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Tax Competition and Foreign Direct Investment: assessing the role of market potential and trade costs in a "Footloose Capital" framework

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Tax Competition and Foreign Direct Investment: assessing the role of market potential and trade costs in a "Footloose Capital" framework.

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Abstract

This paper investigates the impact of the corporate income tax on the geographical distribution of French firms Foreign Direct Investment portfolio across 26 European countries. The empirical assessment is based on Baldwin (1999) new economic geography model in which we focus on the location of firms with respect to level of taxation. In this model, the magnitude of the impact of taxation on location decision partly depends on the market size and the level of trade costs. Indeed, firms may not only seek lower production costs but better market access and market opportunity when investing abroad. Through panel data regressions, we find a negative impact of the corporate income tax rate on Foreign Direct Investment. We also find that trade costs between source and host country increases Foreign Direct Investment. In advanced specifications we show that increasing trade costs reduce the impact of tax level on capital location.

Keywords: Corporate taxation, Firm-level data, Foreign Direct Investment, Trade Costs.
JEL codes: F23, H25, F21, R38, C33

1 Introduction

For fifty years, European integration has been reducing barriers on trade, capital and human flows between member states, allowing for greater transparency for consumers and producers across Europe. Still, most economic areas remain within the competence of member states and there is scope for competition across governments. Amongst these areas, taxation, fiscal policy, and labour

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regulation are still determined by national governments. In such a framework, many studies have been focusing on the impact of taxation and find that when the tax base is mobile (such as capital) tax policies may impact on capital location (see for instance Wilson 1999 for a survey). In such a case capital would move where tax rates are low and this might lead to a "race to the bottom" between governments (Markusen et al. 1996) creating distortions in both the tax level and the financing of public good.

Since Krugman (1991), Krugman and Venables (1995) and Venables (1996) and the emergence of "new economic geography" models, tax competition studies have taken a new path where increasing returns in production, and agglomeration have a major impact on capital location. Indeed, firm will tend to move where demand is located rather than where production costs are low. With a proximity-concentration trade-off, the relation between tax rates and attractiveness need not be linear and the considering agglomeration externalities may lead to different results compared with standard tax competition models.

To date, few theoretical papers have handled tax competition through economic geography models. Amongst them, three papers from Baldwin and Krugman (2000), Ludema and Wooton (2000) and Anderson and Forslid (2003) have shown that within an economic geography framework and in the presence of rents of agglomeration, dominant countries may be able to increase the tax rate on the mobile factor while keeping firms in the home market. It clearly shows that the "race to the bottom" hypothesis weakens with these new models.

In the empirical literature, many FDI determinants have been highlighted. Brainard (1997), and Hanson et al. (2001) evaluate the impact of trade costs on FDI. It appears that horizontal FDI is encouraged by increasing trade costs while vertical FDI is limited by high trade costs. The size of the market is shown to be a fundamental factor of attraction for multinational firms (Markusen and Maskus 2002). Indeed, most FDI flows go towards large markets. The influence of factor cost differentials, especially the costs of labour still raises controversy. In the classical analysis, high labour cost, possibly due to the presence of strong trade unions, increasing wage above its equilibrium value, reduces operational profit, and discourages capital inflows (Clark 1984). However, recent research has found a positive effect of labour cost on FDI, emphasising the fact that high wages increase purchasing power (Javorcik and Spatareanu 2005). Turning to taxation as a determinant of FDI, a large empirical work has been done amongst others by Devereux and Griffith (1998, 2002) based on US multinationals, showing that high tax rates decrease FDI attraction.

Most empirical papers focusing on FDI are based either on aggregated data of bilateral FDI flows or on US firms individual data. Only recently have a few papers using German or Japanese firms level data emerged (Buch et al. 2005 Head et al. 1999; Head and Mayer 2004; Büttner and Ruf 2007).

In this paper, we aim at bringing Baldwin's (1999) "Footloose Capital" model and Baldwin and Krugman (2000) to the data. We focus on productive capital distribution over possible location depending on "freeness of trade", demand size, agglomeration forces and corporate tax. To what extent does freeness of trade lead to agglomeration? Can large host countries maintain higher tax rates thanks to their potential demand?

We study the impact of the corporate income tax (CIT) on the geographical distribution of French firms FDI portfolio across 26 European countries. Thus, not only do we focus on firms location, but we also analyse how they spread their capital over several possible locations. To achieve this, we use a new longitudinal database of 1447 French firms surveyed between 1998 and 2003 by the French Central Bank.

The paper is constructed as follows. Section 2 presents elements of theory we aim at assessing. Section 3 tests the model empirically. Section 4 analyses the results and concluding remarks are proposed in section 5.

2 Theoretical framework

2.1 Assumptions

Our empirical assessment confronts Baldwin (1999) "Footloose Capital" and Baldwin & Krugman (2000) models to the data. These models are more tractable in many ways than Krugman (1991) "Core-Periphery" (see Baldwin et al. 2003 for a comparison). Due to the assumption of capital mobility and labour immobility (which is quite consistent with the current situation within Europe, as well as between Europe and the rest of the world) the model can be solved analytically.

The theory considers two countries (north and south), two sectors (agriculture and manufacturing) and two productive factors. Labour is immobile across countries, capital is supposed to be perfectly mobile but capital owners are immobile. This assumption implies that capital reward is re-imported to capital-owners country. The agricultural sector is characterised by constant returns to scale and perfect competition. Moreover, the agricultural good is traded freely, leading to the equalisation of labour prices. The manufacturing sector is characterised by Dixit-Stiglitz monopolistic competition and increasing returns to scale.

In the Footloose Capital model, the spatial division of industries is driven by two main principles. First, the level of income (which is proportional to the level of capital owned by a country) and the resulting level of demand will drive industries to countries where potential demand is sufficiently high to benefit from increasing returns. Second, in the case of free mobility of goods, firms will tend to agglomerate in a single production location due to increasing returns.

Conversely, the higher the trade costs in goods, the more firms will disaggregate production and produce close to the market.

2.2 Baldwin's long-run equilibrium and location decision

In order to determine the division of production, capital owners (or firms) will estimate their expected profits in both locations. Profit in the north equals to the weighted sum of demand in the north and demand in the south:

$$\begin{aligned} \pi &= b\left[\frac{e}{\Delta} + \phi\frac{(1-e)}{\Delta^*}\right] \\ \text{with } \Delta &= n + \phi(1-n) \\ \Delta^* &= \phi n + (1-n) \\ b &= \frac{\mu}{\sigma}\frac{E^w}{K^w} \\ 0 &\leqslant \phi \leqslant 1 \end{aligned} \tag{1}$$

where e is the relative income (or wealth) in the north (i.e. the relative demand), n is the relative number of firms (or capital) located in the north as the model considers one firm as one unit of capital producing one variety. Then, Δ represents the number of varieties available for consumers in the north on which they will spend their income. The analogous Δ^* holds for the south. b is a constant term including the share of the manufactured good in total consumption (μ), the demand elasticity between varieties (σ), the total income (E^w) and the total amount of capital (K^w). ϕ measures the degree of trade freeness. When $\phi = 1$ trade in goods is perfectly free. Conversely, if $\phi = 0$ no trade can occur and the varieties are limited to domestic ones, n in the north and $1-n$ in the south. Moreover, when $\phi = 0$ profit the north only depends on northern demand.

The analogous expression holds for profit in the south:

$$\pi^* = b\left[\phi\frac{e}{\Delta} + \frac{(1-e)}{\Delta^*}\right] \tag{2}$$

In the model, capital is perfectly mobile so that profits in the two countries equalise ($\frac{\pi}{\pi^*} = 1$) and the location of production[1] is given by:

$$\begin{aligned} n &= \frac{1}{2} + \Phi\left(e - \frac{1}{2}\right); \\ \text{where } \Phi &= \left(\frac{1+\phi}{1-\phi}\right) \end{aligned} \tag{3}$$

[1] Please refer to Baldwin (1999) for full model description.

The interpretation for (3) is that as trade costs decrease (Φ increases), firms tend to agglomerate in the country where they can benefit from increasing returns and reach all other markets through trade from one main production site. Conversely, as trade costs increase, firms will disseminate their production in the two countries.

In this model, the relative size of capital invested in the north n depends positively on the relative level of northern expenditures e. The level of trade costs emphasises the impact of the market size. This is the "Home Market Effect".

$$\frac{\delta n}{\delta e} = \Phi > 1; \tag{4}$$

The analysis of the interaction between trade costs and market size (4) shows that the lower the trade costs, the greater the impact of the market size on the location of investment. If trade costs are low, the change in the location of capital is more than proportional to the change in the market size.

2.3 Introducing taxation

We now introduce the impact of profit taxation on the location of capital n using Baldwin & Krugman's (2000) results. Keeping the same notations, the relative amount of capital (or firms) invested in the north n in the long-run equilibrium is given by the post tax profit equilisation:

$$\left(\frac{1-t}{1-t^*}\right)\frac{\pi}{\pi^*} = 1 \tag{5}$$

where t and t^* are respectively the northern and the southern corporate income tax rates. We can obtain the new equilibrium value of n and the elasticity of n with respect to the tax rate t:

$$\begin{aligned} n &= \frac{1}{2}\left(1 - T\Phi^2\right); \\ T &= \frac{t-t^*}{2-t-t^*}; \end{aligned} \tag{6}$$

$$\frac{\delta n}{\delta t} = -\frac{1}{4(1-t)}\Phi^2; \tag{7}$$

n depends negatively on the northern tax rate, when CIT rates increase, the after-tax profit reduces so does the incentive for investment. In addition, the "freeness" of trade magnifies the impact of taxation on the location of productive capital.

3 The data

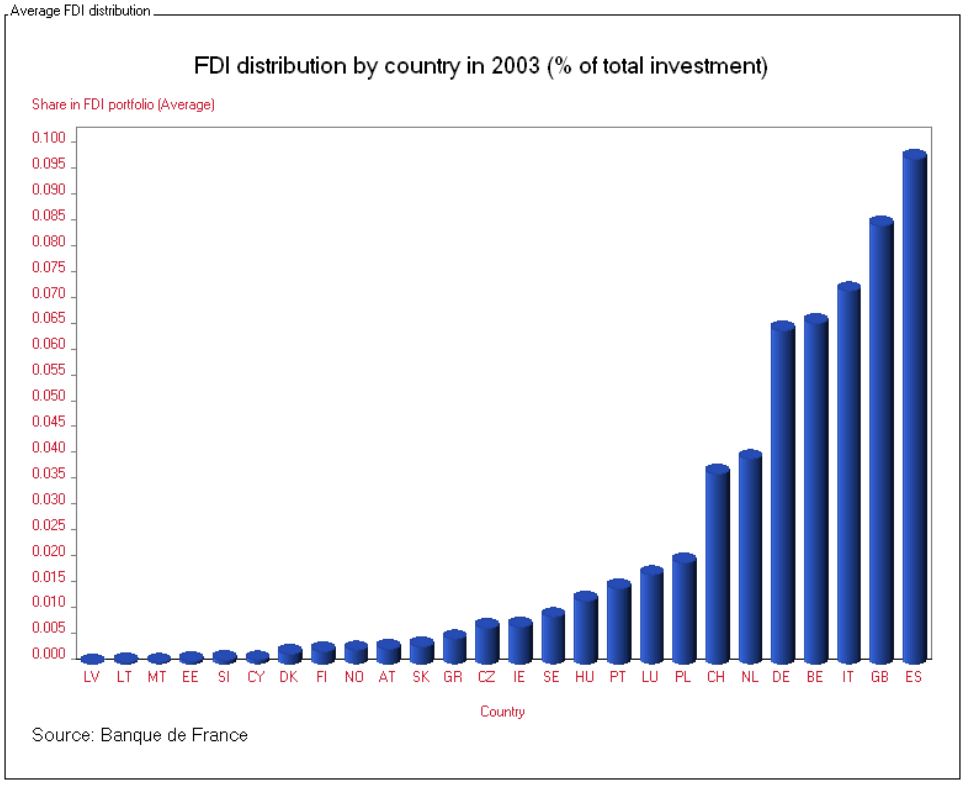
3.1 FDI

Investment data used in this paper are taken from a restricted database provided by the *Banque de France*. This database gives information on the position of French firms investment abroad, the host country of investment, their activity sector, the foreign firm, the amount of capital owned in the foreign firm, the profit. Data are collected annually by the *Banque de France*. Firms that have more than 10 million long-term financial assets are asked to provide information covering their investment abroad. In terms of FDI we consider the stock of capital, including "equity and benefits". Thus highly negative benefits can lead to negative capital (i.e. FDI).

Since we are concerned with the distribution of productive capital over multiple possible locations, the data have been transformed in order to obtain for each firm the distribution of its FDI portfolio across 26 countries. The original database includes 1447 firms. We keep firms investment positions in 26 European countries, over the period 1998-2003. Investment towards these countries accounts for more than 60% of total investment in 2003. Besides criteria imposed by the *Banque de France* for their annual survey, FDI is defined as a national investment in a foreign firm above 10% of the subsidiary equity.

Figure 1 shows the average distribution of FDI across the 26 possible destinations in 2003 (see appendices for the list of countries). On average, almost 50% of a firm's FDI is located in Great Britain, Germany, Italy, Spain, Belgium and Switzerland. Surprisingly, Ireland accounts for only 1% of French firms FDI in 2003.

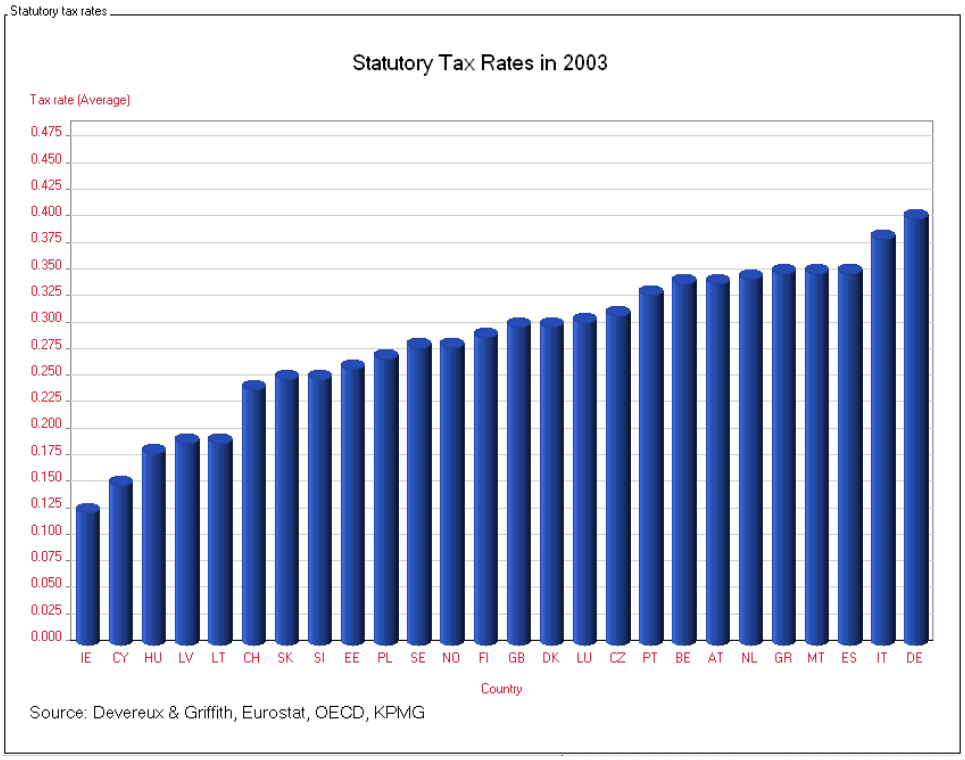
Figure 1:



3.2 Tax rate

We use the statutory CIT rate as the tax variable. The CIT rate does not account for differing tax bases across countries. However, each firm investing abroad may face different tax bases in a same country if we allow for multiple activities. Then, the statutory CIT rate becomes a broad indicator for taxation in destination countries. The tax rate dataset is constructed from different sources, Devereux and Griffith, Eurostat, OECD, KPMG and national sources (see Figure 2).

Figure 2:



3.3 Estimation of the "Freeness of trade" variable.

As shown in the theoretical framework, the "freeness of trade" (the inverse of trade costs) plays an important role in the division of production across countries. The more countries are reachable through trade, the less they will attract investment unless they are large enough to agglomerate industries. How can we assess countries freeness of trade Φ? Our approach is to determinate the bilateral factors (between goods exporters and importers) that modify trade levels above or below their expected values. If we assume that trade levels between i and j depend on each country's characteristics over time, we can express trade levels as:

$$\log X_{ijt} = \alpha + E_{it} + M_{jt} + \mu_t + \epsilon_{ijt} \tag{8}$$

where E_{it} is a dummy variable capturing country i's characteristics over time, and M_{jt} is a dummy variable capturing country j's characteristics over time. i is the potential FDI host country and $j = 1, ...J$ is i's direct or indirect

neighbour. μ_t is a time dummy accounting for annual exogenous shocks, and α is a constant term. ϵ_{ijt} is the error term. This error term will be positive if trade levels are higher than they should be considering i and j's characteristics, due to bilateral factors that are not included as regressors and that increase trade between two countries. We consider this term as exhaustive indicator for bilateral freeness of trade. ϵ_{ijt} can itself be expressed as a linear combination of bilateral variables:

$$\begin{aligned} \epsilon_{ijt} &= \beta_0 + \beta_1 COMLANG_{ij} + \beta_2 \log DIST_{ij} \\ &\quad + \beta_3 CONTIG_{ij} + \beta_4 EUROZONE_{ijt} + \eta_{ijt} \end{aligned} \tag{9}$$

where $COMLANG$ is a binary dummy variable indicating if i and j have a common language, $DIST$ is the geographic distance between the two countries, $CONTIG$ takes the value 1 if the two countries share common borders, and $EUROZONE$ is also a binary dummy variable indicating when the two countries are part of the European Monetary Union. β_0 is a constant term and η_{ijt} the error term.

We can now estimate $\widehat{\epsilon}_{ijt}$:

$$\begin{aligned} \widehat{\epsilon}_{ijt} &= \widehat{\beta}_1 COMLANG_{ij} + \widehat{\beta}_2 \log DIST_{ij} \\ &\quad + \widehat{\beta}_3 CONTIG_{ij} + \widehat{\beta}_4 EUROZONE_{ijt} \end{aligned} \tag{10}$$

Finally, we calculate the $FREENESS$ variable for country i at time t as follows:

$$FREENESS_{it} = \frac{\sum_{j=1}^{J} \exp(\widehat{\epsilon}_{ijt})}{J} \tag{11}$$

3.4 Geographic variables

We must consider variables that link the capital owner country, France, to the investment host country, i as it may influence the location decision of French capital. We then use two dummy variables $COMLANG$ and $CONTIG$, and the $DIST$ variable for the distance between France and the host country. These three variables are defined as before.

New trade models also emphasize the agglomeration of firms as a result of firm mobility. Agglomeration can be seen as a driving force for attracting firms

as in may create positive externalities such as better and cheaper access to intermediate goods or market knowledge sharing. The agglomeration variable is calculated as the number of French affiliates divided by the host country gross domestic product.

Finally, market size plays a significant role in economic geography models. The greater the potential demand in a country, the greater the incentive for a firm to locate in that country. We must not only account for the demand in the potential host country but also from its neighbours. To that aim we construct a basic market potential indicator as shown in (12):

$$\begin{aligned} MKP_{it} &= GDP_{it} + \sum_{j=1}^{J} \left(\frac{GDP_{jt}}{DIST_{ij}} \right); \qquad (12) \\ \text{with} \quad j &\neq i \end{aligned}$$

3.5 Exogenous variables

When a firm invests abroad, not only does it consider the destination country as production and consumption market, but also a hub for exporting to neighbour countries. Thus, when choosing the location the firm not only measures country-specific costs and benefits, but also compares costs between different locations in a same region. Consistently, exogenous variables such as Unit Labour Cost, CIT rate, market potential and agglomeration are transformed as shown in (13).

$$\begin{aligned} x^*_{it} &= \frac{x_{it}}{\overline{x}_{it}} \qquad (13) \\ \text{with } \overline{x}_{it} &= \frac{\sum_{j=1}^{J} (x_{jt}.Dist_{ij})}{\sum_{j=1}^{J} Dist_{ij}} \\ \text{and} \quad j &\neq i \end{aligned}$$

where x^*_{it} is the "relative" value if x_{it} and $Dist_{ij}$ is the geographical distance between j and i.

The Unit Labour Cost variable (ULC) is taken from Eurostat and is defined as the total costs of labour divided by the total number of hours worked.

4 Econometric specifications

4.1 Baseline specification

As presented in the theoretical framework in (**??**) and (6), the relative number of firm investing in a country depends positively on the income (or market size) and negatively on taxation. We now investigate the empirical relation between these variables. We intend to explain the share of country i in firm f's FDI portfolio ($SFDI_{fit}$) by the corporate income tax (CIT_{it}), labour costs (ULC_{it}) and the geographical data, such as distance between origin and destination country i ($DIST_i$), agglomeration effect ($AGGLO_{it}$), and country i's market potential (MKP_{it}). Using the standard variables of taxation and labour cost, we obtain that the share of FDI is:

$$\begin{aligned} \log SFDI_{fit} &= \beta_1 \log CIT_{it} + \beta_2 \log ULC_{it} + \beta_3 \log MKP_{it} \\ &\quad + \beta_4 \log DIST_i + \beta_5 CONTIG_i + \beta_6 COMLANG_i \\ &\quad + \beta_7 \log AGGLO_{it} + \beta_8 \log FREENESS_{it} \\ &\quad + \delta_t + \gamma_{fi} + \epsilon_{fit} \end{aligned} \tag{14}$$

In (15) we replace variables CIT, ULC, MKP and $AGGLO$ by their "relative" versions written with the prefix "GEO":

$$\begin{aligned} \log SFDI_{fit} &= \beta_1 \log GEOCIT_{it} + \beta_2 \log GEOULC_{it} + \beta_3 \log GEOMKP_{it} \\ &\quad + \beta_4 \log DIST_i + \beta_5 CONTIG_i + \beta_6 COMLANG_i \\ &\quad + \beta_7 \log GEOAGGLO_{it} + \beta_8 \log FREENESS_{it} + \delta_t + \gamma_{fi} + \epsilon_{fit} \end{aligned} \tag{15}$$

The estimation uses a time dummy δ_t in order to take into account the global business cycle.

We also include a firm-country specific random effect γ_{fi}. The latter not only accounts for heterogeneity between firms but also states that each firm behaves specifically with respect to each country. Indeed, each firm may have a particular historical background with a particular country leading to different investment strategy compared to other countries. We do not use country-dummies as the model already contains country-specific time-invariant variables such as the distance and the contiguity. The DIST, CONTIG and COMLANG variables are not colinear with the FREENESS variable as the former three connect France to the FDI host-country while the later connects the host country to its neighbours. Results are presented in table 1.

4.2 Advanced specifications

Using results from Table 1 as baseline results, we can now turn to more specific questions. In (6) and (7), we see that not only taxation has a negative impact on the location of capital, but as freeness of trade increases, the impact of tax rates should become higher. We test this relation in specification (16) using a qualitative interaction dummy variable stating that the level of freeness of trade for country i is lower or higher than the average at time t. Results are presented in Table 2

$$\begin{aligned}\log SFDI_{fit} &= \beta_1 \log GEOCIT_{it} \times LOWER_{it} \\ &+\beta_2 \log GEOCIT_{it} \times HIGHER_{it} \\ &+\beta_3 \log ULC_{it} + \beta_4 \log GEOMKP_{it} + \beta_5 \log DIST_i \\ &+\beta_6 CONTIG_i + \beta_7 \log GEOAGGLO_{it} + \beta_8 \log FREENESS_{it} \\ &+\delta_t + \gamma_{fi} + \epsilon_{fit}\end{aligned} \tag{16}$$

The second test we implement is the interaction between freeness of trade and market size. (**??**) and (4) showed that as the "freeness of trade" decreases, the impact of the market size, or the Home Market Effect, decreases as well. In (17), we use the same interaction dummy variable as we did previously. Results are displayed in Table 3.

$$\begin{aligned}\log SFDI_{fit} &= \beta_1 \log GEOCIT_{it} + \beta_2 \log GEOMKP_{it} \times LOWER_{it} \\ &+\beta_3 \log GEOMKP_{it} \times HIGHER_{it} \\ &+\beta_4 \log ULC_{it} + \beta_5 \log OPEN_{it} \\ &+\beta_6 CONTIG_i + \beta_7 \log AGGLO_{it} + \delta_t + \gamma_{fi} + \epsilon_{fit}\end{aligned} \tag{17}$$

The third theoretical finding we want to test empirically is the presence of rent of agglomeration for large countries. Theory says that in the case of rent of agglomeration, the government could increase the CIT rate without dissuading firms from investing in the country. We test the interaction between the CIT variable and the centered Market Potential $MKP_{.t}$ as shown in (18). Results are presented in table 4.

$$\begin{aligned}\log SFDI_{fit} &= \beta_1 \log GEOCIT_{it} + \beta_2 \log(GEOCIT_{it} \times MKP_{.t}) \\ &+\beta_3 \log ULC_{it} + \beta_4 \log MKP_{it} + \beta_5 \log DIST_i \\ &+\beta_6 CONTIG_i + \beta_7 \log AGGLO_{it} \\ &+\delta_t + \gamma_{fi} + \epsilon_{fit}\end{aligned} \tag{18}$$

5 Interpreting results

Table 1:
Baseline specification

			With "relative" variables		
Variable	β	S.E.	Variable	β	S.E.
Log**FREENESS**$_{it}$	$-.6634^{***}$	.0216	Log**FREENESS**$_{it}$	$-.6905^{***}$	.0202
Log**CIT**$_{it}$	$-.0284$	.0234	LogGEO**CIT**$_{it}$	$-.1041^{***}$	.0310
Log**ULC**$_{it}$	$-.2368^{***}$	.0151	LogGEO**ULC**$_{it}$	$-.1106^{***}$	.0143
Log**MKP**$_{it}$	$.4855^{***}$	.0106	LogGEO**MKP**$_{it}$	$.4339^{***}$	.0122
Log**DIST**$_{i}$	$-.4216^{***}$	.0284	Log**DIST**$_{i}$	$-.5899^{***}$	.0280
CONTIG$_{i}$	$.7181^{***}$	.0260	**CONTIG**$_{i}$	$.7750^{***}$	.0275
COMLANG$_{i}$	$.3567^{***}$	.0503	**COMLANG**$_{i}$	$.5031^{***}$	.0488
Log**AGGLO**$_{it}$	$-.0358^{***}$	.0099	LogGEO**AGGLO**$_{it}$	$-.0140^{***}$	.0013
-2LL	737850		**-2LL**	736660	
Obs	191035		**Obs**	191035	

In the first column of Table 1, the baseline specification provides preliminary results in line with the empirical literature. Particularly, market potential appears with a positive sign and unit labour cost has a negative impact on FDI. Sharing borders and common language encourages FDI while geographic distance deters it. The use of "relative" variables does not change the qualitative impact of the exogenous indicators except for CIT variable, which becomes significantly negative in the second specification. Thus, it confirms the qualitative negative impact of taxation. These results show that an increase in the relative CIT rate by 10% reduces the country's share in FDI portfolio by 1%. The unit labour costs also has a negative impact on the location of investment, a 10% increase in the relative unit labour cost reduces the share by about 1%. The major determinant being the relative market potential, an increase of $GEOMKP$ by 10% would increase the country share in FDI portfolio by more than 4%. The distance, contiguity and common language variables have respectively the expected signs, the share of direct neighbours as host countries in firms investment portfolio is 70% greater than other countries. Finally, the results on the "freeness" variable show that the more countries can be served trough trade thanks to low trade costs, the less firms will invest in the country. This result is in line with the theoretical framework.

Through a basic specification, we assess the ability of constructed variables to determine capital location as proposed by the New Economic Geography theories. Results here support the general findings of this body of literature. Indeed, the size of expenditures (the resources of the host country) presented in section 2, which is represented by the "Market Potential" variable, has a positive impact on the location of capital, given the several possible locations, firms will go where the potential demand is the greatest, and they will benefit from increasing returns in production. The estimated freeness variable appears

with a negative sign in the baseline specification. In Baldwin's model we see that there is a negative relation between free trade and production disaggregation.

The agglomeration effect represents the possible presence of positive externalities linked to the former location of French firms in the same country. The market access is shown to be easier when firms from the same country are already set up (See Head and Mayer (2004) concerning the agglomeration of Japanese firms in Europe). In the present results, the negative impact of agglomeration is not the one we expected, but is relatively small compared to other determinants. A 10% increase in our relative agglomeration index lowers the country's share in FDI portfolio by 0.1%.

Turning to non-geographical variables, we see that labour cost has a negative impact on capital location in all specifications. This goes beyond Baldwin's paper where factor prices equalise across countries, and we show that factor prices do matter for the location of productive capital. Finally, the results on tax variables confirm the theoretical intuition, we find a negative impact of relative tax rates on the dependent variable.

Table 2

Advanced specifications:
Interaction between CIT and Freeness

	β	S.E.
Log**FREENESS**$_{it}$	$-.3315^{***}$	.0129
LogGEO**CIT**$_{it}\times$LOWER$_{it}$	.0471	.0317
LogGEO**CIT**$_{it}\times$HIGHER$_{it}$	$-.0814^{***}$	.0312
LogGEO**ULC**$_{it}$	$-.1155^{***}$	.0144
LogGEO**MKP**$_{it}$	$.4211^{***}$	.0122
Log**DIST**$_i$	$-.4987^{***}$	.0275
CONTIG$_i$	$.8383^{***}$	.0277
COMLANG$_i$	$.4441^{***}$	.0487
LogGEO**AGGLO**$_{it}$	$-.0145^{***}$	.0013
-2LL	736361	

Table 3:

Advanced specifications
Interaction between Market Potential and Freeness

	β	S.E.
Log**FREENESS**$_{it}$	$-.6843^{***}$	.0208
LogGEO**CIT**$_{it}$	$-.1040^{**}$	.0310
LogGEO**MKP**$_{it}$*LOWER$_{it}$	$.4387^{***}$	.0122
LogGEO**MKP**$_{it}$*HIGHER$_{it}$	$.4374^{***}$	.0125
LogGEO**ULC**$_{it}$	$-.1127^{***}$	.0142
Log**DIST**$_{i}$	$-.5893$	.0278
CONTIG$_{i}$	$.7753^{***}$.	.0275.
COMLANG$_{i}$	$.5169^{***}$	.0484
LogGEO**AGGLO**$_{it}$	$.0141^{***}$	.0013
-2LL	743154	

Table 4:

Advanced specifications
Interaction between CIT and Market Potential

	β	S.E.
Log**FREENESS**$_{it}$	$-.6630^{***}$	.0204
LogGEO**CIT**$_{it}$	$-.4736^{***}$	.0603
LogGEO**CIT**$_{it}$*GEO**MKP**$_{.t}$	$.2911^{***}$	.0407
LogGEO**ULC**$_{it}$	$-.1186^{***}$	.0144
LogGEO**MKP**$_{it}$	$.5603^{***}$	.0214
Log**DIST**$_{i}$	$.5681^{***}$	.0282
CONTIG$_{i}$	$.8384^{***}$	.0289
COMLANG$_{i}$	$.4707^{***}$	.0490
LogGEO**AGGLO**$_{it}$	$.0142^{***}$	.0013
-2LL	736959	

In more advanced specifications, our aim is first to figure out if the "freeness" effect on CIT that we presented in section 2 is observable in the data. We actually find that tax does have an negative impact but only for countries that are sufficiently (above average) open to trade. As trading goods becomes more expensive, firms tend to discentralise their production and locate multiple plants close to the markets. In this case, the tax level becomes less decisive in the location decision. Thus, we are able to confirm one of Baldwin & Krugman's theoretical result.

The second test emphasises the relative impact of trade costs on the effect of market size. In the baseline specification we demonstrate that market potential is an significant driver for investment due to the presence of high potential demand. In section 2, as trade cost decreases (Φ increases) the impact of potential demand (e) is magnified. We don't find any empirical evidence when looking at the data.

The relation between FDI and Market Potential is linear with respect to freeness of trade. This shows that in the case of free trade, firms will not necessarily agglomerate in the largest market but will be driven by other factors such as taxation or labour cost.

The third set of tests sheds lights on the existence of rents of agglomeration. Baldwin & Krugman (2000) show that in the presence of rents of agglomeration, large countries may increase tax rates even on the mobile base without discouraging investors. Indeed, we show in Table 4 that the market potential reduces the impact of relative tax level on FDI. As the market size increases, the impact of taxation on capital location decreases. This confirms the ability for large countries to slightly increase CIT rates without been less attractive.

6 Conclusion

Using firm-level FDI data, we empirically test the impact of taxation on the distribution of French firms productive capital over the European Union and several OECD countries. This study is made within Baldwin's (1999) "Footloose Capital" framework. Our results confirm the theoretical findings of the model in terms of general impact of both taxation and trade costs. Increasing trade costs encourage production to disaggregate and locate close to the market for the final good. Taxation reduces attractiveness for foreign capital. We then turn to the interaction between taxation and trade costs. We show that as trade costs increase, the level of taxation becomes less influent in the location decision. Besides, results confirm the ability for large countries to increase CIT rates without deterring investment as the market potential reduces the impact of taxation on FDI.

7 Appendix

Appendix 1 - List of countries

EU16	Country	*EU10*	Country
AT	Austria	CY	Cyprus
BE	Belgium	CZ	Czech Republic
DE	Germany	EE	Estonia
DK	Denmark	HU	Hungary
ES	Spain	LT	Lithuania
FI	Finland	LV	Latvia
GB	United Kingdom	MT	Malta
GR	Greece	PL	Poland
IE	Ireland	SI	Slovenia
IT	Italy	SK	Slovakia
LU	Luxembourg		
NL	Netherlands		
PT	Portugal		
SE	Sweden		
CH	Switzerland		
NO	Norway		

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