the home country operates a dividend credit system, the statutory corporate tax rate in host country u^B is less than the home country rate u^A, and the parent is in an insufficient foreign tax credit position, leveraging of a foreign subsidiary in country B does not affect the amount of tax on returns on investment. This follows where host country taxation is offset by reduced foreign tax credits. Leveraging causes the host country tax liability to decline, but where this results in an offsetting reduction in foreign tax credits in the home country tax calculation, there is no change in the combined host/home tax burden.

An insufficient foreign tax credit position may also arise where the statutory CIT rate in the host country exceeds the home country rate ($u^B > u^A$). As reviewed in the preceding section, the tax burden on FDI by parents in an excess foreign tax credit position is reduced with leveraging, which reduces the host country tax burden, with foreign income sheltered from home country tax by excess tax credits. However, at some critical leverage value β^c, excess credits would be used up, and the additional leveraging would no longer provide tax savings.[15] At this point, foreign earnings would be effectively taxed at the home country rate, with host country tax offset by foreign tax credits. Leveraging causes the host country tax liability to decline, but where this results in an offsetting reduction in foreign tax credits in the home country tax calculation, there is no change in the combined host/home tax burden (as above).

Therefore, in the insufficient foreign tax credit case, the NPV formula, steady state equilibrium condition, and METR and AETR calculations are unchanged from those presented in Case 1. Host country taxation will of course be different with leveraging, but the combined host/home country tax burden is not. Therefore, the solutions derived for Case 1-B also apply in Case 2-B: in particular, the formulae for the NPV of investment (A.1.28), the user cost of capital used to determine METR (A.1.32), and AETR (A.1.37).

Case 3. Third-party debt invested in new equity shares of a foreign subsidiary

Most countries allow resident firms to deduct interest charges on amounts borrowed to finance outbound FDI, even where little or no domestic tax is collected on foreign source income. Where no home country tax is collected, interest deductions offset domestic tax on domestic source income. While certain countries have tracing rules that aim to match interest charges on such loans against foreign source income, these rules are difficult to enforce in practice. This section examines the case where the parent borrows in the international capital market at interest rate r^* to fund investment in new equity shares of a foreign sub.

In considering possible differences between this case and Case 1 (where a parent uses retained earnings rather than third-party debt to finance its investment in new equity shares of a foreign subsidiary), the main difference is with regard to the cost of funds (with interest deductible, but not the opportunity cost of retained earnings). Differences do not arise in relation to the tax treatment of returns on FDI unless domestic borrowing to fund FDI somehow impacts on the tax base inclusion and/or foreign tax credit calculation. Under effective tracing rules, interest deductions would be limited where little or no domestic tax is collected on returns on FDI. US interest allocation rules operate to constrain domestic borrowing through their impact on FTC claims. In particular, in the calculation of deemed amount of domestic tax on foreign source income (calculated as the fraction of US tax payable that foreign taxable income is to total taxable income), foreign

taxable income is calculated net of a *pro rata* interest allocation (on the basis of foreign *versus* total assets). In what follows, neither effective tracing rules nor interest allocation rules are factored in. Results derived for the case without restrictions on interest allocation serve to highlight possible tax effects in the absence of such provisions.

A) *Dividend exemption system/Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)*

1. Specification of NPV of investment

With third-party borrowing by a parent used to fund FDI, the NPV of investment in the dividend exemption case, and excess foreign tax credit case, is given by the following:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B)-(1-A^B)\delta K^*)(1-w^d)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.3.1)}$$

where F(K), δ , u^A, u^B, w^d and ρ are defined as above, and A^B is measured by:

$$A^B = \sum_{s=1}^{s=\infty} \frac{u^B \alpha^B (1-\alpha^B)^{(s-1)}(1-\xi^B)}{(1+r^*(1-u^A))^s} + \xi^B = \frac{u^B \alpha^B (1-\xi^B)}{r^*(1-u^A)+\alpha^B} + \xi^B \quad \text{(A.3.2)}$$

This capital cost allowance measure differs from that applicable when the parent's source of funds is retained earnings [see (A.1.2)] on account of the different cost of funds [ρ in the case of retained earnings, and $r^*(1 - u^A)$ in the case of third-party debt finance].

With $A^B K^*$ currency units of host country tax relief on the purchase of K^* units of capital, the parent borrows $(1 - A^B)K^*$ from the domestic bond market, with an after-tax interest charge on this loan given by $r^*(1 - u^A)$. The NPV specification assumes that while the initial investment is financed with borrowed funds, replacement investment is financed each period out of retained earnings of the subsidiary.

2. METR [scale decision (optimal K^*)]

The optimal level of investment may be derived using (A.3.1), where the net present value of the last unit of investment is zero (*i.e.* where economic profit is exhausted at the margin):

$$npv = \sum_{s=1}^{s=\infty} \frac{(F_K(K^*)(1-u^B)-(1-A^B)\delta)(1-w^d)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)}{(1+\rho)^s} = 0 \quad \text{(A.3.3)}$$

Solving the summation term and rearranging gives:

$$\frac{(F_K(K^*)(1-u^B)-(1-A^B)\delta)(1-w^d)}{\rho} = \frac{r^*(1-u^A)(1-A^B)}{\rho} \quad \text{(A.3.4)}$$

Multiplying through by $\rho/(1 - w^d)$ and then rearranging terms gives:

$$F_K(K^*)(1-u^B)-(1-A^B)\delta = \frac{r^*(1-u^A)}{(1-w^d)}(1-A^B) \quad \text{(A.3.5)}$$

$$F_K(K^*) = \frac{(\frac{r^*(1-u^A)}{1-w^d}+\delta)(1-A^B)}{(1-u^B)} = c \quad \text{(A.3.6)}$$

This equilibrium condition, equating pre-tax marginal product of capital with the user cost of capital (denoted by c), determines the optimal capital stock level K^*. It differs from previous cases where the parent finances FDI with equity (retained earnings of the parent) on account of the cheaper cost of funds, with interest costs being deductible (and with

$\rho = r^*$ in the small open economy case). The corresponding METR may be solved using (A.1.5), substituting the above user cost value.

3. *AETR and NPV of investment*

Reorganising terms of the NPV formula (A.3.1), solving the summation terms and substituting the average rate of return formula, we have:

$$NPV = \frac{(F(K^*) - \delta K^* - u^B F(K^*) + A^B \delta K^*)(1-w^d)}{\rho} - \frac{r^*(1-u^A)(1-A^B)K^*}{\rho} \quad \text{(A.3.7)}$$

$$NPV = -\frac{r^*}{\rho}K^* + \frac{((p - u^B(p+\delta) + A^B(\frac{r^*(1-u^A)}{(1-w^d)} + \delta))(1-w^d) + u^A r^*)K^*}{\rho} \quad \text{(A.3.8)}$$

Under a small open economy assumption, the parent's discount rate is given by the market rate of interest r^* set on international capital markets (that is, $\rho = r^*$). Therefore, the NPV may be written as:

$$NPV = -K^* + \frac{(p - u^B(p+\delta) - w^d(p - u^B(p+\delta)) + u^A r^* + A^B(\frac{r^*(1-u^A)}{(1-w^d)} + \delta)(1-w^d))K^*}{\rho} \quad \text{(A.3.9)}$$

Comparing this NPV solution with that for Case 1 [where the parent's investment is financed by retained earnings (A.1.12)] finds that in the case of debt-financed investment by the parent, the NPV is higher on account of the tax deductibility of interest (with the opportunity cost of equity finance in Case 1 being non-deductible). The difference is captured in two terms including the numerator term of (A.3.9), $u^A r^* K^*$, measuring home country tax relief each period associated with an annual borrowing charge of r^*K^* units. However, as the parent need only borrow $(1 - A^B)K^*$ units, implying an interest charge of $r^*(1 - A^B)K^*$ and an annual tax saving of $r^*(1 - A^B)K^*$ units, the fifth term makes an adjustment of $-u^A r^* A^B K^*$ units.[16]

The NPV formula can be expressed as a function of the AETR in this case, as follows:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1 - AETR) \quad \text{(A.3.10)}$$

$$PVY = \frac{pK^*}{\rho} \quad \text{(A.3.11)}$$

$$PVT = \frac{(u^B(p+\delta) + w^d(p - u^B(p+\delta)) - u^A r^* - A^B(\frac{r^*(1-u^A)}{(1-w^d)} + \delta)(1-w^d))K^*}{\rho} \quad \text{(A.3.12)}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^B(p+\delta) + w^d(p - u^B(p+\delta)) - u^A r^* - A^B(\frac{r^*(1-u^A)}{(1-w^d)} + \delta)(1-w^d)}{p} \quad \text{(A.3.13)}$$

B) Dividend credit system with low-taxed foreign affiliate ($u^A > u^B$)

1. *Specification of NPV of investment*

Under the assumption, noted above, that there are no effective restrictions on domestic interest expense on funds used to finance FDI, the introduction in this case of borrowing by the parent only affects the cost of funds (not the taxation of investment returns). Thus the NPV of investment in the insufficient foreign tax credit case is:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^A) - (1-A^A)\delta K^*)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^A)K^*}{(1+\rho)^s} \quad \text{(A.3.14)}$$

where F(K), δ , u^A, u^B, w^d and ρ are defined as above, and A^A is measured by:

$$A^A = \sum_{s=1}^{s=\infty} \frac{u^A \alpha^A (1-\alpha^A)^{(s-1)}}{(1+r^*(1-u^A))^s} = \frac{u^A \alpha^A}{r^*(1-u^A)+\alpha^B} \tag{A.3.15}$$

With $A^A K^*$ currency units of home country tax relief on the purchase of K^* units of capital, the parent borrows $(1 - A^A)K^*$ from the domestic bond market, with an after-tax interest rate on the loan of $r^*(1 - u^A)$.

2. METR [scale decision (optimal K^*)]

The optimal level of investment may be derived using (A.3.15), where the net present value of the last unit of investment is zero (*i.e.* where economic profit is exhausted at the margin):

$$npv = \sum_{s=1}^{s=\infty} \frac{(F_K(K^*)(1-u^A)-(1-A^A)\delta)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^A)}{(1+\rho)^s} = 0 \tag{A.3.16}$$

Solving the summation term and rearranging gives:

$$F_K(K^*) = \frac{(r^*(1-u^A)+\delta)(1-A^A)}{(1-u^A)} = c \tag{A.3.17}$$

This equilibrium condition differs from that of Case 1, owing to the deductibility of interest expense (recall also that $\rho = r^*$ in the small open economy case). The corresponding METR may be solved using (A.1.7), substituting the above user cost value.

3. AETR and NPV of investment

Reorganising terms of the NPV formula (A.3.15), solving the summation terms and substituting the average rate of return formula, we have:

$$NPV = \frac{(F(K^*)-\delta K^* - u^A F(K^*) + A^A \delta K^*)}{\rho} - \frac{r^*(1-u^A)(1-A^A)K^*}{\rho} \tag{A.3.18}$$

$$NPV = -\frac{r^*}{\rho}K^* + \frac{(p-u^A(p+\delta)+A^A(r^*(1-u^A)+\delta)+u^A r^*)K^*}{\rho} \tag{A.3.19}$$

Under a small open economy assumption, the parent's discount rate equals the market rate of interest r^* (that is, $\rho = r^*$). Therefore, the NPV may be written as:

$$NPV = -K^* + \frac{(p-u^A(p+\delta)+A^A(r^*(1-u^A)+\delta)+u^A r^*)K^*}{\rho} \tag{A.3.20}$$

This NPV solution finds a higher value, for a given K^*, compared with Case 1, on account of the tax deductibility of interest (with the opportunity cost of equity finance in Case 1 being non-deductible). The NPV formula can be expressed as a function of the AETR in this case, as follows:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1-AETR) \tag{A.3.21}$$

$$PVY = \frac{pK^*}{\rho} \tag{A.3.22}$$

$$PVT = \frac{(u^A(p+\delta)-u^A r^* - A^A(r^*(1-u^A)+\delta))K^*}{\rho} \tag{A.3.23}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^A(p+\delta)-u^A r^* - A^A(r^*(1-u^A)+\delta)}{p} \tag{A.3.24}$$

Case 4. Third-party debt invested in new equity shares and debt securities of a foreign subsidiary

This case combines the features of Cases 2 and 3. The parent is assumed to borrow, as in Case 3, in the international capital market at r^* to finance its foreign investment. Like Case 2, the parent capitalises its foreign sub using a combination of new equity and inter-affiliate loans, with the leverage parameter β measuring the fraction of funds injected in the form of debt capital. Using the results derived previously for Cases 2 and 3, the formulae for the net present value of investment, the marginal investment conditions, and corresponding effective tax rates may be derived directly as follows.

1. *Specification of NPV of investment*

a) Dividend exemption system

The NPV under Case 4 financing is as follows, where F(K), δ, u^A, u^B, A^B, w^d and ρ are defined as in Case 1, β is the inter-affiliate leverage parameter as in Case 3, and r^* is the "world" rate of interest:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-u^A)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.4.1)}$$

Optimal leveraging of the foreign subsidiary in the dividend exemption case

The NPV formula (A.4.1a) may be written alternatively as follows:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B)(1-w^d) + r\beta K^*(u^B + w^d(1-u^B) - u^A)) - (1-A^B)\delta K^*(1-w^d)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.4.2)}$$

Using this expression, we have the following result regarding optimal leveraging of the subsidiary:

$$\frac{\partial NPV}{\partial \beta} = \frac{r(u^B + w^d(1-u^B) - u^A)K^*}{\rho} \quad \text{(A.4.3)}$$

As in Case 2, loans by the parent to the sub increase the NPV on investment if the rate of host country tax relief from substituting towards inter-affiliate interest as a channel to receive foreign earnings $[u^B + w^d(1 - u^B)]$ exceeds the effective tax rate on interest in the dividend exemption case, u^A. If statutory tax rates are such that $[u^B + w^d(1 - u^B)] < u^A$ and the subsidiary is held directly, leveraging the subsidiary reduces the NPV on investment. In this case, it is optimal to set the leverage parameter to zero ($\beta = 0$) and capitalise the subsidiary using equity alone. However, if $[u^B + w^d(1 - u^B)] > u^A$, leveraging the subsidiary increases NPV by reducing host corporate tax (given interest deductibility) and dividend withholding tax by more than home country tax is increased due to the interest inclusion.

In other words, despite dividends being exempt while interest is taxable, if $[u^B + w^d(1 - u^B)] > u^A$, switching towards interest reduces the host country tax by more than the home country tax on interest, so that an overall tax reduction is realised. Under this rate structure it is optimal for the parent in the dividend exemption case to strip out all earnings in the form of interest. In practice, the degree of leveraging may be constrained by host country thin capitalisation rules (not included in the model).

b) Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

Similar (but not identical) results are found where the home country operates a dividend credit system, the host country statutory corporate tax rate exceeds the home country rate and the parent is in an excess credit position, with excess credits on dividends from the foreign affiliate shielding foreign interest from home country tax (under the assumption that dividends and interest paid out of active business income are pooled for home country foreign tax credit purposes).

With no home country tax on foreign dividends or interest in the excess foreign tax credit case (at least up to some degree of leveraging of the foreign subsidiary), the relevant NPV is as follows:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-w^i)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.4.4)}$$

or alternatively:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B)(1-w^d) + r\beta K^*(u^B + w^d(1-u^B) - w^i)) - (1-A^B)\delta K^*(1-w^d)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.4.5)}$$

Optimal leveraging of the foreign subsidiary in the excess credit case

Using (A.4.3a), the impact of leveraging on the NPV on investment is assessed as follows:

$$\frac{\partial NPV}{\partial \beta} = \frac{r(u^B + w^d(1-u^B) - w^i)K^*}{\rho} \quad \text{(A.4.6)}$$

As in Case 2, an inter-affiliate loan increases the NPV on investment if the parent is in an excess foreign tax credit position with foreign earnings free of home country tax, with interest shielded by excess credits. The condition that host country statutory tax rates satisfy $[u^B + w^d(1 - u^B)] > w^i$ would normally be met, at least where the foreign subsidiary is profitable (as assumed in the model). However, this condition reflects NPV effects where the parent has sufficient excess foreign tax credits to shield interest income. At some point, with increased leveraging, the excess foreign tax credit characterisation would no longer apply (*i.e.* the parent would switch to an insufficient foreign tax credit position).

As shown above, where the host country tax rate on profit (earnings net of interest) is relatively high, increasing β above zero reduces host country corporate tax and dividend withholding tax (with no offsetting increase in home country tax), more than offsetting the non-resident withholding tax charge. However, stripping earnings out in the form of interest would at some critical value of the leveraging parameter result in host country tax on foreign earnings $F(K^*)$ falling to a level where the parent's foreign tax credit limit switches to the amount of home country tax on foreign earnings, despite a higher statutory tax rate in the host country. Beyond this point, additional leveraging leaves the combined host/home country tax burden unchanged, with reductions in host country tax offset by a reduced foreign tax credit. This insufficient foreign tax credit case is examined in the following sub-section 4B.

2. METR [scale decision (optimal K^*)]

a) Dividend exemption system

The optimal level of investment is derived using (A.4.1), as follows:

$$npv = \sum_{s=1}^{s=\infty} \frac{(F_K(K^*) - r\beta)(1-u^B) - (1-A^B)\delta)(1-w^d) + r\beta(1-u^A)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)}{(1+\rho)^s} = 0 \quad \text{(A.4.7)}$$

Solving the summation term and rearranging terms gives:

$$\frac{((F_K(K^*) - r\beta)(1-u^B) - (1-A^B)\delta)(1-w^d) + r\beta(1-u^A)}{\rho} = \frac{r^*(1-u^A)(1-A^B)}{\rho} \quad \text{(A.4.8)}$$

Multiplying through by ρ, reorganising terms and dividing through by $(1 - w^d)$ gives:

$$F_K(K^*)(1-u^B)(1-w^d) - r\beta(1-u^B - w^d(1-u^B) - (1-u^A)) - (1-A^B)\delta(1-w^d) = r^*(1-u^A)(1-A^B)$$

$$F_K(K^*)(1-u^B) + r\beta\frac{(u^B + w^d(1-u^B) - u^A)}{(1-w^d)} = (\frac{r^*(1-u^A)}{(1-w^d)} + \delta)(1-A^B) \quad \text{(A.4.9)}$$

Rearranging terms again and dividing through by $(1 - u^B)$ gives finally:

$$F_K(K^*) = \frac{(\frac{r^*(1-u^A)}{(1-w^d)} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta\frac{(u^B + w^d(1-u^B) - u^A)}{(1-w^d)}}{(1-u^B)} = c \quad \text{(A.4.10)}$$

This condition, equating the pre-tax marginal product of capital with the user cost of capital (c), determines the optimal capital stock level K^* in the dividend exemption case, with double-dip financing involving partial leveraging of the foreign subsidiary {with $\beta > 0$ only if $[u^B + w^d(1 - u^B)] > u^A$}.

b) Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

The solution to the optimal scale decision in the excess credit case may be readily derived using the preceding result (A.4.10), by comparing the NPV formulae for the dividend exemption case (A.4.1) and excess credit case (A.4.4), where the only difference is with regard to the effective tax rate on interest (u^A under dividend exemption, *versus* w^i under excess credits). Replacing u^A in (A.4.10) with w^i gives the following result [where for both cases a) and b), the corresponding METR may be calculated using (A.1.7)]:

$$F_K(K^*) = \frac{(\frac{r^*(1-u^A)}{(1-w^d)} + \delta)(1-A^B)}{(1-u^B)} - \frac{r\beta\frac{(u^B + w^d(1-u^B) - w^i)}{(1-w^d)}}{(1-u^B)} = c \quad \text{(A.4.11)}$$

3. AETR and NPV of investment

a) Dividend exemption system

The NPV of investment in the dividend exemption case (A.4.1) may be expressed as a function of the AETR on investment as follows [first arranging terms, solving the summation terms and then introducing the average rate of return variable p given by (A.1.8)]:

$$NPV = \frac{(F(K^*) - \delta K^* - u^B F(K^*) + A^B \delta K^*)(1-w^d) + r\beta K^*(1-u^A - (1-u^B)(1-w^d))}{\rho} - \frac{r^*(1-u^A)(1-A^B)K^*}{\rho} \quad \text{(A.4.12)}$$

$$NPV = -\frac{r^*}{\rho}K^* + \frac{((p-u^B(p+\delta)+A^B(\frac{r^*(1-u^A)}{(1-w^d)}+\delta))(1-w^d)+r\beta(u^B+w^d(1-u^B)-u^A)+u^A r^*)K^*}{\rho} \quad \text{(A.4.13)}$$

Under a small open economy assumption, the parent's discount rate is given by the market rate of interest set on world capital markets [that is, $\rho = r^*$ implying $(r^*/\rho) = 1$]. Therefore, the NPV formula given above may be expressed as follows:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1-AETR) \quad \text{(A.4.14)}$$

$$PVY = \frac{pK^*}{\rho} \quad \text{(A.4.15)}$$

$$PVT = \frac{(u^B(p+\delta)+w^d(p-u^B(p+\delta))-u^A r^*-r\beta(u^B+w^d(1-u^B)-u^A)-A^B(\frac{r^*(1-u^A)}{(1-w^d)}+\delta)(1-w^d))K^*}{\rho} \quad \text{(A.4.16)}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^B(p+\delta)+w^d(p-u^B(p+\delta))-u^A r^*-r\beta(u^B+w^d(1-u^B)-u^A)-A^B(\frac{r^*(1-u^A)}{(1-w^d)}+\delta)(1-w^d)}{p} \quad \text{(A.4.17)}$$

b) Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

The NPV of investment may be expressed as a function of the AETR in the excess credit case in a direct fashion, with regard to the preceding results. In particular, comparing the basic NPV formulae for the exemption case (A.4.1) with the NPV formula for the excess credit case (A.4.3a), one observes that they differ with regard to the effective tax rate on interest. In the dividend exemption case, where interest is subject to home country tax, the relevant tax rate is u^A. In the dividend credit case with excess foreign tax credits, where home country tax on interest is offset by dividend tax credit, the relevant tax rate is the non-resident withholding tax rate in the host country w^i. Therefore, substituting w^i for u^A in equations (A.4.14) through to (A.4.17) we have immediately the following results:

$$NPV = -K^* + PVY - PVT = -K^* + PVY(1-AETR) \quad \text{(A.4.18)}$$

$$PVY = \frac{pK^*}{\rho} \quad \text{(A.4.19)}$$

$$PVT = \frac{(u^B(p+\delta)+w^d(p-u^B(p+\delta))-u^A r^*-r\beta(u^B+w^d(1-u^B)-w^i)-A^B(\frac{r^*(1-u^A)}{(1-w^d)}+\delta)(1-w^d))K^*}{\rho} \quad \text{(A.4.20)}$$

$$AETR = \frac{PVT}{PVY} = \frac{u^B(p+\delta)+w^d(p-u^B(p+\delta))-u^A r^*-r\beta(u^B+w^d(1-u^B)-w^i)-A^B(\frac{r^*(1-u^A)}{(1-w^d)}+\delta)(1-w^d)}{p} \quad \text{(A.4.21)}$$

c) Dividend credit system with low-taxed foreign affiliate ($u^A > u^B$)

Where the home country operates a dividend credit system, the statutory corporate tax rate in host country u^B is less than the home country rate u^A, and the parent is in an insufficient foreign tax credit position, leveraging of a foreign subsidiary in country B does not affect the amount of tax on returns on investment. This follows where host country taxation is offset by reduced foreign tax credits. Leveraging causes the host country tax liability to decline, but where this results in an offsetting reduction in foreign tax credits in the home country tax calculation, there is no change in the combined host/home tax burden.

An insufficient foreign tax credit position may also arise where the statutory CIT rate in the host country exceeds the home country rate ($u^B > u^A$). As reviewed in the preceding section, the tax burden on FDI by parents in an excess foreign tax credit position is reduced with leveraging, which reduces the host country tax burden, with foreign income sheltered from home country tax by excess tax credits. However, at some critical leverage value β^c, excess credits would be used up, and the additional leveraging would no longer provide tax savings. At this point, foreign earnings would be effectively taxed at the home country rate, with host country tax offset by foreign tax credits. Leveraging causes the host country tax liability to decline, but where this results in an offsetting reduction in foreign tax credits in the home country tax calculation, there is no change in the combined host/home tax burden (as above).

Therefore, in the insufficient foreign tax credit case, the NPV of investment, the user cost of capital and corresponding METR, and AETR calculations are unchanged from those applicable in Case 3B, where leveraging the subsidiary does not add value (implying $\beta = 0$). The relevant formulae are as follows: NPV of investment (A.3.15), user cost of capital used to determine METR (A.3.17) and AETR (A.3.24).

Case 5. Third-party debt invested in new equity shares and hybrid securities of a foreign subsidiary

In this case, a foreign subsidiary is capitalised using a hybrid security rather than standard (*i.e.* conventional) debt. Payments on the hybrid security are recognised by the host country as interest and are deductible against the host country tax base. However, returns on the hybrid security in the hands of the investor (the parent) are treated by home country tax authorities as dividends, rather than interest.[17]

Hybrid securities may be used to reduce tax on FDI where the home country operates a dividend exemption system (which would subject interest on standard debt to corporate tax). With hybrid financing, both dividends on equity shares and returns on hybrid securities, treated by the home country as dividend income, are exempt from home country tax under a dividend exemption system. Where the home country instead operates a dividend credit system, tax results with hybrid financing are shown under the model to be unchanged from those where standard debt is used. This follows where the home country subjects the parent to tax on total pre-tax foreign earnings of the subsidiary, and creditable tax equals host country tax underlying the combined pool of income (with an interest deduction for payments on hybrid securities, like standard debt), both of which are unchanged where a hybrid instrument is used instead.

In the following analysis of hybrid financing, the parent is assumed, as in Case 4, to borrow in the international capital market at r^* to finance its foreign investment. The leverage parameter β in this case measures the fraction of borrowed funds invested in a foreign subsidiary using a hybrid security, with $(1 - \beta)$ measuring the fraction injected as new equity.

A) Dividend exemption system/Dividend credit system with high-taxed foreign affiliate ($u^B > u^A$)

1. Specification of NPV of investment

Where the international tax system adopted by the home country is dividend exemption system, or instead a dividend credit system and the parent is in an excess

foreign tax credit position, the NPV of FDI relying on hybrid financing is as follows, where F(K), δ, u^A, u^B, A^B, w^d and ρ are defined as in Case 1, β is the inter-affiliate hybrid-leverage parameter, and r^* is the "world" rate of interest:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-w^i)}{(1+\rho)^s}$$
$$- \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.5.1)}$$

or alternatively,

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B)(1-w^d) + r\beta K^*(u^B + w^d(1-u^B) - w^i)) - (1-A^B)\delta K^*(1-w^d)}{(1+\rho)^s}$$
$$- \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.5.2)}$$

This NPV formula matches that shown for Case 4B (dividend credit system, excess FTC position) considering the use of standard debt finance (see A.4.4).

Consider first the use of a hybrid security under a dividend credit system, where the parent is required to include in the home country tax base total pre-tax earnings of the foreign subsidiary [measured by $F(K^*)$, including the hybrid return component], as in the standard debt finance case, and the foreign tax credit is constrained to be the lesser of domestic tax on total pre-tax earnings, and foreign tax on those earnings. As total pre-tax earnings are the same, for a given K^*, regardless of whether the non-dividend component is a return on standard debt or hybrid instrument, total pre-tax earnings and thus home country tax on pre-tax earnings are the same with the hybrid instrument. Creditable host country tax is unchanged as well, with the hybrid instrument treated by the host country as standard debt, and creditable tax available to shelter pooled foreign income.

Thus the NPV on investment, as well as the optimal scale condition and effective tax rate formulae are unchanged from the standard debt finance case examined in Case 4. This is true both for the excess foreign tax credit case (examined in this section) and the insufficient foreign tax credit case (examined below in sub-section 5B).

However, an important difference arises in the dividend exemption case, where returns on the hybrid security are subject to tax at the non-resident withholding tax at rate w^i, rather than the (normally higher) home country corporate tax rate u^A with returns on the hybrid security treated as exempt dividends. Moreover, the NPV formula (A.5.2) applies at all hybrid leverage parameter values, up to and including the value that would repatriate all foreign earnings as hybrid interest, subject possibly to host country thin capitalisation rules (not modelled).

This stands in contrast to results under the dividend credit case, where capitalising a foreign subsidiary with a hybrid security or standard debt is attractive to a parent only where the parent is in an excess foreign tax credit position (as leveraging beyond this point reduces host country tax, but reduces in tandem the allowable foreign tax credit so that total tax is unchanged).

Optimal leveraging of the foreign subsidiary in the hybrid instrument

Using (A.5.2), the impact of hybrid-leveraging on the NPV of investment is assessed as follows:

$$\frac{\partial NPV}{\partial \beta} = \frac{r(u^B + w^d(1-u^B) - w^i)K^*}{\rho} \quad \text{(A.5.3)}$$

The condition that host country tax rates satisfy $[u^B + w^d(1 - u^B)] > w^i$ would normally be met under the assumption in the model that the foreign subsidiary is profitable. As noted above, the taxation of hybrid-interest at rate w^i would hold at all values of the hybrid-leverage parameter β in the dividend exemption case. In the dividend credit case, increasing the hybrid-leverage parameter increases the NPV on investment, provided that foreign tax credits are sufficient to offset home country tax on the pooled foreign income (dividends on equity, plus returns on the hybrid instrument also treated as dividends). At some point, with increased leveraging, the excess foreign tax credit characterisation would no longer apply (*i.e.* the parent would switch to an insufficient foreign tax credit position, considered in sub-section 5B).

2. METR and AETR

As noted above, with hybrid financing, the NPV formula for the dividend exemption case and the dividend credit case with excess foreign tax credits matches that for Case 4B analysing tax results under a dividend credit system with excess foreign tax credits and standard debt financing. Therefore, in the context of hybrid financing under dividend exemption or excess foreign tax credits, the user cost of capital determining the METR is given by equation (A.4.11), and the AETR is measured by (A.4.21).

B) Dividend credit system with low-taxed foreign affiliate ($u^A > u^B$)

Similarly, tax results with hybrid financing under a dividend credit system where the parent is in an insufficient foreign tax credit position match those examined in Case 4 for the insufficient FTC case. These are unchanged from results derived for Case 3 in the insufficient FTC case, where recall leveraging the foreign sub does not generate tax relief and thus does not add value (implying $\beta = 0$). Therefore the following formula continue to hold: NPV for investment (A.3.15), user cost of capital determining the METR (A.3.17) and AETR (A.3.24).

Case 6. Third-party debt invested in new equity shares of a tax haven foreign affiliate which invests in new equity shares and debt securities of a foreign subsidiary

This sixth case considers the use of a tax haven finance affiliate to avoid home country tax on foreign active business income. A parent company is assumed to borrow funds at market rate r^* and invest these funds in equity shares of a tax haven finance subsidiary location in jurisdiction C. This intermediary invests the funds immediately in an operating subsidiary in country B, using some combination of inter-affiliate loan and new equity, used to purchase K^* units of physical capital. The parameter β measures the fraction of funds injected using an inter-affiliate loan. As in Case 2, r denotes the interest rate on the inter-affiliate loan (possibly different than the "world" interest rate r^*). Borrowing by the parent to finance the purchase of K^* units of capital takes account of capital cost

allowances realised by the operating subsidiary on the purchase of physical capital (as in previous cases).

The operating subsidiary is assumed to fully distribute its after-tax earnings each period to the finance subsidiary except for a fraction retained to finance replacement investment to maintain the physical capital stock at a steady-state level K^*. Earnings are paid to the finance subsidiary in some combination of interest and dividends, with the payout type set by the choice over the leverage parameter β. The finance subsidiary is assumed to invest earnings received from the operating subsidiary in passive assets paying the "world" rate of return r^*, held offshore indefinitely (*i.e.* after-tax earnings are not paid out to the parent).[18] Anti-deferral/anti-exemption rules are assumed to *not* apply.

1. Specification of NPV of investment

The NPV to the parent of FDI in an operating subsidiary acquiring K^* units of physical capital, capitalised under the structure described above, is as follows:

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*) - r\beta K^*)(1-u^B) - (1-A^B)\delta K^*)(1-w^d) + r\beta K^*(1-w^i)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.6.1)}$$

or alternatively,

$$NPV = \sum_{s=1}^{s=\infty} \frac{(F(K^*)(1-u^B)(1-w^d) + r\beta K^*(u^B + w^d(1-u^B) - w^i)) - (1-A^B)\delta K^*(1-w^d)}{(1+\rho)^s} - \sum_{s=1}^{s=\infty} \frac{r^*(1-u^A)(1-A^B)K^*}{(1+\rho)^s} \quad \text{(A.6.2)}$$

where F(K), δ, u^A, u^B, A^B, w^i and ρ are defined as in Case 2, with β and r defined above. The operating subsidiary in country B is assumed to retain after-tax earnings sufficient to finance replacement investment δK^* that maintains the capital stock at a steady-state value K^*, and to distribute in full after-tax earnings in excess of this amount.[19] Investment returns paid in the form of interest and dividends attract repatriation tax at rates w^i and w^d, which may exceed values applicable in the non-intermediated investment case (where the foreign subsidiary is held directly by the parent). The NPV specification applies both in the dividend exemption and dividend credit cases, with the absence of home country taxation resulting from indefinite deferral and an absence of controlled foreign corporation (anti-deferral/anti-exemption) rules.

NPV measurement with investment in passive assets

Under the intermediated financing structure, the present value to the parent of after-host country tax earnings of a foreign subsidiary in period $n \geq 1$, in the amount Xn , paid to a tax haven finance affiliate and invested in indefinitely in passive assets paying r^*, may be assessed as follows:

$$NPV(X_n) = \frac{X_n \sum_{j=1}^{j=\infty} \frac{(1+r^*)^j}{(1+\rho)^j}}{(1+\rho)^n} = \frac{X_n}{(1+\rho)^n} \quad \text{(A.6.3)}$$

The implication is that returns and the discounting of returns on the investment each period of after-tax earnings of the foreign subsidiary in passive assets can be ignored in modelling the NPV. As shown by (A.6.3), the influence on NPV of returns on the passive asset and the discounting of those returns cancels out, with the parent's discount rate ρ equal to the "world" rate of return r^*.[20]

The NPV measure (A.6.1) matches that for Case 5A, considering non-intermediated investment using a hybrid instrument where the home country operates a dividend exemption system (or dividend credit system with excess foreign tax credits) where there is no home country tax on foreign earnings received as exempt dividends or exempt returns on hybrid debt [see (A.5.1)].[21] While the same formula applies, the non-resident withholding tax rates on interest (w^i) and dividends (w^d) may be higher in the case of payments to a tax haven finance subsidiary (Case 6), as compared to previous cases where payments were made directly to the parent assumed to be resident in a treaty country (as under Case 5).[22]

Optimal leveraging of the foreign subsidiary held by tax haven finance affiliate

Using (A.6.2), the impact of hybrid-leveraging on the NPV of investment is assessed as follows:

$$\frac{\partial NPV}{\partial \beta} = \frac{r(u^B + w^d(1-u^B) - w^i)K^*}{\rho} \qquad \text{(A.6.4)}$$

As noted previously, the condition that host country tax rates satisfy $[u^B + w^d(1 - u^B)] > w^i$ would normally be met under the assumption in the model that the foreign subsidiary is profitable. Taxation of interest at rate w^i would hold at all values of the leverage parameter β with no taxation beyond the host country.

2. *METR and AETR*

As noted, the NPV formula for the tax haven finance affiliate structure matches that for Case 5A, considering non-intermediated investment using a hybrid instrument where the home country operates a dividend exemption system. Therefore, the user cost of capital formula determining the METR and the AETR formula applicable in Case 5A for the dividend exemption case, given by equations (A.4.11) and (A.4.21) apply in the current case. These formula hold regardless of whether the home country operates a dividend exemption system, or dividend credit system (including excess and insufficient foreign tax credit cases, given the absence of home country tax). Last to note is that while leveraging does not reduce total tax and thus does not add value in the previous cases examined where the home country CIT rate is high relative to the host country rate ($u^A > u^B$), due to reduced foreign tax credits, leveraging does provide tax savings in the intermediated investment case with no offsetting home country tax effects.

Notes

1. 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.
2. 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 (1991),

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.

3. Section B analyses results where the home country taxes foreign profit on an accrual rather than deferred basis. Most countries operating dividend credit systems defer home country tax on retained active business income. Proper modelling of deferral is difficult in a static model. The approach taken in this paper is to consider results under accrual taxation (as in Case 1), to be compared with results in Case 6 that consider indefinite deferral.

4. Where tax depreciation and other corporate tax base provisions in the host and home countries are similar, an excess foreign tax credit position could arise where the statutory corporate tax rate in the host country exceeds the home country rate ($u^B > u^A$). Excess credits may also occur where the home country statutory CIT rate is higher, but the corporate tax base is narrower (*e.g.* due to less restrictive loss provisions).

5. Where investment tax credits do not reduce the depreciable capital cost amount, the investment tax credit parameter would not appear in the numerator of the summation term in (A.1.2).

6. Capital stock units may be chosen such that one unit of capital has a purchase price of one currency unit.

7. With K^* units of physical capital purchased by the subsidiary at the beginning of the initial period $s = 1$, in each period ($s \geq 1$) the subsidiary receives a capital cost allowance on that investment that provides tax savings valued in period s at $u^B\alpha^B(1 - \alpha^B)^{s-1}(1 - \xi^B)K^*$ units. This amount is paid to the supplier of physical capital, who receives only $(1 - A^B)K^*$ on the sale in the initial period. The present value to the subsidiary (and the capital supplier) of this stream of payments is A^BK^*. The present value to the parent of this stream of payments is $A^BK^*(1 - w^d)$.

8. In the absence of repatriation tax ($w^d = 0$), the AETR reduces to $[u^B(p + \delta) - A^B(\rho + \delta)]/p$.

9. Separate pools or "baskets" may apply to restrict the taxpayer from using excess credits on high-taxed foreign income to offset domestic tax on low-taxed income. An overall limitation may apply that limits the foreign tax credit to be no greater than a deemed amount of domestic tax on foreign income (*i.e.* the fraction of home country tax on worldwide income that foreign taxable income is to total (worldwide) taxable income).

10. The formula for A^B given by (A.1.2), measuring the present value of (host country) capital cost allowances on a unit of investment, is unchanged with the introduction of an inter-affiliate loan which affects the tax treatment of the return on investment, not the (opportunity) cost of investment.

11. The term "profit" in this context is somewhat misleading, as the parent's return on investment consists of its profit as conventionally defined (returns net of interest paid to the parent), plus the part of its return received in the form of interest. Where the parent finances FDI with equity (retained earnings), profit on FDI is measured net of the opportunity cost of retained earnings (ρ). Where the parent finances FDI with third-party debt, profit on FDI is measured net of interest expense at r^* (examined in Case 3).

12. As noted previously, the analysis assumes that after-tax foreign profits are distributed in full. Results under deferred taxation are addressed in Case 6.

13. As noted previously, whether a parent company is in an excess credit or insufficient credit position depends not only on the relative setting of host/home statutory corporate tax rates, but also host/home country tax base provisions, and home country rules governing the streaming/pooling of different types of income.

14. A statutory rate setting where $[u^B + w^d(1 - u^B)] < w^i$ is highly unlikely.

15. While increasing the leverage parameter to β^c may provide tax savings, it may not be possible where thin capitalisation rules in the host country limit the degree of leveraging to some value less than β^c.

16. In other words, the fourth and last numerator terms, $(-u^Ar^*A^B + u^Ar^*)K^* = u^Ar^*(1 - A^B)K^*$.

17. Treatment of the return as interest by the host country and dividends by the home country generally reflect differences across countries in security attributes that authorities look to when deciding whether on balance an instrument should be regarded as debt *versus* equity for tax purposes.

18. While the foreign earnings invested in passive assets are available for investment by the finance affiliate in other operations of the multinational group owned by the parent company, other

possible investments and returns on them are do not factor into the current NPV calculation (FDI in K^* units of physical capital of the operating subsidiary in country B). The key assumption is that foreign earnings of the operating sub in country B are never repatriated (a limiting case, approximating results where funds are held offshore for an extended period such that the present value of possible future repatriation tax is negligible).

19. As in previous cases, the purchase of initial and replacement investment is financed in part by capital cost allowances (see the discussion in the specification of the NPV of investment in Case 1).

20. As the parent's discount rate ρ equals r^*, the terms $(1 + r^*)^h$ and $(1 + \rho)^h$ in (A.6.3) cancel out.

21. While the NPV formula (A.5.1) [identical to (A.6.1)] also applies with hybrid financing under a dividend credit system case with excess foreign tax credits, the formula no longer holds (discussed in Case 5) for leverage values that exceed some critical value ($\beta > \beta^c$) that would place the parent in an insufficient foreign tax credit position. In contrast, the NPV formula (A.6.1) holds in Case 6 (and in the dividend exemption case with non-intermediated hybrid financing) for all leverage values. The implication is that the NPV is higher and effective tax rates lower in these cases where home country taxation is avoided and host country taxation minimised at high leverage values (possibly constrained by host country thin capitalisation rules not included in the model).

22. Such could be the case where country B does not have a tax treaty with the tax haven jurisdiction in which the tax haven affiliate is located, but does have a tax treaty with the country of residence of the parent which stipulates withholding tax rates that are lower than country B's statutory rates.

ANNEX B

Tax Planning Costs and Behaviour – An Analysis of Repatration Taxes on Dividends[1]

The sixth financing structure examined in Section E of Chapter 5 (*Cross-border METR/AETR analysis – a focus on tax-planning effects*) considers the use of a tax haven finance affiliate to avoid home country tax in country A on foreign active business income paid out by an affiliate operating in high-tax country B. Home country tax on foreign earnings is avoided under the assumption that the finance affiliate invests all of the earnings received from the operating subsidiary in passive assets, and holds the earings offshore indefinitely (no repatriation of profits to the parent company).

The assumption that the multinational is able to avoid indefinitely home country tax on *all* foreign earnings is a limiting case, one that ignores costs involved in tax-planning. The model presented in this annex relaxes this assumption, introducing convex costs of tax planning. These costs could be consulting and legal fees, deductible against the home country tax base, in designing and implementing strategies and structures to avoid repatriation tax. Or the relevant costs may be opportunity costs incurred with foreign profits invested in passive assets, rather than alternative investments generating economic rents. Where external funds are used to finance such investment, a premium paid on those funds (*e.g.* interest charged in excess of the cost of internal funds) would represent a cost of avoiding repatriation tax.

Evidence suggests that repatriation taxes factor into repatriation decisions by established multinational firms, and that costs are met by firms in avoiding repatriation tax. It is noteworthy, for example, that the one-year window provided by the US government allowing multinationals to repatriate foreign earnings subject to a repatriation tax of only 5.25 per cent was accompanied by a large inflow of foreign profits. This reaction is consistent with optimising behaviour whereby earnings are retained offshore only so far as the tax savings from not repatriating profit, to avoid repatriation tax, are not offset by the costs incurred in keeping funds offshore. Under this scenario, a reduction in the tax charge to bringing earnings back home would be expected to lead to a higher rate of repatriation.

To focus on the implications of tax-planning costs, simplifying assumptions may be made. Assume in what follows that physical capital does not depreciate and that investment tax credits are not provided. Second, assume that an operating subsidiary is capitalised with equity only (inter-affiliate loans to strip out taxable profits from country B are ignored), and tax-planning is limited to avoiding home country tax on foreign

dividends. Furthermore, assume that the operating subsidiary resides in a low-tax country, and the home country operates a dividend credit system, providing a credit for underlying foreign tax.

1. Specification of NPV of investment

Without tax-planning costs

In the simple case where capital does not depreciate, investment tax credits are not provided, and *tax-planning costs do not arise*, so that all earnings of a foreign subsidiary are held offshore by a tax haven finance subsidiary, invested indefinitely in passive assets, the NPV of an investment of K^* units of retained earnings of a parent company, in country A, in an operating subsidiary in country B, intermediated by a tax haven affiliate in tax haven country C, is given by the following:[2]

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{F(K^*)(1-u^B)\sum_{j=1}^{j=\infty} \frac{(1+r^*)^j}{(1+\rho)^j}}{(1+\rho)^s} = -K^* + \sum_{s=1}^{s=\infty} \frac{F(K^*)(1-u^B)}{(1+\rho)^s} \quad \text{(B.1)}$$

In the absence of home country tax (accompanying indefinite deferral), including an assumed absence of controlled foreign company-type rules that would tax interest on passive assets, only host country taxation applies.[3] In each period, $F(K^*)(1 - u^B)$ units of earnings are paid to the tax haven finance affiliate and invested in passive assets (portfolio capital) paying the "world" rate of return r^*. With the rate of return on passive assets r^* equal to the parent's discount rate Á (the required after-corporate tax rate of return), only the principal amounts $F(K^*)(1 - u^B)$ need appear in the NPV measure.

With tax-planning costs

With tax-planning costs that tend to limit the amount of foreign profit that can be profitably retained offshore, the NPV formula requires adjustment. First, with some fraction α of profits retained offshore, and the residual fraction $(1 - \alpha)$ repatriated as dividends, the latter is subject to home country tax. Let u^d be the repatriation tax rate that grosses-up foreign dividends in respect of host country income tax, applies home country tax at rate u^A, while providing a foreign tax credit for underlying host country tax at rate u^B:

$$u^d = \frac{(u^A - u^B)}{(1-u^B)} \quad \text{(B.2)}$$

The second factor to account for is the cost to the parent of tax-planning, deductible against the home country tax base [as would be the salary cost of employees hired for tax-planning advice, or fees charged to the parent by independent firms for such advice, or premia paid for borrowed funds used (rather than internal funds) to finance other investment]. Let the cost function be denoted by $C[\alpha,F(K^*)]$, a function of the amount of foreign profit earned each period and the fraction ± retained.

Incorporating these considerations in (B.1) gives the following NPV formula:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{F(K^*)(1-u^B)(1-(1-\alpha)u^d) - C(\alpha, F(K^*))(1-u^A)}{(1+\rho)^s} \quad \text{(B.3)}$$

Solving for the optimal degree of tax-planning requires specification of a functional form for the tax-planning cost function. The following functional form is assumed:

$$C(\alpha, F(K^*)) = c(\alpha) \cdot \alpha F(K^*) \quad \text{(B.4a)}$$

where $\alpha F(K^*)$ measures the amount of profit retained offshore, and $c(\alpha)$ is a unit cost function measuring the cost associated with avoiding repatriation of one unit of profit. Under the assumption that tax-planning costs rise non-linearly with the fraction of profit retained offshore, the following (quadratic) unit cost function may be used:[4]

$$c(\alpha) = \frac{c}{3} \cdot \alpha^2 \tag{B.4b}$$

Substituting (B.4b) into (B.4a) gives the following (total) tax-planning cost function:

$$C(\alpha, F(K^*)) = \frac{c}{3}\alpha^3 F(K^*) \tag{B.4c}$$

Incorporating (B.4c) into the NPV formula (B.3) gives the following:

$$NPV = -K^* + \sum_{s=1}^{s=\infty} \frac{F(K^*)((1-u^B)(1-(1-\alpha)u^d) - \frac{c}{3}\alpha^3(1-u^A))}{(1+\rho)^s} \tag{B.5}$$

2. Marginal investment condition

The optimal amount of capital to employ in the subsidiary's operations is determined with reference to (B.5). In particular, the optimal scale of investment is determined at the point where the net present value of the last unit of capital invested is zero (where economic rent is exhausted). This equilibrium condition may be expressed as follows:

$$npv = -1 + \sum_{s=1}^{s=\infty} \frac{F_K(K^*)((1-u^B)(1-(1-\alpha)u^d) - \frac{c}{3}\alpha^3(1-u^A))}{(1+\rho)^s} = 0 \tag{B.6a}$$

The numerator of the summation term is constant in all periods and may be readily solved. This gives the following steady-state condition:

$$F_K(K^*)((1-u^B)(1-(1-\alpha)u^d) - \frac{c}{3}\alpha^3(1-u^A)) = \rho \tag{B.6b}$$

3. Optimal tax-planning condition

The optimal degree of tax-planning (the optimal retention parameter α^*) may be solved by totally differentiating the equilibrium condition (B.6b) with respect to α, which gives:

$$F_K(K^*)((1-u^B)u^d - c\alpha^{*2}(1-u^A)) = 0 \tag{B.7a}$$

which simplifies to:

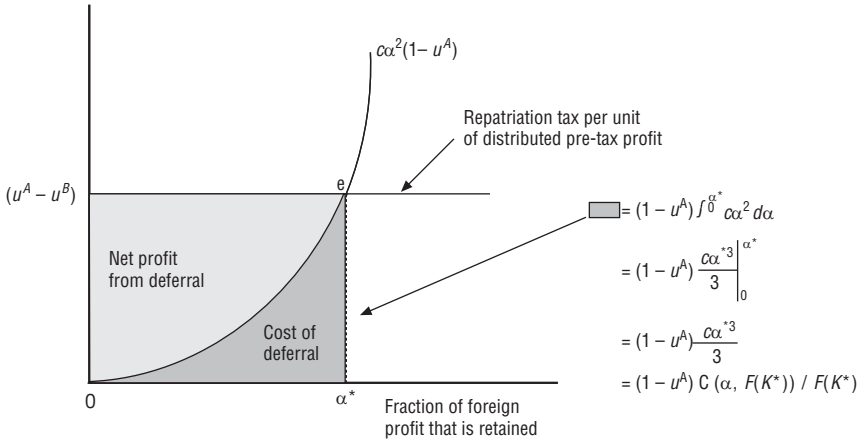
$$(1-u^B)u^d = c\alpha^{*2}(1-u^A) \tag{B.7b}$$

or alternatively, using (B.2):

$$(u^A - u^B) = c\alpha^{*2}(1-u^A) \tag{B.7c}$$

This condition, illustrated in Figure B.1, finds that it is optimal to increase the percentage of foreign earnings retained offshore just up to the point where the amount of repatriation tax avoided, per unit of foreign earnings, measured by $(u^A - u^B)$, just equals the after-tax additional cost incurred at the margin, per unit of foreign earnings, measured by $c\alpha^{*2}(1 - u^A)$.[5]

Figure B.1. **Optimal deferral (avoidance of repatriation tax)**



From equation (B.7c), one can readily solve for the optimal retention parameter:

$$\alpha^* = \left[\frac{(u^A - u^B)}{c(1-u^A)}\right]^{1/2} \tag{B.8}$$

These results show that the higher (lower) is the repatriation tax rate relative to the after-tax per unit cost of avoiding repatriation tax, the higher is the optimal value of the retention parameter. Where host and home country CIT rates are identical, implying that the repatriation tax rate is zero, the optimal retention rate is zero ($\alpha^* = 0$) given the costs associated with retaining funds offshore.

Notes

1. This work draws on the analysis of Grubert and Mutti (2001), and Grubert and Altshuler (2006).
2. In particular, the parent is assumed to invest K^* units of its after-tax profit (retained earnings) in new equity shares of a tax haven finance affiliate, which in turn invests the K^* units in new equity shares of the foreign operating subsidiary.
3. Non-resident dividend withholding tax imposed by country B is ignored, but can be readily factored in.
4. Certain other properties of the cost function may be considered. First, the total cost function is linear in the amount of foreign earnings: $C[\alpha,\lambda F(K^*)] = (c/3)\alpha^3\lambda F(K^*) = \lambda C[\alpha,F(K^*)]$. With a doubling of foreign earnings ($\lambda = 2$), tax-planning costs double, holding fixed the fraction of profits retained α. This property seems reasonable if the ability to shelter foreign profits increases with the scale of foreign operations (under constant returns-to-scale production technology, earnings double with a doubling of the capital stock). The unit cost function and the total cost function are non-linear in the fraction of foreign earnings retained offshore: $c(\lambda\alpha) = (c/3)(\lambda\alpha)^2 = \lambda^2(c/3)\alpha^2 = \lambda^2 c(\alpha)$, and $C[\lambda\alpha,F(K^*)] = (c/3)(\lambda\alpha)^3F(K^*) = \lambda^3C[\alpha,F(K^*)]$.
5. From (B.4c), the tax planning cost associated with one unit of foreign earnings, for a given ±, is measured by $C[\alpha,F(K^*)]/F(K^*) = (c/3)\alpha^3$. The additional tax planning cost associated with one unit of foreign earnings, when increasing ± at the margin, is $c\alpha^2$, or after-tax $c\alpha^2(1 - u^A)$.

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OECD Tax Policy Studies

Tax Effects on Foreign Direct Investment

RECENT EVIDENCE AND POLICY ANALYSIS

This publication reports the results of a project examining taxation and foreign direct investment (FDI), with a focus on three areas. Recent empirical studies and models are first reviewed, with the aim of better understanding what factors explain differences in the responsiveness of FDI to taxation, in different country and industry contexts. Second, the publication reports an exchange of views on considerations that are balanced by tax policy makers in the design of rules governing the taxation of inbound and outbound FDI, including increasing pressure to provide "internationally competitive" tax treatment. Third, the publication presents findings from a new framework developed for the project to analyse the implications of tax-planning by multinationals in reducing effective tax rates on cross-border investment. The findings highlight the need to address tax-planning when attempting to measure the "true" tax burden on FDI.

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