Foreign Direct Investment, Tax Competition and Social Expenditure

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Abstract: The aim of this paper is to make a first step towards studying the role of social expenditure and its interaction with corporate taxation in determining the destination of foreign direct investment (FDI) flows. Using panel data for 18 OECD countries and measuring the extent of social welfare policies by the (public social expenditure)/GDP ratio, we find strong support for the conjecture that redistributive social welfare state policies are valued by multinationals as, for instance, they may signal a government's commitment to social stability.

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1. Introduction

The aim of this paper is to make a first step towards studying the role of social expenditure and its interaction with corporate taxation in determining the destination of foreign direct investment (FDI) flows.

Multinational enterprises (MNEs) play an increasingly dominant role in the international economy and considerable effort has been devoted in recent years to the study of the determinants of their location and investment decisions. Developments in imperfect competition theory have made it possible to depart from a treatment of foreign direct investment (FDI) flows as portfolio capital flows that characterised much of the economics literature up until the early 1980s; multinational firms' behaviour is now usually analysed within imperfectly competitive general equilibrium or industrial organisation models of trade. A 'unified' framework for the positive theory of FDI has emerged that highlights the role of market access, trade and factor costs, factor endowments and scale economies in determining the locational choices of MNEs and the clear testable predictions emerging from this body of theoretical literature have found good support in the empirical analysis.[1]

Whilst the positive theory of FDI has made incredible leaps forward, much of the public debate surrounding MNEs has focused on the policy determinants of their location decisions. In this area, the progress in the academic literature – both at a theoretical and at an empirical level – has not been as significant and has to a great extent focussed on the role of taxation. Corporate taxes, in particular, are considered as having adverse effects on the volume and location of FDI since, other things equal, they reduce after-tax returns from investment. In line with the traditional theory of tax competition[2], this view suggests that increasingly footloose firms and industries – that have the ability to shift taxable income between jurisdictions in response to different tax treatments – will (i) channel investment towards countries with lower relative corporate taxes, and hence (ii) lead to a downward convergence of capital taxation, as governments compete with each other in the attempt to attract and/or retain industry. The resulting shrinking of actual and potential tax revenues is then likely to undermine governments' ability to finance expenditure, thus leading to a downward convergence of national policies towards lower levels of taxation, smaller governments and welfare state programmes, and lower levels of regulations and social standards. This view is at the core of the 'race-to-the-bottom' hypothesis that informs much

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[1] For an excellent synthesis of this literature, see Markusen (2002) and Barba Navaretti and Venables (2004).
[2] For a survey, see Wilson (1999).

of the current debate on globalisation, and of concerns about 'harmful' competition between governments that underpin calls, in recent years, for 'harmonisation' of tax polices – for example by the OECD (1998) and the EU (1999).[3]

The findings of a large part of the existing empirical literature on the effects of taxation on FDI seem to support the view that international differences in corporate taxation are important determinants of the location decisions of MNEs. Desai *et al.* (2002) examine the link between taxation and foreign direct investment using affiliate-level data for US companies investing abroad over the period 1982 to 1997 and find a strong negative effect of taxation in the host country on investment by foreign affiliates. Further empirical evidence on the deterring effect of corporation taxes on the attraction of FDI is presented by Gropp and Kostial (2000) who focus on total FDI inflows and outflows; Grubert and Mutti (2000), Altshuler *et al.* (2001) and Görg (2005) who concentrate on the location decisions of US firms; and Hines (1996) who studies the location of foreign multinationals across US states.[4]

There are, however, major stylized facts concerning the effects of 'globalisation' on national economies that call for further inquiry into these issues. There is no compelling evidence to date of a race-to-the-bottom among industrial economies and substantial cross-country diversity remains in government spending, transfers and taxation. Welfare state reforms in OECD countries have mostly been limited to a restructuring of expenditure that has not resulted in substantial retrenchments.[5] As documented by a recent OECD report (OECD, 2006), tax revenues as a percentage of GDP are on the rise in many OECD countries. Existing evidence also casts doubts on the extent of competition between governments in capital taxation, as overall effective corporate tax burdens do not appear to have fallen in response to capital and trade liberalisation: whilst many governments have reduced statutory corporate income tax rates, most have simultaneously broadened the tax base and closed various loopholes (Devereux *et al.*, 2002), so that total revenue from capital taxation has not declined. More generally, inter-country differences in corporate tax treatments remain very large.

These stylised facts suggest that national governments have thus far retained significant control over their policies. To paraphrase Rodrik (1997), one interpretation of this

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[3] Consistent with this view, the traditional theory on tax competition predicts that in open economies with full capital mobility, capital taxation should tend to zero as the tax burden is transferred on to immobile factors (for a survey, see Wilson, 1999).

[4] Hines (1999) and Gordon and Hines (2002) provide extensive reviews of the evidence on corporate tax and FDI.

[5] For example, Dreher (2006) finds that globalisation, measured by an index encompassing 23 variables, did not 'decrease leeway for independent national economic policy'.

is that economic globalisation has not yet *gone far enough*. Another, and intellectually more intriguing, hypothesis is that the revenue raising ability of governments is not fundamentally hindered by economic globalisation.[6]   More specifically, the above stylised facts can be taken as casting doubts on the extent to which governments' accountability has become biased towards external economic agents. This in turn may suggest that the current literature on tax-competition and FDI overstates the degree to which international investment decisions are driven by relative tax-treatment considerations.

There are a number of reasons to suppose that MNEs' location decisions may not be as sensitive to corporate tax differentials as is often presumed.   In terms of behavioural responses to corporate taxation, multinational firms have the ability to shift profits to lower-tax locations – for example via transfer pricing or intra-firm debt contracting. Governments that are imposing high tax rates may also set in place mechanisms that compensate firms indirectly via other investment incentives. Furthermore, as emerges from the recent positive theory of foreign direct investment, taxation is only one of the many factors that determine the international location of firms: other cost and/or market access considerations may be as important. In particular, corporate taxation *per se* may be expected to play a more limited role in FDI decisions among high-income industrial economies, characterised by significant two-way inter-industry FDI flows, where 'horizontal' integration appears to be the most dominant motivation for FDI.[7]   The complexity and number of factors that drive MNEs' decisions may thus be expected to soften significantly the effects of taxation on FDI[8] and can help explain the persistence of wide corporate tax differentials between countries. For example, in the presence of imperfect competition, agglomeration economies have been shown to generate rents for the mobile factors that can be partially appropriated by governments via taxation.[9] These agglomeration forces result in equilibria characterised by differential rates of capital taxation, with regions with a higher concentration of industries being able to charge a higher tax rate without losing capital.

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[6] Molana and Montagna (2006), in a theoretical model with aggregate scale economies, show how welfare state policies can interact with international trade and capital mobility in increasing aggregate welfare.

[7] An important distinction that has emerged from the literature is that between 'vertical' and horizontal FDI: 'horizontal' FDI (in which MNEs duplicate production operations abroad) is driven primarily by market access considerations, whilst 'vertical' FDI emerges from vertical fragmentation of production and differences in skill-labour intensities and is therefore driven by cost and factor endowment considerations. Focusing on US MNEs, Mutti and Grubert (2004) find that horizontal FDI is less sensitive than vertical FDI to host country taxation.

[8] Markusen (1995) predicts the effects of taxation to be unnoticeable as a result of these other factors.

[9] See for instance, Ludema and Wooton (2000), Andersson and Forslid (2003) and Baldwin and Krugman (2004).

More fundamentally, what these recent theoretical developments do is to critically challenge the focus of standard tax competition literature on 'perfect markets', where investment can move 'frictionlessly' across national borders. When investing abroad, firms respond to 'imperfect markets'[10] and are not driven solely by the search for higher net-of-tax returns. FDI flows, while relatively liquid ex-ante, are characterised by significant immobility ex-post, thus entailing a long-lasting ownership stake in a host country. This in turn implies that, in addition to factors such as the 'thickness' of supplier markets, the cost and quality of local inputs, and the proximity and size of final markets, firms' perceptions about the host country's economic and social environment are key to their choice of location, and investment decisions will depend on the combination of taxation and the provision of public goods and services that host countries can offer *because of* taxation.[11] It is therefore plausible to conjecture that an 'unfavourable' tax differential may even be associated with more and not less investment flowing into a country, if higher taxes are associated with other long-lasting favourable conditions such as legal and labour market institutions, public services, and public capital that improve the business environment.[12]

It is often alleged that the categories of expenditure that matter to investors in Tiebout-type of 'public good/taxation' combinations are 'productive' expenditure, such as public investment in infrastructure. Indeed, the recent attacks on the modern welfare states are partly based on the supposition that social policy has highly distortionary effects on incentives and is thus expected, other things equal, to act as a hindrance to a country's ability to attract and/or retain industry. Yet, casual evidence suggests that *social* infrastructure is very important in attracting inward investment.[13]

Set against the above background, in this paper we make an empirical attempt in exploring the proposition that redistributive social welfare state policies are valued by multinationals – since, for instance, they result in higher social contentment and stability. In a recent survey[14] of multinationals, a 'stable social and political environment' was found to be the second most important – 'very influential' – factor (after market access and before the quality of infrastructures and quality of skilled staff) in determining the attractiveness of an

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[10] This was already pointed out in the 'early' literature on FDI: e.g., see Hymer (1976), Caves (1971) and Dunning (1971).

[11] This idea dates back to Tiebout (1956).

[12] Political scientists have recently examined the role of 'market-friendly' political institutions and policies in determining FDI flows. See for instance Mosley (2003) and Jensen (2006).

[13] Markusen (2001) includes in this definition physical, educational and legal infrastructure.

[14] The survey was carried out by the Multilateral Investment Guarantee Agency and Deloitte & Touche. See Jensen (2006).

investment location. Hence, to the extent that social policy plays an important role in signalling a government's commitment to social stability, it may attract FDI. Using panel data for 18 high-income OECD countries and measuring the extent of social welfare policies by the (public social expenditure)/GDP ratio, we investigate whether the latter exerts any significant impact on FDI inflows − once all other determinants are accounted for − and find strong support for the above proposition. We explain our empirical work and provide the estimation results in Section 2 and give our concluding remarks in Section 3.

2.   Estimating the Impact of Social Expenditure on FDI

As explained above, our main theoretical conjecture is that social welfare state policies play a positive role in attracting FDI. Thus, while we maintain that multinationals do care about the tax rates imposed by the host countries, we suggest that they are also concerned about those host governments' policies which affect the socio-economic environment in which they will be operating.

We therefore propose to start our empirical analysis by estimating an equation which, in addition to the other typical explanatory variables, uses the relevant proxies for taxation and social expenditure, and the interaction between them, as the main regressors determining the inflow of FDI. More specifically, let the general regression equation be

$$y_{it} = \alpha x_{it} + \beta z_{it} + \gamma \left(x_{it} \cdot z_{it} \right) + \delta' w_{it} + \varepsilon_{it} , \tag{1}$$

where, for a host country i in year t, y_{it} is the (logarithm of real) inflow of FDI; x_{it} is the share of social expenditure in GDP; z_{it} is the effective marginal tax rate[15]; and w_{it} is a vector of the conditioning variables that are usually used is the literature.[16] Social expenditure refers to the bulk of what is normally defined as the welfare state, i.e. publicly

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[15] The economics literature distinguishes between two slightly different concepts of the effective tax rate: the effective *marginal* (EMTR) and effective *average* (EATR) tax rates. When it comes to examining the effects of corporate tax rates on the activities of MNEs, Devereux et al. (2002) argue that the EATR is the relevant tax rate in determining *discrete investment choices* (i.e., whether to invest or export) as the average return to capital is what matters for this decision. By contrast, the EMTR is relevant for firms' decisions about the *level of investment*, as it affects the net marginal return to capital. Hence, the use of the EMTR seems appropriate in our context. However, it should also be noted that while we have some data on EATR the coverage is by no means as extensive as for the EMTR and the use of the former would hence limit our analysis severely. Still, we find that for those cases for which we have both EATR and EMTR, these two rates are highly positively correlated.

[16] See Blonigen (2005) for a recent survey on the determinants of FDI flows.

financed health and social protection.[17] In this study, the main control variables that we include in this vector are[18]:

1. The logarithms of real GDP and population (*GDP* and *POP*). Together, these capture the market size of the host country which is important for market-seeking MNEs. We would therefore expect FDI to be positively affected by these variables.

2. Unit labour cost and the cost of capital (*ULC* and *CC*) capture cost and relative factor endowment considerations and are expected to have a negative effect on inward FDI.

3. A measure of openness (*OPEN*, measured by trade/GDP ratio) is used as a proxy for trade barriers and trade costs. While this measure is likely to influence FDI, its effect is *a priori* ambiguous and will ultimately depend on whether FDI is a complement or a substitute to trade: countries with a higher trade openness should be more attractive to export-seeking MNEs, whilst low barriers to trade may reduce the attractiveness of horizontal, market-seeking, FDI.

4. The real effective exchange rate (*REER*, defined such that an increase is depreciation). The effect of this variable is *a priori* ambiguous. As a measure of the competitiveness of the host country, which may matter particularly for export-platform FDI, it is expected to have a positive effect on FDI. However, to the extent that a weak currency reduces the value of an investment and of repatriated profits, then an increase in *REER* should deter FDI.

5. A number of 'policy' variables: the share of public consumption in GDP (*GC*); an index of infrastructure (*INFRA*); and inflation (*INF*). These are relevant if we believe that MNEs are *ceteris paribus* likely to favour locations that offer a market-friendly and stable macroeconomic environment.[19] *GC* captures the size of the government and since, other things equal, MNEs are likely to prefer 'leaner' governments, we would expect *GC* to have a negative effect on FDI. Similarly, a high inflation could reflect a 'wet' government and we would expect *INFL* to have a negative effect on inward FDI. In contrast, *INFRA* is expected to have a positive impact on inward FDI since it facilitates operations.

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[17] The latter includes expenditure on: active labour market policies; disability and family cash benefits, family services, housing, occupational injury, old age cash benefits, other contingencies, services for elderly and disabled, sickness benefits, survivors, unemployment benefits.

[18] See the data appendix for all definitions.

[19] Mosley (2003) argues that for industrial economies in particular, international financial markets participants are particularly sensitive to key macroeconomic indicators.

6. An index of left-political party (*LEFT*): one the one hand, one may expect this to have a negative effect on FDI as it indicates a commitment to a more interventionist and redistributive style of government in the economy; on the other hand, as in the Scandinavian corporatist system, left governments may be allied with encompassing labour movements and this may be attractive to FDI by generating social stability and containment of wage demands.

7. We also condition our regression on the lagged dependent variable, y_{it-1}. Past FDI inflows are important in that they signal to investors about both the business environment and the extent of the market, and thus serve as a control for the 'self-perpetrating' nature of FDI. In addition, we include a constant intercept, country fixed effects, and time trend (*TREND*) to pick up any trend discrepancies that are not captured by the regressors.[20] Finally, ε_{it} in (1) is a zero-mean random disturbance term reflecting all unobservable shocks and model omissions.

The specification of equation (1) captures our theoretical belief regarding the role of taxation and its use discussed above in that, by allowing for an interaction effect between the effective marginal tax rate and social expenditure, the impact of each of these variables on FDI inflow depends on the other variable. In particular, we postulate that $\alpha > 0$ since we expect social expenditure to stimulate FDI inflows. However, because $\dfrac{\partial y_{it}}{\partial x_{it}} = \alpha + \gamma z_{it}$, the total effect of social expenditure on FDI depends on its interaction with capital taxation. It is plausible to expect the positive impact of social expenditure to be lower the higher is the burden of taxation, i.e., $\gamma < 0$ and hence $\dfrac{\partial y_{it}}{\partial x_{it}} \le 0$ cannot be ruled out *a priori*. Alternatively, of course, one may focus on the overall impact of taxation on FDI by examining $\dfrac{\partial y_{it}}{\partial z_{it}} = \beta + \gamma x_{it}$, which would normally be expected to be negative. However, given our theoretical priors, we would not rule out that the overall impact of corporate taxes may turn out to be insignificant or even positive.

We carry out our empirical investigation using a panel dataset consisting of annual observations over the period 1984–1998 for the following 18 OECD countries: Australia, Belgium, Canada, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, New

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[20] We also experimented with time dummies, but the time trend seems to yield better results.

Zealand, Portugal, Spain, Sweden, Switzerland, UK and USA. Table 1 reports the estimates of the general specification in equation (1), where we have also included as an additional regressor the interaction term between the tax rate and government consumption, z_{it} and GC_{it}, in order to capture any interdependence between their impacts. Briefly, the estimates suggest:

➤ Social expenditure, the tax rate and their interaction, $\alpha x_{it} + \beta z_{it} + \gamma (x_{it} \cdot z_{it})$, play a significant role in explaining the inflow of FDI and we obtain $\hat{\alpha} > 0; \hat{\beta} > 0; \hat{\gamma} < 0$, where $\hat{\alpha}, \hat{\beta}$ and $\hat{\gamma}$ are the estimated values of the corresponding parameters.

- $\alpha > 0$ conforms to our hypothesis that social expenditure can attract FDI inflows. Social expenditure is normally regarded as an 'unproductive' category of expenditure which hinders the attractiveness of a location to foreign investors via its distortionary effects on the economy and by increasing governments' revenue raising needs. However, as pointed out earlier, social expenditure is also likely to play an important role in signalling a government's commitment to social stability, as it contributes amongst other things to (i) developing and maintaining a social fabric, (ii) reducing political unrest, (iii) warranting unions' cooperation, (iv) increasing workers incentive to invest in industry- and/or firm-specific training, and (v) increasing education and health standards.

- $\beta > 0$ goes against the race-to-the-bottom hypothesis and hence may appear counterintuitive. Nevertheless, it is fully consistent with the view that MNEs' major concern is not with taxation but with what governments do with it and is therefore in line with our conjecture that capital taxation should not necessarily discourage FDI. -

- $\gamma < 0$ suggests that the higher is the level of social expenditure (taxation) the lower is going to be the overall impact of taxation (social expenditure) on FDI: for sufficiently high levels of social expenditure (taxation), the overall effect of taxation (expenditure) on FDI may become negative. Or, put differently, at sufficiently low levels of social expenditure (taxation), high levels of taxation (social expenditure) encourage FDI, while the opposite will happen when social expenditure (taxation) is sufficiently high. This type of behaviour may reflect a fear by investors that too high levels of social expenditure (or taxation) indicate a convergence to (i) a large government size, and/or

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(ii) welfare policies that are sufficiently generous so as to generate disincentive effects on economic behaviour – e.g. on labour supply, saving, etc.

➢ The market size factors, GDP and population, have the expected positive impacts although the latter's coefficient is statistically insignificant. It is worth noting that because we are not particularly interested in measuring the impact of these variables individually, we have entered them without any restrictions as, say, $\delta_1 \ln GDP_{it} + \delta_2 \ln POP_{it}$. It may be more appropriate to use *per capita* GDP in this context but this can be obtained by simply reparameterising the former expression as $\delta_1 \ln \left(GDP_{it} / POP_{it} \right) + \left(\delta_2 - \delta_1 \right) \ln POP_{it}$ which does not change.

➢ The coefficients of lagged FDI, real effective exchange rate, infrastructure and openness have the expected sign and are statistically significant; although those of infrastructure and openness are only significant at a lower confidence level, we shall retain these explanatory variables at this stage. The coefficients of government consumption and its interaction with the tax rate, inflation, unit labour costs, cost of capital and the index of left-political party are all statistically insignificant and we shall drop these explanatory variables. These finding are on the whole consistent with those reported in literature.

On the whole, the results so far lend support to our conjecture about the effects of social expenditure and corporate taxation on FDI and thus cast doubts on the race-to-the-bottom hypothesis. In light of the above analysis, and in the interest of statistical efficiency, in investigating the role of social expenditure in determining inward FDI, we need to obtain a more parsimonious specification which passes the required robustness checks. The first step therefore is to exclude the explanatory variables whose coefficients were insignificant and re-estimate the corresponding restricted specification. This is also reported in Table 1; the coefficient estimates of the remaining explanatory variables are not affected by imposing this restriction (i.e. dropping the insignificant explanatory variables) and the *F* test supports the underlying joint restriction. However, a further examination of the coefficient estimates of the restricted specification suggests that the impacts of infrastructure and openness are not clearly identified since the significance of the coefficient of *INFRA* drops and in fact neither variable seems to have a significant impact at a satisfactory confidence level. Given that the sample pair-wise cross-section correlation coefficients between *INFRA* and *OPEN* are very high, this result is likely to be due to multicollinearity.

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We therefore report in Table 2 the estimates of the alternative specifications by dropping one of these variables − *INFRA* and *OPEN* − at a time from the restricted specification reported in Table 1. Given that these alternative models are non-nested, we also report in Table 2 the statistics for comparing these specifications – see in particular the *JA* statistics and the information criteria, *IC*. While it seems reasonable to regard these models as equally good alternatives, we find **Model 1** which uses *OPEN* to be superior; the coefficient of *OPEN* is highly significant − in comparison to the coefficient of *INFRA* in **Model 2** − and the time trend also features significantly in **Model 1** (we had to retain the time trend in **Model 2**, despite its insignificant coefficient, in order to remove the trend that was not captured otherwise and was reflected in the residuals). Given that the sample consists of high-income OECD countries, all with high levels and quality of infrastructures, the finding is perhaps not surprising.

While past FDI continues to play an important (and rather stable) explanatory role in both specifications, we still need to examine the residuals to see if they pick up any omitted dynamics which could manifest themselves in residual autocorrelation. We therefore re-estimated both models again allowing for *AR*(1) disturbances. The results are reported in Table 3 and show no sign of omitted dynamics/residual autocorrelation.

So far, we have been estimating our models using least squares on the grounds that all the explanatory variables can be regarded as weakly exogenous. However, given that there is the possibility that governments may use the tax rate as a policy variable to attract FDI, we need to allow for simultaneity between the tax rate and the inward FDI. In Table 4, we report the two-stage least squares estimates of the two models that treat the tax rate as an endogenous explanatory variable. These estimates are not very different from the least square ones reported in Table 2 and the Wu–Hausman test statistic reported in the table does not reject the null hypothesis that the tax rate is weakly exogenous.

In the light of the above explanations, we chose **Model 1** as our preferred specification and use its least squares estimates reported in Table 2 to analyse the net impacts of social expenditure and capital taxation on FDI inflows. Using the sample information, for each country i we measure these by $\frac{\partial y_i}{\partial x_i} = \hat{\alpha} + \hat{\gamma}\overline{z}_i$ and $\frac{\partial y_i}{\partial z_i} = \hat{\beta} + \hat{\gamma}\overline{x}_i$ where $\overline{x}_i$ and $\overline{z}_i$ are the mean values of x_{it} and z_{it} over the estimation period 1984–1998. Table 5 reports these values as well as the test statistics for the null hypotheses $\beta + \gamma\overline{x}_i = 0$ and $\alpha + \gamma\overline{z}_i = 0$, both individually and jointly.

As the last row of Table 5 shows, the full sample indicates that the overall impact of social expenditure is positive while that of taxation is negative; we find that $\hat{\alpha} + \hat{\gamma}\bar{z} > 0$ and $\hat{\beta} + \hat{\gamma}\bar{x} < 0$ (and both are statistically significant at rather high confidence levels) where $\bar{x}$ and $\bar{z}$ are the mean values of x_{it} and z_{it} over the whole sample. At the individual country level, this result also holds for Australia, Canada, Japan, Portugal, and USA. For Finland, France, Germany, Greece, Italy, New Zealand and Spain we find the overall impact of taxation to be negative and statistically significant but cannot reject the hypothesis that social expenditure does not have a net effect on inward FDI, i.e., $\hat{\alpha} + \hat{\gamma}\bar{z}_i = 0$; hence, for these countries the tax rates are sufficiently high on average to compensate the direct impact of social expenditure, while $\hat{\beta} + \hat{\gamma}\bar{x}_i < 0$ still holds. In contrast, there seems to be no net impact from either taxation or social expenditure on the inflow of FDI into Belgium, Netherlands, Switzerland and UK, i.e., $\hat{\alpha} + \hat{\gamma}\bar{z}_i = 0$ and $\hat{\beta} + \hat{\gamma}\bar{x}_i = 0$; in these countries social expenditure and the tax rate are relatively high on average and compensate the corresponding direct impacts.

The only anomalies are the results for Ireland and Sweden: in Ireland, social expenditure is ineffective while taxation has a positive net impact on inward FDI; in Sweden, both effects are significant but have the opposite sign to that we expected *a priori*. However, Ireland and Sweden are usually used as special examples in the literature of successful economies in, respectively, attracting inward FDI and achieving high levels of social standards and may, therefore, be somewhat regarded as 'outliers' in our sample.

On the whole, however, the evidence reported above encourages a more substantial empirical pursuit of the possibility that MNEs do not only take account of the levels of taxation in the host countries but also care about what governments do with the resulting tax revenue.

3.   Conclusions

This paper offers a first exploration of the effects of social expenditure and its interaction with levels of corporate taxation on foreign direct investment. In our empirical analysis, based on data from 18 OECD countries for the period 1984-1998, we find strong support for our conjecture that redistributive social welfare state policies are valued by multinationals.

At first sight, our results may be startling and appear as being counterintuitive. A key tenant of the conventional wisdom on the effects of globalisation is that capital mobility

undermines the revenue raising and hence spending capacity of governments, as firms have a strong preference for locations with relatively low taxation. Our analysis, instead, suggests that competition between governments for internationally mobile firms may be more muted than what is implied by the tax-competition (and race-to-the bottom) hypothesis and confirms our conjecture that corporate taxation does not necessarily deter FDI, if it is associated with the provision of public goods that improve the economic environment in which MNEs operate. Thus, so long as there is diversity in the combination of programmes that may be of interest to MNEs, a convergence of taxation regimes is not to be expected as a result of the increase in capital mobility.

This study highlights the overall empirical relationship between social policy, and its interaction with corporate taxation, and FDI. However, it only offers conjectures as to the reasons behind this relationship. An interesting direction of future research will be to consider the effects of specific categories of social expenditure on FDI as well as to identify the channels and mechanisms through which these effects take place.

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Table 1. Panel least squares estimates of the general specification

	General Specification		Restricted Specification	
Regressor	Coeff. Estimate	t-ratio	Coeff. Estimate	t-ratio
x_{it}	0.180698	3.377216	0.156709	4.214143
z_{it}	0.140464	2.870871	0.156168	4.271028
$x_{it} \cdot z_{it}$	-0.007176	-3.726300	-0.006255	-4.332907
$\ln GDP_{it}$	1.177806	3.962402	1.181546	4.186456
$\ln POP_{it}$	1.022771	0.467332	--	--
GC_{it}	-0.051971	-0.601324	--	--
$GC_{it} \cdot z_{it}$	0.001345	0.396171	--	--
$INFRA_{it}$	0.034825	1.629404	0.031405	1.491196
$OPEN_{it}$	0.227206	1.562018	0.226738	1.689263
$REER_{it}$	-0.010410	-2.915769	-0.009367	-4.177137
$INFL_{it}$	-0.010241	-0.582105	--	--
ULC_{it}	9.49E-06	0.476907	--	--
CC_{it}	0.182301	1.239393	--	--
$LEFTC_{it}$	0.000441	0.494227	--	--
y_{it-1}	0.281800	3.520728	0.286925	3.498031
TREND	-0.021949	-0.532833	-0.010864	-0.313463
Constant Intercept	4.471019	0.060554	0.204507	0.002990
$\overline{R}^2$	0.91239		0.9140	
S.E. of regression	0.43898		0.43469	
RSS	45.4785		45.9163	
Log-likelihood	-142.6537		-143.9473	
Durbin-Watson	2.026		2.036	
Akaike IC	1.30855		1.26628	
Schwarz IC	1.76168		1.62612	
$F_{(7,236)}$ *p-Value*	0.3246 (0.942388)			

Dependent variable is logarithm of real FDI inflow, y_{it}

- t-ratios are based on White cross-section standard errors.
- Country fixed effect estimates are not reported.
- RSS is the sum of squared residuals.
- The F ratio in the last row is for the joint restrictions due to excluding the regressors.

Table 2. Panel least squares estimates of two alternative specifications

	Model 1		Model 2	
Dependent variable is logarithm of real FDI inflow, y_{it}				
Regressor	Coeff. Estimate	t-ratio	Coeff. Estimate	t-ratio
x_{it}	0.125909	3.158686	0.151940	4.179063
z_{it}	0.125323	3.380606	0.156620	4.354771
$x_{it} \cdot z_{it}$	-0.005090	-3.413753	-0.006303	-4.446734
$\ln GDP_{it}$	1.098153	3.512078	1.167136	4.164059
$INFRA_{it}$	--	--	0.036272	1.761867
$OPEN_{it}$	0.359722	3.052397	--	--
$REER_{it}$	-0.008014	-3.120315	-0.010979	-4.868471
y_{it-1}	0.295143	3.494371	0.286245	3.511905
$TREND$	0.046712	2.062170	-0.009435	-0.270018
$Constant\ Intercept$	-109.5225	-2.776858	-1.998643	-0.028995
$\overline{R}^2$	0.912645		0.913969	
$S.E.\ of\ regression$	0.438338		0.435003	
RSS	46.88225		46.17161	
$Log\text{-}likelihood$	-146.7577		-144.6957	
$Durbin\text{-}Watson$	1.998906		2.031917	
$Akaike\ IC$	1.279687		1.264413	
$Schwarz\ IC$	1.626202		1.610928	
$JA\ Statistic$ $p\text{-}Value$	1.491196 (0.1372)		1.689263 (0.0925)	

- t-ratios are based on White cross-section standard errors.
- Country fixed effect estimates are not reported.
- RSS is the sum of squared residuals.
- The JA Statistic is Davidson and MacKinon's non-nested test statistic for Model 1 v Model 2 or vice versa, and is distributed as standard normal asymptotically.

Table 3. Panel least squares estimates with AR(1) disturbances

	Model 1		Model 2	
Dependent variable is logarithm of real FDI inflow, y_{it}				
Regressor	Coeff. Estimate	t-ratio	Coeff. Estimate	t-ratio
x_{it}	0.122881	2.991793	0.150410	3.937498
z_{it}	0.122268	3.248941	0.155028	4.246154
$x_{it} \cdot z_{it}$	-0.004951	-3.284200	-0.006235	-4.373752
$\ln GDP_{it}$	1.018425	3.253436	1.138781	3.889643
$INFRA_{it}$	--	--	0.035510	1.682386
$OPEN_{it}$	0.352055	2.933722	--	--
$REER_{it}$	-0.007562	-2.969002	-0.010816	-4.654421
y_{it-1}	0.354853	3.083046	0.308816	2.650459
$TREND$	0.041103	1.783364	-0.010200	-0.298807
$Constant\ Intercept$	-97.51318	-2.378010	-0.138367	-0.002053
$AR(1)\ coefficient$	-0.070873	-0.530486	-0.026314	-0.196472
$\overline{R}^2$	0.912352		0.913624	
$S.E.\ of\ regression$	0.439075		0.435877	
RSS	46.84711		46.16717	
$Log\text{-}likelihood$	-146.6565		-144.6827	
$Durbin\text{-}Watson$	1.980099		2.024355	

- t-ratios are based on White cross-section standard errors.
- Country fixed effect estimates are not reported.
- RSS is the sum of squared residuals.
- Panel two-stage estimation (with lagged dependent variable and regressors used as instruments) yielded similar results.

Table 4. Panel two-stage least squares estimates
(effective tax rate, z_{it}, treated as endogenous)

	Model 1		Model 2	
Dependent variable is logarithm of real FDI inflow, y_{it}				
Regressor	Coeff. Estimate	t-ratio	Coeff. Estimate	t-ratio
x_{it}	0.145535	2.472012	0.249342	2.779958
z_{it}	0.143675	2.197632	0.263463	2.462476
$x_{it} \cdot z_{it}$	-0.005843	-2.501190	-0.010151	-2.731665
$\ln GDP_{it}$	1.107767	3.501443	1.191927	4.679895
$INFRA_{it}$	--	--	0.048110	1.467778
$OPEN_{it}$	0.366343	2.893695	--	--
$REER_{it}$	-0.007973	-2.956709	-0.010435	-3.847330
y_{it-1}	0.290731	3.383842	0.262849	3.241549
$TREND$	0.047959	1.925138	-0.020232	-0.444408
$Constant\ Intercept$	-112.6775	-2.545672	15.53702	0.174554
$\overline{R}^2$	0.912572		0.911485	
S.E. of regression	0.438523		0.441239	
RSS	46.92179		47.50481	
2nd Stage RSS	47.60568		46.45853	
Durbin-Watson	1.992991		1.996209	
Sargan Statistic (p-Value)	10.542 (0.0612)		4.521 (0.4771)	
Wu – Hausman Statistic (p-Value)	0.0264		0.2476	

- t-ratios are based on White cross-section standard errors.
- Country fixed effect estimates are not reported.
- RSS is the sum of squared residuals.
- The Sargan Statistic is the value of the GMM objective function at estimated parameters, asymptotically distributed as $\chi^2_{(5)}$ under the null hypothesis that the over-identifying restrictions are valid.
- The Wu – Hausman Statistic is asymptotically distributed as $\chi^2_{(5)}$ under the null hypothesis that the effective tax rate is weakly exogenous.

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Table 5: The impacts of social expenditure (x) and effective tax rate (z)
on the inflow of FDI (y) in a sample of OECD countries

Country	$\overline{x}_i$	$\overline{z}_i$	$\frac{\partial y_i}{\partial x_i} = \hat{\alpha} + \hat{\gamma}\overline{z}_i$	$\frac{\partial y_i}{\partial z_i} = \hat{\beta} + \hat{\gamma}\overline{x}_i$	Testing the joint restriction $\beta + \gamma\overline{x}_i = 0$ & $\alpha + \gamma\overline{z}_i = 0$	
Australia	15.25	37.99	0.048281* (0.019814)	-0.068060* (0.020624)	10.89279	(0.0043)
Belgium	25.64	23.88	-0.004608 (0.013032)	0.003765 (0.005348)	0.566816	(0.7532)
Canada	18.39	39.40	0.032297* (0.016572)	-0.075238* (0.022664)	11.04437	(0.0040)
Finland	27.44	27.73	-0.013771 (0.013418)	-0.015833* (0.007002)	5.856913	(0.0535)
France	27.34	28.52	-0.013262 (0.013382)	-0.019855* (0.007834)	6.994879	(0.0303)
Germany	23.83	28.78	0.004606 (0.013195)	-0.021178* (0.008127)	6.822299	(0.0330)
Greece	19.86	22.23	0.024814 (0.015313)	-0.021178* (0.008127)	5.240592	(0.0728)
Ireland	19.43	17.88	0.027003 (0.015660)	0.034307* (0.011321)	9.354609	(0.0093)
Italy	23.42	29.31	0.006693 (0.013308)	-0.023876* (0.008746)	7.473605	(0.0238)
Japan	12.09	37.25	0.064367* (0.023570)	-0.064294* (0.019559)	10.80853	(0.0045)
Netherlands	26.95	24.43	-0.011276 (0.013260)	0.000965 (0.005243)	0.729023	(0.6945)
N. Zealand	20.60	43.09	0.021047 (0.014762)	-0.094021* (0.028047)	11.28647	(0.0035)
Portugal	15.16	33.08	0.048739 * (0.019915)	-0.043067* (0.013670)	9.974157	(0.0068)
Spain	19.48	33.59	0.026749 (0.015619)	-0.045663* (0.014375)	10.09218	(0.0064)
Sweden	32.18	21.11	-0.037899* (0.016608)	0.017865* (0.007394)	7.351023	(0.0253)
Switzerland	21.65	25.89	0.015703 (0.014092)	-0.006467 (0.005572)	2.096539	(0.3505)
UK	23.19	25.77	0.007863 (0.013383)	-0.005856 (0.00551)	1.287925	(0.5252)
USA	14.11	28.84	0.054084* (0.021124)	-0.021483* (0.008195)	8.126623	(0.0172)
Full Sample	21.45	29.38	0.054084* (0.021124)	-0.024232* (0.008830)	7.546543	(0.0230)

The results are based on the estimates of **Model 1** reported in Table 2. The numbers in parentheses below the estimates are the corresponding asymptotic standard errors which can be used to test the restrictions $\beta + \gamma\overline{x}_i = 0$ and $\alpha + \gamma\overline{z}_i = 0$ – asterisks denote significant at 5%. For testing the latter restrictions jointly, we report the value of the Wald $\chi^2_{(2)}$ test statistic in the last column, with the corresponding p-values in parenthesis.

Data Appendix

Variable	Notation	Description	Source
FDI inflows	*y*		FDI International Direct Investment Statistics Yearbook 2001, OECD
Social Expenditure	*x*	Total public social expenditure by country as percentage of GDP	Social Expenditure Database, 2001 edition, OECD
Effective tax rate	*z*	effective marginal tax rate on investment calculated as difference between cost of capital and post-tax rate of return as a proportion of cost of capital	OECD (2003)
GDP	*GDP*	GDP in real 1996 USD	OECD (2003)
Population	*POP*		World development indicators database, World Bank
Openness indicator	*OPEN*	(Imports + Exports) / GDP	World development indicators database, World Bank
Real effective exchange rate	*REER*	Nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs	World development indicators database, World Bank
Government consumption	*GC*	General government final consumption expenditure (% of GDP)	World development indicators database, World Bank
Inflation rate	*INFL*	Percent change in consumer prices	World development indicators database, World Bank
Unit labour cost	*ULC*	Trade-weighted unit labour cost in manufacturing	OECD (2003)
Cost of capital	*CC*	The required pre-tax rate of return for investment in the country based on the approach developed in King and Fullerton (1984)	OECD (2003)
Infrastructure	*INFRA*	Indicator on quality and quantity of telecom, transport and electricity infrastructure, relative to US 1995 = 100	OECD (2003)
Index of left political party	*LEFTC*	Left party cabinet portfolios as percentage of all cabinet portfolios	Duane, Swank, "Codebook for 21-Nation Pooled Time-Series Data Set: Political Strength of Political Parties by Ideological Group in Capitalist Democracies," http://www.marquette.edu/polisci/Swank.htm (accessed 4 January 2007)