

# The role of tax systems' complexity on foreign direct investment allocation

Esteller-Moré Alejandro<sup>1</sup>, Rizzo Leonzio<sup>2</sup>, Secomandi Riccardo<sup>3</sup>

## ABSTRACT

In this paper we present new cross-country evidence in recent years to study the effect of tax complexity on international investment. The evidence comes from a newly constructed database of the bilateral flows of Foreign Direct Investment (FDI) for all OECD countries over the 2013-2016 period. We use also an innovative dataset from the survey “*Doing Business – Paying Taxes*” which collects different measures of complexity and effective tax rates. To jointly consider the impact of host and parent country complexity of taxation on firm location decisions, we use the technique of the so-called gravity models. Regressions may suffer from problem of endogeneity so we check that our estimates are consistent using the instrumental variables method (IV). In particular, we use an innovative instrument for the difference in tax complexity, the difference in permanence in an empire of bureaucracy: the Hasburg Monarchy. We find that the tax complexity affects negatively the FDI flows between OECD countries.

KEY WORDS: FDI, tax complexity, instrumental variables, gravity model.

JEL: H32, H29, H25.

---

<sup>1</sup> Universitat de Barcelona and IEB.

<sup>2</sup> University of Ferrara and IEB.

<sup>3</sup> University of Ferrara and Parma.

## Introduction

The effect of corporate taxes on international investment is a subject on which many studies of public finance economics have concentrated (Auerbach, 2002; Desai, Foley and Hines, 2004; Devereux, Griffith and Klemm, 2002; Gordon and Hines, 2002; Hines, 2007; Hines and Rice, 1994; Slemrod, 1990). Very few studies have examined the effect of the tax institutional framework on international firms' investment decision (see Djankov, Ganser, McLiesh, Ramalho and Schleifer, 2010 and Edmiston, Mudd and Valev, 2003).

In this paper we present new cross-country evidence in recent years for the effects of tax complexity on international investment. The evidence comes from a newly constructed database of the bilateral flows of Foreign Direct Investment (FDI), measures of tax complexity, tax rates and other control variables for all OECD countries over the 2013-2016 period.

Measuring the complexity of a taxation system is not simple. We use an innovative dataset called "*Doing Business – Paying Taxes*"<sup>4</sup>, in particular we use the variable *time* that measures how long a firm takes to prepare, compile and pay three main types of taxes and contributions.

According to De Mooij and Ederveen (2006), simple regressions of the tax variable on FDI may give misleading results for a number of reasons. First, decisions to undertake FDI may not only depend on location advantages, but also on ownership advantages. Taxes can affect location and ownership advantages in different ways, which renders it difficult to determine the impact of taxes on the capital itself. Second, the impact of taxes on foreign investment depends on the tax regime in the country where the parent company resides. Lack of control for this will yield estimates that are difficult to interpret. To jointly consider the impact of host and parent country complexity of taxation on firm location decisions, we plan to use the technique of the so-called gravity models, originally developed by Isard (1960). Regressions may suffer from problem of endogeneity so we check that our estimates are consistent using the instrumental variables method (IV). In particular, we use an innovative instrument for the difference in tax complexity, the difference in permanence in the Hasburg Monarchy.

The structure of the paper is as follows. Section I reviews the literature, Section II describes the data, Section III introduces the main estimation strategy using the gravity model and reports the Instrumental Variable estimation strategy, Section IV presents results of the gravity model, Section V the results of Instrumental variable model, Section VI extends the analysis by including different measures of tax rates and dependent variable, and using a Tobit model to replicate previous model and Section VII concludes.

## Literature

Globalization increased firm mobility. In particular, removal of barriers to international trade pushed governments to attract FDI with the aim of obtaining positive spillover effects to the local economy, and so increasing economic growth (among others, see Alfaro et al., 2004; Barro, 1991; Baumol, Litan, and Schramm, 2007; Du, Harrison and Jefferson, 2014; or Smarzynska and Javorcik, 2004).

Tax and non-tax factors might affect the decision to relocate production abroad. The size of a foreign market, the foreign regulatory and legal environment, and distance from the home country are the main non-tax factors (Mayer and Ottaviano, 2007). Kessing, Konrad and Kotsogiannis (2009) also show that the organizational structure of the federal states has a sizeable negative effect on FDI.

---

<sup>4</sup> World Bank, PricewaterhouseCoopers and Harvard University.

Regarding tax factors, previous studies show that investment decisions and other activities of multinational corporations are sensitive to the tax corporate rate (for a review, see Devereux, 2007). Recent studies explore the effects of country tax policy or international agreements aimed at restricting multinationals' tax planning on FDI (Buettner, Overesch, and Wamser, 2018; Clifford, 2017; Daniels, O'Brien and von der Ruhr, 2015; Hong, S., 2018; or Johannesen, Tørsløv and Wier, 2016). Specific analyses are also carried out on the role of tax havens on tax competition (Bouvatier, Capelle-Blancard and Delatte, 2017; Gresik, Schindler and Schjelderup, 2015). These studies arise around the discussions about company tax reform and tax harmonization after the implementation of the OECD/G20 Base Erosion and Profit Shifting (BEPS) Package (OECD, 2018; Durán-Cabré and Esteller-Moré, 2018, for an analysis applied to the Spanish case).

Starting with aggregate time series, the literature on the impact of taxation on FDI has gradually evolved in the direction of panel data analyses (Buettner and Wamser, 2013; Devereux and Freeman, 1995), and cross-country analyses (Djankov, Ganser, McLiesh, Ramalho and Schleifer, 2010). More recently there is a trend to use micro data of firm investments (Barrios, Huizinga, Laeven and Nicodème, 2012; Becker and Riedel, 2012; Desai, Foley and Hines, 2004; Devereux and Griffith, 2008; Lawless, McCoy, Morgenroth and O'Toole, 2015; Stöwhase, 2002).

Studies of the effect of taxation on FDI location decisions generally examine host country taxation to the exclusion of parent country taxation (Mooij and Everdeen, 2006; Devereux and Maffini, 2007). The contribution of this paper is to jointly consider the impact of host and parent country system taxation on international investment.

As far as we know, very few studies have examined the effect of the tax institutional framework on international firms' investment decision. Djankov et al. (2010) use the World Bank data on taxes and the number of tax payments to explain a range of country-level outcomes, including total FDI inflows. They find that both statutory and effective tax rates have negative effects on FDI inflows, investment and entrepreneurship but they find no significant relationship between the number of tax payments and total FDI inflows.

The work by Edmiston, Mudd and Valev (2003) examine whether complexity and uncertainty in tax laws have deterred FDI. From their analysis, carried out only on countries of the former Soviet Union and Eastern and Central Europe, they conclude that complexity and uncertainty – defined by multiple tax rates, indeterminate language in the tax law, and inconsistent changes in the tax laws – have a significant negative effect on inward FDI.

Our work differs from that of Djankov et al. (2010) and Edmiston, Mudd and Valev (2003) as it uses a different method of analysis (gravitational model), uses data panel data and focuses on a different period of analysis, more recent (2013-2016).

## Data

### *Data on FDI*

The main variable of interest is the bilateral flows of Foreign Direct Investment (FDI)<sup>5</sup>. FDI are financial flows consist of equity, transactions, reinvestment of earnings and intercompany debt transaction

---

<sup>5</sup> It's well known that there exist significant problems in the accounting procedure for FDI, and that even the statistics supplied by supranational bodies like Eurostat and the OECD suffer from differences in the national reporting

(UNCTAD). As suggested by the *FDI Eurostat manual* FDI measured in this way are the most appropriate for studying the nature and motivations of FDI. Like reported in Tørsløv, Wier and Zucman (2018) and Wei (2000), we decided to use outward FDI because a greatest number of host countries are covered. The variable net FDI outward contain negative values because this variable measure also reverse investment from the subsidiary in the host country (UNCTAD) <sup>6</sup>.

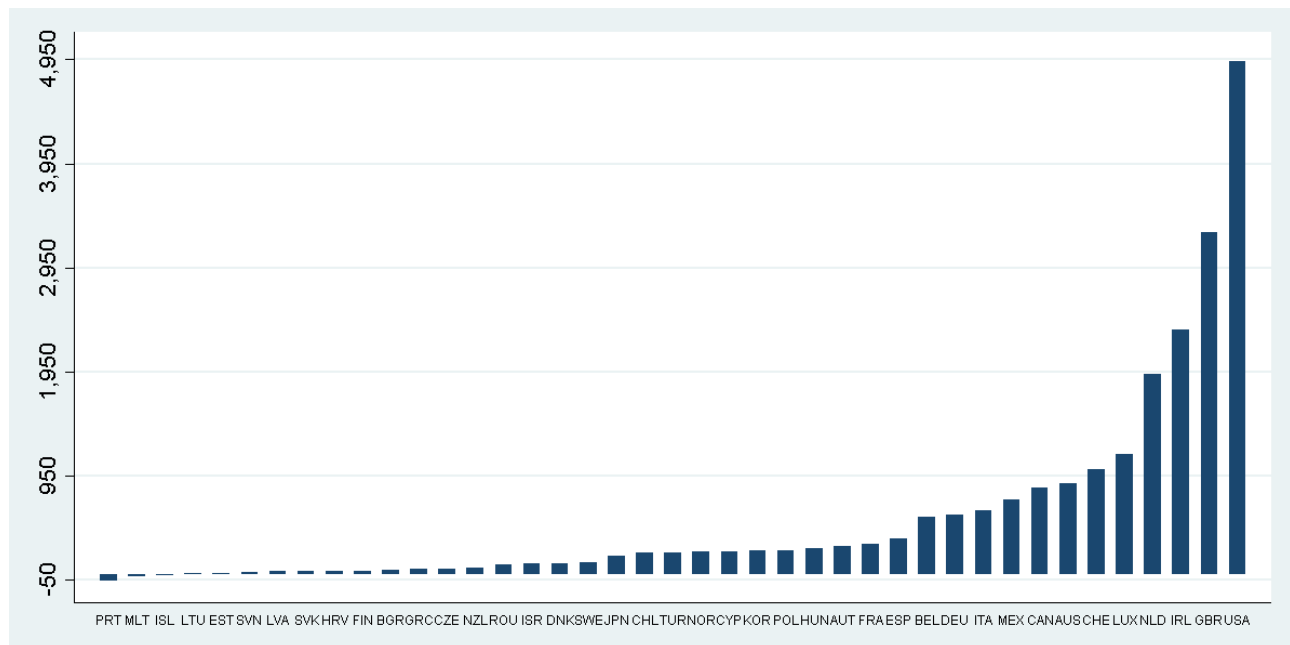
Data on bilateral flows of FDI come from the table *bop\_fdi6\_int* in the *bilateral Eurostat Balance of Payment* and the *OECD International Direct Investment report*. The data from Eurostat follows in principle the OECD benchmark definition for FDI so the two dataset are fully comparable. All FDI data are converted into euro.

The key variable *Foreign Direct Investment* in our dataset refers to all OECD countries, 36 source countries to 36 host countries. These countries represent a large part of the world economy (63% of the world's GDP) and international trade (68% of the value of exports in the world). We collect bilateral flow of FDI also for all the countries belonging to the European Union and we use this information to replicate the main regression on a sub-sample of countries, all belonging to Europe. The full list of source and host countries is given in table A1.

Because of substantial methodological changes bilateral FDI flows time series prior and after 2013 reference year are no longer comparable (*FDI Eurostat manual*). So we can use only data from 2013 to 2016.

As shown in Figure 1, we observe a strong variability of FDI flows per country in the observed period. This heterogeneity reflects the relative attractiveness of investment in the country, the size and growth of the economy overall levels of openness, competition and integration into international value chains.

*Fig. 1 - Bilateral flow of Foreign Direct Investment, by source country, billion euros (2013-2016).*



*Source: Eurostat and OECD.*

procedures (Bellak, 1998). However, as emphasized by Hines (1997) in order to study the determinants of FDI it is sufficient to focus on the distribution of FDI flows among different countries.

<sup>6</sup> For these reason in our estimates we use the dependent variable without log.

## *Data on tax complexity*

We use the dataset “*Doing Business – Paying Taxes*” (World Bank, PricewaterhouseCoopers, and Harvard University) to measure the complexity of a taxation system. To ensure comparability across countries, the data are based on a case study of a hypothetical representative firm examined across countries. A range of assumptions were made about the structure of the business, and hypothetical financial accounts were presented to the survey respondents to enable them to calculate the company’s tax liabilities and costs of compliance<sup>7</sup>. This information is available for the 2006-2017 period for more than 130 countries. Recently several authors have used this source of information for different purposes. For example, Van Stel, Storey and Thurik (2007) used it to study the effect of business regulations on nascent and young businesses; Belitski, Chowdhury and Desai (2016), to analyze the connection between taxes, corruption, and entry; and Jerbashian and Kochanova (2016), to explore the impact of doing business regulations investments in information and communication technologies.

In particular, two variables are interesting for our purpose: the variables *time* and *payments*. The variable *time* measures how long a firm takes to prepare, compile and pay three main types of taxes and contributions: the corporate income tax, value added or sales tax, and labor taxes, including payroll taxes and social contributions. *Time* is recorded in hours per year. Preparation time includes the time to collect all information necessary to compute the tax payable and to calculate the amount payable. If separate accounting books must be kept for tax purposes the time associated with these processes is included. This extra time is included only if the regular accounting work is not enough to fulfill the tax accounting requirements. Filing time includes the time to complete all necessary tax return forms and file the relevant returns at the tax authority. Payment time considers the hours needed to make the payment online or in person. Where taxes and contributions are paid in person, the time includes delays while waiting.

The variable *payments*, which reports the total number of taxes and contributions, paid during a year, including consumption taxes. It includes taxes withheld by the company, such as sales tax, VAT and employee-borne labor taxes. These taxes are traditionally collected by the company from the consumer or employee on behalf of the tax agencies. Although they do not affect the income statements of the company, they add to the administrative burden of complying with the tax system and so are included in the tax payments measure. The number of payments takes into account electronic filing. Where full electronic filing and payment is allowed and it is used by the majority of medium-size businesses, the tax is counted as paid once a year even if filings and payments are more frequent. For payments made through third parties, such as tax on interest paid by a financial institution or fuel tax paid by a fuel distributor, only one payment is included even if payments are more frequent.

From the analysis of the data on the complexity of the taxation systems there would not seem to be a close relationship between the two variables, in fact the correlation between the variable *time* and the variable *payments*, in the observed period, is 0.0157 while the correlation between the variable *difference in time* and the variable *difference in payments* is -0.0089. Also in Figure 2, where on the y axis is represented the variable *time* and on the x axis the variable number of payments, does not show any relation (r frame of the line that contains the points is very low)

*Figure 2 – correlation between difference in time and difference in payments.*

---

<sup>7</sup> For more detail about the survey see Djankov et al. (2010)

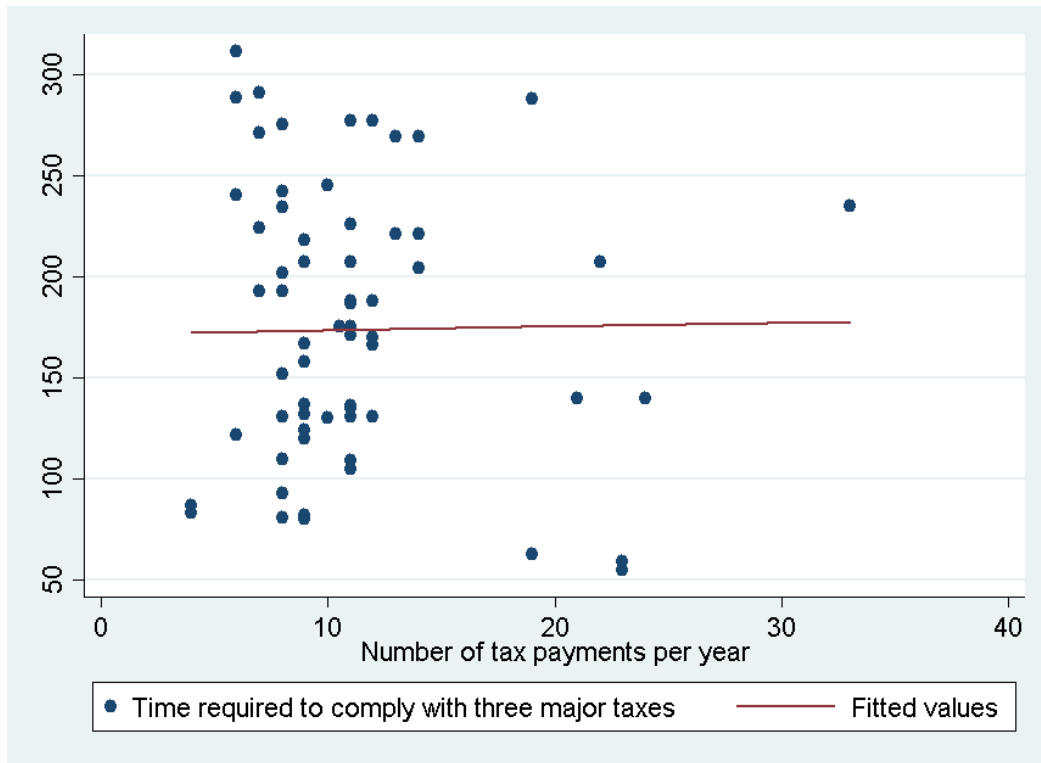
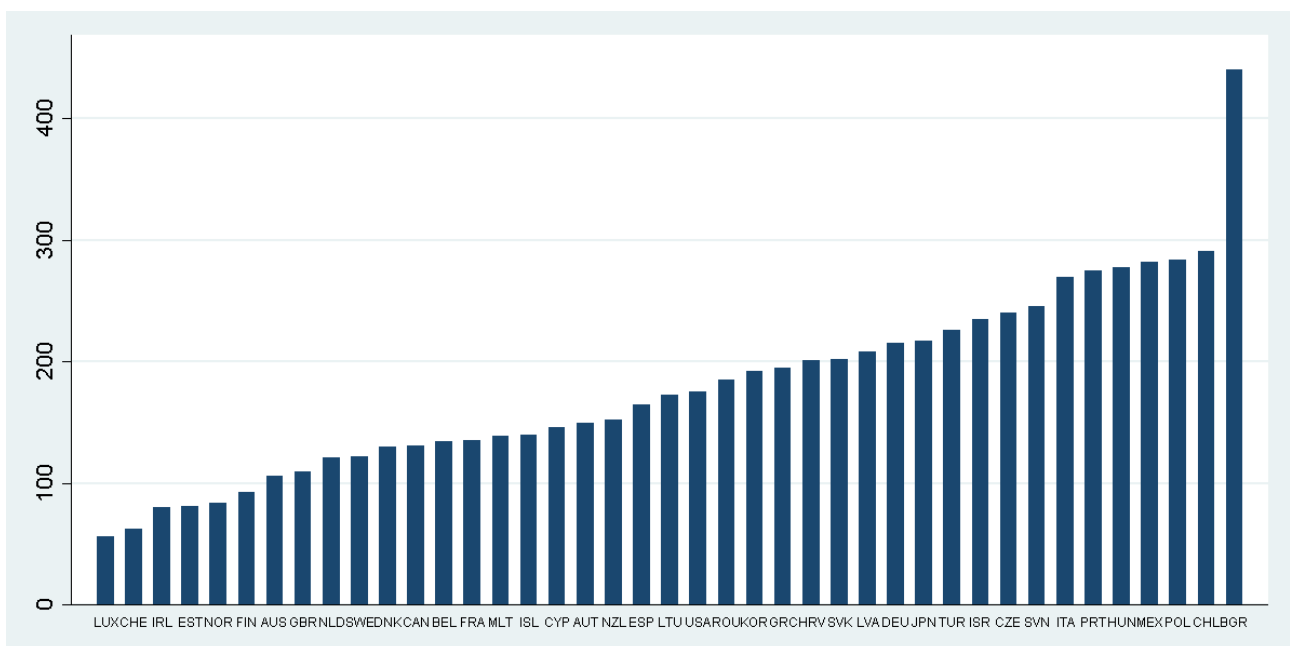


Figure 3 shows the length of *time* (in hours) required to comply with the tax codes in the countries used in this paper. Countries analyzed differ significantly in the way in which they regulate tax administration. The average number of hours, in the period 2013-2016, is 179.72, about 23 working days. The variable *time* goes from a minimum mean value of 56 hours in Luxembourg to a maximum average value of 440 in Bulgaria. For the 28 countries belonging to the European Union the average of *time* is 181.22, for other 3 OECD – European countries the average is 95.67 and for other 10 OECD – Non European countries the average is 200.73.

Figure 3 – Time required to complete taxes, in hours (2013-2016).



Source: *Doing Business*.

As shown in different studies (Djankov et al. (2010)), also tax rate variables can have an effect on FDI. Both statutory tax rate and effective tax rate are important for locations of international investments (Devereux and Griffith, 2003). A robust finding is that studies using the effective tax rates produce larger elasticities than studies using statutory tax rates (De Mooij and Ederveen, 2006) . So we decide to use different measures of tax rate: in the main regression we include the *top statutory corporate income tax rate* but also the *total tax and contribution effective rate* computed in Doing Business dataset.

The *top statutory corporate income tax rate*, from Eurostat and OECD dataset, is the tax rate a corporation has to pay on marginal income assuming that it is in the highest tax bracket, taking into account federal, state, and local rates. The *total tax and contribution effective rate* from Doing Business survey, measures the amount of taxes and mandatory contributions borne by the business in the second year of operation, expressed as a share of commercial profit. The total amount of taxes and contributions borne is the sum of all the different taxes and contributions payable after accounting for allowable deductions and exemptions. The taxes withheld (such as personal income tax) or collected by the company and remitted to the tax authorities (such as VAT, sales tax or goods and service tax) but not borne by the company are excluded. The *total tax and contribution effective rate* is designed to provide a comprehensive measure of the cost of all the taxes a business bears. If there are different corporate taxes (e.g. federal, state and local), the deductibility of one or more of those taxes is taken into account when computing the tax base for corporate income. It differs from the statutory tax rate, which merely provides the factor to be applied to the tax base.

In addition to these three corporate taxes, we use five other tax rates in our analysis as controls.

The first two of this variables are derived from Doing Business dataset: *effective tax rate on labor* and *effective tax rate on other*. The *effective tax rate on labor* is the ratio between the sum of all labor-related taxes payable (including payroll taxes, mandatory social security contributions, mandatory health insurance, mandatory unemployment insurance) and the pre-tax earnings. The *effective tax rate on other* is the ratio between the sum of all taxes payable that enter the profit and loss statement where the statutory incidence is on the firm, other than corporate income and labor tax, and pre-tax earnings. This ratio includes all property taxes, business license taxes, financial transactions, and asset and capital taxes payable.

Only for the OECD countries, we use also the *average statutory corporate tax rate*, computed by OECD.

Only for European Union member countries, we use also the *effective average tax rate (EATR)* and *taxes on capital as percentage of GDP*, only on the income of corporations, computed by Eurostat.

In addition to the tax rate and tax system complexity variables, a range of country specific factors are also controlled for in the empirical approach. As suggest in Butter (2017) we use the ratio between bilateral exports and GDP to capture market size and trading costs between the source and host countries. The data on exports (all products) and on GDP (in euro) come from World Bank national accounts data and OECD National Accounts data files.

Another useful dataset comes from the *Worldwide governance indicator* (World Bank), which includes rankings and detailed data profiles for almost 200 countries and comparable time series from 1996 to 2017. We use this dataset, as suggested by previous studies (Hines, 1995; Wei, 2000) to control if other dimensions of government quality (*level of corruption*, *political stability* and *rule of law*) can capture different effects on FDI. *Level of corruption* captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. *Political stability* is defined as an index "that measure of perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism". *Rule of Law* captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. All this three variables are introduced in the regression model as rank

differences (from 0 to 100) between countries. The construction of these institutional variables is discussed in detail in Kaufmann et al. (2010).

To check the robustness of our results, we consider another additional potential determinant of investment and entrepreneurship: *inflation* (Djankov et al., 2010). *Inflation* is measured starting from World Bank national accounts data and OECD national accounts data as the annual growth rate of the GDP implicit deflator<sup>8</sup> shows the rate of price change in the economy as a whole.

The descriptive statistics of the main variables used in the analyzes are shown in table A2

### Model specification

The reference model that we adopt follows the technique of the so-called gravity models, originally developed by Isard (1960)<sup>9</sup>. The basic idea is to assume a functional form, such that without any differences between two countries the expected value of the bilateral flow is given by the size of the origin and the destination country as well as by the distance. Denoting the flow of direct investments from  $i$  to  $j$  with  $f di_{ij}$  a possible specification is:

$$(1) f di_{ij,t} = \beta_0 + \beta_1(c_{it} - c_{jt}) + \beta_2(t_{it} - t_{jt}) + \beta_3(x_{it} - x_{jt}) + \beta_4 d_{ij,t} + a_j^D + \mu_t + \varepsilon_{ij,t}$$

$f di_{ij,t}$  is the bilateral flows of Foreign Direct Investment on GDP<sup>10</sup> from country  $i$  to country  $j$  at year  $t$ .

$c_{it} - c_{jt}$  is the difference in the complexity of the tax system between country  $i$  to country  $j$  at year  $t$ , measured by the log of variable *time* and the log of variable *payments*

$t_{it} - t_{jt}$  is the difference in the tax rate between country  $i$  to country  $j$  at year  $t$ , measured in different way using Eurostat, OECD and *Doing Business* datasets.

$x_{it}$  and  $x_{jt}$  are control variables which can influence FDI flows, like inflation (Djankov et al., 2010) and level of corruption, political stability and rule of law (Wei, 2000).

We consider spatial effects, not in the sense of spatial proximity but more in the sense of proximity to the markets, control for the ratio between bilateral exports and GDP (Jost, 1997). In fact we use as control variable the variable  $d_{ij,t}$  that is equal to ratio between the value of export (all products) from country  $i$  to country  $j$  and the sum of GDP of country  $i$  and country  $j$ . The values of this variable is built using data from Eurostat and World Bank.

$$d_{ij,t} = \frac{export_{ij,t}}{GDP_{i,t} + GDP_{j,t}}$$

$\mu_t$  is a fixed time specific effect, which controls for common shocks to all countries.

The additional inclusion of country specific destination dummies ( $a_j^D$ ) controls for unobserved characteristics in each destination countries (Devereux and Freeman, 1995)<sup>11</sup>.

<sup>8</sup> The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.

<sup>9</sup> Also developed in a recent paper by Buettner (2017).

<sup>10</sup> We check also for FDI on labour and FDI on population and FDI.

<sup>11</sup> As Wei (2000) we don't include host country dummies as doing so would eliminate the possibility of estimating all the interesting coefficients including the effects of tax complexity and tax rate.



## IV strategy

The model reported in equation 1 maybe have a problem of endogeneity. Tax complexity, measured by the variable *time*, are of course potentially endogenous. For instance, a significant decrease in the level of FDI entering a country with a very complex tax system, such as the Czech Republic, could cause a series of reforms concerned to lower the level of complexity.

We use an instrumental variables (IV) strategy to address this concern. Our IV strategy is based on instrumenting for the difference in tax complexity with the difference of permanence in an important bureaucratic fiscal empire: the Habsburg Monarchy (1526-1867), that have traced the history of fiscal bureaucracy in Europe.

The Habsburg identification with Austria began when Rudolf IV of Habsburg was elected king of the Holy Roman Empire in 1273 but only in the 1526 Habsburgs extended their territory, when Ferdinand of Austria, brother of Charles V, was elected King of Hungary, Croatia and Bohemia (actual Czech Republic).

Step by step, Habsburg conquered vast territories along the Danube (Hungary, Croatia, Serbia and Romania) constantly driving back the Ottomans. In the sixteenth century, more than half of Europe was ruled by the House of Habsburg (Becker et al., 2016). External events caused the Habsburg's north-eastward expansion: the First Partition of Poland in 1772, arranged by Russia and Prussia, brought Galicia and Lodomeria. Since then, the Habsburgs continuously expanded their territories, in the eastward direction (figure 4). Habsburg has influenced not only in East Europe but also in Western Europe such as in Belgium, Luxembourg and Denmark. For several centuries, Austria was the great European superpower, until The Austro-Hungarian Compromise of 1867 established the dual monarchy of Austria-Hungary. The Compromise partially re-established the sovereignty of the Kingdom of Hungary.

Empires that ruled over long periods of time might have had enough time to build up formal and informal institutions that have lasted to the present day (Putnam, 1993; Guiso et al., 2008; Tabellini 2010).

The Habsburg Empire is considered to have a good administrative institutions (Ingrao 2000), the Habsburg bureaucracy is considered as “*fairly honest, quite hard-working, and generally high-minded*” (Taylor 1948) as well as relatively well-functioning and respected by the population (Becker et al., 2016). However, the fiscal effort required by the citizens of the empire through land tax and indirect taxes was very high, especially for the territories farthest from Vienna (Meriggi, 1987; Zamagni, 2008). Especially during the eighteenth century when the organization was increasingly centralized, Maria Theresa (1741–65) began to establish a *Beamtenstaat* (an administration of civil servants) and instituted *Kreishauptmanner* (county governors) to supervise local administration in different parts of the empire. Her son, Josef II (1765–90) continued this way introducing complex legal reforms.

To try to give a measure of permanence in the Hasburg Monarchy for each country we calculate the relationship between the number of years and the length of the empire and then we weigh it for the distance between the center of the empire and the capital of the country. If a country has never been conquered by the empire we have consider the fewest *years in the empire* among the conquered countries.

$$empire_j = \begin{cases} \frac{\text{years in the empire } j}{\text{total years of the empire}} * (1 + d_{jc}) & \text{if years in the empire } j > 0 \\ \frac{\min\langle \text{years in the empire } j \rangle}{\text{total years of the empire}} * (1 + d_{jc}) & \text{if years in the empire } j = 0 \end{cases}$$

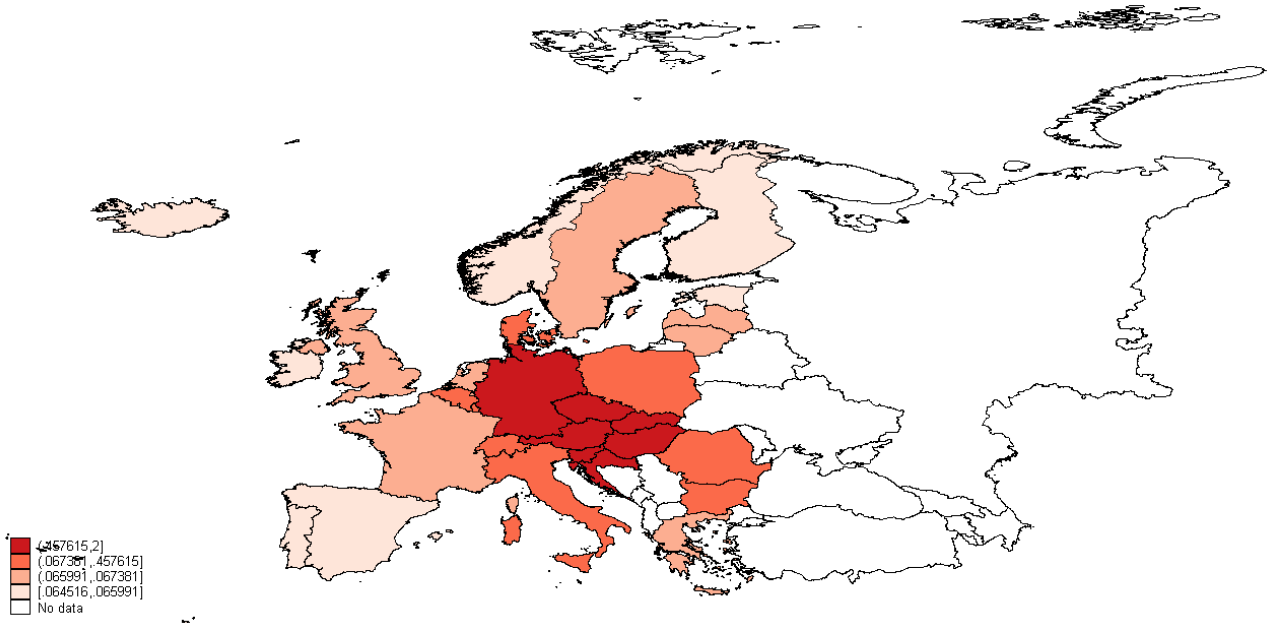
Where: *years in the empire*  $j$  is the number of years of permanence in the empire of country  $j$ ; these information are drawn from the maps collected in Bellabarba (2015) and reported in Table A3.

*total years of the empire* are the years of existence of the empire (341).  $d_{jc}$  is the normalized distance in kilometers<sup>12</sup> between the capital of the country  $j$  and capital of the empire *Vienna*.

The instrument is the difference of permanence of Habsburg Monarchy between country  $i$  and country  $j$ :

$$diff\_empire = empire_i - empire_j$$

Figure 4 - Distribution of permanence in the European countries of Hasburg Monarchy.



<sup>12</sup> The normalized distance in kilometers is calculated using the tables present in Jon Haveman's website, available at [www.maclester.edu/research/economics/PAGE/HAVEMAN/Trade.Resources/TradeData.html](http://www.maclester.edu/research/economics/PAGE/HAVEMAN/Trade.Resources/TradeData.html) (accessed 28 December 2018).

## Main regression estimates

Table 1 and table 2 show the results for the effect of the *time* spent on complying with tax requirements on bilateral FDI flows (on GDP). The tables reports results from a OLS regression for the equation 1, in which we control for another measure of tax complexity (*payments*) and for different tax rates. The difference in tax rate in table 1 is measured as the difference between the *top statutory corporate tax rate* of the country of origin and the *top statutory corporate tax rate* destination of the FDI. The difference in tax rates in table 2 is measured in three different way: the total effective tax rate, the effective tax rate on labour and the effective tax rate on other.

The bilateral exports is included as explanatory variable, as in the eq.1, in all regressions. In both tables we add a set of control variables: the difference in *inflation*, *level of corruption*, *political stability* and *rule of law*. Each bilateral FDI flows might be affected in a different way by unobserved characteristics of countries and years, so in each regressions we use host countries fixed effects and years fixed effects.

In general we observe a significant reduction of FDI flows on GDP from one country to another as the difference in the complexity of the tax system, measured by the variable *time*, increases. We notice that the different measures of tax rate haven't a significant impact on FDI on GDP but in general they have a negative coefficient. Also the variable number of payments hasn't a significant effect on FDI on GDP.

Table 1 – Impact of tax complexity and top statutory tax rate on bilateral flows of FDI.

VARIABLES	(1) FDI/GDP	(2) FDI/GDP	(3) FDI/GDP	(4) FDI/GDP	(5) FDI/GDP	(6) FDI/GDP
Diff. Time	-1.014*** (0.347)		-1.020*** (0.344)	-0.856** (0.374)		-0.860** (0.372)
Diff. Payments		-0.044 (0.120)	0.061 (0.105)		0.026 (0.110)	0.064 (0.105)
Diff. Top statutory corporate tax rate	-0.002 (0.017)	-0.009 (0.019)	-0.002 (0.017)	-0.007 (0.016)	-0.020 (0.020)	-0.007 (0.016)
Bilateral export	0.069*** (0.020)	0.071*** (0.020)	0.069*** (0.020)	0.069*** (0.020)	0.070*** (0.020)	0.070*** (0.020)
Constant	0.689*** (0.169)	0.154 (0.212)	0.694*** (0.170)	0.651*** (0.177)	0.388* (0.228)	0.658*** (0.180)
Observations	3,404	3,404	3,404	3,404	3,404	3,404
R-squared	0.013	0.008	0.013	0.014	0.011	0.014
Host country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Other controls	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Other controls: difference between countries in inflation; level of corruption; political stability and rule of law.

Table 2 – Impact of tax complexity and different tax rates on bilateral flows of FDI.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	FDI/GD	FDI/GD	FDI/GD	FDI/G	FDI/G	FDI/G	FDI/G	FDI/G	FDI/G	FDI/GD	FDI/GD	FDI/GD	FDI/G	FDI/G	FDI/G	FDI/G	FDI/G	FDI/G
	P	P	P	DP	DP	DP	DP	DP	DP	P	P	P	DP	DP	DP	DP	DP	DP
	Total tax and contribution effective rate			Effective tax rate on labour			Effective tax rate on other			Total tax and contribution effective rate			Effective tax rate on labour			Effective tax rate on other		
Diff. time	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.977**		0.975**	1.010*		1.009*	1.049*		1.055*	-		-	1.032*		1.032*	0.928*		0.932*
	*		*	**		**	**		**	0.924**		0.923**	*		*	*		*
	(0.346)		(0.337)	(0.365)		(0.359)	(0.381)		(0.378)	(0.462)		(0.458)	(0.514)		(0.514)	(0.457)		(0.455)
Diff. payments		-0.141	-0.016		-0.125	-0.014		-0.049	0.059		-0.053	-0.023		-0.025	-0.030		0.026	0.065
		(0.162)	(0.134)		(0.150)	(0.126)		(0.123)	(0.106)		(0.152)	(0.142)		(0.136)	(0.137)		(0.110)	(0.102)
Diff. Tax rate				0.013*	0.015*	0.014*	0.039*	-	0.039*							0.047*	-	0.047*
	-0.013	-0.018*	-0.013	*	*	*	*	0.023*	*	-0.013	-0.012	-0.013	0.014*	-0.007	-0.014	*	0.039*	*
	(0.008)	(0.010)	(0.009)	(0.006)	(0.007)	(0.007)	(0.018)	(0.014)	(0.018)	(0.009)	(0.009)	(0.010)	(0.008)	(0.006)	(0.009)	(0.023)	(0.021)	(0.023)
Bilateral export	0.073**	0.076**	0.073**	0.074*	0.076*	0.074*	0.068*	0.071*	0.069*	0.073**	0.072**	0.073**	0.074*	0.071*	0.074*	0.069*	0.069*	0.069*
	*	*	*	**	**	**	**	**	**	*	*	*	**	**	**	**	**	**
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Constant	0.614**		0.612**	0.738*		0.737*	0.804*	0.254*	0.809*	0.613**		0.610**	0.739*	0.487*	0.737*	0.798*	0.564*	0.804*
	*	0.106	*	**	0.241*	**	**	*	**	*	0.397*	*	**	**	**	**	**	**
	(0.148)	(0.170)	(0.146)	(0.186)	(0.131)	(0.182)	(0.202)	(0.125)	(0.200)	(0.169)	(0.207)	(0.171)	(0.197)	(0.185)	(0.195)	(0.198)	(0.175)	(0.197)
Observations	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404
R-squared	0.014	0.009	0.014	0.014	0.009	0.014	0.014	0.008	0.014	0.014	0.011	0.014	0.014	0.011	0.014	0.014	0.011	0.014
Host country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Other controls	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

To have a homogeneous sample of states a priori, we focus the analysis only on European countries. In the table 3 we show the main regression results do not change for this sub-sample of nations, indeed the coefficients seem to be higher.

Table 3 - Impact of tax complexity on bilateral flows of FDI, only European countries.

VARIABLES	(1) FDI/GDP	(2) FDI/GDP	(3) FDI/GDP	(4) FDI/GDP	(5) FDI/GDP	(6) FDI/GDP
Diff. time	-1.075** (0.501)		-1.083** (0.525)	-1.090* (0.653)		-1.097* (0.655)
Bilateral export	0.069*** (0.021)	0.068*** (0.021)	0.069*** (0.021)	0.069*** (0.021)	0.067*** (0.021)	0.069*** (0.021)
Diff. Paymentes		-0.328** (0.127)	0.026 (0.116)		-0.035 (0.173)	-0.093 (0.174)
Constant	0.239 (0.218)	0.019 (0.235)	0.242 (0.221)	0.311 (0.235)	0.407 (0.278)	0.275 (0.258)
Observations	2,277	2,277	2,277	2,277	2,277	2,277
R-squared	0.011	0.007	0.011	0.012	0.010	0.012
Host country FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Other controls	NO	NO	NO	YES	YES	YES

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Other controls: difference between countries in inflation, level of corruption, political stability, public expenditure on GDP, rule of law.

## Instrumental variables estimates

This main regression estimates are statistically significant and substantial in magnitude. However, tax complexity are of course potentially endogenous. Using an instrumental variables (IV) strategy based on instrumenting for variable *time* using the permanence of Hasburg Monarchy, however it is not possible to refer this instrumental variable to several years. One solution to this problem involves going to a cross section analysis. In table 4 we replicate the gravitational model using the means of the variables in the period 2013-2016.

According to the first stage results (table 4) we find that the instrument *diff. empire* has a positive and highly significant effect on difference in tax complexity between countries analyzed. In addition, the instrument results to be a good predictor, as the Cragg-Donald Wald F statistic statistics take on the value between 41.88 and 161.86. As the second stage is concerned (table 4), it turns out that the coefficient of difference in variable *time* is statistically significant at 1% using different specification of first difference.

Table 4 - Impact of tax complexity on bilateral flows of FDI, using instrumental variables.

VARIABLES	(1)	(2)	(3)	(4)
	FDI/GDP	FDI/GDP	FDI/GDP	FDI/GDP
	Top statutory tax rate		Total tax and contribution effective rate	
Diff. Empire	0.159*** (0.024)	0.147*** (0.251)	0.207*** (0.026)	0.210*** (0.026)
F-Test	41.76***	34.48***	65.17***	59.54***
Kleibergen-Paap rk LM statistic	45.13***	36.23***	71.08***	59.72***
Diff. Time	-1.212** (0.550)	-1.423** (0.555)	-1.069* (0.563)	-1.075** (0.459)
Diff. Payment		0.179 (0.147)		0.006 (0.200)
Diff. Tax rate	0.002 (0.021)	0.008 (0.024)	-0.015 (0.011)	-0.015 (0.012)
Bilateral export	0.064*** (0.013)	0.065*** (0.013)	0.069*** (0.013)	0.069*** (0.013)
Constant	0.696*** (0.218)	0.762*** (0.231)	0.574*** (0.191)	0.576*** (0.185)
Observations	993	993	993	993
R-squared	0.025	0.024	0.028	0.028
Host country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Other controls	YES	YES	YES	YES

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Robustness check

A range of robustness checks for the results are carried out in tables 5, 6 and 7. In table 5 we replicate the main regression (eq.1) as in table 1, replacing the difference between the tax rates of country  $i$  and country  $j$  with the effective tax rate on labour and the effective tax rate on other tax bases that are not labor and profits from the dataset Doing Business in the first and second column. In column (3) we use only for the OECD countries the *average statutory corporate tax rate*, computed by OECD. In column (4) and (5), only for European Union member countries, we use respectively the *effective average tax rate* and *taxes on capital as percentage of GDP*. All of the estimates reported in table 3 are comprehensive of other countries control variables in the previous tables, but the coefficients are suppressed for clearer presentation.

Table 5 – Impact of tax complexity on bilateral flows of FDI, with different measures of tax rate.

VARIABLES	(1) FDI/G DP	(2) FDI/G DP	(3) FDI/G DP	(4) FDI/G DP	(5) FDI/G DP	(6) FDI/G DP	(7) FDI/G DP	(8) FDI/G DP	(9) FDI/G DP
	Average statutory corporate tax rate (only OECD)			Effective average tax rate (only EU)		Taxes on capital as percentage of GDP (only EU)			
Diff. time	- 0.871* *		- 0.875* *	- 1.791 *		- 1.791 *	- 1.607 *		- 1.628 *
	(0.377)		(0.375)	(0.953)		(0.956)	(0.827)		(0.843)
Diff. payments		0.027	0.065		-0.029 (0.356)	0.005 (0.364)		-0.144 (0.322)	-0.275 (0.360)
		(0.110)	(0.104)		)	)		)	)
Diff. Tax rate	-0.005 (0.016)	-0.017 (0.020)	-0.005 (0.016)	0.010 (0.020)	-0.036 (0.041)	0.010 (0.021)	0.184 (0.180)	0.007 (0.151)	0.179 (0.176)
Bilateral export	0.069* **	0.070* **	0.069* **	0.069 ***	0.068 ***	0.069 ***	0.071 ***	0.067 ***	0.071 ***
	(0.020)	(0.020)	(0.020)	(0.023)	(0.023)	(0.023)	(0.022)	(0.022)	(0.022)
Constant	0.667* **	0.401* **	0.673* **	-0.448 (0.346)	1.532 (3.773)	3.567 (4.627)	0.674 (0.497)	0.348 (0.419)	0.534 (0.466)
	(0.182)	(0.230)	(0.185)	)	)	)	)	)	)
Observations	3,404	3,404	3,404	1,579	1,579	1,579	1,922	1,922	1,922
R-squared	0.014	0.011	0.014	0.015	0.012	0.015	0.017	0.013	0.017
Host country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Other controls	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Other controls: difference between countries in inflation; level of corruption; political stability and rule of law.

In table 6 we replicate the main regression (eq.1), replacing the independent variable. In the first three columns of table 6 we use only the FDI on Labor Force as dependent variable, in the columns (4-5-6) we use FDI on population. All of the estimates reported in table 4 are comprehensive of other countries control variables in the previous tables, but the coefficients are suppressed for clearer presentation. We notice that

the significance of the coefficient of the difference in tax complexity, measured by the variable *time*, don't vary.

Table 6 - Impact of tax complexity on bilateral flows of FDI, with different measures of dependent variable.

	(1)	(2)	(3)	(4)	(5)	(6)	(13)	(14)	(15)	(16)	(17)	(18)
VARIABLES	FDI/L about Force	FDI/L about Force	FDI/L about Force	FDI/L about Force	FDI/L about Force	FDI/L about Force	FDI/Pop ulation	FDI/Pop ulation	FDI/Pop ulation	FDI/Pop ulation	FDI/Pop ulation	FDI/Pop ulation
	Total tax and contribution effective rate						Top statutory tax rate			Total tax and contribution effective rate		
	Top statutory tax rate			Top statutory tax rate			Top statutory tax rate			Total tax and contribution effective rate		
Diff. time	-	-	-	-	-	-	-	-	-	-	-	-
	87.013		87.640	97.592		97.554	43.317*		43.697*		-48.575*	-48.596*
	**		**	*		*	*		*			
	(43.96		(43.73	(53.86		(53.43	(21.258)		(21.168)		(25.992)	(25.797)
	4)		7)	3)		2)						
Diff. Tax rate	-1.311	-2.575	-1.297	-1.513	-1.379	-1.520	-0.645	-1.274	-0.637	-0.771	-0.697	-0.767
	(1.678	(2.237	(1.686	(0.982	(0.998	(1.067	(0.806)	(1.075)	(0.809)	(0.476)	(0.481)	(0.514)
	)	)	)	)	)	)	)	)	)	)	)	)
Bilateral export	4.792*	4.887*	4.822*	5.217*	5.139*	5.217*	2.381**	2.431**	2.399**	2.599**	2.561**	2.600**
	**	**	**	**	**	**	*	*	*	*	*	*
	(1.520	(1.521	(1.521	(1.540	(1.532	(1.540	(0.759)	(0.759)	(0.759)	(0.769)	(0.765)	(0.769)
	)	)	)	)	)	)						
Diff. payments		5.297	9.190		-4.026	-0.876		3.629	5.570		-1.085	0.484
		(11.95	(11.21		(16.31	(15.09		(6.146)	(5.857)		(8.048)	(7.498)
		3)	4)		9)	1)						
Constant	46.473		47.417	44.631		44.503	24.430*		25.003*	23.347*		23.418*
	***	19.997	***	***	22.007	***	**	11.331	**	**	12.212	**
	(14.28	(23.76	(14.84	(13.45	(21.00	(14.11	(7.274)	(11.584)	(7.573)	(6.856)	(10.284)	(7.201)
	6)	3)	7)	9)	2)	3)						
Observati ons	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404	3,404
R- squared	0.017	0.015	0.017	0.018	0.015	0.018	0.017	0.015	0.017	0.018	0.015	0.018
Host country												
FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Other controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Other controls: difference between countries in inflation; level of corruption; political stability and rule of law.

Observing the dependent variable more closely, we notice that there are several zero values, the 14,27% of the sample. For this reason, as robustness check, we use a Tobit model that is a standard econometric method used in the case a dataset excess zeros (Green, 2003). In the first three column of table 5 we show the results of the main regression (eq.1) using a Tobit model without other controls, for different levels of censoring limit (no limit, 1° and 99° quartile and 5° and 95° quartile). In the last three column of table 7 we show the same regression results using a new set of controls.

Table 7 - Impact of tax complexity on bilateral flows of FDI, using Tobit model.



VARIABLES	(1)	(3)	(5)	(7)
	FDI/GDP	FDI/GDP	FDI/GDP	FDI/GDP
	Top statutory tax rate	Total tax and contribution effective rate	Effective tax rate on labour	Effective tax rate on other
Diff. time	-1.512** (0.629)	-1.747** (0.865)	-1.744** (0.847)	-1.739** (0.795)
Diff. payments	-0.195 (0.354)	-0.414 (0.507)	-0.346 (0.449)	-0.107 (0.360)
Diff. Tax rate	-0.016 (0.035)	-0.026 (0.020)	-0.022 (0.016)	-0.079* (0.042)
Bilateral export	0.074*** (0.022)	0.077*** (0.022)	0.077*** (0.022)	0.071*** (0.022)
Constant	-0.648 (0.832)	-0.475 (0.871)	-0.455 (0.841)	-0.520 (0.905)
Observations	2,046	2,046	2,046	2,046
Host country FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Other controls	YES	YES	YES	YES
Left-censored	NO	NO	NO	NO
Right-censored	NO	NO	NO	NO

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Other controls: difference between countries in inflation; level of corruption; political stability and rule of law.

## Conclusion

We find evidence that in recent years, between the most development countries, tax complexity, measured by the length of time required to comply with the tax codes, have a negative significant adverse effect on allocation of FDI. We can therefore state that an increase in the difference between tax complexity in the home country and the tax complexity of the destination country is related with a decrease in FDI outflows.

In order to capture the economic distance and control for not observable difference between countries we use a gravity model developer by Isard (1960). To solve possible endogeneity problem in the model we have adopted a model that instruments the variable *time* with the permanence in the Hasburg Monarchy. This result holds even when a range of country-specific controls is added, including other indicators of the quality of governance (level of corruption, political stability and rule of law). This result is also stronger in a sub-sample of countries with more homogeneous taxation systems (European countries). This effect is robust if we control for different measures tax rates, different measures of the dependent variable and we replicate the main results using a Tobit model.

We show that complexity and uncertainty regarding the design of the tax system condition the allocation of FDI across countries. Firm managers seem to choose to allocate investments in not hostile environment (Friedman et al., 2000). A complex tax system directly imposes transaction costs on a firm, reducing the return to any given investment (Warskett, Winer and Hettich, 1998). Uncertainty might affect business decisions because firms and individuals prefer less risk for any given expected return. Complexity itself may generate uncertainty, since it can obstruct discernment of the meaning of the law (Edmiston, Mudd and Valev, 2003). For firms that are making a decision about where to locate, the costs associated with a complicated tax code might compensate to some extent attractions of a lower tax rate.

## References

- Alfaro, L., Chanda, A., Kalemli-Ozcan, S., and Sayek, S., 2004. FDI and economic growth: The role of local financial markets, *Journal of International Economics*, 64, 89–112.
- Barrios, S., Huizinga, H., Laeven, L. and Nicodème, G. (2012), “International taxation and multinational firm location decisions”, *Journal of Public Economics*, 96, 946-958.
- Barro, R. (1991), “Economic Growth in a Cross Section of Countries”, *Quarterly Journal of Economics* 106, 407-443.
- Baumol, W., Litan R., and Schramm C. (2007), *Good Capitalism, Bad Capitalism, and the Economics of Growth and Prosperity*. New Haven, CT: Yale University Press.
- Becker, J. and Riedel, N. (2012), “Cross-border tax effects on affiliate investment—Evidence from European multinationals”, *European Economic Review*, 56, 436-450.
- Becker, S. O., Boeckh, K. , Hainz, C. and Woessmann, L. (2016), The Empire Is Dead, Long Live the Empire! Long-Run Persistence of Trust and Corruption, in the Bureaucracy. *Econ J*, 126: 40-74.  
doi:10.1111/eoj.12220
- Belitski, M., Chowdhury, F. and Desai, S. (2016), “Taxes, corruption, and entry”, *Small Business Economics*, 47, 201.
- Bellabarba M. (2015), *L’Impero asburgico, Il Mulino*.
- Bellak, C. (1998), The Measurement of Foreign Direct Investment: A Critical Review, *International Trade Journal* 12, 227–57.
- Bouvatier V., Capelle-Blancard, G. and Delatte, A.L. (2017), “Banks Defy Gravity in Tax Havens”, Working Papers 2017-16, CEPII Research Center.
- Buettner, T. (2017), The Impact of Taxes and Public Spending on the Location of FDI: Evidence from FDI-flows within Europe, *ZEW Discussion Paper*, No. 02-17.
- Buettner, T., and Wamser, G. (2013). “Internal debt and multinationals’ profit shifting, empirical evidence from firm-level panel data”, *National Tax Journal*, 66, 63–95.
- Buettner, T., Overesch, M. and Wamser, G., (2018), “Anti profit-shifting rules and foreign direct investment”, *International Tax and Public Finance*, 25, 553-580.
- Clifford, S. (2017), “Taxing multinationals beyond borders: financial and locational responses to CFC rules”, *EPRU Working Paper Series 17-02*, Economic Policy Research Unit (EPRU), University of Copenhagen. Department of Economics.
- Daniels, J.P., O’Brien P., von der Ruhr, M (2015), “Bilateral tax treaties and US foreign direct investment financing modes”, *International Tax Public Finance*, 22, 999–1027.
- Desai, M.A., Foley, C.F. and Hines, J.R, (2004), “Foreign direct investment in a world of multiple taxes”, *Journal of Public Economics*, 88, 2727-2744.

- Devereux, M.P. (2007), “The Impact of Taxation on the Location of Capital, Firms and Profit: a Survey of Empirical Evidence”, Working Papers 0702, Oxford University Centre for Business Taxation.
- Devereux, M.P. and Freeman H. (1995), “The impact of tax on foreign direct investment: empirical evidence and the implications for tax integration schemes”, *International Tax and Public Finance*, 2, 85-106.
- Devereux, M.P. and Griffith, R. (2003), “Evaluating tax policy for location decisions”, *International Tax and Public Finance*, 10, 107-126.
- Devereux, M.P. and H. Freeman (1995), *The impact of tax on foreign direct investment: empirical evidence and the implications for tax integration schemes*, *International Tax and Public Finance* 2, 85–106.
- Devereux, M.P. and Maffini G. (2007), *The impact of taxation on the location of capital, firms and profit: A survey of empirical evidence*, Oxford University Centre for Business Taxation, Working Paper 07/02.
- Devereux, M.P., Griffith R., and Klemm A. (2002), “Corporate Income Tax Reforms and International Tax Competition.” *Economic Policy*, 17(35): 449–95.
- Djankov, S., Ganser T., McLiesh C., Ramalho R. and Schleifer A. (2010), “The effect of corporate taxes on investment and entrepreneurship”, *American Economic Journal: Macroeconomics*, 2, 31-64.
- Djankov, S., Ganser T., McLiesh C., Ramalho R. and Schleifer A. (2010), “The effect of corporate taxes on investment and entrepreneurship”, *American Economic Journal: Macroeconomics*, 2, 31-64.
- Du, L., Harrison, A., and Jefferson, G. (2014), “FDI Spillovers and Industrial Policy: The Role of Tariffs and Tax Holiday”s, *World Development*, 64, 366-383.
- Durán-Cabré, J.M., Esteller-Moré, A. (Editors) (2018): *Impuesto sobre sociedades, ¿quo vadis? Una perspectiva europea*, Publicacions Universitat de Barcelona, 2018.
- Edmiston K., Mudd, S. and Valev, N. (2003), “Tax Structures and FDI: The Deterrent Effects of Complexity and Uncertainty”, *Fiscal Studies*, 24, 341-359.
- Friedman E., Johnson S., Kaufmann D., Zoido-Lobaton P. (2000), Dodging the grabbing hand: the determinants of unofficial activity in 69 countries, *Journal of Public Economics*, Volume 76, Issue 3, 2000, Pages 459-493, ISSN 0047-2727, [https://doi.org/10.1016/S0047-2727\(99\)00093-6](https://doi.org/10.1016/S0047-2727(99)00093-6).
- Gordon, Roger H., and James R. Hines Jr. 2002. “International Taxation.” In *Handbook of Public Economics*. Volume 4, ed. Alan J. Auerbach and Martin Feldstein, 1935–95. Amsterdam: North-Holland.
- Greene, W. H. (2003), *Econometric Analysis*, Prentice Hall , Upper Saddle River, NJ.
- Gresik, T. A., Schindler, D., & Schjelderup, G. (2015), “The effect of tax havens on host country welfare”, CESifo Working Paper, 5314, Munich.
- Guillerm, M. (2015), *Les méthodes de pseudo-panel*, Insee, Document de travail Méthodologie et Statistique-DMCSI, M 2015/02.
- Guillerm, M. (2017). Pseudo-panel methods and an example of application to Household Wealth data. *Economie et Statistique / Economics and Statistics*, 491-492, 109-130. DOI: 10.24187/ecostat.2017.491d.1908
- Guiso, L., Sapienza P., and Zingales L. (2008). “Long Term Persistence”, CEPR Discussion Paper 6981

- Hines, J. (1995), *Forbidden Payment: Foreign Bribery and American Business After 1977*, NBER Working Paper 5266.
- Hines, J. (1997), Tax Policy and the activities of multinational corporations, in: Auerbach, A. (Eds.), *Fiscal Policy – Lessons from Economic Research*. Cambridge MA, 401–445.
- Hines, James R., Jr. 2007. “Corporate Taxation and International Competition.” In *Taxing Corporate Income in the 21st Century*, ed. Alan J. Auerbach, James R. Hines, Jr., and Joel Slemrod, 268–95. New York: Cambridge University Press.
- Hines, James R., Jr., and Eric M. Rice. 1994. “Fiscal Paradise: Foreign Tax Havens and American Business.” *Quarterly Journal of Economics*, 109(1): 149–82.
- Hong, S. (2018), “Tax treaties and foreign direct investment: a network approach”, *International Tax Public Finance*, 25, 12-77.
- Ingrao, C. W. (2000), *The Habsburg Monarchy, 1618-1815*. Second edition, Cambridge University Press
- Isard, W. (1960), *Methods of regional analysis: an introduction to regional science*, Cambridge, MA.
- Jerbashian, V. and Kochanova, A. (2016), “The impact of doing business regulations on investments in ICT”, *Empirical Economics*, 50(3), 991–1008.
- Johannesen, N., Tørsløv, T. and Wier, L. (2016), Are less developed countries more exposed to multinational tax avoidance? Method and evidence from micro-data, WIDER Working Paper Series 010, World Institute for Development Economic Research.
- Jost, T. (1997), Direct investment and Germany as a business location, Discussion paper Economic Research Group of the Deutsche Bundesbank 2.
- Kaufmann, D., Kraay, A. and Mastruzzi, M. (2010). *The Worldwide Governance Indicators: methodology and analytical issues*. World Bank Policy Research Working Paper no. 5430.
- Kessing, S. G., Konrad, K. A., and Kotsogiannis, C. (2009), “Federalism, weak institutions and competition for foreign direct investment”, *International Tax and Public Finance*, 16(1), 105–123.
- La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (2008), “Economic Consequences of Legal Origins”, *Journal of Economic Literature*, 46(2): 285–332.
- Lawless, M., McCoy, D., Morgenroth, E. and O’Toole, C. (2015), *Corporate Tax and Location Choice for Multinational Firms*, MPRA Paper 64769, University Library of Munich, Germany.
- M. Meriggi (1987), *Il Regno Lombardo-Veneto*, Torino : UTET, 1987 p. 275
- Mayer, T. and Ottaviano G. (2007), “The happy few: new facts on the internationalization of European firms”, Bruegel-CEPR EFIM 2007 Report, Bruegel Blueprint Series.
- Mooij, de R. and S. Ederveen, 2006, What a difference does it make? Understanding the empirical literature on taxation and international capital flows, Economic Papers No. 261, European Commission, D-G for Economic and Financial Affairs, Brussels.
- Mutti, J. and Grubert, H. (2004), “Empirical asymmetries in foreign direct investment and taxation”, *Journal of International Economics*, 62, 337-358.

- OECD (2018), Inclusive Framework on BEPS, Progress report July 2016-June 2017, Framework on BEPS - Third Session, 21-22 June 2017.
- Putnam, R. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton University Press.
- Razin, A., Sadka, E. and Tong, H. (2005), Corporate taxation and bilateral FDI with threshold barriers, NBER working paper n. 11196.
- Razin, A., Sadka, E. and Tong, H. (2008), Bilateral FDI flows: threshold barriers and productivity shocks, *CESifo Economic Studies*, 54(3), 451-70.
- Slemrod, Joel. 1990. "Tax Effects on Foreign Direct Investment in the United States: Evidence from a Cross-Country Comparison." In *Taxation in the Global Economy*, ed. Assaf Razin and Joel Slemrod, 79–117. Chicago: University of Chicago Press.
- Smarzynska Javorcik, B. (2004), "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers Through Backward Linkages", *American Economic Review*, 94, 605-627.
- Stöwhase, S. (2002), "Profit shifting opportunities, multinationals, and the determinants of FDI", *Discussion Papers in Economics n.29*, University of Munich.
- Tabellini, G. (2010), "Culture and Institutions: Economic Development in the Regions of Europe", *Journal of the European Economic Association*, 8(4):677-716.
- Taylor, AJP (1948), *The Habsburg Monarchy 1809-1918: A History of the Austrian Empire and Austria-Hungary*, Penguin Books (reprint 1990).
- Tørsløv, Thomas and Wier, Ludvig and Zucman, Gabriel (2018), *The Missing Profits of Nations*, NBER Working Paper No. w24701. Available at SSRN: <https://ssrn.com/abstract=3194743>.
- Van Stel, A., Storey, D.J. and Thurik, A.R. (2007), "The Effect of Business Regulations on Nascent and Young Business Entrepreneurship", *Small Business Economics*, 28, 171.
- Warskett, G., Winer S. and Hettich, W. (1998), "The Complexity of Tax Structure in Competitive Political Systems", *International Tax and Public Finance*, 5, 123-151.
- Wei, S. (2000). How Taxing is Corruption on International Investors? *The Review of Economics and Statistics*, 82(1), 1-11. Retrieved from <http://www.jstor.org/stable/2646667>
- Wells, B.W. (1922), Taxation and Bureaucracy in the Declining Empire, *The Sewanee Review*, Vol. 30, No. 4, pp. 421-445.
- Zamagni V. (2008), *Introduzione alla storia economica d'Italia*, Il Mulino.

## Appendix

Table A1 – List of countries

<i>Country</i>	<i>Code</i>
<b><i>OECD and European countries</i></b>	
Austria	AUT
Belgium	BEL
Czech Republic	CZE
Germany	DEU
Denmark	DNK
Spain	ESP
Estonia	EST
Finland	FIN
France	FRA
United Kingdom	GBR
Greece	GRC
Hungary	HUN
Ireland	IRL
Italy	ITA
Lithuania	LTU
Luxembourg	LUX
Latvia	LVA
Netherlands	NLD
Poland	POL
Portugal	PRT
Slovak Republic	SVK
Slovenia	SVN
Sweden	SWE
Switzerland	CHE
Iceland	ISL
Norway	NOR
<b><i>OECD countries</i></b>	
Australia	AUS
Canada	CAN
Chile	CHL
Israel	ISR
Japan	JPN
Korea, Rep.	KOR
New Zealand	NZL
United States	USA
Mexico	MEX
Turkey	TUR
<b><i>European countries – not OECD</i></b>	
Bulgaria	BGR
Cyprus	CYP

Croatia	HRV
Malta	MLT
Romania	ROU

Tab A2 - Summary statistics

VARIABLES	N. Obs.	Mean	Stand. Dev.	Min	Max
Bilateral export	4,245	2.261	4.774	0.000349	61.60
Diff. total tax and contribution effective rate	4,245	0.788	17.48	-52.40	52.40
Diff. effective tax rate on other	4,245	0.276	3.553	-18.80	19
Diff. effective tax rate on labour	4,245	0.846	18.23	-51	51
Diff. average statutory corporate tax rate (only OECD)	3,404	-0.553	9.334	-26.58	26.58
Diff. Top statutory corporate tax rate	4,245	-0.345	9.905	-28	29.08
Diff. effective average tax rate (only EU)	2,277	-0.519	9.360	-29.40	29.40
Diff. taxes on capital as percentage of GDP (only EU)	2,689	-0.190	1.574	-5.400	6.274
Diff. level of corruption	4,245	-0.660	23.15	-51.18	76.44
Diff. political stability	4,245	-1.721	28.10	-94.76	91.43
Diff. rule of law	4,245	-0.676	19.68	-53.37	67.79
Diff. inflation	4,245	0.0427	2.430	-9.254	10.65
Diff. empire	4,245	-0.0196	0.562	-1.935	1.935
Diff. time	4,245	0.0865	0.626	-1.973	2.109
Diff. payments	4,245	0.0250	0.623	-1.922	2.327
FDI/GDP	4,245	0.225	4.891	-114.3	182.9
FDI/Labour force	4,245	21.18	477.4	-6,300	22,986
FDI/Population	4,245	10.59	233.4	-3,338	11,014

Table A2 – Years ruled by Hasburg monarchy – instrumental Variable

Country	Years ruled by Hasburg monarchy
Austria	341
Belgium	79
Bulgaria	0
Cyprus	0
Czech Republic	341
Germany	341
Denmark	22
Spain	0
Estonia	0
Finland	0
France	0
United Kingdom	0
Greece	0
Croatia	149
Hungary	149



Ireland	0
Italy	129
Lithuania	0
Luxembourg	79
Latvia	0
Malta	0
Netherlands	0
Poland	127
Portugal	0
Romania	149
Slovak Republic	341
Slovenia	341
Sweden	0
Switzerland	0
Iceland	0
Norway	0