



Foreign direct investment, legal uncertainty and corporate income taxation

Martin Zagler^{a, b, *}

^a UPO University of Eastern Piedmont, Via Perrone 16, I-28100, Novara, Italy

^b WU Vienna University of Economics and Business, Welthandelsplatz 1/D4, A-1020, Vienna, Austria

ARTICLE INFO

JEL classification:

F21
H25
H87
K33

Keywords:

Foreign direct investment
Legal uncertainty
Double tax treaties

ABSTRACT

This paper asks whether legal uncertainty surrounding corporate income taxation can defer foreign direct investment (FDI) in developing economies. Legal risk or uncertainty can take many forms. We will focus on uncertainty circling around double tax agreements, differences in the type of legal systems, and corruption. We test the effect of legal uncertainty on foreign direct investment both directly or indirectly thru taxation in an extended gravity model. Our observation unit is country pairs (FDI sender and FDI receiver). We find that an increase in the ratio of the statutory corporate income tax rate of the destination relative to the source country negatively impact foreign direct investment. Interacting the statutory corporate income tax rate with measures of legal uncertainty, we observe a negative effect. This implies that legal uncertainty detracts foreign direct investment, and the more so the higher are corporate tax rates.

1. Introduction

This paper investigates the impact of corporate income taxation and legal uncertainty on foreign direct investment. The OLI paradigm (Dunning, 1980) identifies ownership, location and internalization advantages that explain why firms invest abroad. Whilst ownership and internalization are firm specific, locational advantages depend on the characteristics of the source country and the destination country. Some factors are country specific, such as the existence of natural resources or specific human capital.¹ As there are more firms in a big economy, the size of the source country will matter. As there are more opportunities in bigger destination countries, the size of its economy will matter, too (Bloningen and Piger, 2014). Clearly, distance can pose an obstacle to foreign direct investment (FDI).

Little of that can be changed by economic policy. When trying to attract foreign direct investment, countries have therefore looked at tax rates, in particular on corporate income tax rates, as a policy measure to attract FDI. Investors however complain that there is a lot of uncertainty surrounding the actual tax burden when investing abroad.

This paper asks whether the institutional framework, and in particular legal uncertainty, has an impact on foreign direct investment. We will specify legal uncertainty in three dimensions. First, we try to classify *knowledge* about the foreign legal system by looking at its closeness to the domestic legal tradition, distinguishing between common law, civil law, custom law and religious law. Next, we identify *trust* in the foreign legal system by adopting an indicator of corruption. Finally, we control for the existence of a double tax

* UPO University of Eastern Piedmont, Via Perrone 16, I-28100, Novara, Italy.

E-mail address: martin.zagler@gmail.com.

¹ We will control for country specific factors using source and destination fixed effects.

treaty between countries. The stated aim of these treaties is to avoid double taxation by assigning taxing rights either to the source or the destination country. Whilst this clearly reduces the overall tax burden, it introduces an element of uncertainty, as the treaty may be interpreted differently by the signature countries, an issue which may be particularly prevalent for young treaties.

This paper proceeds as follows. We will review some of the literature in Section 2, before turning to the data and methodology in Section 3. Section 4 presents the main results, and Section 5 concludes.

2. Related literature

Foreign direct investment (henceforth FDI) has become an important source of private external finance for developed and especially for developing countries. While FDI represents investment in production facilities, its significance for developing countries is much greater than for developed countries. [Sujit et al. \(2020\)](#) study the determinants of FDI and find that profitability, openness, but most significantly government regulation and certainty exhibit a positive impact on FDI. [Rjoub et al. \(2017\)](#) demonstrate that domestic investment, openness, political constraints, and taxation are important elements for FDI in Africa. [Farok et al. \(2020\)](#) insist that clearer government procedures matter for FDI in developing economies.

Not only can FDI add to investment and capital formation, but, perhaps more important, it is also a means of transferring production technology, skills, innovative capacity, and organizational and managerial practices between locations, as well as of accessing international marketing networks. The first to benefit are enterprises that are part of transnational systems (consisting of parent firms and affiliates) or that are directly linked to such systems through nonequity arrangements. But these assets can also be transferred to domestic firms and the wider economies of host countries if the environment is conducive. The greater the supply and distribution links between foreign affiliates and domestic firms, and the stronger the capabilities of domestic firms to capture spillovers (that is, indirect effects) from the presence of and competition from foreign firms, the more likely it is that the attributes of FDI that enhance productivity and competitiveness will spread. In this respect, beyond inducing transnational corporations to locate their activities in a particular country, policies and fiscal strategies matter.

2.1. Legal risk

A main concern for firms to invest in developing countries is the assurance to find a good environment for FDI in terms of political and social stability and the presence of rules and laws that assure legal certainty in carry on the business. More specifically we can distinguish five basic principles, which can be considered fundamental components of a macro-legal environment for FDI in developing countries. The first is the publicity of the rule of law, which enables all concerned parties to have access to the laws they have to abide. The second is the clarity and certainty of the legal framework, which allows such parties to understand which laws are applicable to their situation and what their specific meaning is. The third is predictability in the application of the rule of law, which reduces the risks linked to changing interpretation, implementation or enforcement of the laws. The fourth is stability of the legal, political and policy frameworks, which provides investors assurances that the local government will not unilaterally and unfavorably change the basic conditions underlying their investment decisions. Finally, there is fairness, in particular the possibility of legal recourse and due process, with access to independent judiciary and dispute settlement mechanism. Legal uncertainty can therefore be detrimental to FDI ([D'Amato, 1983](#)).

[Mosquera Valderrama \(2020\)](#) analyze the role of tax incentives for FDI and concludes that developing economies cannot do without them. However, an analysis of the effect of corporate income taxation on FDI can not be done without considering the overall impact that legal uncertainty has on this relationship. In order to reach a beneficial environment for FDI, harmonization (same legal systems) and clarity of law inside these countries is a prerequisite. The need for this harmonization derives in part from the costs of legal diversity and the legal uncertainty that possibly results from it for particular groups. Broadly, “legal certainty” would imply dynamic and efficient substantive laws clearly stating the rights, obligations, and liabilities of all business parties, rule-based business transactions, procedural law providing prompt and inexpensive means to the courts, an institutional framework that supports business development and sustainability, strict adherence to the principles of ‘rule of law’ and ‘supremacy of the law’, and an efficient and independent judiciary. Legal uncertainty on the other hands always occurs when individual actors are uncertain of the effects of the provisions of the dominant legal system on the results of their actions.

Legal uncertainty in a very broad meaning generates transaction costs which obviously are higher in international transactions than in domestic trade. The costs of collecting information due to the lack of knowledge of foreign statutes prevent international purchases or leads to the necessity of more expensive information collection. There are costs of legal disputes, which are much greater in the event of international legal disputes than in the case of a domestic legal dispute ([Freyhold et al., 1995](#)). There are costs of setting incentives for pushing through legal claims. This includes private attempts to speed up approval procedures and legal procedures. As is known, “beneficial charges”, that apply in particular in developing countries, and include bribes or pay-offs, represent an important cost factor for multinational corporations. Part of this is probably the result of having to deal with legal uncertainty or legal instability and, sometimes also corruption issues ([Wei, 1997](#)). Finally, there are other transaction costs, in particular due the difficulties involved in complaining about goods, in making warranty claims and in exchanging goods. The associated costs in case of international transactions, including travel expenses, time spent (opportunity costs), and annoyance (negative utility), are high, in particular if law suits are the consequence.

The legal system is one of the most important institutions of a society. ([North, 1994](#)). Legal uncertainty due to different legal systems in act can represent an investment risk for both domestic and foreign investors. For domestic investors it is not only the actual existence of institutions as being important but also their stability. For foreign investors the legal uncertainty can be caused not only by

imperfect national legal systems, but also by the different natures of legal systems in the international context.

Moreover, as far as transnational economic integration and FDI are concerned, law is a fundamental instrument. There are high costs involved in cross-border business due to different legal systems within a global or a regional area. These costs are, on the one hand, occurring through the collection of information about the respective national regulations, and, on the other hand, are due to the uncertainty of individual cross-border transactions that increase the number of legal provisions and processes that could be faced. In a recent working paper, [Laudage \(2020\)](#) expresses these concerns very directly, noting that government tax revenues can suffer from too much tax risk.

More in detail different legal systems may imply additional costs for acquiring the information needed to write a particular contract in other legal areas; higher costs for litigating issues under various contracts governed by different legal regimes; costs of instability due to the fact that several contracts are subject to subsequent changes in the law; and diversity in judicial administration across the different countries.

In general empirical research on the effect of legal uncertainty on economic trade and growth suffers from the difficulty of measuring correctly the degree of legal uncertainty. Most studies model legal uncertainty using factors such as political instability, juridical incredibility, a lack of civil liberty or the degree of corruption. All these studies concentrate on explaining cross-country variations in growth due to differences in legal uncertainty within a country in worldwide samples or only for developing economies.

Written law is the first observable characteristics of formal institutions used in empirical research in order to measure the quality of legal institutions. For example, it has been discovered that formal legal protections for investors correlate with the size and depth of capital markets and hence with investment levels ([La Porta et al., 1997](#)). This approach has some limitations due to the fact that cannot capture the role of informal institutions and cannot take into account possible interdependencies with formal institutions.

Surveys of country risk experts or foreign and domestic investors are normally used as a third approach in the empirical literature on the impact of legal uncertainty or institutions on economic growth. These surveys cover a series of questions about the business environment. However, also this third approach is subject to criticism. Some authors note that the survey data used in this approach raises at least two relevant difficulties ([Rodrik, 2004](#)). First the survey data is highly subjective and may depend upon other aspects than the actual institutional environment. Second this kind of data gives no policy guidelines because the results say nothing about which institutional model is superior but just that it is important to make investors feel save.

[Turrini and Ypersele \(2006\)](#) explicitly analyze the effects of cross-border legal uncertainty taking into consideration mainly two variables. The first variable is an index of legal similarity; the other is a dummy variable equal to 1 if a pair of countries shares the same origin of their legal system and to 0 otherwise. The estimation of a standard gravity equation augmented by one of these two variables show that trade flows are higher by about 65 per cent if a pair of countries has identical legal procedures or, respectively, by 47 per cent if a pair of countries shares common origins for their legal systems. These results are in line with other results ([den Butter and Mosch, 2003](#)) that find for a sample of 25 OECD countries that a pair of countries with a similar legal system trades about 46–84 percent more with each other than countries with a different legal system. Hence on average from these studies it seems that a country pair with a similar legal system trades almost 50 percent more with each other. Other studies use firm-level data ([del Gatto et al., 2006](#)) to simulate that a 5 per cent reduction in international trade barriers (induced by legal harmonization) results in a 2.13% increase in productivity due to a more competitive environment.

Another study considers from a theoretical point of view the issue whether legal harmonization could be an appropriate solution to the problem of the high macroeconomic costs of legal uncertainty ([Wagner, 2004](#)). In this paper legal uncertainty is regarded as a non-tariff trade barrier. However, the author does not suggest that full harmonization is necessary, because also harmonization itself generates substantial costs. These costs include: direct costs for developing new bureaucracies or demolishing old structures; costs arising from a loss of the advantages of system competition (the advantages being an adaptation to the variety of preferences, efficiency advantages of regulative competition, and the minimization of “rent-seeking” costs caused by bureaucrats/politicians). However, in the paper it is also claimed that, from the point of view of the economy as a whole, welfare gains could be realized through more harmonization.

In the light of the above considerations the paper suggests to adopt a step-by-step approach that would also allow the correction of errors at an early stage. At first is suggested to start with harmonization of contract law for international (transborder) transactions that would give individuals time to get acquainted with the new regime and to evaluate it. The background of the experience gathered through this first stage should make it possible to turn to a more comprehensive harmonization at a later stage if this then is assessed as being desirable. However the author also warns that a legal harmonization only makes sense if it is accompanied by a thorough reform of the system of civil justice and a harmonization of procedural law. The paper concludes that: “a full harmonization (at first sight) may seem to be an adequate instrument for reducing the costs of cross-border legal uncertainty; however, full harmonization itself tends to imply high economic costs, so that it is not generally recommendable. Nevertheless, a gradual (partial) harmonization process could, in some circumstances, be beneficial” ([Wagner, 2009](#)).

Legal uncertainty may be drive by corruption. Corrupt officials and judges may decide against the law or at least postpone the judicial process, which has a cost to foreign investors. Corruption has therefore always been considered an important determinant of foreign direct investment. The direction of the effect of corruption on foreign direct investment is unclear in the literature ([Al-Sadig and Ali, 2009](#)). The reason may be that foreign investors may use corruption to facilitate their investment, thus circumventing bad institutions. This argument has been made by [Delios and Beamish \(2004\)](#). Cross section regressions typically support the view that corruption is bad for FDI, but this may be due to an omitted variable bias, as countries that attract little FDI for different reasons may also be the most corrupt. When controlling for country fixed effects in a panel, [Al-Sadig \(2009\)](#) finds that corruption has no impact at all on FDI. [Caetano and Caleiro \(2005\)](#) split the countries in two samples, high corruption and low corruption countries, and find that the effect of corruption on FDI is negative only for high corruption countries.

2.2. Tax treaties and double tax agreements

Economists have long been concerned about the effect of taxation on foreign direct investment (FDI). Many studies have examined whether and to what extent FDI responds to tax incentives, finding that actually firms do indeed respond to a variety of tax policies and that this can result in an inefficient allocation of investment across countries. As governments use their tax policies to affect the rates of return on capital, provide public goods, or simply capture part of the profits that would otherwise be repatriated to other countries, this can allocate investment away from its most productive use.

One potential method of eliminating this inefficiency is a bilateral tax treaty on FDI. These treaties adjust the tax environment for investment between treaty partners by specifying the applicable tax base, the withholding taxes that can be applied, and other measures affecting the taxation of FDI. Already in 1995, over 2000 of these treaties were in force and they govern the taxation of the large majority of FDI (Radaelli, 1997). That number has since grown to more than 3500. Tax treaties should also provide certainty and protection regarding the level of taxation on investments abroad which may, for instance, be valued by business when deciding on the location of a regional headquarters.

Double tax agreements (or double tax treaties, henceforth DTT) are made in order to avoid double taxation and prevent fiscal evasion with respect to taxes on income. But their wider function is to try to facilitate investment, trade, movement of technology, and movement of personnel between countries. The double tax agreements reduce or eliminate double taxation caused by the overlapping taxing jurisdictions because treaty partners agree to limit taxing rights over various types of income. These tax agreements also agree on methods of reducing double taxation where both countries have a right to tax and moreover generally include an exchange of information facility in order to prevent fiscal evasion. The two tax administrations can also use the mutual agreement procedures to develop a common interpretation and resolve differences of application of the tax treaty.

Double taxation occurs if a multinational company (henceforth MNC) pays tax on the same corporate income earned from economic activity in a foreign country twice: once to the tax authorities of the foreign country, which is host to the economic activity, and once to the tax authorities of the home country, in which the company is domiciled.

Double taxation has to be avoided, through double tax agreements, as it could represent an obstacle or barrier to foreign investment, thus distorting the efficient allocation of scarce financial resources across countries of the world. Yet, DTTs can also reduce FDI in as much as they reduce tax avoidance, tax evasion and other more or less legal tax-saving strategies such as transfer pricing by multinational companies (Blonigen and Davies, 2002). The 2003 Revision to the Commentary to the treaty model of the OECD explicitly mentions prevention of tax avoidance as an objective of DTTs (Arnold, 2004).

More in detail, the theory claims that tax treaties play four major roles, two of which are likely to increase FDI and two of which tend to reduce it (Blonigen and Davies, 2004). Tax agreements increase FDI as they standardize tax definitions and jurisdictions. Janeba (1996) theoretically shows that such coordination can reduce the double taxation of affiliate income. Tax treaties affect the taxation of multinational enterprises by lowering withholding taxes and increasing tax certainty. In particular, Edmiston et al. (2003) find that uncertainty over tax policy is a significant barrier to FDI. Thus, if a tax treaty reduces the likelihood of a host nation unilaterally changing its tax policy, this added certainty would increase FDI.

The combination of these two roles of treaties increases the expected value of after-tax returns from FDI leading one to expect that the introduction of a tax treaty should increase FDI. These above mentioned FDI-increasing aspects of treaties are however at least partially offset by the following two FDI-reducing roles of treaties, due to the increased enforcement of transfer pricing regulation. This occurs by the introduction of additional regulations on the calculation of internal prices, establishing guidelines for resolving disputes between taxation authorities, and encouraging the exchange of information between authorities. The establishment of anti-treaty shopping provisions inhibits the ability to direct profits through low-tax treaty partners in order to minimize tax payments. Since these increase the taxation of affiliate income in a given host, they would lead one to anticipate that a tax treaty might reduce FDI.

Despite the large and increasing number of DTTs concluded, there exists little evidence on the question whether they increase FDI or not. This is surprising given that the question is of great importance especially to developing countries that invest time and other scarce resources to negotiate, conclude, sign and ratify a lot of DTTs. If no increase in FDI can be expected, then the effort spent concluding DTTs would be wasted and the costs imposed would fail to be recovered. In their aim to increase FDI inflows, developing countries have resorted to bilateral treaties to signal their commitment to stable, correct practices and offer favorable treatment to foreign investors. By signing DTTs, developing countries provide foreign investors with security and stability as regards the issue of taxation in addition to the relief from double taxation. (UNCTAD, 1998).

There are two model treaties for DTTs available, which are regularly updated and on which treaty partners can base their treaty if they wish to do so: one from the OECD, the other one from the United Nations. The OECD model treaty clearly favors residence taxation, which benefits developed countries since it is mainly developed country investors who invest in developing countries, not the other way around and residence taxation favors countries with net positive foreign asset positions. The UN model treaty, on the other hand, provides more room for source-based taxation, which is more beneficial to developing countries for the same reason. Critics argue, however, that the UN model treaty is not sufficiently different from the OECD model treaty and is still biased against developing country interests (Figueroa, 1992). Also, the vast majority of DTTs are based on the OECD model (Arnold et al., 2002).

2.3. Tax treaties and foreign direct investment

There is a growing literature on the effects of tax treaties on FDI. Theory generally claims that, in line with the OECD's (1997) model treaty, treaties are intended to increase FDI. However the empirical literature generally finds no evidence for the theoretical hypothesis: researchers find in general an insignificant or a weakly negative effect of treaty formation on FDI (Louie and Rousslang, 2007;

Millimet and Kumas, 2007). This result is often interpreted suggesting that the FDI increasing aspects of treaties, such as tax certainty or withholding tax reductions are balanced with negative effects as mentioned above, yielding a zero net effect of treaties on multinational enterprises.

Blonigen and Davies (2002) represent the first attempt to estimate the impact of tax treaties on FDI. Respectively using panel data on OECD FDI (where FDI is measured as stocks) and US FDI (where FDI is measured as stocks or sales), these papers find that after controlling for country fixed effects there is either a small negative or insignificant effect of treaty formation on FDI. In details using OECD data they find that new treaty activity (during the 1983–1992 period) suggests strong negative impacts on FDI. While they find a positive correlation in the case of much older treaties, they cannot weight this evidence very heavily as they cannot observe FDI activity before these treaties were in place. These results are consistent with previous work by Blonigen and Davies (2002) using only US data. Thus, in conjunction with this earlier work, the results cast doubt upon the FDI promotion rationale for treaty formation, which stands in contrast to the conventional wisdom among many economists and lawyers. The authors suggest that one possible reason for the non-promotion effect of treaties on FDI activity is that treaties reduce firms' abilities to evade taxes through transfer pricing or treaty shopping. An additional possibility for non-promotion of FDI activity by new treaties is that treaties may increase investment uncertainty, at least in the short run. Since a new treaty has yet to be tested in the courts of the partner countries, it may actually increase the perceived risk of investment between treaty partners until the legal interpretation of the treaty has been resolved. Thus, in the short run, the treaty may lead to a reduction in FDI activity. Over the long run, however, this uncertainty will be resolved, clearing the way for the treaty to promote investment. However, when the authors include the new treaty dummy variable with a lag of one year (or even two years) after the treaty was enacted; they get similar negative and statistically significant effects of new treaties on FDI activity. This would argue that the uncertainty issue is not behind the effects they find unless it takes many years to resolve such uncertainty.

Egger et al. (2004), who control for the endogenous selection of which treaties are actually formed, find that treaties significantly reduce FDI stocks. Davies et al. (2007) expand the research on this by utilizing affiliate-level data from Swedish-owned multinationals from 1965 to 1998. In line with earlier studies, they find no significant effect from treaty formation on the level of affiliate sales.

An important study from Neumayer (2006) finds, against all the results so far mentioned, robust empirical evidence that DDTs increase FDI to developing countries. However when the author splits developing countries into low-income and middle-income countries, he found that DDTs are effective in the group of middle income countries.

Double tax treaties are not all the same, and some authors have started to look into details of treaties. Azémar and Dharmapala (2019) look at tax sparing clauses. These permit foreign investors to deduct corporate income taxes in the destination country even if the destination country offers a tax holiday for incoming FDI. In the absence of a tax sparing clause firms are subject to the source country tax right, which may clearly reduce FDI flows.

Finally, firms may be exposed to additional risk when instead of the direct route use conduit countries, in particular tax havens, in order to structure their international FDI (Ahmed et al., 2020). Petkova et al. (2020) calculate effective tax burdens for foreign investors and show that they reduce FDI if and only if there isn't a cheaper indirect route available.

2.4. Corporate income taxation and foreign direct investment

Foreign direct investment has long been investigated in the area of international economics. Geographical distance, as well as home and host country size income have been identified as determinants of FDI. The impact of corporate income taxation on FDI is a more recent field of research. De Mooij and Ederveen (2006) give a good survey of the field. The first evidence for the impact of corporate income taxes on FDI comes from Bénassy-Quéré et al. (2005), who find some evidence for OECD countries once non-linearities are considered.

Overesch and Wamser (2009) do not find an overall impact of CIT on FDI, but find evidence in some industries. Bellak and Leibrecht (2009) find no evidence for the impact of statutory corporate income taxes on FDI in Eastern Europe, but once they calculate effective tax rates, some evidence can be identified.

2.5. Corporate income taxation and legal uncertainty

Legal uncertainty has not received much attention in the economic literature. Charles McLure (1981) has written about it for the US. There are several papers in law that discuss the effect of legal uncertainty in corporate income taxation, such as Kwall (1989) and Logue (2005). These work focus on the legal issue of uncertainty without looking at economic consequences, of course. There is some work in accounting on the topic. Guenther et al. (2019) show for the US that firms that use the planning face higher uncertainty. Dyreng et al. (2019) find similar results across the board.

However, to our knowledge no paper has so far addressed the economic impact of legal uncertainty on foreign direct investment, and this is the first contribution of this paper. Including legal uncertain, we will revisit the relationship between corporate income taxation and foreign direct investment, and we will argue that legal uncertainty may explain why previous studies have found little evidence of a relationship between these two variables.

3. Data and methodology

We will study the implications of corporate income taxation and legal uncertainty on foreign direct investment. We use bilateral FDI stocks from 26 OECD to 114 countries around the world for the year 2013, which is the last year the OECD has made the data available.² The outward FDI stock is the value of the resident investors' equity in and net loans to enterprises in foreign economies. FDI stocks are measured in USD. All FDI stocks are reported by OECD countries, which ensures data quality. By contrast, UNCTAD data report bilateral inward FDI (which is then inverted by many researchers), but data quality depends on reporting by developing countries, and is not always accurate.

We will use GDP and population data for the same year for all those countries from the same source. Statutory corporate income tax rates come from KPMG world taxation report. We use the CIA world factbook to identify latitude and longitude of each country and compute the distance between two countries with the Haversine formula, which takes account of the spherical shape of earth to compute the distance between two points starting from latitude and longitude coordinates in radian notation,

$$d = \arccos[\sin(\text{lat}) \sin(\text{lat}^*) + \cos(\text{lat}) \cos(\text{lat}^*) \cos(\text{long}^* - \text{long})] * 6371$$

where 6371 km is the earth radius. Table 1 below presents the summary statistics for our main variables. Note that we have taken averages over all 114 countries for all variables except for FDI and distance, where we actually use information of the 26 times 114 bilateral relationships (excluding cases where the source and destination country is identical). Table 2 the gives the correlation matrix between our main variables.

We use three indicators for legal uncertainty. First, we look at double tax agreements, which we have taken from the IBFD database, which for 2013 had registered 2678 tax treaties between 186 countries. Second, we analyze legal traditions. We assume that countries with similar legal traditions find it easier to understand each other's legal system, and this should reduce legal uncertainty. We use the Juriglobe data from the University of Ottawa database (<http://www.juriglobe.ca/>) to identify the legal system of a country. This database contains five distinct legal traditions, common law, civil law, customary law, muslim law and jewish law. The degree of mutual understanding will be higher if both countries have only one identical legal system. We create a dummy variable that takes the value of unity if two countries come from two different legal backgrounds, and zero otherwise. Both double tax treaties (DTT) and legal systems are dummy variables, so we have refrained from including them here. In addition, we compute a variable that measures the number of years that a tax treaty has already been in place. Finally, we will also include the corruption index from transparency international as indicator of uncertainty in the outcome of legal proceedings, as corruption might increase the number of incorrect rulings. The variable theoretically run from 1 (most corrupt) to 10 (least corrupt).

Legal uncertainty per se may have an impact on FDI. But legal uncertainty may influence investment decisions through its impact on expectations over taxation. For this reason, we will interact our measures of legal uncertainty with the statutory corporate income tax.

We see very little correlation between variables. Not surprisingly, there is a strong correlation between GDP (of the destination country) and FDI (0.767), and between GDP and population (0.32), maybe less than expected. We find a strong correlation between FDI and corruption (0.46), meaning that there is more FDI where there is a lower level of corruption. None of the variables exhibit a correlation coefficient above 0.8.

The dependent variable is the FDI stock invested by a source country i in a destination country j . Similar to a panel, the dataset therefore has two dimensions,

$$FDI_{ij} = \alpha_i X_i + \alpha_j X_j + \beta_{ij} Z_{ij} + \delta_i + \delta_j + \varepsilon_{ij}$$

where X_i are variables of the source country, such as GDP, population, and its corporate income tax rate (CIT), X_j are variables of the destination country, again GDP, population and CIT, but also corruption. Z_{ij} measures bilateral variables, in particular the geographical distance between the two countries, whether the two countries use the different legal systems, whether there exists a DTT between the two countries, and how long it has been in place. We may add interaction terms between variables here as well. We include source and destination country fixed effects and an error term. All series except for dummies are transformed logarithmically. We estimate with OLS.

4. Results

A natural starting point is to see whether corporate income taxes have an influence on foreign direct investment. This is shown in column A of Table 1 below. We obtain the surprising result that an increase in corporate income taxes increases foreign direct investment. Obviously, this may be due to the fact that bigger economies attract more FDI but also have higher tax rates. We therefore control for GDP in the second estimation, presented in column B of Table 3. The statutory corporate income tax rate now has a negative sign and GDP has a positive impact. A one percent increase in GDP will lead to a one percent increase in FDI, whereas a 1 percent decrease in the statutory corporate income tax leads to a 2.38% increase in FDI. We then also include GDP of the source country, as bigger countries may manage to invest more, and indeed find a unit elasticity here, too. Column D includes the corporate income tax

² Data are available from <https://data.oecd.org/fdi/fdi-stocks.htm>.

Table 1
Summary statistics.

Variable	Obs.	Mean	Std.dev.	Min	Max
FDI	2938	3.17B	17.4B	0	375B
CIT	114	26,1	0.08	0.00	0,50
GDP	114	421B	1365B	0.26B	1513B
Population	114	50.9M	163M	0.2M	1311M
Corruption	114	4.66	2.28	2	9.6
Distance	2938	6578	4444	66	19,812

Table 2
Correlation matrix.

	FDI	CIT	GDP	Population
Corruption	0.460	−0.003	0.239	−0.115
Population	0.119	0.197	0.320	
GDP	0.767	0.282		
CIT	0.207			
Distance*	−0.073			

Note: Correlations are between countries, with the exception of Distance and FDI, where we have used country pairs.

Table 3
Bilateral FDI stock 2013 (in logs).

	A	B	C	D
CIT (destination country)	3.78*** (4.01)	−2.38*** (−3.54)	−2.35*** (−3.88)	−2.74** (−2.13)
CIT (source country)				2.53* (1.91)
GDP (destination country)		1.02*** (27.43)	1.00*** (32.87)	0.99*** (31.04)
GDP (source country)			1.02*** (28.99)	0.99*** (25.11)
Constant	X	x	x	x
Source FE	X	x	x	x
Destination FE	X	x	x	x
R ²	0.8	27.9	45.0	48.3

Notes: t-statistics in parenthesis. (*/**/****) indicates significance at the 10%/5%/1% level.

rate of the source country. An increase in the source country statutory corporate income tax rate reduces FDI.³

Eliminating destination CIT as it is statistically insignificant, we find that a unit decrease in the CIT ratio increases FDI by ½ percent, as shown in column E of Table 2. Given that we are using logs, we can interpret this by stating that both the absolute size of destination country, measured by its GDP, as well as the richness of the country, measured by GDP per capita, matters for foreign direct investment. A reduction of the destination CIT has a similar effect as an increase on the source CIT, indeed t-tests show that we cannot reject the null hypothesis that these coefficients are opposite. As the model is in logs, we can think of the ratio of CIT matters, or that the difference in CIT drive FDI.

As mentioned, FDI is driven by GDP and GDP per capita. We therefore include population of both the source and the destination country in column E of Table 4. As the model is in logs, similar coefficients with opposing signs would indicate that only GDP per capita matters. A bigger coefficient on GDP with respect to population would indicate that both GDP and GDP matter. Whilst the coefficient on GDP actually increases somewhat, the coefficients on population are much smaller. We could simplify and say that roughly two thirds of FDI is drawn in due to higher GDP, one third due to higher GDP per capita. Note that the coefficient on source country population is slightly higher, meaning that reach countries tend to invest more about that big countries.

Column F in Table 4 adds geographical distance. A country that is further away will receive less FDI. It is noteworthy that at this stage that the effect of corporate income tax rates of the destination country is negative and significant only at the 10% level, whereas the coefficient on source country CIT is no longer significant at all. This is in line with the literature, which finds little effect of CIT once gravity variables are included.

In column G we add the three variables that aim to capture legal uncertainty. All three are significant and exhibit the correct sign. Low levels of corruption, similarities in the legal system and the existence of a double tax treaty all increase FDI. Reducing legal uncertainty, or more generally speaking improving institutions, fosters FDI. At the same time, both CIT rates turn insignificant. In the last column, we have added the duration of the treaty, and we find that (new) treaties actually reduce (!) FDI, but as time goes by this effect inverts. It takes about five to six years for a treaty to start generating a positive impact on FDI.

³ Whereas all other coefficients are significant at the 5% level, source CIT is significant only at the 10% level.

Table 4
Bilateral FDI stock 2013 (in logs).

	E	F	G	H
CIT (destination country)	−2.72** (−1.99)	−2.71** (−1.96)	−1.88 (−1.13)	−1.87 (−1.14)
CIT (source country)	2.48* (1.89)	2.45* (1.82)	2.01* (1.67)	1.99 (1.61)
GDP (destination country)	1.07*** (32.63)	1.06*** (32.88)	1.06*** (33.21)	1.06*** (33.04)
GDP (source country)	1.05*** (28.10)	1.05*** (29.02)	1.05*** (29.01)	1.04*** (28.97)
Population (destination)	−0.36*** (−6.08)	−0.35*** (−6.66)	−0.35*** (−6.26)	−0.35*** (−6.25)
Population (source)	−0.46*** (−8.01)	−0.45*** (−7.99)	−0.42*** (−8.55)	−0.43*** (−8.25)
Geographic distance		−0.21*** (−4.97)	−0.20*** (−4.89)	−0.20*** (−4.88)
Corruption index			0.28*** (5.04)	0.27*** (5.05)
Different legal system			−0.50** (−2.11)	−0.49** (−2.12)
Treaty			−0.61*** (−3.80)	−1.34*** (−6.25)
Treaty duration				0.28** (2.25)
Constant	X	x	x	x
Source FE	X	x	x	x
Destination FE	X	x	x	x
R ²	48.8	50.9	54.4	54.7

Notes: t-statistics in parenthesis. (*/**/****) indicates significance at the 10%/5%/1% level.

Note that column H in Table 4 should be treated with care, as the length of a treaty that has not been signed is zero, and therefore the variable is correlated with the dummy itself.⁴ We therefore start from column G and introduce interaction terms between corporate income tax rates and legal uncertainty variables in Table 5. In column I, we interact CIT of the destination country with corruption, and find nothing. Clearly, FDI is lower in countries with a lot of corruption, but whether that country charges high or low corporate income tax rates does not matter.

In column J we interact the CIT of the destination country with the legal system differences dummy. We find that higher CIT have a negative impact when legal systems are different (significant at the 10% level). In case CIT are low, legal uncertainty matters little, whereas firms worry about legal uncertainty when they face difficulty in forecasting the outcome of legal decisions,⁵ and when CIT in the country of destination are high, and hence the potential tax burden.

Finally, in column K we interact CIT rates of the destination country with the treaty dummy. Under a fully functioning treaty, firms would not need to pay CIT in the destination country, as taxing rights are typically assigned to the source country. The CIT variable thus captures the effect of countries that have not signed a DTT. It turns out negative and significant, implying that CIT rates matter for FDI. At the same time, we observe a positive and significant effect on the interaction term. However, the interaction term is significantly lower than coefficient on CIT, meaning that even under a DTT, firms worry about high CIT in the destination country. We suspect that this could be due to legal uncertainty, or the possibility that despite a treaty, the source country may levy taxes.

In the last column, we have added all interaction effect into one big equation. We find that the interaction effect between CIT rates and the legal system is no longer significant, whereas the interaction between CIT rates of the destination country and double tax treaties survives.

5. Summary and conclusion

This paper has analyzed the effects of legal uncertainty in the application of double tax agreements on foreign direct investment in developing economies. The literature is surprisingly inconclusive and more often than not finds a negative or insignificant relationship. We explain this stylized fact by taking legal uncertainty into account.

We have tested these findings empirically. We use the stock of foreign direct investment from one country to another as our dependent variable. The explanatory variables are statutory corporate income tax rates in the source and destination country, corruption, the existence of a tax treaty, and the difference in legal traditions, in addition to some control variables, in particular GDP and population in the source and destination country, and geographic distance.

We find that legal uncertainty matters in explaining foreign direct investment. An increase in the ratio of the statutory corporate income tax rate of the destination relative to the source country exhibits a traditionally negative and significant effect on foreign direct investment. The data suggest that legal uncertainty matters in explaining FDI. We find that corruption, different legal systems and young tax treaties are actually bad for FDI. We were also able to show that different legal traditions may reduce FDI to high CIT countries, and we can show that high corporate income tax rates in destination countries can deter FDI even under a double tax treaty, due to legal uncertainty.

The results lead to some stark policy implications for developing countries to attract foreign direct investments. It may be an obvious point, and our data confirm this, reducing corruption will lead to an increase in FDI. This is obvious, but probably hard to achieve for reasons that are beyond this paper. Second, and this may sound counterintuitive, signing a double tax treaty is actually

⁴ I am indebted to an anonymous referee for pointing this – and many other helpful suggestions – out.

⁵ As is the case under different legal systems between the country where the firm is located and the country where the firm invests.

Table 5
Bilateral FDI stock 2013 (in logs).

	I	J	K	L
CIT (destination country)	−1.89 (−1.20)	−1.81 (−1.43)	−2.51** (−2.23)	−2.52** (−2.27)
CIT (source country)	2.00* (1.68)	1.99* (1.65)	1.97* (1.65)	1.96 (1.64)
GDP (destination country)	1.06*** (33.20)	1.06*** (33.19)	1.06*** (33.18)	1.05*** (33.22)
GDP (source country)	1.05*** (29.02)	1.05*** (29.03)	1.04*** (28.68)	1.05*** (28.91)
Population (destination)	−0.35*** (−6.27)	−0.35*** (−6.26)	−0.35*** (−6.25)	−0.35*** (−6.24)
Population (source)	−0.42*** (−8.56)	−0.42*** (−8.54)	−0.42*** (−8.54)	−0.42*** (−8.55)
Geographic distance	−0.20*** (−4.88)	−0.20*** (−4.87)	−0.20*** (−4.91)	−0.20*** (−4.90)
Corruption index	0.27*** (4.77)	0.26*** (4.93)	0.28*** (4.84)	0.26*** (4.74)
Different legal system	−0.49** (−2.10)	−0.40** (−2.56)	−0.48** (−2.02)	−0.43** (−2.37)
Treaty	−0.60*** (−3.79)	−0.61*** (−3.81)	−1.01 (−0.80)	−0.98 (−0.92)
CIT (dest.) X Corruption	0.01 (0.09)			0.00 (0.04)
CIT (dest.) X legal system		−0.10* (−1.91)		−0.08* (−1.82)
CIT (dest.) X Treaty			1.28** (2.41)	1.30** (2.41)
Constant	x	X	x	X
Source FE	x	X	x	X
Destination FE	x	x	x	X
R ²	54.5	55.1	56.0	56.1

Notes: t-statistics in parenthesis. (*/**/****) indicates significance at the 10%/5%/1% level.

detrimental for FDI. The reason in our opinion is that a new treaty adds a layer of legal uncertainty for a foreign investor. Indeed, we find that the older a tax treaty, the less negative is its impact on FDI until after five years the negative impact vanishes. Adopting the old adage, one may say that an old tax treaty is a good tax treaty.

Finally, the role of the corporate income tax needs to be reevaluated. In the absence of a tax treaty, a one percentage point reduction in the CIT will lead to a 2.5% increase in FDI. This gives a strong incentive to engage in tax competition, which would drive rates down and lead to a reduction in tax revenues. By contrast, with the presence of a treaty, the effect falls to a semi-elasticity of 1.2, reducing the incentive to engage in tax competition.

Acknowledgements

The author would like to thank Eva Eberhartinger, Michael Lang, Dimitri Paolini, and Pasquale Pistone for fruitful comments and discussion, and Valerie Bösch and Oliver Prausmüller for help with the data. Financial support from OeNB Jubiläumsfonds Project 16017 and the ETPF are gratefully acknowledged.

References

- Ahmed, Ali and Jones, Chris and Temouri, Yama, The relationship between MNE tax haven use and FDI into developing economies characterized by capital flight (2020). *Transnat. Corporat. J.*, Vol. 27(2).
- Al-Sadig, Ali, 2009. The effects of corruption on FDI inflows. *Cato J.* 29, 267ff.
- Arnold, B., 2004. Tax treaties and tax avoidance: the 2003 revisions to the commentary to the OECD model. In: *Bulletin for International Fiscal Documentation*, vol. 58, pp. 244–260.
- Arnold, B., Sasseville, J., Zolt, E.M., 2002. Summary of the Proceedings of an Invitational Seminar on Tax Treaties in the 21st Century in *Bulletin for International Fiscal Documentation*, Nr. vol. 56, pp. 233–243.
- Azémar, C., Dharmapala, D., 2019. Tax sparing agreements, territorial tax reforms, and foreign direct investment. *J. Publ. Econ.* 169, 89–108.
- Bellak, Christian, Leibrecht, Markus, 2009. Do low corporate income tax rates attract FDI? – evidence from Central- and East European countries. *Appl. Econ.* 41 (21), 2691–2703.
- Bénassy-Quéré, A., Fontagné, L., Lahrèche-Révil, A., 2005. How does FDI react to corporate taxation? *Int. Tax Publ. Finance* 12, 583–603.
- Blonigen, B.A., Davies, R.B., 2002. Do Bilateral Tax Treaties Promote Foreign Direct Investment?, Working Paper Nr. 8834. National Bureau of Economic Research, Boston (Mass).
- Blonigen, B.A., Davies, R.B., 2004. The effects of bilateral tax treaties on U.S. FDI activity. *Int. Tax Publ. Finance* 11 (5), 601–622.
- Blonigen, B., Piger, J., 2014. Determinants of foreign investment. *Can. J. Econ.* 47 (3), 775–812.
- Caetano, José, Caleiro, Antonio, 2005. Corruption and Foreign Direct Investment. What Kind of Relationship Is There?. No. 2005/18. Documento de Trabalho.
- Contractor, Farok J., Nuruzzaman, N., Ramesh, Dangol, Raghunath, S., 2020. How FDI inflows to emerging markets are influenced by country regulatory factors: an exploratory study. *J. Int. Manag.* 27 (1).
- Davies, R.B., Norbäck, P.J., Tekin-Koru, A., 2007. The Effect of Tax Treaties on Multinational Firms: New Evidence from Microdata. Oxford University Centre for Business Taxation, WP 07/21.
- De Mooij, R.A., Ederveen, S., 2006. What a Difference Does it Make? Understanding the Empirical Literature on Taxation and International Capital Flows (No. 261. European Commission, Directorate-General for Economic and Financial Affairs.
- Del Gatto, M., Mion, G., Ottaviano, G.I.P., 2006. Trade Integration, Firm Selection and the Costs of Non-europe. CEPR Discussion Paper No. 5730. Centre for Economic Policy Research, London.
- Delios, Andrew, Beamish, Paul W., 2004. Joint venture performance revisited: Japanese foreign subsidiaries worldwide. *Mir. Manag. Int. Rev.* 69–91.
- Den Butter, F.A.G., Mosch, R.H.J., 2003. Trade, Trust and Transaction Costs. Tinbergen Institute Working. Paper No. 2003-082/3.
- Dunning, John H., 1980. Toward an eclectic theory of international production: some empirical tests. *J. Int. Bus. Stud.* 11 (1), 9–31.
- Dyregang, S.D., Hanlon, M., Maydew, E.L., 2019. When does tax avoidance result in tax uncertainty? *Account. Rev.* 94 (2), 179–203.
- D'Amato, A., 1983. Legal uncertainty. *Calif. Law Rev.* 71 (1).
- Edmiston, K., Mudd, S., Valev, N., 2003. Tax structures and FDI: the deterrent effects of complexity and uncertainty. *Fisc. Stud.* 24, 341–359.

- Egger, P., Larch, M., Pfaffermayer, M., Winner, H., 2004. The Impact of Endogenous Tax Treaties on Foreign Direct Investment: Theory and Empirical Evidence in Working Paper, Versity of Innsbruck. Department of Economics and Statistics.
- Figueroa, A.H., 1992. Comprehensive tax treaties, in double taxation treaties between industrialised and developing countries: OECD and UN models – a comparison. In: Proceedings of a Seminar Held in Stockholm in 1990 during the 44th Congress of the International Fiscal Association, 9–13. Deventer: Kluwer Law and Taxation Publishers.
- Freyhold, H. von, Gessner, V., Vial, E.L., Wagner, H., 1995. Cost of Judicial Barriers for Consumers in the Single Market, A Report for the European Commission, Brussels, DG XXIV.
- Guenther, D.A., Wilson, R.J., Wu, K., 2019. Tax uncertainty and incremental tax avoidance. *Account. Rev.* 94 (2), 229–247.
- Janeba, E., 1996. Foreign direct investment under oligopoly: profit shifting or profit capturing? *J. Publ. Econ.* 60, 423–445.
- Kwall, Jeffrey L., 1989. Uncertain case against the double taxation of corporate income. *NCL Rev.* 68, 613.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.W., 1997. Legal determinants of external finance. *J. Finance* 52 (3), 1131–1150.
- Laudage, S., 2020. Corporate Tax Revenue and Foreign Direct Investment: Potential Trade-Offs and How to Address Them. Deutsches Institut für Entwicklungspolitik. <https://doi.org/10.23661/dp17.2020> (DIE) Discussion Paper No. 17/2020.
- Logue, Kyle D., 2005. Tax law uncertainty and the role of tax insurance. *Va. Tax Rev.* 25, 339.
- Louie, H., Rousslang, D.J., 2007. Host Country Governance, Tax Treaties, and US Direct Investment Abroad, Forthcoming in *International Tax and Public Finance*.
- McLure, C.E., 1981. The elusive incidence of the corporate income tax: the state case. *Publ. Finance Q.* 9 (4), 395–413.
- Millimet, D., Kumas, A., 2007. Reassessing the Effects of Bilateral Tax Treaties on US FDI Activity, Working Paper.
- Mosquera Valderrama, I.J., 2020. Tax incentives: from an investment, tax, and sustainable development perspective. In: Chaisse, J., Choukroune, L., Jusoh, S. (Eds.), *Handbook of International Investment Law and Policy*. Springer, Singapore. https://doi.org/10.1007/978-981-13-5744-2_31-1.
- Neumayer, E., 2006. Do double taxation treaties increase foreign direct investment to developing countries? *J. Dev. Stud.* 43 (8), 1495–1513.
- North, D.C., 1994. Economic performance through time. *Am. Econ. Rev.* 84 (3), 359–368.
- OECD, 1997. Model Tax Convention on Income and on Capital. OECD Committee on Fiscal Affairs, Paris.
- Overesch, M., Wamser, G., 2009. Who cares about corporate taxation? Asymmetric tax effects on outbound FDI. *World Econ.* 32, 1657–1684.
- Petkova, K., Stasio, N., Zagler, M., 2020. On the relevance of double tax treaties. *Int. Tax Publ. Finance* 27 (3), 575–605, 2020.
- Radaelli, C.M., 1997. The Politics of Corporate Taxation in the European Union. Knowledge and International Policy Agendas, London.
- Rjoub, Husam, Aga, Mehmet, Abu, Alrub, Ahmad, Bein, Murad, 2017. Financial reforms and determinants of FDI: evidence from landlocked countries in Sub-Saharan Africa. *Economies* 5 (1), 1. <https://doi.org/10.3390/economies5010001>.
- Rodrik, D., 2004. Getting Institutions Right, CESifo DICE Report, No. 2 (München: CESifo GmbH - Munich Society for the Promotion of Economic Research).
- Sujit, K.S., Kumar, B.R., Oberoi, Sarbjit S., 2020. Impact of macroeconomic, governance and risk factors on FDI intensity—an empirical analysis. *J. Risk Financ. Manag.* 13 (12), 304. <https://doi.org/10.3390/jrfm13120304>.
- Turrini, A., Ypersele, T. van, 2006. Legal Costs as Barriers to Trade, CEPR Discussion Paper No. 5751. Centre for Economic Policy Research), London.
- UNCTAD, 1998. Bilateral Investment Treaties in the Mid-1990s, New York and Geneva: United Nations.
- Wagner, H., 2004. Economic analysis of cross-border legal uncertainty, the example of the European union, discussion paper No. 371. In: Jan, Smits (Ed.), *The Need for a European Contract Law. Empirical and Legal Perspectives*. Europa Law Publishing, Groningen, 2005.
- Wagner, H., 2009. Legal Uncertainty - Is Harmonization of Law the Right Answer? A Short Overview, Discussion Paper No. 444, Diskussionsbeiträge der Fakultät für Wirtschaftswissenschaft der FernUniversität in Hagen.
- Wei, S.J., 1997. How Taxing Is Corruption on International Investors? The William Davidson Institute University of Michigan Business School. Working Paper Nr. 63.