

# **Foreign direct investment to developing economies, legal uncertainty and corporate income taxation\***

Martin Zagler<sup>†</sup>

## **Abstract**

This paper asks whether legal uncertainty surrounding corporate income taxation can defer foreign direct investment (FDI) in developing economies. Legal 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 unit of observation are 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 exhibits a negative impact on 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. Motivation**

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

---

\* 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 is gratefully acknowledged.

<sup>†</sup> Martin Zagler (martin.zagler@gmail.com), **UPO** University of Eastern Piedmont (Via Perrone 16, I-28100 Novara) & **WU** Vienna University of Economics and Business (Welthandelsplatz 1/D4, A-1020 Vienna)

for developed countries. 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.

### *1.1. Legal uncertainty*

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.

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, Gessner, Vial and Wagner, 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.

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., 1999). 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.

Another approach uses proxy variables that measure the quality of institutions indirectly (Barro, 1991). The quality of this approach clearly depends on the quality of the proxy chosen.

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.

There are recent studies that explicitly analyze the effects of cross-border legal uncertainty taking into consideration mainly two variables (Turrini and van Ypersele, 2006). 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 to 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, 2009). 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, 2009). The reason may be that foreign investors may use corruption to facilitate their investment, thus circumventing bad institutions. This argument has been recently made by Delios et al (2005). 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.

### *1.2. 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. Worldwide, over 2,000 of these treaties are in force and they govern the taxation of the large majority of FDI (Radaelli, 1997). 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, Mudd, and Valev (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, Sasseville and Zolt, 2002).

There is a growing literature on the effects of tax treaties on FDI. Theory general 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, Larch, Pfaffermayr, and Winner (2006), who control for the endogenous selection of which treaties are actually formed, find that treaties significantly reduce FDI stocks. Davies, Norbäck and Tekin-Koru (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.

## **2. The Data**

We will study the implications of legal uncertainty on foreign direct investment in an international panel. We will use the stock of foreign direct investment from one country to another as our dependent variable. We will rely on OECD data and use FDI stocks from OECD countries invested in other OECD countries and virtual all the countries of the world before the financial crisis set in (2006). With data restrictions implied by other series described below, we arrive at a sample of 26 investor countries and 125 countries where investments have taken place.

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.

We use two indicators for legal uncertainty. First, we look at double tax agreements, which we have taken from the IBFD database, which has registered 2489 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, 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, and allows for

several legal traditions within one country, e.g. a former colony that had customary law, gets influenced by e.g. civil law through its colonial power and then turns towards muslim law. The degree of mutual understanding will be higher if both countries have only one identical legal system. We will use an interaction term between legal systems to identify common legal traditions. In order to ensure that we are not measuring corruption instead, we will also include the corruption index for transparency international.

Legal uncertainty per se is not our main concern, however. We have found that legal uncertainty matters for 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.

### **3. Evidence**

Apart from our dependent variable, the stock of foreign direct investment by country of origin and country of destination according to OECD data, we have 4 panel data series, namely, the existence of a tax treaty between these countries, the distance between these two countries, and whether they share a common law or civil law tradition. Unfortunately for our estimation, none of the countries of origin had a muslim, jewish or customary law tradition. We also have eight data series that only vary with the country of destination. These variables are the corporate income tax rate, gross domestic product, population, and five dummy variables for the five legal systems. Finally, we have series that vary only with the country of source, namely the statutory corporate income tax and gross domestic product. All series except for dummies and ratios are transformed logarithmically.

A natural starting point was 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 drives 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 1. 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 2.45% increase in FDI. We then also include GDP of source country, as bigger countries may manage to invest more, and indeed find a unit elasticity here, too. Column D then includes the ratio of corporate income tax rate between the destination and the source country. An increase in this ratio, either due to a reduction in the destination country statutory corporate income tax rate or due to an increase in the source country statutory corporate income tax rate reduces FDI.

**Table 1:** Panel estimation. Dependent: bilateral FDI stock 2006 (in logs)

	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Constant	1.87 (8.33)	-21.59 (-30.44)	-49.58 (-43.09)	-48.38 (-38.06)
Corporate income tax rate (destination country)	4.23 (5.319)	-2.45 (-3.49)	-2.44 (-3.96)	-1.07 (-1.21)
GDP (destination country)		1.01 (34.35)	1.01 (38.92)	1.01 (38.94)
GDP (source country)			1.04 (28.99)	0.99 (24.21)
CIT ratio (destination/source)				-0.38 (-2.22)
<b>R<sup>2</sup></b>	0.9	29.2	44.8	44.9

**Notes:** t-statistics in parenthesis.

Eliminating destination CIT as it is statistically insignificant, we find that a unit decrease in the CIT ratio increases FDI by  $\frac{1}{2}$  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.

**Table 2:** Panel estimation. Dependent: bilateral FDI stock 2006 (in logs)

	<b>E</b>	<b>F</b>	<b>G</b>
Constant	-47.90 (-39.63)	-47.84 (-39.99)	-45.81 (-37.63)
GDP (destination country)	1.01 (39.46)	1.18 (35.52)	1.11 (32.68)
GDP (source country)	0.97 (25.37)	0.99 (26.05)	1.03 (27.01)
CIT ratio (destination/source)	-0.52 (-4.37)	-0.38 (-3.15)	-0.29 (-2.46)
Population		-0.31 (-8.00)	-0.24 (-6.25)
Geographic distance			-0.30 (-7.36)
<b>R<sup>2</sup></b>	44.9	46.1	47.0

**Notes:** t-statistics in parenthesis.

We then add population of the destination country. We find that in addition to GDP itself, also GDP per capita would have a positive impact on FDI. However, the inclusion of GDP per capita breaks the unit elasticity of destination GDP and FDI, as confirmed by coefficient tests. This may be due to the fact that big poor countries attract less FDI, or rich small countries more. Next, we add geographical distance and find that countries attract less FDI when they are distant from countries of origin, thus confirming the augmented gravity model.

We will now look at three different institutional variables that measure of legal uncertainty, corruption in the destination country, the difference in the legal system, and the existence of a tax treaty. Columns H and I give the results, first with population included, and then without (as population turns out insignificant).

**Table 3:** Panel estimation. Dependent: bilateral FDI stock 2006 (in logs)

	<b>H</b>	<b>I</b>	<b>J</b>
Constant	-44.07 (-35.46)	-44.37 (-36.12)	-42.99 (-35.67)
GDP (destination country)	0.76 (13.00)	0.84 (29.72)	0.79 (27.34)
GDP (source country)	1.02 (27.06)	1.02 (27.08)	1.01 (26.25)
CIT ratio (destination/source)	-0.24 (-2.06)	-0.22 (-1.91)	-0.28 (-2.68)
Population	0.10 (1.56)		
Geographic distance	-0.23 (-5.73)	-0.23 (-5.59)	-0.23 (-5.56)
(low) Corruption index	0.26 (6.96)	0.21 (9.33)	0.23 (8.44)
Different legal system	-0.45 (-4.36)	-0.43 (-4.24)	-0.46 (-3.91)
Treaty	0.60 (6.21)	0.71 (6.32)	-1.24 (1.84)
Treaty duration			0.28 (2.29)
<b>R<sup>2</sup></b>	48.9	48.9	49.1

**Notes:** t-statistics in parenthesis.

All variables have the expected sign. GDP in both the destination and source country increases bilateral FDI, whereas an increase in the statutory corporate income tax ratio reduces FDI. We find that low corruption is good for foreign direct investment, a different legal system is an impediment to FDI, but the existence of a tax treaty is favorable for FDI. In that respect, an institutional setting that reduces legal uncertainty appears to be good for FDI. In column J, we add the duration of the treaty (in years since ratification). It turns out that a treaty actually reduces foreign direct investment (albeit significant only at the 10% level). In this may be due to the fact that a new treaty actually increases legal uncertainty. This effect gets levitated with the duration of a treaty, and after five years, a treaty actually has a positive impact on FDI.

**Table 4:** Panel estimation. Dependent: bilateral FDI stock 2006 (in logs)

	<b>K</b>	<b>L</b>	<b>M</b>	<b>N</b>
Constant	-43.70 (-33.70)	-43.52 (-34.78)	-41.83 (-35.11)	-41.10 (-34.41)
GDP (destination country)	0.83 (28.72)	0.82 (28.92)	0.81 (27.77)	0.79 (26.00)
GDP (source country)	1.01 (26.45)	1.01 (26.60)	1.00 (26.17)	0.99 (25.97)
CIT ratio (destination/source)	-0.31 (-2.41)	-0.34 (-2.89)	-0.28 (-2.44)	-0.27 (-2.39)
Geographic distance	-0.24 (-5.76)	-0.24 (-5.89)	-0.23 (-5.12)	-0.22 (-4.91)
(low) Corruption index	0.21 (9.39)	0.21 (9.43)	0.22 (9.61)	0.21 (9.23)
Different legal system	-0.43 (-4.22)	-0.43 (-4.22)	-0.39 (-3.75)	-0.28 (-3.45)
Treaty	0.16 (0.53)		-1.29 (1.96)	-1.31 (1.67)
Treaty duration			0.29 (2.16)	0.33 (2.07)
Interaction: Treaty and CIT (destination country)	1.69 (1.62)	2.21 (6.51)	0.16 (1.08)	0.11 (2.21)
Interaction: Treaty duration and CIT (destination country)				-0.07 (2.30)
<b>R<sup>2</sup></b>	49.0	49.0	49.3	49.4

**Notes:** t-statistics in parenthesis.

Table 4 repeats this exercise with an interaction variable between the corporate income tax rate and the existence of a tax treaty. We observe in column K that neither the treaty variable itself nor the interaction term are statistically significant and therefore drop the treaty variable in column L, implying that treaties themselves have no impact on FDI. The interaction effect then turns out positive and statistically significant. An interpretation of this result may be that legal uncertainty may actually lead to excess entry into foreign markets, as tax speculators may hope for low or no taxation, and otherwise consider default. Clearly, the speculative gain is bigger if the destination country has a higher corporate income tax. This implies that speculative entry occurs also when treaties add a layer of complexity to the domestic and foreign legal system and thus increase legal uncertainty.

Once again, the inclusion of the treaty duration is key. In column M, we demonstrate that whilst a new treaty is bad for FDI, probably due to the increased uncertainty, a longstanding treaty (approximately 4 years are enough) will have a positive impact on FDI. Higher corporate income taxes still lead to an increase in FDI activities, but the effect is now insignificant. In column N, we have added an interaction term between the treaty duration and corporate income taxes. Here, the treaty itself ceases to have an impact on FDI. The introduction of a new treaty may increase legal uncertainty, but it is not directly negative on FDI. As the treaty duration increases, FDI augments. Looking at the final two lines of table 4, we observe that the boost to FDI for high destination corporate income tax countries is short-lived. With a treaty in place for longer than 18 months, an increase in destination FDI will actually reduce foreign direct investment inflows.

#### **4. 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 then tested these findings empirically in an international panel. We use the stock of foreign direct investment from one country to another as our dependent variable. The explanatory variables are the ratio of the statutory corporate income tax rates between the source and destination country, the existence of a tax treaty, and the common legal traditions, in addition to some control variables, in particular GDP in the source and destination country, corruption 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. In particular, we were able to show that the negative impact of young tax treaties is stronger, the higher the destination country corporate income tax rate.

## References

- 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. 56, pp. 233-243
- Bevan, A.A., Estrin, S. (2004): The determinants of foreign direct investment into European transition economies, *Journal of Comparative Economics*, Vol. 32, pp. 775-787
- Blonigen, B.A. (1997): Firms' specific assets and the link between exchange rates and foreign direct investment, in *American Economic Review*, Vol. 87(3), pp. 447-465
- Blonigen, B.A. (2004): A review of the Empirical Literature on FDI Determinants, University of Oregon and NBER
- Blonigen, B.A., Davies, R.B. (2002): Do Bilateral Tax Treaties Promote Foreign Direct Investment?, Working Paper Nr. 8834. Boston (Mass.): National Bureau of Economic Research
- Blonigen, B.A., Davies, R.B. (2004): The Effects of Bilateral Tax Treaties on U.S. FDI Activity, in *International Tax and Public Finance*, Vol. 11(5), pp. 601-622
- 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
- D'Amato, A. (1983): Legal uncertainty, *California Law Review*, Vol.71, no.1
- Del Gatto, M., Mion, G. and Ottaviano, G. I. P. (2006) Trade Integration, Firm Selection and the Costs of Non-Europe. CEPR Discussion Paper No. 5730 (London: Centre for Economic Policy Research)
- Den Butter, F. A. G. and Mosch, R. H. J. (2003): Trade, Trust and Transaction Costs, Tinbergen Institute Working Paper No. 2003-082/3
- Edmiston, K., Mudd, S., Valev, N. (2003): Tax Structures and FDI: The Deterrent Effects of Complexity and Uncertainty, in *Fiscal Studies* Vol. 24, pp. 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, 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
- Froot, K.A., Stein, J. C. (1991): Exchange rates and foreign direct investment, an imperfect capital markets approach, in Quaterly Journal of Economics, Vol. 106(4), pp. 1191-1217
- Janeba, E. (1996): Foreign Direct Investment Under Oligopoly: Profit Shifting or Profit Capturing?, in Journal of Public Economics, Vol. 60, pp. 423-445
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R.W. Vishny (1997) Legal Determinants of External Finance, Journal of Finance, 52(3), 1131-1150
- Louie, H., Rousslang, D.J. (2007): Host country governance, tax treaties, and US direct investment abroad, forthcoming in International Tax and Public Finance
- Millimet, D., Kumas, A. (2007): Reassessing the effects of bilateral tax treaties on US FDI activity, Working paper
- Neumayer, E. (2006): Do double taxation treaties increase foreign direct investment to developing countries?, in Journal of Development Studies, Vol. 43, No. 8, pp. 1495-1513
- North, D. C. (1994) Economic Performance through Time, American Economic Review, 84 (3), 359-368
- OECD (1997): Model tax convention on income and on capital, OECD Committee on Fiscal Affairs, Paris
- OECD (2000): Main determinants and impacts of foreign direct investment on China's economy, Directorate for Financial, Fiscal and Enterprise Affairs, Working Papers on International Investment, Nr. 2000/4
- Padma Mallampally and Karl P. Sauvart (1999): Foreign Direct Investment in Developing Countries, in Finance and Development, IMF, Vol 36(1)
- Radaelli, C.M. (1997): The Politics of Corporate Taxation in the European Union, Knowledge and International Policy Agendas, London



Rodrik, D. (2004): Getting Institutions Right, CESifo DICE Report, No. 2 (München: CESifo GmbH - Munich Society for the Promotion of Economic Research)

Turrini, A. and Ypersele, T. van (2006): Legal Costs as Barriers to Trade, CEPR Discussion Paper No. 5751 (London: Centre for Economic Policy Research)

UNCTAD (1998): Bilateral Investment Treaties in the Mid-1990s, New York and Geneva: United Nations

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

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, Groningen: Europa Law Publishing 2005

Wei, S.J. (1997): How taxing is corruption on international investors?, The William Davidson Institute University of Michigan Business School, Working Paper Nr. 63