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International differences in corporate taxation, foreign direct investment and tax revenue

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By Øystein Bieltvedt Skeie

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ABSTRACT/RÉSUMÉ

International differences in corporate taxation, foreign direct investment and tax revenue

This paper assesses the redistribution of foreign direct investments (FDI) and tax revenues among countries due to multinationals' response to international differences in corporate tax systems. The paper briefly reviews the literature on the tax sensitivity of FDI and uses a consensus estimate of this sensitivity in combination with bilateral FDI data to compute hypothetical bilateral FDI positions in the absence of tax rate differences. In a second step, tax revenue effects are estimated by assuming a conventional rate of return on investment. For most OECD countries, the effects of tax rate differentials on FDI positions range between -15% and 15% of current FDI positions. The calculated effects of taxes on FDI reflect real investments as well as tax planning behaviours and the methodology cannot distinguish between these two channels. The methodology only captures part of the tax planning activities of multinationals, since some of these activities are not reflected in the size of the FDI positions.

JEL classification: H25; H26; F21; F23

Key words: Foreign direct investment, corporate tax, multinational tax planning

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Différences internationales de fiscalité des entreprises, investissements directs à l'étranger et recettes fiscales

Ce document évalue la redistribution des investissements directs étrangers (IDE) et des recettes fiscales entre les pays en raison de la réponse des multinationales aux différences internationales entre les systèmes d'imposition des sociétés. Le document examine brièvement la littérature sur la sensibilité des IDE à la fiscalité et utilise une estimation du consensus de cette sensibilité en combinaison avec des données d'IDE bilatéraux pour calculer les positions d'IDE bilatéraux hypothétiques en l'absence de différences de taux d'imposition. Dans un deuxième temps, les effets sur les recettes fiscales sont estimés en supposant un taux conventionnel de retour sur investissement. Pour la plupart des pays de l'OCDE, les effets des écarts de taux d'imposition sur les stocks d'IDE se situent entre -15% et 15% des stocks d'IDE effectifs. Les effets calculés de la fiscalité sur les IDE reflètent des investissements réels ainsi que les comportements de planification fiscale et la méthodologie ne permet pas de distinguer entre ces deux canaux. La méthodologie ne capte qu'une partie des activités de planification fiscale des multinationales, puisque certaines de ces activités ne sont pas reflétées dans la taille des stocks d'IDE.

Classification JEL: H25; H26; F21; F23

Mots clés: Investissements directs à l'étranger, impôt des sociétés, planification fiscale multinationale

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INTERNATIONAL DIFFERENCES IN CORPORATE TAXATION, FOREIGN DIRECT INVESTMENT AND TAX REVENUES

By Øystein Bieltvedt Skeie[1]

Box 1. Main findings

- Tax-induced changes in bilateral foreign direct investments (FDI) positions (stocks) result in a relocation of investments and a redistribution of tax revenue among countries.
- For most OECD countries, the calculated effects of tax rate differentials on FDI positions range between -15% and 15% of current FDI positions, assuming an semi-elasticity of FDI to taxes of -1.5.
- For most OECD countries, the calculated revenue effects range between -0.25% and 0.25% of GDP, assuming an semi-elasticity of FDI to taxes of -1.5.
- The calculated effects capture both tax induced changes in real investments and tax planning, but the analysis cannot distinguish between these two channels. The methodology only captures a part of tax planning activities of multinationals, since many of these activities are not reflected in the size of the FDI positions.

1. Introduction

1. The design of international taxation systems may influence multinational enterprises' (MNEs) choices, such as how much, where and in which assets to invest as well as how to finance this investment. In turn, these choices affect the amount of corporate tax revenue that each country can raise. The direction and size of these spillovers may vary across economies. International differences in taxation can also lead MNEs to exploit legal tax provisions to minimise the corporate tax burden by allocating profits in lower-tax countries. The location of profits affects the distribution of tax bases and revenues among countries, thereby entailing fiscal considerations.

2. The objective of this paper is to assess the redistribution of investments and tax revenues among countries due to multinationals' response to international differences in tax systems. The approach taken is a pure calculation exercise. More specifically, based on a consensus estimate of the tax sensitivity from the economic literature, a hypothetical gross bilateral foreign direct investment (FDI) position (stock) in absence of differences between home and host corporate statutory tax rate is computed for all pairs of countries. In a second step, the difference between the actual and hypothetical bilateral FDI is treated as capital, which yields a return that is assumed to be taxed in the host country. This gives an estimate of the revenue effects of changes in FDI due to differences in taxes between countries.

3. The paper continues with a description of the analytical framework (section 2). Section 3 describes the methodology and section 4 describes the data used in the calculation analysis. The effects of

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differences in tax systems on investments and revenue are calculated in section 5, while section 6 concludes.

2. Framework

4. Foreign direct investment is a category of investment that reflects the objective of establishing a lasting interest by a resident enterprise in the home economy (direct investor) in an enterprise located abroad (direct investment enterprise). The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise and a significant degree of influence on the management of the enterprise (10% ownership threshold).

5. Several factors affect MNE's FDI decisions (Nicoletti et al., 2003; Fournier, 2015). They can broadly be categorised in two sets: non-policy factors and policy factors. Non-policy factors are gravity forces (e.g. market size and distance) and factor proportions (i.e. relative endowments of different inputs). Policy factors include openness, product-market regulation, labour-market arrangements and infrastructure. Some of these policy channels restrict market access by exporters and foreign investors. For instance, FDI restrictions raise border obstacles to trade and investment. Other border and non-border policies (e.g. tariffs or regulations that raise production costs) make trade and investment unprofitable, for instance by increasing the relative cost of foreign versus home goods or decreasing the net returns of MNEs when they invest abroad. Finally, policies can also raise the overall cost of the transaction by affecting the costs of inputs that both the exporter and importer must use in order to implement the exchange (e.g. transport or communication services). Alternatively, policies can have positive effects on trade and FDI, for example by creating areas of free trade, improving the business environment in which exporters and MNEs operate or reducing the cost of transactions through the development of the necessary infrastructure.

6. Taxation is another important policy factor affecting MNEs' real investments decisions. *Ceteris paribus*, lower-tax countries are expected to have larger inflows (and smaller outflows) of capital than higher-tax countries. Multinationals are also able to utilise differences in tax systems between countries to reduce their global tax liability via base erosion and profit shifting (BEPS). Multinationals can do this in several ways, for instance by mispricing internal trade, by allocating debt in high-tax countries or utilising mismatches between corporate tax systems (Box 2).

Box 2. Main tax planning channels of MNEs

For a given allocation of physical assets and activity, MNEs have several ways to minimise corporate taxation. Below is a non-exhaustive and simplified description some tax planning channels:

Profit shifting channels: MNEs have different ways to reduce their corporate tax burden by locating in lower-tax rate countries their profit generated in higher-tax rate countries.

- **Transfer price optimisation:** Optimising the price of transactions between related entities within the range of possible market-based so-called "arm's-length" prices to achieve tax advantages. For example, by selecting a low price in the range for rights, products and services transferred from high to low-tax entities or *vice versa*.

- **Allocation of intangibles, assets and risks:** Allocating through intra-group arrangements the ownership of income producing intangibles, assets and risks in low-tax countries to divert profit from high-tax countries. Operational functions are more difficult to re-locate and the main value-creating activities which manage and exploit those intangibles, assets and risks may be performed in higher-tax locations under contract to the legal owner.

- **Manipulation of the location of debt:** Interest payments on debt are generally deductible from taxable income. Locating MNE external and internal debt (and the associated interest payments) in an entity in a

higher-tax rate country allows offsetting profits and reducing tax payments of this entity.

Mismatches between tax systems, including preferential tax treatment and negotiated tax rates: MNEs may exploit differences in the tax treatment of entities, instruments, or transfers between countries to reduce their corporate tax burden (OECD, 2014). This is possible even in the absence of a difference between statutory tax rates. MNEs may also be able to reduce their tax burden via preferential tax treatment and negotiated firm-specific reduced tax rates.

- **Hybrid instruments and transfers:** Instruments which are treated differently in two countries, for example as debt in one country and as equity in another country. This can result in an interest deduction in the first country and non-taxable income in the second country (as the income is treated as a tax-exempt dividend).
- **Hybrid entities:** The same entity can be treated differently in two countries for tax purpose. For instance, an entity may be considered as tax resident by no country (so called "stateless entities") and in this way achieve double non-taxation of profit. Alternatively, an entity can be treated as a non-taxable entity such as a partnership (where the partners are taxed instead of the entity itself) in one country and a taxable entity in another. This can result in a deduction in the first country and non-inclusion of the income in the second country.
- **Preferential tax treatment:** MNEs may shift certain incomes to benefit from special tax treatment offered by some countries (or areas within them), such as for intellectual property (e.g. patent boxes) or financial services. Domestic firms can also benefit from preferential tax treatment, but to a lesser extent than MNEs since they cannot shift incomes across borders to enjoy these treatments on a larger scale.
- **Negotiated tax rates:** Firm-specific reduced tax rates for individual MNEs through negotiation between the MNE and the tax authority.

7. FDI data can also reveal some of the known tax planning strategies. One example is the use of affiliates in lower-tax countries for holding or intra-group financing purposes. This will typically result in larger FDI positions in lower-tax countries than in higher-tax countries. On the other hand, for a tax planning strategy like strategic transfer pricing there is no necessary connection between the amounts invested in the subsidiary (i.e. FDI) and actual amount of profits shifted.

3. Methodology

8. The approach in this paper is to use existing estimates of the sensitivity of FDI to tax rate differences to calculate the hypothetical bilateral FDI positions in a situation where there would be no differences in tax rates between countries. The difference between actual and hypothetical FDI positions (corrected for tax differences) is treated as capital and "converted" into taxable profit by assuming a constant rate of return. The revenue implications are obtained by multiplying this taxable profit with the statutory corporate tax rate. The rest of this section describes this methodology in more detail.

3.1. Calculating effects of differences in taxes on investment positions

9. Assume the hypothetical event that the host country (partner) and/or the home country (reporter) change their tax rates (statutory or effective) to the same tax rate, t^*, so that the tax rate differential between the two countries disappears. Assume in addition that the elasticity of taxes on FDI is the same for both home country taxes and host country taxes. The effect on FDI will then be given by the elasticity, ε, multiplied with $t_r - t_p$, i.e. the difference between the present tax rate in the home country, t_r, and the present tax rate in the host country, t_p. If $t_r > t_p$ and $\varepsilon < 0$, the host country tax rate will increase relative to the home country tax rate and the FDI from the home country to the host country will decrease, $\Delta FDI < 0$. This yields an estimate of the percentage of the total FDI from the home country to the host country that is caused by the tax rate difference. The tax induced percentage change in FDI is multiplied with the FDI

from the home country to the host country in absolute terms, and then summed over all partner countries according to:

$$\Delta FDI_{OUT,r} = \sum_p FDI_{r,p}\varepsilon(t_r - t^*) + \sum_p FDI_{r,p}\varepsilon\left(t^* - t_p\right) = \sum_p FDI_{r,p}\varepsilon\left(t_r - t_p\right)$$

This gives the change in the outward FDI position of country *r* if its tax rate differences with all countries are eliminated. This change in the inward FDI position of country r if its tax rate differences with all countries are eliminated can be obtained by a similar approach.

3.2. Calculating effects of removing differences in taxes on tax revenue

10. FDI is not directly taxable, but the resulting profits generally are. Therefore FDI positions need to be translated into a revenue figure. This is done by treating FDI as investments in equity. First, it is assumed that any extra outflow of equity caused by tax rate differences would have been invested at home if there were no tax rate differences. Second, it is assumed that this investment at home would generate a taxable profit equal to a "normal" rate of return, i_r. The effect on taxable profit, $\Delta\pi_r$, can now be expressed as:

$$\Delta\pi_{OUT,r} = \Delta FDI_{OUT,r} \cdot i_r$$

11. By multiplying with the statutory tax rate in the home country, τ, one obtains a measure of the tax revenue effect caused by the differences in tax rates between the home country and the host countries:

$$\Delta R_{OUT} = \Delta\pi_{OUT,r} \cdot \tau$$

12. The revenue effects of tax induced changes in inward FDI positions are obtained by a symmetric approach:

$$\Delta \mathrm{R_{IN}} = -\Delta \mathrm{FDI_{IN,r}} \cdot \mathrm{i_r} \cdot \tau$$

3.3. Semi-elasticity

13. The main assumption in the methodology described in the previous section is the value of the semi-elasticity. The approach taken in this paper is to rely on existing estimates of the semi-elasticity in the economic literature.

14. In the empirical literature, the main approach to estimate the effects of taxation on FDI positions is to model FDI as a function of taxation while controlling for other policy and non-policy factors influencing FDI. Denoting y the log of the bilateral gross FDI position, X a vector of non-policy controls, P a vector of (non-tax) policy indicators, T the indicator for the relevant tax rate, α an unobserved component and u the error term, the general empirical specification of the bilateral FDI model is as follows:

$$\mathrm{y_{ijt}} = \sum_{\mathrm{X}} \varepsilon_{\mathrm{X}}\mathrm{X_{ijt}} + \sum_{\mathrm{P}} \varepsilon_{\mathrm{P}}\mathrm{P_{ijt}} + \varepsilon\mathrm{T_{ijt}} + \alpha_{\mathrm{i}} + \alpha_{\mathrm{j}} + \alpha_{\mathrm{t}} + \alpha_{\mathrm{it}} + \alpha_{\mathrm{ij}} + \alpha_{\mathrm{jt}} + \mathrm{u_{ijt}}$$

where *i* indexes the home country, *j* indexes the host country and *t* is the time period.

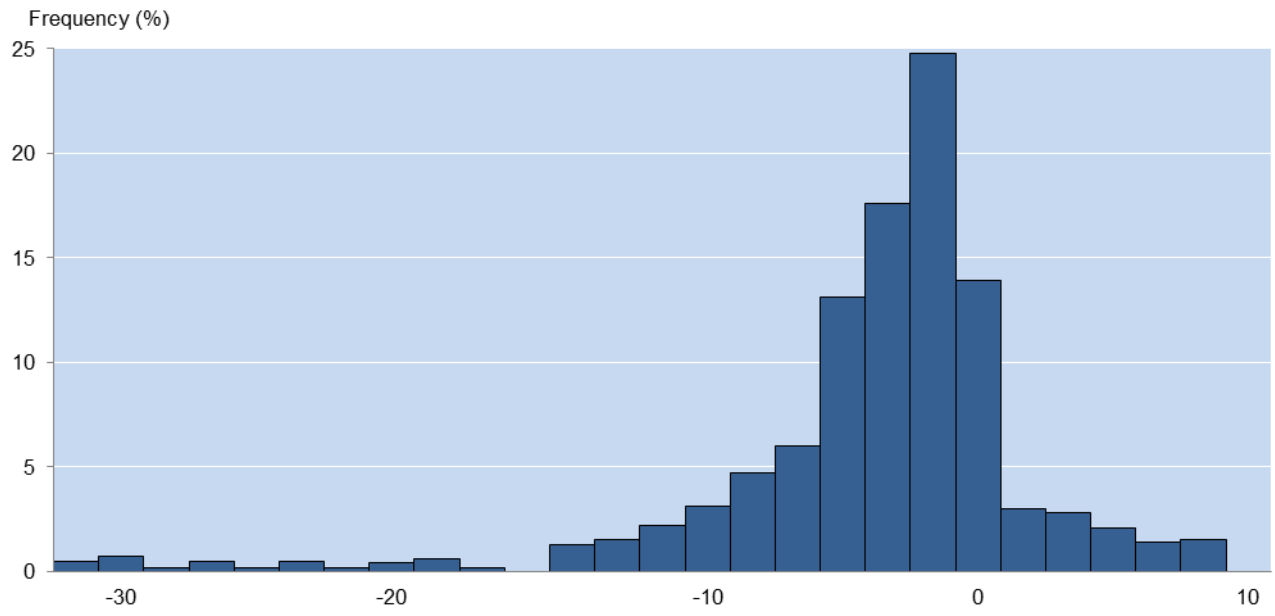
15. The parameter ε in the equation above is the semi-elasticity of taxes to FDI. The semi-elasticity indicates the percentage change in FDI associated with a one percentage-point change in taxes. If a host country increases taxes, the inflow of capital to that country is expected to decline, so the semi-elasticity is

expected to be negative. One caveat with current estimates of the tax sensitivity of FDI is that the available FDI statistics are distorted by international tax planning, for instance by large flows of interest income between countries. This is because the bilateral FDI statistics cannot separate investment income reflecting real activity from that of financial flows stemming from profit shifting. Even so, the illustration gives an indication of the importance of taxes for real foreign investment.

16. Over the past decade several studies have estimated the effect of corporate (cross-border) taxes on bilateral FDI. In general, the existing literature finds evidence of a negative relationship between FDI and host country taxation (OECD 2007). Past OECD work by Hajkova et.al. (2006) found that corporate taxation has a non-negligible impact on FDI. However, their results suggest that focusing only on taxation in home and host countries and omitting other policies may lead to a serious overestimation of tax elasticities and their relevance for policy. They found that the estimate of the semi-elasticity was reduced to approximately half when controlling for other policies. Based on the results from Hajkova et.al. (2006), a semi-elasticity of -1.5 will be used.

17. Alternatively, an estimate based on a meta-analysis by Feld and Heckemeyer (2011) is used (Figure 1), with a tax sensitivity of 3 instead of 1.5. This higher sensitivity is because the meta-analysis does not control for the effect of policy determinants (apart from corporate taxes) on FDI. As the same semi-elasticity is applied to all countries and all years, the semi-elasticity is a scaling factor with regards to the estimated effects of tax differentials on FDI and revenue. A change in the semi-elastisity would change the size of the estimated effects proportionally, but the relative revenue effects will be unchanged.

Figure 1. Distribution of estimated tax semi-elasticities of FDI



Source: Feld and Heckemeyer (2011)

4. Data

4.1. FDI

18. The FDI data used in this paper are gross bilateral FDI positions (stocks) in and out of OECD member countries taken from the OECD International Direct Investment database.[2] Statistics on FDI cover all cross-border transactions and positions between enterprises which are a part of the same group. The construction of FDI data are described in Box 3.

Box 3. The construction of FDI positions (stocks)

The OECD Benchmark Definition of FDI (3rd edition) recommends current market value as the basis for valuation of FDI positions (stocks), as it allows comparing assets of different vintages. In practice book values from the balance sheets of direct investment enterprises (or investors) are generally used to determine the value of stocks of direct investment. This reflects the fact that enterprise balance sheet values – whether they are regularly revalued on a current market value basis, reported on a historical cost basis, or are based on some interim but not current revaluation – represent the only source of valuation of assets and liabilities readily available in most countries.

Direct investment positions (stocks) include:

i) capital shares and reserves including retained profits attributable to the direct investor.

ii) plus loans, trade credit and debt securities (e.g. bonds, notes, money markets instruments, financial derivatives, etc.) due from subsidiaries and associates to the direct investor, including dividends declared but not yet paid to the direct investor;

iii) less loans, trade credit and other liabilities (equity and debt securities) due to subsidiaries and associates from the direct investor.

Data on FDI positions (stocks) from one country to another country can be obtained from both investor and recipient country. The country reporting the data is called reporting country, the other country is called partner country. Country A reports on outflows to country B, while country B reports on inflows from country A. In theory, these two numbers should be identical, but in practice two main factors may lead to discrepancies between them. First, particular transactions may be treated differently in the two countries. Country A may include re-invested earnings in its outflow statistics while country B receiving this FDI may not include the earnings in its inflow statistics. Second, corporate accounting practices and valuation methods differ between countries. In this paper, when calculating revenue effects for a specific country, only FDI data (both outward and inward bilateral FDI positions) reported by this country are used.

The methodology of the FDI statistics currently published by the OECD still relates to the 3rd edition from 1996. The 4th edition from 2008 improves existing concepts and definitions and incorporates concepts and definitions on elements missing from the previous edition (such as, cross-border mergers and acquisitions, special purpose entities, ultimate investing country). Since September 2014 the OECD has been collecting FDI statistics from member countries according to the updated benchmark definition. These statistics are being processed and validated and will be available in Q2 2015.

Source: OECD (1996).

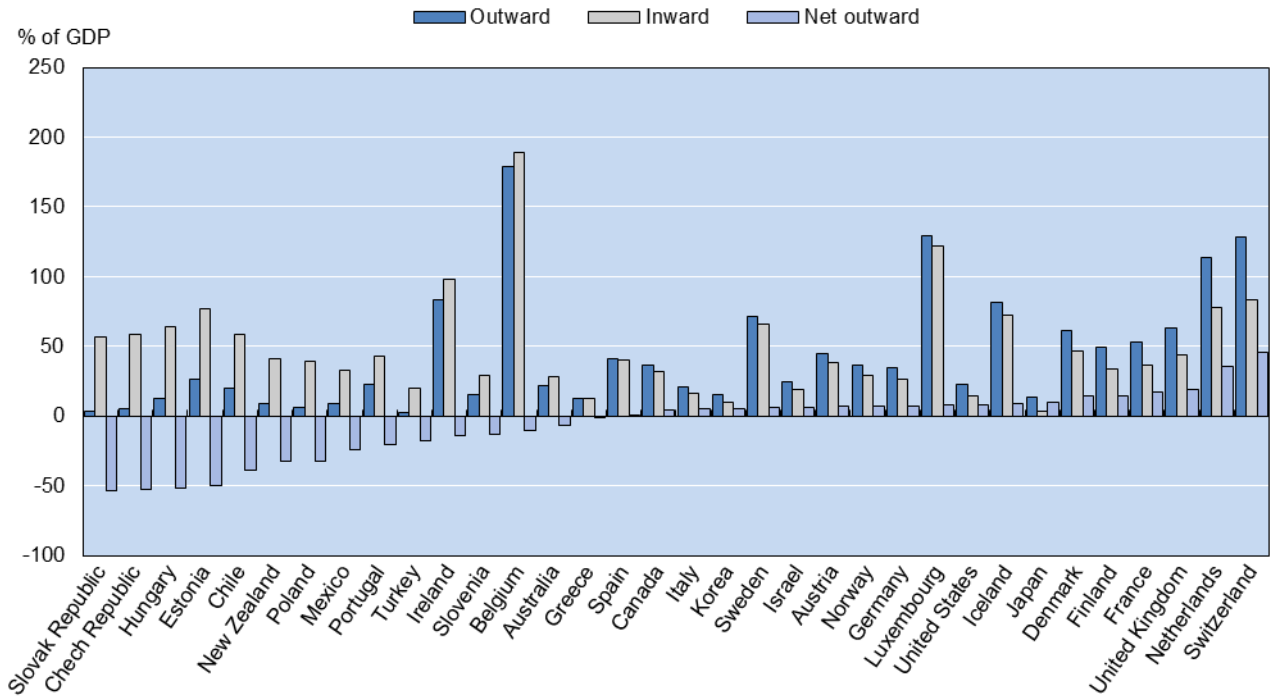
2. A possible extension is to use the more detailed statistics on FDI position in the OECD International Direct Investment database including data on equity capital and reinvested earnings (net), other capital (net) and total (net). This database also contains more detailed data on FDI flows and on FDI income. An alternative source is IMF's Coordinated Direct Investment Survey which includes bilateral FDI position statistics for a large number of countries (URL: http://cdis.imf.org/).

19. The coverage of FDI data increases over time and some observations are missing. This is especially true for FDI positions and flows between OECD countries and non-OECD countries. Thus, changes in FDI over time should be interpreted with care, because some of the observed variations might reflect changes in data coverage and not real changes in FDI. The effects of taxes reported in this paper might underestimate the actual effects due to missing observations. However, for the countries included in this study the coverage of bilateral FDI data is fairly good after 2006, so this bias is likely to be small.

20. Figure 2 shows the outward, inward and net outward (outward minus inward) FDI positions of OECD countries as percentage of GDP in 2010. FDI positions (both in and outward) are especially large for Belgium, Luxembourg, Switzerland, Netherlands and Ireland. Turning to net positions, Switzerland and Netherlands have sizeable net outward positions of more than 25% of GDP, while Slovak Republic, Czech Republic, Hungary and Estonia all have a net inward FDI position of more than 50% of GDP.

Figure 2. FDI positions of OECD countries as percentage of GDP[1]

Average 2006-2011



1. Countries are ranked according to their net outward position. Net outward FDI position = Outward FDI position – Inward FDI position.

Source: OECD International direct investment database

4.2. Tax rates

21. Several tax rate measures are relevant for studying the effect of taxation on FDI: statutory tax rates, backward-looking effective tax rates and forward-looking effective tax rates.

22. The statutory tax rate applies to taxable profit. For a MNE that considers shifting profit from one jurisdiction to another jurisdiction through transfer pricing or the use of internal debt, the statutory tax rate is the relevant tax measure (Gravelle, 2014). In contrast, a country's statutory tax rate cannot be taken alone as a reliable indicator of the effective tax burden on income generated at the corporate level. Indeed,

the corporate tax actually due depends on various tax base rules applicable in determining the corporate taxable income. Generous tax allowances deducted against the base, for example, may yield an effective corporate tax rate that is well below what the statutory rate suggests.

23. The backward-looking effective tax rate (ETR) of a company is normally calculated as the ratio of corporate income tax to a pre-tax measure of corporate profit. It captures the net effect of all factors affecting actual tax liability. But an important limitation is that taxes paid in one year are not only a result of the profit in that year, as they might also be affected by losses in previous years that are carried forward.

24. Forward-looking effective tax rates are derived from modelling a hypothetical investment project on a discounted cash flow basis and taking account of all the relevant tax provisions. Effective marginal tax rates (EMTR) are defined as the tax rate of pre-tax returns on the last unit of capital invested (where economic profit is exhausted) and serves to estimate how tax affects a firm's cost of capital (i.e. the minimum required rate of return on an investment project). Effective average tax rates (EATR) are most relevant where businesses (particularly MNEs) have a choice about the country in which they can locate discrete, infra-marginal projects that yield more than the cost of capital, while EMTR is important for the size of the investment (Devereux and Griffith, 2003). EMTRs and EATRs can also be calculated for cross-border investments, taking account of tax parameters for both the country of the parent and the affiliate.

25. The analysis will use statutory tax rates due to a wider country-coverage. Backward-looking and forward-looking effective tax rates have been used for robustness checks.

4.3. Normal rate of return

26. The "normal" rate of return on a capital investment is assumed to be 10% for all countries and all years. This is close to the average profit-to-equity ratio for MNEs observed in the ORBIS database.[3] As a robustness check, the average long-term interest rate on government bonds combined with a constant risk premium has been used. This allows for variations in the normal rate of return across countries over years.

5. Results

5.1. Effect of taxes on FDI positions

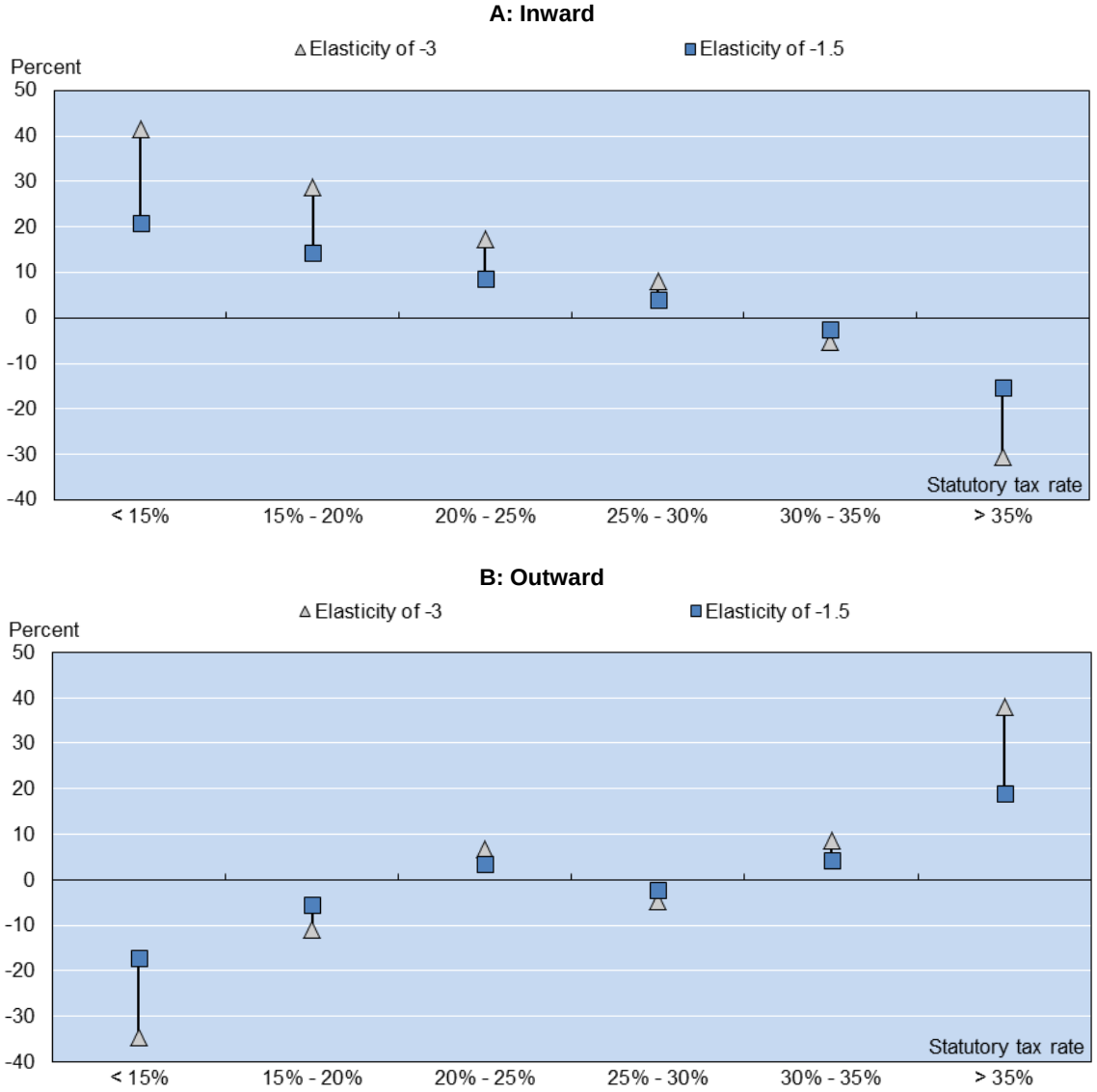
27. Taxation is one of several variables that affect FDI (cf. section 2.1). Tax rate differences can thus only be expected to explain a fraction of the observed differences in bilateral FDI positions. Most of the FDI positions would be explained by non-policy factors (like gravity factors) and other policy factors. Based on the methodology described in section 2 and the data described in section 3, a rough estimate of FDI positions in the absence of bilateral tax rate differences is calculated.

28. The calculations shows that in the absence of bilateral tax rate differences, the inward FDI position of high tax countries would increase and their outward FDI position would decrease. In a symmetrical way, the inward FDI position of low tax countries would decrease and their outward FDI position would increase (Figure 3). For most OECD countries, the calculated effects of tax rate differentials on FDI positions range between -15% and 15% of current FDI positions, assuming an semi-elasticity of -1.5.

3. The ORBIS database is a commercial database provided by Bureau van Dijk containing information on financial reports (both balance sheet and profit/loss accounts) and ownership of firms around the world.

Figure 3. The effect of taxes on OECD countries FDI positions[1]

Effect of statutory tax rate differentials on FDI positions (in percent of actual FDI position) between pair of countries. By statutory tax rate of reporting country. Average 2006-2011

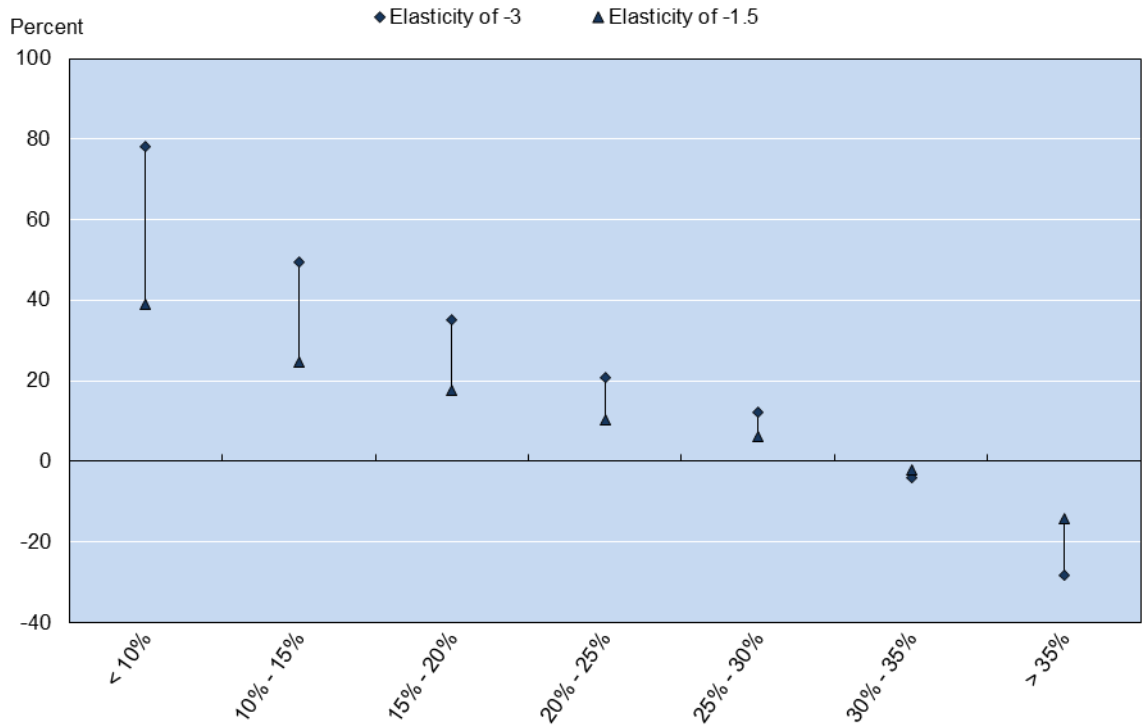


1. For inward FDI positions, a positive figure indicates that the current inward FDI position is higher than the hypothetical inward position if all tax rate differences were abolished. For example, for countries with a statutory tax rate below 15%, the actual inward FDI position is 20-40% higher (depending on the elasticity measured as percentage of actual FDI position) than the hypothetical FDI position. For outward FDI positions, a negative figure indicates that countries are currently "losing" outward FDI (i.e. increasing their domestic investments) due to tax rate differences.

29. The statutory tax rates are also an important determinant of the location of OECD countries outward FDI positions. For some low or no tax countries, most of their FDI position vis-à-vis OECD can be explained by tax differences. For example, on average between 40% and 80% (depending on the elasticity) of OECD countries aggregate outward FDI positions into countries with a statutory tax rate below 10% can be explained by the tax rate differences (Figure 4). This indicates that a substantial share of the outward FDI position of OECD countries into these countries are driven by tax rate differentials. The share of OECD countries aggregate outward FDI positions into partner countries that can be explained by the tax rate differential is decreasing with partner countries statutory tax rate. This reflects that in most cases, taxes are not the major driver of FDI position.

Figure 4. The effect of partner countries tax rates on the aggregate outward FDI position of OECD countries

Average 2006-2011



1. The figure shows how much of the actual outward FDI position that can be explained by differences in statutory tax rates, i.e. (actual FDI – hypothetical FDI) / actual FDI (percent).

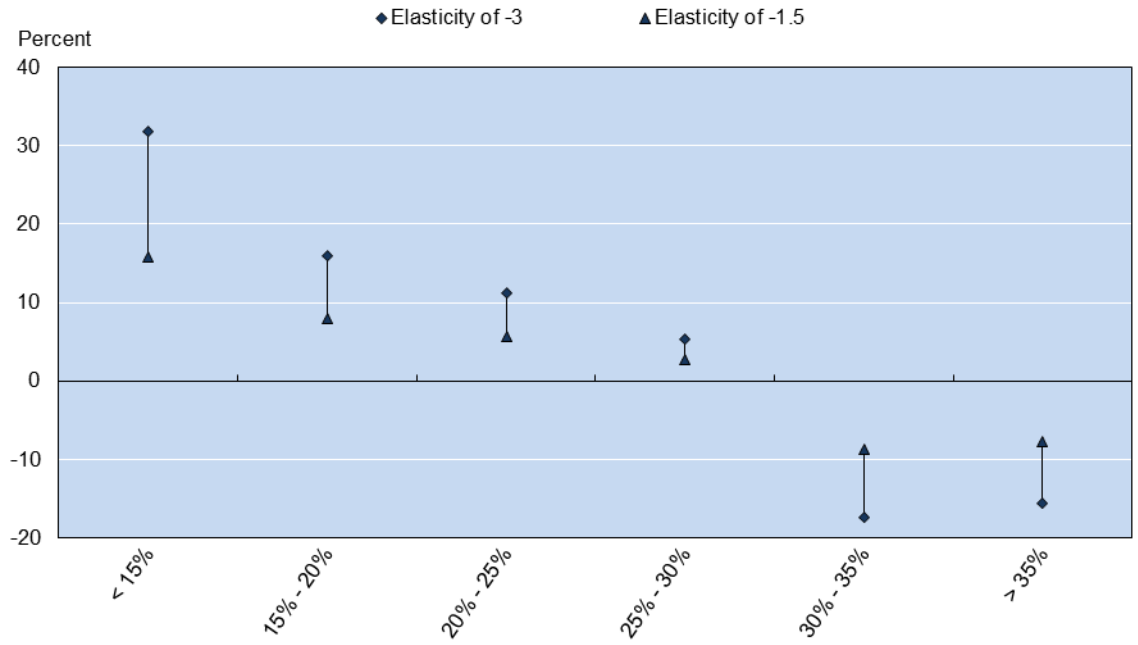
5.2. Tax revenue implications for OECD countries

30. Following the methodology presented in section 2, the redistribution of tax revenues caused by differences in statutory corporate tax rates between OECD countries and their partner countries can be assessed. The analysis suggests that higher-tax OECD countries lose revenue due to the effect of tax differentials on FDI positions, while lower-tax countries gain revenue. For most OECD countries, the calculated effects of tax rate differentials on corporate income tax revenue range between -0.25% and 0.25% of GDP (Figure 5), assuming a semi-elasticity of -1.5. Robustness check using backward and forward looking effective tax rates as the tax variable and using average long-term interest rate on government bonds combined with a constant risk premium as the rate of return gives similar results.

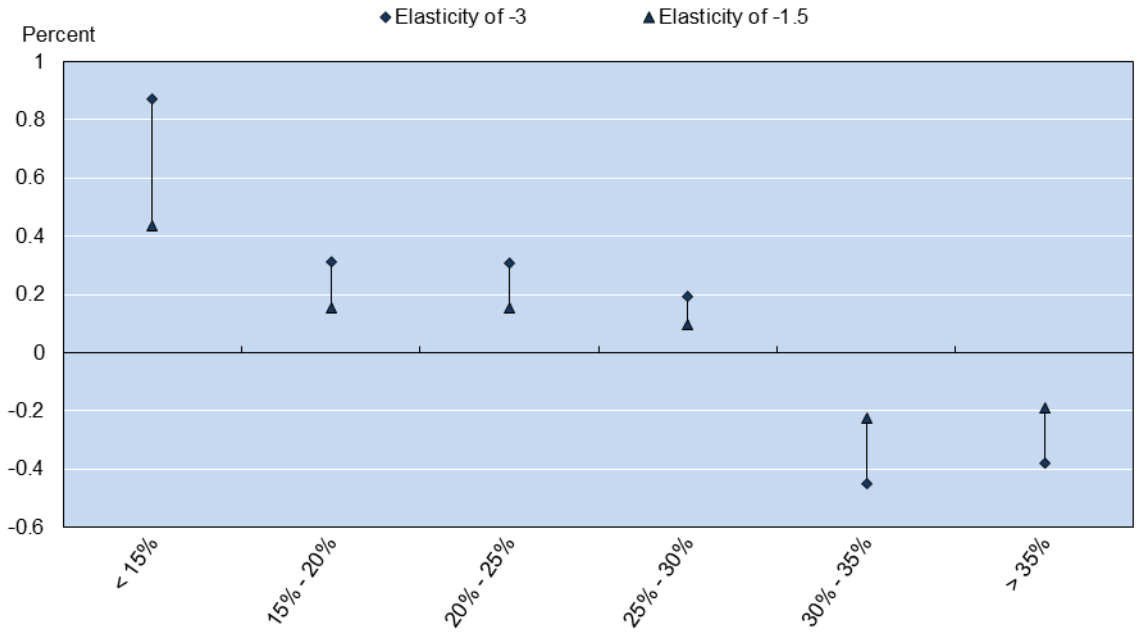
Figure 5. Redistribution of corporate tax revenue[1]

Average 2006-2011

A. Percentage of CIT Revenue



B. Percentage of GDP



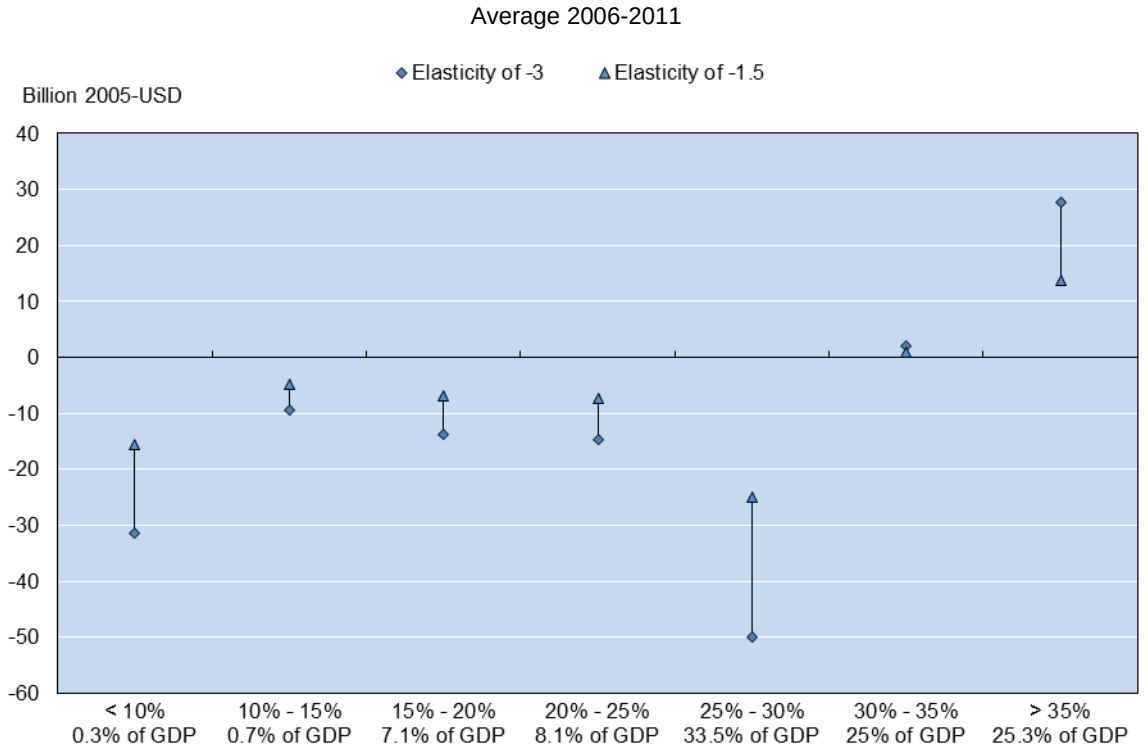
1. Panel A shows that countries with a statutory tax rate below 15% are attracting additional FDI which increase CIT revenue with between 15 to 30 percent of observed CIT revenue. This corresponds to 0.4 to 0.9% of GDP (Panel B).

5.3. Where does the money go?

31. Taxes influence the gross FDI positions between OECD countries and their partner countries. When capital is flowing out of an OECD country, it is flowing into a partner country and *vice versa*. The revenue loss or gain for an OECD country can thus be matched with a partner country. Due to differences in tax rates, the revenue gain for a receiving country is lower than the loss for the corresponding origin country.

32. Figure 6 shows OECD countries' revenue losses (negative values) and gains (positive values) reported by their partner countries and grouped according to the tax rate of the partner countries. OECD countries are gaining revenue from high tax countries and losing revenue to low tax countries. The loss to no- and low tax countries are large (USD 15-30 billion of 2005), even though these countries only account for about 0.3% of world GDP. The losses to medium tax rate countries (25-30%) are somewhat larger, partly reflecting that these countries' share of world GDP is about 100 times larger than the share of no- and low-tax countries.

Figure 6. Revenue gains and losses of the OECD as a whole, by partner country grouped by tax rates[1]



1. The figure shows that because of tax induced changes in FDI positions, OECD countries are annually loosing between 15 and 30 billion 2005-US dollars (depending on the elasticity) in tax revenue to countries with a statutory tax rate below 10%. Countries with statutory tax rate below 10% have 0.3% of GDP of the countries in the sample.

6. Conclusions

33. This paper assesses the redistribution of investments and tax revenues among countries due to multinationals' response to international differences in tax systems. The approach taken is a pure calculation exercise. Based on estimates of the tax sensitivity of foreign direct investments (FDI) from the economic literature, a hypothetical gross bilateral FDI position (stock) in absence of differences between home and host corporate statutory tax rate is computed for all pairs of countries. In a second step, the difference between the actual and hypothetical bilateral FDI is treated as capital, which yields a return that is assumed to be taxed in the host country. This gives an estimate of the revenue effects of changes in FDI due to differences in taxes between countries.

34. Tax induced changes in bilateral gross FDI positions results in a redistribution of investments and tax revenue within the OECD, but also a redistribution of investment and revenue from OECD countries to non-OECD countries. For most OECD countries, the calculated effects of tax rate differentials on FDI positions range between -15% and 15% of current FDI positions, assuming a semi-elasticity of -1.5. The corresponding revenue effects range between -0.25% and 0.25% of GDP.

35. The calculated effects are related to changes in real investments and to tax planning, but the methodology cannot distinguish between these two channels. The methodology only captures part of the tax planning activities of multinationals. The reason is that some of these activities are not reflected in the size of the FDI positions.

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APPENDIX 1: DATA SOURCES

Foreign direct investment positions
Source: OECD International direct investment database
http://www.oecd.org/daf/inv/investmentstatisticsandanalysis/internationaldirectinvestmentstatisticsoecd.htm

Statutory corporate income tax rate (STAT)
Source 1: OECD Tax Database
http://www.oecd.org/tax/tax-policy/tax-database.htm
Source 2: Spengel et. al. (2012), Effective Tax Levels Using the Devereux/Griffith Methodology, Project for the EU Commission TAXUD/2008/CC/099, Centre for European Economic Research (ZEW)
http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/effective_levels_company_taxation_final_en.pdf
Source 3: KPMG - Corporate tax rates table
http://www.kpmg.com/global/en/services/tax/tax-tools-and-resources/pages/corporate-tax-rates-table.aspx
Source 4: KPMG's Corporate Tax Rate Survey – 1993-2006
http://www.lib.uwo.ca/files/business/KPMGCorporateTaxRateSurvey.pdf

Forward-looking effective tax rates (EATR, EMTR and BEATR)
Source: Spengel et. al. (2012), Effective Tax Levels Using the Devereux/Griffith Methodology, Project for the EU Commission TAXUD/2008/CC/099, Centre for European Economic Research (ZEW)
http://ec.europa.eu/taxation_customs/resources/documents/common/publications/studies/effective_levels_company_taxation_final_en.pdf

Backward-looking effective tax rates (ETR - «Implicit tax rate on corporations»)
Source: Eurostat (2013), Taxation trends in the European Union 2013, Publications Office of the European Union
http://ec.europa.eu/taxation_customs/resources/documents/taxation/gen_info/economic_analysis/tax_structures/2013/report.pdf

Long term interest rate
Source: OECD Economic Outlook Database
http://stats.oecd.org/

Gross domestic product:
Source: International Monetary Fund World Economic Outlook Database
http://www.imf.org/external/ns/cs.aspx?id=28

Corporate income tax revenue:
Source: OECD Revenue Statistics - Comparative Series dataset
http://stats.oecd.org/