# Fancy a stay at the "Hotel California"? Foreign direct investment, investment incentives, and exit costs

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**Abstract**

Investment incentives targeted at attracting multinational firms have been extensively documented and researched, and empirical evidence has shown them to be influential. The same is not true of exit costs. Yet, as recent theory suggests, there may be a trade-off between entry incentives and exit costs. This paper focuses on just that trade-off in the case of US multinationals in 33 host countries. Our results suggest that both entry incentives and exit costs are important and ignoring the latter neglects an important dimension in firms' location decision.

Keywords: Foreign direct investment, exit costs, firing costs, investment incentives

JEL classification: F23, H25, J65

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*Welcome to the Hotel California*
*Such a lovely place*
*Such a lovely face*
*Plenty of room at the Hotel California*
*Any time of year*
*You can find it here*
*…*
*Relax said the nightman*
*We are programed to receive*
*You can check out any time you like*
*But you can never leave*

Hotel California (The Eagles, 1976)

## 1 Introduction

The lyrics of the Eagles' song *Hotel California* contain an interesting insight for economists. In economists' speak we could think of *Hotel California* as offering low entry costs giving an incentive to enter, but there being (in that particular case arguably very!) high exit costs. What has all of this got to do with the economics of foreign direct investment? It can be seen as providing an interesting analogy with the location decisions of multinational firms (MNFs).

It is well known that many host country governments around the globe attempt to attract multinationals by offering generous investment incentives. For example, Head (1998) reports that the government of Alabama paid the equivalent of $150,000 per employee to Mercedes for locating its new plant in the state in 1994. Across the Atlantic, Motorola and Siemens were provided with the equivalent of an estimated $17,000 and $50,000 per employee to locate in Scotland and the North East of England respectively in the 1990s (Haskel et al., 2002). Corporate tax rates are also used actively as a policy tool to attract multinationals. A

prominent example among developed countries is the Republic of Ireland which offers a nominal tax rate of 10 percent on corporate profits.

Empirical evidence on whether incentives (grants or tax incentives) attract multinationals has been provided in a number of papers. For example, Hines (1996) and Head et al. (1999) look at the impact of tax rates and financial incentives, respectively, on multinationals investing in the US. Hubert and Pain (2002) study how FDI in EU countries responds to financial incentives offered by host countries. Grubert and Mutti (2000) and Devereux and Griffith (1998) examine the effects of tax rates on location decisions of US companies investing abroad. These studies generally find that both tax rates and financial incentives have an impact on location decisions.[1]

While all this suggests that an appealing looking *Hotel California* type host country may be able to lure multinationals, the issue of potential exit costs has received far less attention in the literature to-date. This may be an important issue, however, if multinationals, which are often argued to be highly footloose (Flamm, 1984; Görg and Strobl, 2002) care about the potential costs they have to incur when leaving a host country. In particular, costs due to employment protection legislation, hiring and firing restrictions, lay-off payments, severance payments, etc. may be important.[2] Without uncertainty about the timing of exit this may be just another fixed or variable cost which can be factored in with certainty when calculating the expected net present value of the investment. It becomes more complicated when there is uncertainty about exit, however.

[1] However, Head et al. (1999) in their study of Japanese investment in the US argue that competition between host (state) governments to attract FDI may render investment subsidies ineffective as they offset each other. There is also a related theoretical literature analysing the use of investment incentives, see, inter alia, Haufler and Wooton (1999) and Kind et al. (2000). One of the conclusions is that incentives may lead to competition between host country governments which may erode any potential benefits from FDI.

[2] The issue of employment protection legislation has been discussed in the labor economics literature; see, for example, Lazear (1990) and Jackman et al. (1996).

A recent paper by Haaland and Wooton (2002) examines theoretically both the importance of investment incentives and exit costs for multinational firms considering greenfield investment. They build a partial equilibrium model in which a foreign monopolist bases its location decision on the net present value of future operations, which is influenced by operating profits, government subsidies and exit costs. The last have a role in this model because there is exogenously given industry specific uncertainty that the industry may collapse in future. In the model there is a trade off between subsidies and exit costs. The latter may discourage the location of multinationals, particularly in industries with high risk of failure.[3]

As far as we are aware, the idea of the trade-off between entry and exit costs for the location of multinationals has not been put to the data yet.[4] This is the main contribution of this paper. The empirical analysis uses data on outward foreign direct investment (FDI) stocks in manufacturing industries by the US.[5] US outward FDI is related to the effective corporate tax rate faced by US multinationals in the host country, and an index of firing costs using dynamic panel data techniques. The tax rate is a proxy for inducements to entry while firing costs are a proxy for exit costs.[6] To the best of our knowledge, such a variable has not been used in previous empirical studies on the location of FDI.

Our empirical model is embedded in a theoretical framework based on Dixit's (1989) work on entry and exit under uncertainty. The model by Haaland and Wooton (2002) relates

[3] Dewit et al. (2003) challenge this view on the importance of exit costs by allowing for strategic behaviour between the foreign entrant and an existing host country firm. In their model, firing costs do not necessarily deter the entry of the foreign firm (depending on the nature of competition). They do not consider the effect of investment incentives, however. Also, only greenfield investment by MNFs is considered.

[4] As pointed out above, a number of empirical papers look at the significance of investment incentives such as grants or taxes for the location of FDI. Haaland et al. (2003) present an empirical analysis relating FDI to exit costs (proxied by the level of labor turnover rates), but do not consider investment incentives.

[5] The choice of the US is motivated by two factors. First, the US is by far the largest outward investor in the world; see, for example, the recent discussion by Lipsey (2001). Second, data on US outward investment are easily available.

specifically to new greenfield investments by multinationals as, by definition, there is no takeover possible due to the MNF being a monopolist. Also, they do not allow for changes in the behaviour of multinationals already located in the host following changes in entry or exit costs. The Dixit framework does not require a specific focus on greenfield investment, but one can also think of firms entering by taking over an existing domestic or foreign firm (as long as there is a sunk cost of entry), and existing multinationals expanding in the host country via new investments, or exiting the host country. In that sense, the model is more appropriate for our data, which cover FDI by new greenfield or acquisitions, as well as investments by parent companies in foreign affiliates already located in the host country.[7]

Our estimation results show that firing costs and investment incentives matter for the location of US manufacturing FDI. This is robust to a number of alternative estimation specifications. The finding on the importance of incentives is in line with other recent evidence. The significance of firing costs, however, suggests a further important, yet heretofore neglected conclusion: multinationals, in particular in manufacturing industries, do not only care about entry costs, but also about ease of exiting the host country.

The remainder of the paper is structured as follows. Section 2 presents a simple theoretical framework to motivate our empirical analysis. Section 3 presents and describes the data. Section 4 discusses the econometric methodology and results. Section 5 concludes.

[6] The focus on the tax rate of course leaves aside other firm- or industry-specific incentives that may be offered by potential host countries. This is due to data availability. Under the assumption that these are complements of tax breaks, i.e., are positively correlated, this should not cause a problem in the empirical estimation.

[7] Also, the Dixit model does not rely on an exogenously given uncertainty but the uncertainty is explicitly modelled.

## 2 Theoretical framework

To motivate our empirical analysis below this section sets out a brief simple theoretical framework based on Dixit's (1989) model on investment under uncertainty.[8] Dixit showed that the entry and exit decision of a firm under uncertainty can be analysed using an analogy borrowed from options pricing theory. In Dixit's model, a firm at any given time has an option to enter a host if it had not been operating there already, exit the market if it was operating, or stay put, wait for another period and then decide. The level of entry and exit costs play crucial roles in a firm's decision about which option to take. Specifically, Dixit shows that as the level of exit costs increases, firms deciding whether or not to enter are more likely to stay out of the market.

It is worth illustrating in a bit more detail how one arrives at that conclusion. Assume that a foreign firm enters a market by committing a lump sum $h$ which one can think of as the sunk cost of entry. A host country government may try to foster entry by offering investment incentives $g$ which are aimed at reducing the sunk cost of entry. Hence, net entry costs equal $s = h - g > 0$.[9] While producing, a firm faces variable cost $c$. Upon exit, there is a cost $k$ which one can think of as severance payments, compliance with firing restrictions, etc. After exiting, a firm would have to incur $s$ again if it decided to re-enter at a later stage. A firm maximises its expected net present value given a depreciation rate of $\delta$. There is uncertainty in the firm's decision due to fluctuations of the market price $P$ which follows some stochastic process.[10]

[8] Campa's (1993) theoretical framework for his analysis of the impact on FDI of uncertainty about exchange rates is also based on Dixit's model. This type of framework is also used in the recent literature on sunk costs and exporting, see, for example, Roberts and Tybout (1997), Clerides et al. (1998) and Bernard and Jensen (2003).

[9] For example, the UK and Ireland offer investment subsidies which are paid as a percentage of capital investment at entry or as a percentage of employment. The latter may at least be partly sunk costs if one views labor as a quasi-fixed factor as in Oi (1962). Also, tax incentives may be thought of as being aimed at reducing sunk capital costs.

[10] Dixit (1989) assumes it follows a Brownian motion but also shows that other types of fluctuations, e.g., mean reverting process produce similar results.

One can interpret as a firm exercising an option to invest, the option price being equal to the sunk cost of investment $s$. Similarly, exit is an option to divest with option price $k$. In this scenario, there are two decision variables $P_{en}$ and $P_{ex}$. If the market price $P$ rises above $P_{en}$ it is beneficial for the firm to exercise the option and enter, while a firm should exit if $P$ falls below $P_{ex}$. At any given time the firm can be in two possible states, either active in the host country (1) or not (0).

In the latter state, the firm decides whether to remain inactive or enter; it will do so if $P_{en}$ satisfies the value matching condition[11]

$$V_0(P_{en}) = V_1(P_{en}) - s \qquad (1)$$

where $V_0(P)$ is the net present value of starting with $P$ in the inactive state and following optimal policies, and similarly for $V_1(P)$ in the active state. That is, the firm would enter if the present value from entering minus the cost of entry is at least equal to the present value from staying out.[12]

If the firm is already active in the host country it decides whether to stay or exit. This, in turn, depends on the present value from staying compared to the present value from exiting minus the exit cost,

$$V_1(P_{ex}) = V_0(P_{ex}) - k \qquad (2)$$

$V_1(P)$ is shown to depend negatively on the level of variable production costs and uncertainty about the output price.

Totally differentiating the explicit functional forms of the above two equations, one can show that as $s$ or $k$ increase, $P_{ex}$ decreases and $P_{en}$ increases. Hence, increases in exit cost or reductions in investment incentives (for constant levels of sunk entry cost) widen the band of

[11] Strictly speaking, $P_{en}$ must also satisfy a smooth pasting condition, see Dixit (1989, p. 627).
[12] In that case, the return to the firm is the expected capital gain accruing on the asset held for future investment.

inaction, where firms find it neither optimal to enter if they are inactive, or exit if they are active.

From this we can derive the hypothesis that reductions in investment incentives (i.e., lower grants or higher taxes) which increase sunk entry costs and/or increases in exit costs may be expected to reduce the level of foreign direct investment in a host country. This is due to lower entry of new foreign affiliates, since the threshold price for entry increases, and the lack of new investment by foreign firms already located in the host country, as they find it optimal to remain as they are. In the following sections we set out to test this hypothesis empirically.

## 3 Description of the data

In order to check whether there is empirical support for the above hypothesis, we relate US outward FDI stocks to the level of investment incentives and exit costs in a number of host countries.[13] The theoretical model does not distinguish between greenfield or acquisition FDI, or new investments by parent companies in foreign affiliates already located in the host and, hence, the FDI measure appears appropriate for our analysis. It could be argued that one should analyse firm or plant level data on multinationals' entry and exit decisions and relate these to corresponding micro data on tax payments, subsidies and exit costs. However, such data are not available. Moreover, since firing costs and taxation are usually constant (or very similar) across industries and firms, as they are set by national legislation, the use of country level data is appropriate.

Our empirical analysis uses data on the stock of outward foreign direct investment in manufacturing industries by US multinational firms in 33 host countries. A list of host

[13] As pointed out above, only taxes are considered as investment incentives, mainly due to data constraints.

countries is given in Table 1. The US FDI data are available from the 1970s onwards from the Bureau of Economic Analysis (BEA) at the US Department of Commerce.[14]

The level of US FDI stocks is related to measures of profit taxation (as a proxy for investment incentives) and exit costs affecting multinationals. Taxation is measured using data for effective tax rates for US multinationals available from Grubert and Mutti (2000). They use US corporate income tax returns to calculate "[a]verage host country corporate tax rates […] by taking total income taxes paid by manufacturing CFCs [controlled foreign corporation] incorporated in that country divided by their total earnings and profits" (Grubert and Mutti, 2000, p. 830).[15] The data published in Grubert and Mutti (2000) are for 1984, 1986, 1990 and 1992. John Mutti generously made data available for 1988, 1994 and 1996 also.

Exit costs are difficult to measure as they include a variety of components. We proxy exit costs via a country level index on the magnitude of hiring and firing costs in each country. The index itself, which does not appear to have been used in the literature thus far, is constructed from extensive surveys of managers in 47 countries conducted by the *World Economic Forum*. In 1999, the *World Competitiveness Yearbook* reports that 4,160 managers participated. In the survey, participants are asked to give a score between 0 and 1 in response to a number of questions describing the overall business climate and competitiveness of the country in which the firm operates. The particular question for the index used here is: "Hiring and firing practices are too restricted by government or are flexible enough". The higher the index the more business friendly respondents judge these practices. The index is available to us from 1986 to 1996.

[14] Nominal values are deflated and expressed in 1995 US$ using a GDP deflator.

[15] An obvious question is whether the average tax rate is, indeed, the relevant measure for taxation. Arguably, the average tax rate is appropriate for the decision of whether to enter a country, while for expansions of existing operations in the host country, the marginal tax rate may be more relevant. Unfortunately, we do not have data

Combining the data from these different data sources yields a country panel dataset for US outward FDI for the years 1986, 1988, 1990, 1992, 1994 and 1996.

Table 1 reports summary statistics on average levels of taxation and exit cost indices to provide an overview of the variation in the two variables across host countries. It is clear that the US, as the home country, has one of the most liberal hiring and firing regimes, surpassed only by Hong Kong and Singapore. By contrast, EU countries, with the exception of the UK, score fairly low on this index; all of them have indices well below the overall sample mean. India appears to have the highest level of exit costs in the sample. The average effective rate of taxation is also fairly high among EU countries, although there is the obvious exception of Ireland. Japan is the country with the highest rate of taxation, however.

*[Table 1 here]*

As the figures reported in Table 2 show, most countries increased their firing cost index (i.e., liberalised firing practices) and reduced their effective rate of taxation between 1986 and 1996. The most striking example is New Zealand, which increased its firing index by 45 decimal points (equivalent to a 169 percent increase), and experienced a decrease in its effective tax rate by 33 decimal points (or 76 percent). However, there are also countries which seem to have reduced the flexibility of firing practices, such as India, Korea and, most notably from a European perspective, Italy. Furthermore, a number of countries increased their effective tax rate – for example, Singapore by 2 percentage points (equivalent to a 110 percent increase) between 1986 and 1996. Ireland experienced an even higher increase in both absolute and percentage terms. However, in both cases, these represent increases from very low bases.

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available on the marginal tax rate and hence follow the related literature, such as Grubert and Mutti (2000) and Hubert and Pain (2001) by using a measure of the average tax rate.

*[Table 2 here]*

## 4 Econometric analysis and results

In line with related literature (e.g., Keller and Levinson, 2002 and Wei, 2000), the core empirical equation to be estimated is

$$FDI_{it} = \lambda_0 FDI_{it-1} + \lambda_1 \tau_{it} + \lambda_2 \kappa_{it} + \lambda_3 X_{it} + \upsilon_t + \mu_i + \varepsilon_{it} \qquad (3)$$

where *FDI* is the log of US FDI stocks (in 1995 US $) in host country *i* at time *t* and *t*-1, respectively. The lagged dependent variable is included to pick up intertemporal correlation in FDI due to, for example, agglomeration effects that may attract MNFs to a particular location (see, e.g., Wheeler and Mody, 1992, Barrell and Pain, 1999). The variable $\tau$ is the log effective average tax rate, $\kappa$ is the log firing cost index and $\upsilon$ is a full set of time dummies. Given that the data form essentially a short country panel the empirical estimation allows for the presence of a time-invariant country specific effect $\mu$.[16] The remaining error term $\varepsilon$ is assumed to be white-noise.

The vector *X* includes a number of other host country variables which can be expected to impact on FDI. These include the log of GDP and log GDP per capita, to control for differences in market size and purchasing power, although the latter variable may also be thought of as being a proxy for average labor cost in a model with labor being the only factor of production. The two GDP variables are in constant 1995 US $ taken from the World Bank's *World Development Indicators*. Also, to be sure that the coefficients on $\tau$ and $\kappa$ do not merely pick up correlations with other costs of investment in the host country we include a proxy for

[16] Taking account of this country specific time invariant effect means that no other country specific time invariant variables, such as distance, language dummy, regional dummy etc are included in the model.

investment costs in *X*. These are calculated as a simple average of several indices of impediments to investment, also taken from the *World Economic Forum*.[17]

First differencing equation (3) allows us to purge the unobserved firm specific effect μ. However, due to the inclusion of the lagged dependent variable, performing OLS on the first differenced version of (3) will render biased and inconsistent estimates; see Baltagi (2001). To avoid this equation (3) is estimated with the linear generalised methods of moments (GMM) estimator as proposed by Arellano and Bond (1991). This estimator uses appropriate lagged levels of the dependent variable and of independent variables as instruments for the equation in first differences.

Equation (3) is estimated pooling the bi-annual data for 1986 to 1996 for all host countries. When applying the GMM estimator one has the choice of using both a one step and a two step procedure to arrive at estimates of the model in question. Arellano and Bond (1991) show that the asymptotic standard errors from two step estimations may be a poor guide for hypothesis testing. However, the two step estimations are preferred for inference on model specification, specifically, the Sargan test for instrument validity and the test for second-order autocorrelation.[18] Hence, we present coefficients and standard errors from the one step estimations, while the Sargan and AR(2) tests are calculated based on the two step estimates.

Estimation results are presented in Table 3. Note that the lagged dependent variable is statistically significant and positive in both specifications, indicating that the dynamic specification is appropriate. Column (1) shows results for a specification of equation (3) excluding the investment cost variable, while column (2) includes this. The robust coefficients

[17] See the appendix for a description of that index. A similar, though not identical, measure was used by Amiti and Wakelin (2003).
[18] Note that the consistency of the estimates rests on the assumption that there is no second order correlation of the residuals of the first-differenced equation (Arellano and Bond, 1991).

on the exit cost index and the tax rate in both specifications indicate that these variables do not pick up effects associated with the general cost of investing in the host country, which is controlled for in column (2).[19]

Turning our attention to the coefficients on exit costs and taxation, it is clear from columns (1) and (2) that both are important and have the anticipated effects. The results in column (2) show that an increase in the exit cost index (i.e., a lowering of firing cost restrictions) by one percent raises FDI by 0.39 percent. Similarly, a reduction in the tax rate by 1 percent increases FDI by 0.23 percent.

Taking these point estimates at face value we can conduct simple thought experiments asking questions like: if a country wants to increase its tax rate but maintain its current level of FDI, by how much would it have to increase its exit cost index? In the example of column (2) if a country were to increase its tax rate by 5 percent it would have to achieve an increase in its exit cost index by 2.9 percent to maintain its value of inward US FDI stocks, all other things being equal. More specifically, if a country with a low tax rate but relatively high exit cost index, for example Ireland, were able to increase its exit cost index to the level of the US (i.e., by 45 percent from 0.490 to 0.708) it could afford to increase its effective rate of taxation by 77percent and keep its level of US FDI stocks constant.[20]

*[Table 3 here]*

The basic specification estimated in Table 3 constrains the effect of investment incentives and exit costs to be equal across countries. This might be a stringent assumption. In particular, from the theoretical framework one may expect differences in the effects of these two variables on FDI across countries with high as opposed to low levels of uncertainty, given

[19] Note that the pair-wise correlation coefficients for the firing cost index and tax rate with the investment cost index are –0.07 and 0.04, respectively and are not statistically significant in either case.

that uncertainty is a crucial influence on a firm's decision of whether or not to exercise its option. In order to take account of this, we first assume that degrees of uncertainty are different between developed and developing countries, with the latter being more risky at least for manufacturing activities due to economic and political instability.

Hence, we calculate a *developing country dummy* = 1 if the host country is a developing country, defined as a low or middle income country according to the World Bank classification. This dummy is then interacted with the exit cost and investment cost indices and the tax variable in order to allow the coefficients on these variables to differ for the two groups of countries. Our results are reported in columns (1) and (2) of Table 4. The results still show a strong positive effect of the exit cost index for developed and developing countries and a negative, though statistically insignificant, coefficient on the tax rate, but no differential effect across the two groups of countries for any of the variables.

To investigate further potential differences in uncertainty across groups of countries, we include an index of economic risk in the regression. This variable is included to proxy for country specific risks like possible expropriation of assets, insecurity of property rights and contracts, and so on. The data for this variable are taken also from the *World Economic Forum* and range from 0 to 1 with higher values indicating lower risk. Based on this index we calculate a dummy variable for risky countries equal to 1 if the economic risk index is below the median value (0.375) in the sample and zero otherwise. This dummy is interacted with the exit cost index, tax rate and the investment cost variable.

Our results are presented in columns (3) and (4) of Table 4. The strong result on the exit cost index remains robust, indicating that countries with more liberal firing restrictions are able to attract more FDI. We do not find statistically significant evidence that this coefficient

[20] 0.389*((0.708-0.490)/0.490)/0.227

varies with country specific risk. The coefficient on the tax rate is also still statistically significant and negative, as expected. However, the associated interaction term now suggests that the effect of the tax rate is less for countries with high (relative to the sample median) levels of perceived economic risk. This suggests that the tax rate is not an important deterrent for FDI in countries with relatively high levels of economic risk.

*[Table 4 here]*

## 5 Conclusions

This paper investigates the trade off between investment incentives and exit costs for the location of foreign direct investment (FDI). While some recent theoretical work has focused on this, there does not appear to have been any empirical work in this area. This paper attempts to fill that gap. Our analysis considers the effect of profit taxation (as a measure of investment incentives) and an index of hiring and firing costs (proxying exit costs) on the location of US outward FDI in 33 host countries for the period 1986 to 1996. Given that the data are on FDI stocks a dynamic model of the determinants of FDI is estimated using a generalised methods of moments (GMM) estimation technique.

The empirical results are as follows. US FDI is positively affected by investment incentives and low levels of firing costs. These results are robust to a number of different empirical specifications. In particular, they do not change following the inclusion of other measures of investment costs in the host country, and allowing for different coefficients for developed and developing countries, or countries with relatively high and low levels of perceived economic risk.

Our results point to an important, yet heretofore neglected conclusion. If countries want to attract FDI, in particular in manufacturing, providing incentives may not be enough;

exit costs also need to be at a level attractive to MNFs. This includes, for example, such factors as redundancy payments and ease of firing of workers. Of course, these are exactly the issues currently being debated in the context of potential reform of European labor markets. FDI may provide another angle from which to look at the issue of reforming labor markets in order to remain competitive as a location for international production.

So what about *Hotel California*? It seems that just having a "lovely place" may not be enough to win new customers, they also need to be able to check-out easily whenever they like.

**References**


Amiti, M. and K. Wakelin (2003), Investment liberalization and international trade, *Journal of International Economics*, Vol. 61, pp. 101-126.

Arellano, M. and S. Bond (1991), Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations, *Review of Economic Studies*, Vol. 58, pp. 29-51.

Baltagi, B.H. (2001), *Econometric analysis of panel data*, 2nd edition. New York: Wiley.

Barrell, R. and N. Pain (1999), Domestic institutions, agglomerations and foreign direct investment in Europe, *European Economic Review*, Vol. 43, pp. 925-934.

Bernard, A.B. and J.B. Jensen (2003), Why some firms export, *Review of Economics and Statistics*, forthcoming.

Campa, J.M. (1993), Entry by foreign firms in the United States under exchange rate uncertainty, *Review of Economics and Statistics*, Vol. 75, pp. 614-622.

Clerides, S.K., S. Lach and J.R. Tybout (1998), Is learning by exporting important? Micro-dynamic evidence from Colombia, Mexico, and Morocco, *Quarterly Journal of Economics*, Vol. 113, pp. 903-948.

Devereux, M.P. and R. Griffith (1998), Taxes and the location of production: Evidence from a panel of US multinationals, *Journal of Public Economics*, Vol. 68, pp. 335-367.

Dewit, G., D. Leahy and C. Montagna (2003), Employment protection and foreign direct investment in dynamic oligopoly, CEPR Discussion Paper 3871.

Dixit, A. (1989), Entry and exit decisions under uncertainty, *Journal of Political Economy*, Vol. 97, pp. 620-638.

Flamm, K. (1984), The volatility of offshore investment, *Journal of Development Economics*, Vol. 16, pp. 231-248.

Görg, H. and E. Strobl (2003), Footloose multinationals?, CEPR Discussion Paper 3402.

Grubert, H. and J. Mutti (2000), Do taxes influence where U.S. corporations invest?, *National Tax Journal*, Vol. 53, pp. 825-839.

Haaland, J.I. and I. Wooton (2002), Multinational investment, industry risk and policy competition, CEPR Discussion Paper 3152

Haaland, J.I., I. Wooton and G. Faggio (2003), Multinational firms: Easy come, easy go?, *FinanzArchiv*, Vol. 59, pp. 3-26.

Haskel, J.E., S.C. Pereira and M.J. Slaughter (2002), Does inward foreign direct investment boost the productivity of domestic firms?, NBER Working Paper 8724.

Haufler, A. and I. Wooton (1999), Country size and tax competition for foreign direct investment, *Journal of Public Economics*, Vol. 71, pp. 121-139.

Head, K. (1998), Comment on `Comparing Wages, Skills, and Productivity between Domestically and Foreign-Owned Manufacturing Establishments in the United States´, in

Baldwin, R., R. Lipsey and J.D. Richardson (eds.), *Geography and Ownership as Bases for Economic Accounting*, Chicago University Press, pp. 255-258.

Head, K.C., J.C. Ries and D.L. Swenson (1999), Attracting foreign manufacturing: Investment promotion and agglomeration, *Regional Science and Urban Economics*, Vol. 29, pp. 197-218.

Hines, J.R. (1996), Altered states: Taxes and the location of foreign direct investment in America, *American Economic Review*, Vol. 86, pp. 1076-1094.

Hubert, F. and N. Pain (2002), Fiscal incentives, European integration and the location of foreign direct investment, *The Manchester School*, Vol. 70, pp. 336-363.

Jackman, R., R. Layard and S. Nickell (1996), Combating unemployment: Is flexibility enough?, in *Macroeconomic policies and structural reform*, OECD, Paris.

Keller, W. and A. Levinson (2002), Pollution abatement costs and foreign direct investment inflows to the U.S. States, *Review of Economics and Statistics*, Vol. 84, pp. 691-703.

Kind, H.J., K.H. Midelfart Knarvik and G. Schjelderup (2000), Competing for capital in a 'lumpy' world, *Journal of Public Economics*, Vol. 78, pp. 253-274.

Lazear, E. (1990), Job security provisions and employment, *Quarterly Journal of Economics*, Vol. 105, pp. 699-726.

Lipsey, R.E. (2002), Foreign direct investment and the operations of multinational firms: Concepts, history and data, NBER Working Paper 8665.

Oi, W.Y. (1962), Labor as a quasi-fixed factor, *Journal of Political Economy*, Vol. 70, pp. 538-555.

Roberts, M.J. and J.R. Tybout (1997), The decision to export in Colombia: An empirical model of entry with sunk costs, *American Economic Review*, Vol. 87, pp. 545-564.

Wei, S.-J. (2000), How taxing is corruption on international investors?, *Review of Economics and Statistics*, Vol. 82, pp. 1-11.

Wheeler, D. and A. Mody (1992), International investment location decisions: The case of U.S. firms, *Journal of International Economics*, Vol. 33, pp. 57-76.

## Appendix: Description of the investment cost index

The index is a simple average of indices on the following scores:

1. Foreign investor control: “Foreign investors may not acquire control in a domestic company or are free to acquire control in a domestic company”

2. Immigration laws: “Immigration laws prevent your company from employing foreign skills or do not prevent your company from employing foreign skills”

3. Cross-border ventures: “Cross border ventures cannot be negotiated with foreign partners without government imposed restraint or can be negotiated freely”

4. Anti-trust laws: “Anti trust laws do not prevent unfair competition in your country or do prevent unfair competition in your country”

5. Justice: “There is no confidence in the fair administration of justice in the society or there is full confidence in the fair administration of justice in society”

6. State control: “State control of enterprise distorts fair competition in your country or does not distort fair competition in your country”

7. Local capital markets: “Local capital markets are not accessible to foreign companies or are equally accessible to domestic and foreign companies”

8. Foreign capital markets: “Access to foreign capital markets is restricted for domestic companies or is not restricted for domestic companies”

9. Intellectual property rights: “Intellectual property rights are inadequately protected in your country or is adequately protected in your country”

**Table 1: Mean values of firing cost index and effective tax rate by country (1986-1996)**

| | Firing cost index | | Effective tax rate | |
|---|---|---|---|---|
| Country | mean | std.dev. | mean | std.dev. |
| AUSTRALIA | 0.473 | 0.136 | 0.323 | 0.044 |
| AUSTRIA | 0.460 | 0.068 | 0.353 | 0.188 |
| BLEU | 0.411 | 0.036 | 0.268 | 0.061 |
| BRAZIL | 0.620 | 0.075 | 0.209 | 0.088 |
| CANADA | 0.606 | 0.043 | 0.328 | 0.041 |
| CHILE* | 0.673 | 0.007 | 0.097 | 0.027 |
| COLOMBIA* | 0.550 | 0.020 | 0.288 | 0.040 |
| FINLAND | 0.475 | 0.025 | 0.231 | 0.087 |
| FRANCE | 0.415 | 0.083 | 0.292 | 0.078 |
| GERMANY | 0.425 | 0.042 | 0.320 | 0.090 |
| GREECE | 0.377 | 0.072 | 0.282 | 0.045 |
| HONG KONG | 0.830 | 0.058 | 0.107 | 0.021 |
| INDIA | 0.279 | 0.062 | 0.362 | 0.056 |
| INDONESIA# | 0.508 | 0.088 | 0.309 | 0.035 |
| IRELAND | 0.490 | 0.074 | 0.053 | 0.026 |
| ITALY | 0.322 | 0.069 | 0.334 | 0.035 |
| JAPAN | 0.560 | 0.028 | 0.499 | 0.047 |
| KOREA | 0.508 | 0.076 | 0.307 | 0.085 |
| MALAYSIA | 0.624 | 0.053 | 0.123 | 0.075 |
| MEXICO | 0.505 | 0.031 | 0.266 | 0.068 |
| NETHERLANDS | 0.381 | 0.046 | 0.236 | 0.069 |
| NEW ZEALAND | 0.575 | 0.254 | 0.255 | 0.135 |
| NORWAY | 0.463 | 0.054 | 0.228 | 0.086 |
| PORTUGAL | 0.346 | 0.049 | 0.265 | 0.015 |
| SINGAPORE | 0.758 | 0.088 | 0.048 | 0.013 |
| SOUTH AFRICA+ | 0.624 | 0.092 | 0.358 | 0.084 |
| SPAIN | 0.307 | 0.039 | 0.236 | 0.035 |
| SWEDEN | 0.414 | 0.053 | 0.287 | 0.195 |
| SWITZERLAND | 0.698 | 0.098 | 0.135 | 0.032 |
| THAILAND | 0.693 | 0.046 | 0.230 | 0.068 |
| TURKEY | 0.598 | 0.122 | 0.373 | 0.085 |
| UK | 0.673 | 0.108 | 0.254 | 0.063 |
| VENEZUELA+ | 0.465 | 0.056 | 0.226 | 0.090 |
| US | 0.708 | 0.034 | | |
| OVERALL MEAN | 0.510 | 0.155 | 0.248 | 0.123 |

Notes: The table reports simple unweighted means
Means and std.devs. for firing cost index relate to * 1994-1996; + 1992-1996; # 1988-1996

**Table 2: Changes in firing cost index and effective tax rate between 1986 and 1996 by country**

| | Firing cost index | | Effective tax rate | |
|---|---|---|---|---|
| Country | percentage | absolute | percentage | absolute |
| AUSTRALIA | 0.760 | 0.200 | -0.161 | -0.060 |
| AUSTRIA | 0.158 | 0.063 | 0.303 | 0.071 |
| BLEU | -0.099 | -0.039 | -0.435 | -0.165 |
| BRAZIL | 0.314 | 0.166 | -0.531 | -0.154 |
| CANADA | 0.105 | 0.058 | -0.230 | -0.088 |
| CHILE* | -0.017 | -0.012 | 0.012 | 0.001 |
| COLOMBIA* | 0.052 | 0.028 | -0.332 | -0.117 |
| FINLAND | -0.028 | -0.013 | -0.475 | -0.169 |
| FRANCE | 0.499 | 0.136 | -0.423 | -0.167 |
| GERMANY | 0.095 | 0.036 | -0.376 | -0.180 |
| GREECE | 0.554 | 0.154 | 0.455 | 0.102 |
| HONG KONG | 0.166 | 0.127 | 0.219 | 0.021 |
| INDIA | -0.429 | -0.150 | -0.268 | -0.108 |
| INDONESIA# | 0.633 | 0.229 | -0.151 | -0.053 |
| IRELAND | 0.436 | 0.157 | 1.266 | 0.043 |
| ITALY | -0.174 | -0.059 | -0.017 | -0.006 |
| JAPAN | 0.087 | 0.047 | -0.100 | -0.050 |
| KOREA | -0.134 | -0.079 | -0.233 | -0.063 |
| MALAYSIA | 0.054 | 0.031 | -0.748 | -0.200 |
| MEXICO | -0.038 | -0.021 | -0.487 | -0.147 |
| NETHERLANDS | 0.037 | 0.013 | -0.523 | -0.177 |
| NEW ZEALAND | 1.693 | 0.445 | -0.758 | -0.332 |
| NORWAY | 0.175 | 0.070 | -0.523 | -0.189 |
| PORTUGAL | 0.496 | 0.134 | 0.132 | 0.032 |
| SINGAPORE | 0.305 | 0.198 | 1.109 | 0.028 |
| SOUTH AFRICA+ | -0.242 | -0.166 | -0.219 | -0.063 |
| SPAIN | 0.014 | 0.004 | -0.252 | -0.070 |
| SWEDEN | 0.129 | 0.044 | -0.771 | -0.428 |
| SWITZERLAND | 0.304 | 0.182 | -0.321 | -0.059 |
| THAILAND | 0.094 | 0.059 | -0.185 | -0.052 |
| TURKEY | 0.397 | 0.203 | 0.016 | 0.007 |
| UK | 0.490 | 0.240 | -0.339 | -0.126 |
| VENEZUELA+ | -0.177 | -0.094 | -0.541 | -0.162 |
| US | -0.041 | -0.028 | | |
| OVERALL MEAN | 0.142 | 0.065 | -0.288 | -0.086 |

Notes: The table reports simple unweighted means
Growth rates for firing cost index relate to * 1994-1996; + 1992-1996; # 1988-1996

**Table 3: Regression results for dynamic panel data regression**

| | (1) | (2) |
|---|---|---|
| lagged FDI stock | 0.758 | 0.697 |
| | (0.144)*** | (0.206)*** |
| exit cost index | 0.350 | 0.389 |
| | (0.184)* | (0.225)* |
| effective tax rate | -0.179 | -0.227 |
| | (0.106)* | (0.123)* |
| investment cost index | | -0.337 |
| | | (0.383) |
| GDP | 0.503 | 2.538 |
| | (0.336) | (1.510)* |
| GDP per capita | 0.257 | -1.387 |
| | (0.374) | (1.696) |
| Constant | -0.018 | -0.097 |
| | (0.035) | (0.054)* |
| Sargan test (p-value) | 0.08 | 0.25 |
| AC(2) (p-value) | 0.35 | 0.60 |
| Observations | 144 | 95 |

Notes:
Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Coefficients are from one-step estimates, Sargan and AC(2) tests are from two step estimations

**Table 4: Regression results including interaction terms**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | fdiman | Fdiman | Fdiman | fdiman |
| lagged FDI stock | 0.814 | 0.761 | 0.763 | 0.787 |
| | (0.156)*** | (0.222)*** | (0.138)*** | (0.208)*** |
| exit cost index | 0.533 | 0.532 | 0.543 | 0.497 |
| | (0.217)** | (0.239)** | (0.200)*** | (0.250)** |
| exit cost index * interaction | -0.512 | -0.474 | -0.171 | -0.057 |
| | (0.425) | (0.536) | (0.197) | (0.239) |
| effective tax rate | -0.155 | -0.210 | -0.226 | -0.362 |
| | (0.137) | (0.149) | (0.105)** | (0.134)*** |
| effective tax rate * interaction | -0.078 | -0.077 | 0.305 | 0.753 |
| | (0.222) | (0.267) | (0.103)*** | (0.247)*** |
| investment cost index | | -0.435 | | 0.148 |
| | | (0.441) | | (0.414) |
| investment cost index * interaction | | 0.205 | | -0.755 |
| | | (0.663) | | (0.364)** |
| GDP | 0.471 | 2.388 | 0.432 | 3.308 |
| | (0.348) | (1.806) | (0.328) | (1.482)** |
| GDP per capita | 0.272 | -1.074 | 0.217 | -2.428 |
| | (0.385) | (1.891) | (0.363) | (1.668) |
| Constant | -0.030 | -0.115 | 0.305 | -0.102 |
| | (0.037) | (0.059)* | (0.103)*** | (0.055)* |
| Sargan test (p-value) | 0.10 | 0.19 | 0.10 | 0.57 |
| AC(2) (p-value) | 0.40 | 0.65 | 0.13 | 0.96 |
| Observations | 144 | 95 | 144 | 95 |

Notes:
Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
Coefficients are from one-step estimates, Sargan and AC(2) tests are from two step estimations
Interaction terms in columns (1) and (2) are with developing country dummy, in columns (3) and (4) with economic risk dummy