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Does Heterogeneity in Transfer Pricing Regulation affect Foreign Direct Investment?

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Abstract

Does multinational firm take advantage of arbitrage opportunities when heterogeneity in transfer pricing regulations exist between home and host country? Using data on U.S. based multinational firms' reinvestment earnings abroad as a proxy for FDI activity, provided by the BEA Survey of U.S. Direct Investment Abroad and the Balance of Payments Survey, we analyze the effect of transfer pricing regulation of multination firm FDI's decision. The analysis results provide no empirical evidence that differences in transfer pricing regulation between home and host country affect FDI activity by U.S. based multinational firms. Host country's specific characteristics such as market size, distant from the U.S., trade openness, as well as tax rates differential seem to be the primarily determinants of FDI activity.

Keywords: Transfer Pricing, Regulation, FDI, Gravity Model

INTRODUCTION

In 1994, the United States is the only country to have specific law regulating how transfer prices should be set for intra-firm trades. Since then there has been a proliferation in transfer pricing regulations around the world modeled after the U.S. transfer pricing regulation. The reasons for this proliferation are (1) countries do not want to be at a disadvantage in taxing multinational firms and (2) there is a population perception that transfer pricing is being used by multinational firm as mean for tax avoidance and tax evasion (Sheppard, 2010). Bloomberg (2010) shows how Google saves $1 billion in taxes by shifting intellectual properties to Ireland and Bermuda to take advantage of the differences in tax rates through the use of transfer prices. Furthermore, in 2005, GlaxoSmithKline, a major multinational pharmaceutical firm agreed to pay the U.S. Internal Revenue Service $3.4 billion for backed taxes for misused of transfer pricing to shift taxable income from its U.S subsidiary to the parent firm in the U.K. from 1995 through 2003.

Governments are paying more attention to multinational firms transfer pricing practices as well as coming up with effective laws and regulations to curtail tax avoidance through the use of transfer prices. However, our understanding of the effects of transfer pricing regulation on multinational firm is limited, especially its effect on foreign direct investment by multinational firm.

Using the data on U.S. based multinational firm's reinvestment earnings abroad we evaluates the effects of transfer pricing on multinational firm foreign direct investment's decision. Both theoretical and empirical evidences suggested that multinational firm whose has multiple divisions located in different tax jurisdictions, has the incentive to shift taxable income from high tax jurisdiction to low tax jurisdiction through the use of transfer prices (Horst, 1971,

1973; Eden, 1998).[1] By shifting taxable income from high tax jurisdiction to low tax jurisdiction multinational firm reduces its effective tax rate on its global income (Eden, 1998). Therefore, it is reasonable to expect that host country with relatively weak transfer pricing regulation attracts more FDI from multinational firms. Because of host country's weak transfer pricing regulation, multinational firm would under-invoice its imports to host country and/or over-invoice its exports to home country. On the other hand, if both countries (home and host) are homogenous in term of their transfer pricing regulation then FDI should not be affected since tax arbitrage opportunities disappeared (i.e. transfer prices have to be set at arm lengths).

In our paper, weak transfer pricing regulation is defined as having no transfer pricing regulation or guideline in the country's tax codes. However we use two measurements for strong regulation, (1) require transfer prices be set at arm-length but does not require contemporaneous documentation and (2) requires both the arm-length principles and the contemporaneous documentation.

In the next section, we will discuss the relevant literature on transfer pricing and its regulation in detail.

TRANSFER PRICING BACKGROUND

Transfer prices are prices established within a business enterprise (e.g., a divisionalized firm, a corporation, a holding company, etc.) for goods, services, intellectual property, and/or credit transferred between units. Transfer pricing has been a topic of growing academic study in economics since the pioneering work of Hirschleifer (1956, 1957), Gould (1964), and Horst (1971, 1973). Theoretical research on tax-motivated transfer pricing includes Eden (1998), Horst (1971), and

[1] Eden (1998) provides both theoretical and real-world evidence of profit shifting by multinational firms through the use of transfer pricing.

Samuelson (1982). They examine the effect of different tax rates across countries on prices that multinationals firms set for their intra-firm trades. They show that transfer prices can be served as a tool for multinational firm to shift taxable income from subsidiaries located in high tax countries to subsidiaries in low-tax countries.

There is also a large empirical literature confirming income shifting by multinational firms through transfer pricing (Grubert and Mutti, 1991; Collins et al., 1998; Desai et al., 2006; Clausing, 2003; Bernard et at., 2006). Grubert and Mutti (1991), Collins et al. (1998), and Desai et al. (2006) use aggregate, industry-level prices and survey data collected by the Bureau of Economic Analysis to estimate the magnitude of income shifting to lower-tax countries. Others (e.g. Bernard et al., 2006; Clausing, 2003) use a more direct approach by constructing data on export/import prices to estimate the magnitude of tax-motivated transfer prices. Their results support the tax-motivated transfer pricing manipulation by multinational firms, suggesting that multinational firms shift incomes from a high tax country to a low tax country through the use of transfer pricing.

TRANSFER PRICING REGULATION

The U.S. transfer pricing regulation was introduced for primarily two reasons. The first was the IRS experience during transfer pricing audits (Lowell et al., 1994). The IRS found that most multinational firms had no documentations to support their transfer prices and thus increases time and costs for the IRS. As a result, having transfer pricing regulation in the tax codes would improves compliance by multinational firms and reduce service times and costs for the IRS. More importantly, it is a well-known perception that multinational firms were underpaying U.S. taxes due to transfer price manipulation.

Transfer price manipulation takes place when there are differences in corporate income tax rates, tariffs, foreign exchange restrictions, and political risk across countries. If corporate income taxes between the home and host country are different then multinational firms can either over (under) invoice their transfer prices to shift taxable income to low tax country. If the host country levies tariffs on imports then this also provides an incentive for multinational firms to under-invoice their imports in order to save on duties paid. A third motivation for transfer pricing arbitrage exists when host country has foreign currency exchange restrictions, thus by over(under) invoice of inbound(outbound) transfers enable the multinational firm to move incomes out of the host country that would not be permissible with currency controls (Chow and Hung, 1997). And finally, if the multinational firm fears instability in the host country's political environment then capital flight can be accomplished through the use of transfer prices (Lessard and Williamson, 1984).

To restrict the possibility of transfer pricing manipulation by multinational firms, governments around the world are increasing their efforts to pass transfer pricing regulation into their tax codes. In 1994, the United States incorporated Section 482 into its tax codes, which authorizes the IRS to impose penalty on firms who evade or avoid taxes through the use of transfer prices. Section 482 requires the transfer prices charged within an integrated enterprise be consistent with the arm's length principle[2]. This principle requires the transfer price of a good or service in an intra-firm trade is equal to the price of two unrelated firms negotiating at arm's length for the same or a similar good or service. Section 482 also requires multinational firm based in the U.S. to have contemporaneous documentation on their transfer pricing practices and

[2] Section 482 of the I.R.S tax code provide a much elaborate details than mentioned in this paper, however the main points of Section 482 is presented here.

to provide this documentation to the I.R.S upon request. If there is evidence of transfer pricing manipulation or noncompliance on the contemporaneous documentation requirement then the IRS is authorized to impose a penalty as well as make adjustments on the actual transfer prices. The penalty raises the effective corporate tax rate from 35% to 48% depending on the level of manipulation.

Following the U.S. footsteps, in 1995 the Organization for Economic Cooperation and Development (OECD) developed a set of transfer pricing guidelines for multinational firms regulating their transfer pricing practices similar to Section 482 of the U.S. tax code. In 1994, the U.S. was the only major country to have specific law in its tax codes but now more than 40 countries around the world have adopted a highly technical and sophisticated transfer pricing regulation similar to the U.S. Section 482 and the OECD's transfer pricing guidelines in their tax codes (Eden, 2009). Consequently, there has been considerable evidence of international homogeneity in transfer pricing policies across countries.

RELATED LITERATURE REVIEW

While the empirical literature on the determinants of FDI is large, however none focus on the relationship between FDI and transfer pricing regulation[3]. The empirical literature on FDI and regulation focuses almost exclusively on market size (Markusen and Venables, 1999), skill differences between the home and host country (Zhang and Markusen, 1999), role of natural resources, international institutions (Wheeler and Mody, 1992; Hines, 1995; Wei, 2000a, 200b), Trade Protection (Grubert and Mutti, 1991; Kogut and Chang, 1996; Blonigen, 1997), environmental regulation (Xing and Kolstad, 2002; Dean, Lovely, and Wang, 2009; List and Co,

[3] Blonigen (2005) provides an excellent review on the empirical literature on FDI determinants.

2000; Hanna, 2004), and intellectual property rights protection (Ferrantino, 1993; Smarzynska, 2002; Fink and Maskus, 2005; Lee and Mansfield, 1996; Smith, 1999, 2001).

Hanna (2004) and Xing and Kolstad (2002) provide empirical evidence to support the theory that environmental regulation causes firm to substitute foreign for domestic production. Their results indicate that host countries with weak environmental regulations attract FDI from U.S. based multinationals in heavy polluting sectors. However, Dean et al (2009) finds that weak environmental regulation in China does not attract equity joint ventures from non-ethnically Chinese countries, especially high income countries.

The empirical results examining the impact of intellectual property rights protection provide conflicting results. Ferrantino (1993) finds that strong domestic patent protection increases the flows of payments and receipts for intellectual property. Smarzynska's (2002) results show that weak intellectual property rights protection deters investors from investing in sectors relying heavily on intellectual property rights protection. On the other hand, Braga and Fink (2005) finds no effect of intellectual property rights protection on trade flows for high technology sectors.

To the best of our knowledge this is the first study that empirically tests the effect of transfer pricing regulation on multinational firms' FDI decisions. A similar paper by Eden et al., (2005) uses an event study to assess the impact of U.S. transfer pricing penalties on Japanese multinationals. Their results show that with the presence of transfer pricing penalties the market value of Japanese multinational firms drops by $56.1 billion, representing 12.6% of their 1997 market value, thus providing evidence for the adverse effect of transfer pricing on multinational firms profitability. In the next section, we will discuss the data and methodology of the study.

DATA AND METHODOLOGY

Our econometric analysis utilizes the gravity model (Leamer, 1994; Brenton et al., 1999; Gopinath, Munisamy, and Echeverria, Rodrigo, 2004; Brulhart and Kelly, 1999) widely used in the FDI and international trade theory. The gravity model takes into account distant, language, and skills differences between the home and host country. The slightly modified form of the gravity equation is taken the following form,

$$REINVEST_{uit} = \alpha_0 + \beta_0 SUMGDP_{uit} + \beta_1 DIST_{ui} + \beta_2 COMLANG + +\beta_3 DTAX_{uit} +$$
$$+ \beta_4 DTAX_{uit}^2 + \beta_5 TPREG_t + \beta_6 TPREG_t * DTAX_{uit} + \beta_7 TAXTREAT_{uit} +$$
$$+ \beta_8 TAXCHANGE_{ut} + \beta_9 EXCHANGERATE_{uit} + \beta_{10} POP_{it} +$$
$$+ \beta_{11} GDPCAP_{it} + \beta_{12} TRADEOPEN_{it} + \varepsilon_{uit},$$

Where i indexes host country, t is the year, and u is the U.S. The dependent variable (REINVEST) measures the volume of reinvestment earnings of U.S. based multinational firms in host country at time t. The variables of interest transfer pricing regulation ($TPREG$) and the interaction term between differences in tax rates and regulations ($DTAX * TPREG$) deserve some special attention. As mentioned above, Section 482 of the U.S. tax code requires that (1) the transfer prices be set at arm's length and (2) firms also are required to have contemporaneous documentation on their transfer pricing practices. However, most countries that adopted transfer pricing regulation modeled after the U.S. section 482 seldom require contemporaneous documentation.

Contemporaneous documentation requirements increase costs for multination firms since they need to allocate extra resources to comply with the requirements, i.e., have to hire more accountants, lawyers, etc. Therefore, it is assumed that transfer pricing regulation is tougher with

documentation requirements than without. It our analysis we will use two measurements for transfer pricing toughness in TPREG: (1) regulation is strong when having law in the tax codes regulating transfer pricing but without documentation requirements and (2) regulation is strong when having law in the tax codes that require both the arm-length principle and the contemporaneous documentation requirement.

TPREG takes the value of 1 for the years when home country (U.S.) and host country have different level of regulation and a value of 0 for years when both countries have the same level of transfer pricing regulation. The coefficient on TPREG is expected to be positive since a positive coefficient indicates that multinational firms invest more in host country with relatively weak transfer pricing regulations compared to the home country. The coefficient on the interaction term between TPREG and DTAX is expected to be negative, i.e., relatively high corporate tax rate in host country discourages multinational firm's investment even though it has a fairly weak transfer pricing policy compare to home country.

The U.S. is the first major country to officially pass any transfer pricing regulation in its tax codes. This creates a unique situation where the possibilities are: (1) home country have a relatively stronger transfer pricing regulation than host country, (2) home and host country both does not have any transfer pricing regulation, and finally (3) home and host country both has similar transfer pricing regulations in place. Consequently, we can only test for the effect when home country has a relatively stronger transfer pricing law than host country but not the other way around. Consequently, when both the home and host country have similar policy (either both have and do not have regulation) regarding transfer pricing then one should not expect this to effect multinational firms FDI decision.

Horst (1971), Eden (1998), and Samuelson (1988) have shown that benefit of tax-motivated transfer pricing manipulation for multinational firms is when the tax rate differential is large between the home and host country. Therefore, one would expect the effect of transfer pricing regulation on FDI should be working in conjunction with the differences in tax rates between the home and host country. Hence, Transfer pricing arbitrage exists when there are differences in transfer pricing regulation across home and host country and it increases in the same direction of tax rates differentials. Appendix A1 provides the expected sign as well as detail justification of the independent variables.

To construct the dependent variable (multinational firm FDI), we utilize the reinvestment earnings abroad for U.S. based multinational firms given by the US Department of Commerce, Bureau of Economic Analysis (BEA) Survey of U.S. Direct Investment Abroad and the Balance of Payments Survey, available for most of the major countries from 1982 through 2009. Appendix A1 provides further details on reinvestment earnings data across countries and years in our sample. It is worth to mention that the top five countries which have the highest mean reinvestment earnings throughout the periods are Canada, Netherlands, United Kingdoms, Ireland, and Luxembourg. Second, the maximum amount of reinvestment earnings for the Netherlands, Ireland, Luxembourg, and Canada are higher relative to other countries in our sample.

Appendix A3 provide details on when host country begin its implementation of transfer pricing regulation, as well as it has a tax treaty with the U.S. As mentioned earlier almost all countries that currently have transfer pricing regulation adopted it after 1994, after the U.S. passed Section 482. However, contemporaneous documentation requirements are seldom adopted. The variables of interested transfer pricing regulation (TPREG) are taken from various

sources from KPMG publications and also from the OECD organization database on country profiles. Tax Treaty (TAXTREAT) is taken from the Internal Revenue Services (IRS) it takes the value of 1 for years in which the U.S. has a bilateral tax treaty with the host country and 0 otherwise. Column 2 of table Appendix 4 shows the year a country adopted some kind of regulation on transfer pricing in its tax codes and column 3 of Appendix 4 provides the year in which the country has a bilateral tax treaty with the United States. The data show that the U.S. is the first country to imposed details transfer pricing regulation in its tax code and subsequently other countries follow suit. Also note that most tax haven countries do not adopt any transfer pricing regulation, e.g., Bahamas, Hong Kong, Panama, and the United Arab Emirates.

Besides our variables of interest on transfer pricing regulation we also employed several control variables commonly used in the gravity model similar to ours such as distant between the U.S. and the host country, and whether the host country official language is English. The model also controls for home and host country market size, proxy with real GDP, population and GDP per Capita. Studies have found evidence that short-run fluctuation in the bilateral currency exchange rate increased inward FDI (Grubert and Mutti, 1991; Swenson, 1994; Blonigen, 1997). The literature on FDI's determinates suggests that the quality of the host country's labor force plays an important role in multinational firms' FDI decision (Markusen and Venables, 1999; Zhang and Markusen, 1999). We use the population education level to proxy for the quality of human capital in the host country.

Other control variables are tax rates and tax reforms in the U.S., both theoretical and empirical evidence has shown that higher taxes discourage inward FDI by multinational firms (De Mooij and Ederwveen, 2003; Grubert and Mutti, 1991). For tax rates, we obtain top corporate tax rates by country and year from various publications provided by

PriceWaterHouseCooper as well as the World Tax Database provided by the Ross School of Business, University of Michigan. The World Tax Database has country tax data going back to 1970 through 2003. In 1986, the U.S. made significant reforms to its tax laws, resulted in significantly lower top corporate tax rates from 45 percent to 35 percent. The dummy variable TAXCHANGE measures the U.S. tax reforms in 1986 and takes on a value of 1 for the year 1986 and beyond. Table 1 provides the descriptive statistics of those variables mentioned above.

Note that the number of observations on these variables is not consistent due to missing data either by a particular year or there are no data available for a particular country for a given year. Second, the coverage on education is limited. Third, over the 27 years and across countries, transfer pricing regulation is adopted about 31% of the time and the average top corporate tax rate is 32%.

Table 1 Descriptive Statistics

Variable	N	Mean	Std. Dev.	Min	Max
EXCHANGERATE	1056	47.68	170.82	0.00	1401.44
GDPGROWTH	1055	3.38	3.70	-18.96	17.75
TAXRATE	985	33.23	12.12	0.00	61.80
USTAXRATE	1064	36.96	4.34	34	46
SUMGDP	1031	29.64	.46	28.76	30.60
TRADEOPEN	1059	88.52	72.36	9.30	453.44
GDPCAP	1031	17825.99	15539.96	201.45	117955.00
POP	1056	86090.94	238935.40	219.48	1322674.00
EDU	824	37.95	21.41	1.95	98.09
TPREG	1064	0.31	0.46	0.00	1.00
TAXTREAT	1064	0.43	0.49	0.00	1.00
DIST	1064	8059.72	3677.07	548.39	16008.79
EDU	824	37.95	21.41	1.95	98.09

Noted that SUMGDP is in natural log

Our analysis begins with a relatively naïve estimation using Ordinary Least Squares (OLS) then proceeding to a more sophisticated model to correct for potential problems. Table 2 provides the OLS's estimation results. For the purpose of this analysis we only use transfer pricing regulation without the contemporaneous requirement to regress on REINVEST for demonstration purposes and in the subsequent analysis we will compare both types of regulations with and without contemporaneous requirement. Column 1 and 2 of Table 2 provide estimates for the variables of interest without controls and in column 3 and 4 we control for country specific characteristics as well as controlling for the U.S. tax reforms in 1986 and bilateral tax treaty between the U.S. and host country. At first glance, transfer pricing regulation seems to have an effect on multinational firms' reinvestment earnings but only through the interaction term with the differences in tax rates between the U.S. and host country. The coefficient on TPREG is not significant but the coefficient on the interaction term is significant ($p < 0.05$) but does not take on the expected sign.

Difference in the tax rates is negative and significant ($p < 0.05$). Based on the sign of the coefficients DTAX and $DTAX^2$ then relatively high corporate income tax in the host country decreases reinvestments by U.S. based multinational firms but at a decreasing rate. Both the coefficients on TAXCHANGE and TAXTREAT take on the correct sign and significant ($p <0.05$). U.S. based multinational firms on average, repatriate 0.16 percent of income back to the U.S. after the tax reforms in 1986 which reduces top corporate income tax to 36%. The coefficients on other control variables such as GDP, distance, common language, exchange rate, and trade openness does take on the correct sign and are significant ($p < 0.05$).

Table 2 Estimates of Transfer Pricing regulation effects on U.S. MNE's Reinvest Earnings abroad using OLS.

VARIABLES	(1) Reinvestment Earnings	(2) Reinvestment Earnings	(3) Reinvestment Earnings	(4) Reinvestment Earnings	(5) Reinvestment Earnings
Interested Variables					
TPREG	0.47***	0.46***	0.19	0.01	-0.13
	(0.12)	(0.13)	(0.13)	(0.10)	(0.11)
TPREG*DTAX		0.03***	0.03**	0.03***	0.05***
		(0.01)	(0.01)	(0.01)	(0.01)
Control Variables					
DTAX		-0.04***	-0.03***	-0.05***	-0.04***
		(0.00)	(0.01)	(0.01)	(0.01)
$DTAX^2$		-0.01***	-0.00***	-0.00***	-0.00***
		(0.00)	(0.00)	(0.00)	(0.00)
TAXCHANGE			0.97***	-0.16	-0.23
			(0.17)	(0.17)	(0.17)
TAXTREAT			0.43***	-0.61***	-0.34***
			(0.12)	(0.10)	(0.11)
SUMGDP				1.26***	1.16***
				(0.17)	(0.21)
DIST				-0.00***	-0.00***
				(0.00)	(0.00)
COMLANG				1.09***	0.97***
				(0.11)	(0.12)
EXCHANGERATE				-0.03*	-0.03
				(0.02)	(0.12)
POP				0.41***	0.64***
				(0.04)	(0.05)
GDPCAP				0.68***	0.85***
				(0.06)	(0.06)
TRADEOPEN				0.01***	0.01***
				(0.00)	(0.01)
EDU					0.01***
					(0.00)
CONSTANT	6.04***	6.20***	5.21***	-30.74***	-41.27***
	(0.07)	(0.07)	(0.15)	(4.24)	(5.61)
Observations	885	985	830	795	630
R-squared	0.02	0.06	0.12	0.49	0.57

Standard errors in parentheses *** p<0.01, ** p<0.05. SUMGDP, POP, GDPCAP are in log form

However, we should be careful drawing conclusions from these estimates since it is difficult to make causal claims on the effect of transfer pricing regulation on FDI since a positive correlation also suggests that multinational firm who has high reinvestment earnings in a particular host country may be due to other unobserved factors. A reasonable way to control for the unobserved characteristics is by run the model using the panel-data random effects specification. Random effects specification is consistent and efficient compared to the fixed effects specification and allows for time invariant independent variables, e.g., distance and common language. The Hausman-Wu test confirms the random effects specification over fixed effects specification in our data ($\chi^2(12) = 5.87$).

Table 3 presents results using random effects specification. Column 1 and 3 illustrates the results when transfer pricing regulation is defined as having law in the tax codes requires the arm-length principle but without the contemporaneous documents requirement. While column 2 and 4 provides results with the same analysis procedure, but strong transfer pricing regulation is measured as requires both the arm-length principle and the contemporaneous document requirement.

When regressing reinvestment earnings on transfer pricing regulation with no additional controls other than tax rates, the coefficients are significant ($p < 0.05$) and take on the correct expected sign as shown in column (1) and (2). It is interesting to note that the magnitude of the effect of transfer price regulation is different depending on how transfer pricing regulation is defined. The effect is larger when regulation requires contemporaneous documents requirement compared to when it does not and the difference is significant at the 95% level. The results in column (2) show that on average, host country with fairly weak transfer pricing regulations attracts 0.48% of reinvestment earnings from U.S. based multinational firms and this effect is

greater when the host country also has a low corporate income tax rate. However, once we control for home and host country specific characteristics the effect of transfer pricing regulation disappeared. Based on the result**,** transfer pricing regulation heterogeneity does not affect foreign direct investment by multinational firms. Both coefficients, TPREG and its interaction term are not significant at the 95% significant level as shown in column (3) and (4).

Most of the control variables in the regression do take on the correct sign and significance ($p < 0.05$) except for exchange rate, tax treaty and U.S. tax reforms. The coefficient on tax rates is negative and significant ($p < 0.01$). As expected host country with high corporate income tax deters investment from U.S. based multinationals but at a decreasing rate ($DTAX^2$ is negative and significant ($p < 0.01$)). On the other hand, host country with a large market size, high level of trade openness, having a common language with the U.S., and relatively close to the U.S. are attractive by U.S. based multinational firms.

Table 3 Estimates of Transfer Pricing regulation effects on U.S. MNE's Reinvest Earnings abroad using random effects specification.

	(1) Without Document Requirement	(2) With Document Requirement	(3) Without Document Requirement	(4) With Document Requirement
VARIABLES				
Interested Variables				
TPREG	0.30***	0.48***	-0.08	-0.14
	(0.10)	(0.09)	(0.08)	(0.08)
TPREG*DTAX	-0.01	-0.03***	0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Control Variables				
DTAX	-0.06***	-0.04***	-0.02***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
$DTAX^2$	-0.00***	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
TAXCHANGE			-0.20*	-0.20*
			(0.12)	(0.12)
TAXTREAT			0.06	0.08
			(0.11)	(0.11)
SUMGDP			0.68***	0.73***
			(0.19)	(0.20)

DIST			-0.00***	-0.00***
			(0.00)	(0.00)
COMLANG			0.89***	0.87**
			(0.35)	(0.37)
EXCHANGERATE			0.01	0.01
			(0.02)	(0.02)
POP			0.60***	0.59***
			(0.11)	(0.11)
GDPCAP			0.80***	0.79***
			(0.12)	(0.12)
TRADEOPEN			0.01***	0.01***
			(0.00)	(0.00)
EDU			-0.01	-0.01
			(0.00)	(0.00)
CONSTANT	6.05***	5.95***	-26.80***	-28.26***
	(0.21)	(0.21)	(4.27)	(4.40)
Observations	830	830	630	630
R-Squared	0.04	0.04	0.53	0.53
Number of country	38	38	37	37

Standard errors in parentheses *** p<0.01, ** p<0.05. Noted that SUMGDP, POP, GDPCAP are expressed in natural log in the regression.

CONCLUSION

We start the chapter with the hypothesis that differences in transfer pricing regulations between the home and host country affect multinational firm's FDI decision. Particularly, host country with no transfer pricing law would attract investments from multinational firms. As Transfer pricing regulations limited multinational firms from taking advantage of differences in tax rates between different tax jurisdictions. Additionally, one would expect the effect of transfer pricing regulation on FDI should be working in conjunction with the differences in tax rates between the home and host country. Hence, transfer pricing arbitrage exists when there are differences in transfer pricing regulation across home and host country and it increases in the same direction of tax rates differentials.

Using data on U.S. based multinational firms' reinvestment earnings abroad as a proxy for FDI activity, provided by the BEA Survey of U.S. Direct Investment Abroad and the Balance of Payments Survey we analyze the effect of transfer pricing regulation of multination firm FDI's decision. Using the gravity model with random effects we found no empirical evidence that heterogeneity in transfer pricing regulation among home and host country affect FDI activity by U.S. based multinational firms. Host country's specific characteristics such as market size, distant from the U.S., trade openness, as well as tax rates seem to be the primarily determinants of FDI activity.

REFERENCES

Bernard, Andrew B., Jensen Bradford J., and Schott K. Peter, 2006. "Importers, Exporters, and Multinationals: A Portrait of Firms in the U.S. that Trade Goods," *NBER working paper*, October.

Blonigen, Bruce A., 1997. "Firm-Specific Assets and the Link Between Exchange Rates and Foreign Direct Investment," *American Economic Review,* 87 3: 447-65.

Blonigen, Bruce A., 2005. "A Review of the Empirical Literature on FDI Determinants," *Atlantic Economic Journal,* 33: 383-403.

Brenton, Paul, Mauro, Francesca Di, and Lucke, Matthias, 1999. "Economic Integration and FDI: An Empirical Analysis of Foreign Investment in the EU and in Central and Eastern Europe," *Empirica,* 26 2: 95-121.

Brulhart, Marius and Mary J. Kelly, 1999. "Ireland's trading potential with Central and Eastern European Countries: A gravity study," *The Economic of Social Review,* 30 2: 159-174.

Clausing, Kimberly A. 2003. "Tax-Motivated Transfer Pricing and US Intrafirm Trade Prices." *Journal of Public Economics,* **87 9-10**: 2207-23.

Chow, Lynne Chan and Hung, K. 1997. "International Transfer Pricing for Business Operations in China: Inducements, Regulation and Practice," *Journal of Business Finance and Accounting,* 24: 1269-1289.

Dean, Judith M., Lovely, Marry E., Wang Hua. 2009. "Are foreign investors attracted to weak environmental regulations? Evaluating the evidence from China," *Journal of Development Economics,* 1-13

De Mooij, Ruud A., Ederveen, Sjef, 2003. "Taxation and Foreign Direct Investment: A Synthesis of Empirical Research," *International Tax and Public Finance,* 10 6: 673-93.

Desai, Mihir A., C. Fritz Foley, and James R. Hines, Jr. 2006 "The demand for tax haven operations." *Journal of Public Economics,* **90 3**: 513-531.

Eden, Lorraine, 1998. *Taxing Multinationals: Transfer Pricing and Corporate Income Taxation in North America,* Toronto: University of Toronto Press.

Eden, Lorraine, 2005. "Talk Softly but Carry a Big Stick: Transfer Pricing Penalties and The Market Valuation of Japanese Multinationals in the United States," *Journal of International Business Studies,* 36: 398-414.

Ferrantino, Michael J., 1993. "The Effect of Intellectual Property Rights on International Trade and Investment," *Review of World Economics,* 129 2: 300-331.

Fink, Carsten and Maskus, Keith Eugene, 1995. "Intellectual Property and Development: Lessons from Recent Economic Research," *A co-publication of the World Bank and Oxford University Press.*

Gresik, Thomas A., 2001, "The Taxing Task of Taxing Transnationals," *Journal of Economic Literature,* Vol XXXIX: 800-838

Gopinath, Munisamy and Echeverria, Rodrigo, 2004. "Does Economic Development Impact the Foreign Direct Investment-Trade Relationship? A Gravity-Model Approach," *American Journal of Agricultural Economics, 86 3: 782-787.*

Gould, J. R., 1964. "Internal Pricing in Firms when There are Costs of Using an Outside Market," *Journal of Business,* **37 1:** 61-67.

Grubert, Harry, and John Mutti 1991. "Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision Making." *Review of Economics and Statistics,* **73 2**: 285-93.

Hanna, Rema, 2004. "U.S. Environmental Regulation and FDI: Evidence from a Panel of U.S. Based Multinational Firms," *Working Paper.*

Hartman, David G., 1984. "Tax Policy and Foreign Direct Investment in the United States," *National Tax Journal,* 37 4: 475-87.
__, 1985. "Tax Policy and Foreign Direct Investment," *Journal of Public Economics,"* 26 1: 107-121.

Heston, Alan, Robert Summers and Bettina Aten, 2011**. "Penn World Table Version 7.0, Center for International Comparisons of Production, Income and Prices"** ***at the University of Pennsylvania***

Hines, James R., Jr., and Eric M. Rice 1994. "Fiscal Paradise: Foreign Tax Havens and American Business." *Quarterly Journal of Economics,* **109 1**: 149-82.

Hines, James R., Jr., 1995. "Altered States: Taxes and the Location of Foreign Direct Investment in America," *American Economics Review,*85: 1076-94.
Hirschleifer, Jack. 1956. "On the Economics of Transfer Pricing," *Journal of Business,* **29 3:** 172-184.

Hirschleifer Jack. 1957. "Economics of the Divisionalized Firm," *Journal of Business,* **30 2:** 96-108.

Horst, Thomas, 1971. "Theory of the Multinational Firm: Optimal Behaviour under Differing Tariff and Tax Rates," *Journal of Political Economy*," **79 5:** 1059-1072.

Horst, Thomas, 1973 "The Simple Analytics of Multinational Firm Behaviour," in *International Trade and Money,*

Kogut, Bruce, and Chang, Sea Jin. 1991. "Technological Capabilities and Japanese Foreign Direct Investment in the United States," *Review of Economics and Statistics,* 73: 401-13.

KPMG, 2011. "Global Transfer Pricing Review," *Global Transfer Pricing Services*

Markusen, James R., and Venables, Anthony J., 1999. "Foreign direct investment as a catalyst for industrial development," *European Economic Review,* 43: 335-356.

Leamer, Edward E., 1994. Testing Trade Theory in Greenaway, David and L. Alan Winters (eds.), *Surveys in international trade,* Oxford: Blackwell.

Lee, Jeong-Yeon, and Mansfield, Edwin, 1998. "Intellectual Property Protection and U.S. Foreign Direct Investment," *Review of Economics and Statistics,* LXXVIII, 181-186.

Lessard, D., and Williamson, J., 1987. "Capital Flight and Third World Debt," *Institute for International Economics,* Washington, 201-254.

List, John A., Co, Catherine Y., 1999. "The Effects of Environmental Regulations on Foreign Direct Investment," *Journal of Environmental Economics and Managements,* 40 1: 1-20.

Lowell, C., Burge, M. and Briger, P., 1994. "International transfer pricing: Planning for Section 481 Penalty," *Tax Notes International* 23: 349-374.

Samuelson, L., 1982, "The multinational firm with arm's length transfer pricing limits," *Journal of International Economics,*13. 365-374.

Sheppard, Lee, "Transfer Pricing as Tax Avoidance," at http://www.forbes.com/2010/06/24/tax-finance-multinational-economics-opinions-columnists-lee-sheppard.html?boxes=Homepagechannels, June 25, 2010.

Smarzynska, Beata, 2002. "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages," *Unpublished Manuscript.*

Smith, Pamela, 1999. "Are Weak Patent Rights a Barrier to U.S. Exports?" *Journal of International Economics, XLVIII, 151-77.*

___, 2001, "How do Foreign Patents Rights Affect U.S. Exports, Affiliate Sales, and Licenses?" *Journal of International Economics,* LV, 411-439.

U.S. Bureau of the Census. Various Years. "Bureau of Economic Analysis (BEA) Survey of U.S. Direct Investment Abroad and the Balance of Payments Survey," *U.S. Government Printing Office: Washington, DC.*

Wheeler, David and Mody, Ashoka. 1992. "International Investment Location Decisions: The Case of U.S. Firms," *Journal of International Economics,* 33: 57-76.

Wei, Shang-Jin. 2000a. "How Taxing is Corruption on International Investors?" *Review of Economics and Statistics,* 82: 1-11.

___. 2000b. "Local Corruption and Global Capital Flows," *Brookings Papers on Economic Activity, 0, 2: 303-46.*

World Tax Database at the Ross School of Business, University of Michigan.

Xing, Yuqing and Kolstad, Charles D. 1995. "Do Lax Environmental Regulation Attract Foreign Investment?" *Working Paper,* University of California, Santa Barbara.

Zhang, Kevin Honglin and Markusen, James R., 1999. "Vertical multinationals and host-country characteristics," *Journal of Development Economics,* 59: 233-252.

Appendices

A1. Coefficient Expected Sign and Justification

Coefficient	Expected sign	Justification
TPREG	+	Relatively Weak transfer pricing laws in host country encourage FDI from multinational firms.
TPREG*DTAX	-	We should expect a larger investment in host country by multinational when host country has a relatively lower tax rate and a weak transfer pricing laws compare to the home country.
TAXTREAT	-	Bilateral tax treaty between the U.S. and host country reduces tax avoidance by multinationals thus reduces incentive for multinational firms to invest in host country.
TAXRATE	-	Higher tax rate in host country deters multinational firms to invest.
SUMGDP	+	Strong GDP promotes FDI from multinational firms.
GDPCAP	+	High GDP per Capita promotes FDI from multinational firms.
DIST	-	The further the distant between the home and host country discourages FDI investment because of transportation cost and control.
COMLANG	+	Having a common language in the host country make it easier to do business thus encourages FDI by multinational firms.
EXCHANGERATE	-	Production costs increase when host country currency appreciates against the home country currency.
TRADEOPEN	+	Proxy for host country trade openness, less restriction on trades and transfers should promote FDI from multinational firms.
POP	+	As a proxy for market size, host country with a large market size is attractive for multinational firms to invest.
EDU	+	Studies have shown that high skill labors in host country attract FDI investment.

Notes: The variables SUMGDP, GDPCAP, DIST, EXCHANGERATE and POP are express in natural log in the regression.

A2. Reinvest Earnings by U.S. Multinationals by Country

Country	Number of Years		Mean	Std. Dev.	Min	Max
Australia		28	1374.00	1410.80	-446.00	5107.00
Austria		28	-18.89	1744.50	-8473.00	2074.00
Bahamas		17	-234.59	459.76	-1401.00	529.00
Belgium		28	1033.36	862.76	176.00	3511.00
Brazil		28	1308.89	1623.65	-1509.00	4278.00
Canada		28	5903.07	5065.23	-36.00	17619.00
Chile		28	657.86	1211.43	-183.00	5403.00
China		28	825.11	1299.82	-92.00	4712.00
Denmark		28	174.29	250.94	-160.00	935.00
Finland		28	114.71	112.48	-49.00	331.00
France		28	1082.21	1220.35	-612.00	4651.00
Germany		28	1719.04	1791.30	-455.00	6676.00
Hong Kong		28	1511.14	1530.18	-396.00	4768.00
Hungary		11	509.18	486.55	-117.00	1423.00
India		28	355.07	605.67	-182.00	2030.00
Ireland		28	3650.96	5723.53	-3257.00	22582.00
Israel		28	231.36	188.17	24.00	750.00
Italy		28	825.43	695.23	-746.00	2476.00
Japan		28	2302.79	2559.19	-392.00	7677.00
Korea: Republic of		27	778.93	876.83	-14.00	2821.00
Luxembourg		28	3116.43	6019.47	-5953.00	17395.00
Mexico		28	2442.93	2414.82	-363.00	7640.00
Netherlands		28	8204.82	14688.08	-33848.00	45889.00
New Zealand		28	131.43	175.07	-163.00	476.00
Norway		28	198.93	775.81	-2813.00	1865.00
Panama		28	417.86	441.79	-501.00	2020.00
Philippines		28	172.04	187.43	-86.00	640.00
Poland		11	419.00	407.86	11.00	1122.00
Portugal		28	92.50	123.83	-322.00	432.00
Singapore		28	2051.82	3077.20	-4637.00	11770.00
South Africa		28	157.25	205.52	-117.00	816.00
Spain		28	924.18	1322.87	-424.00	5699.00
Sweden		27	231.81	615.84	-2174.00	1303.00
Switzerland		28	3656.36	4795.43	-7366.00	14875.00
Taiwan		28	492.07	408.63	36.00	1602.00
Turkey		28	119.25	180.70	-137.00	689.00
United Arab Emirates		28	62.25	217.81	-944.00	353.00
United Kingdom		28	4118.61	5107.31	-1195.00	17620.00

A3. Adoption of Transfer Price Regulation and Bilateral Tax Treaty by Country

Country	(2) TP Regulation Adoption Year	(3) Document Requirements Adoption Year	(3) Bilateral Tax Treaty Year
Australia	1997	1996	1982
Austria	1995	N/A	1996
Bahamas	N/A	N/A	N/A
Belgium	1999	N/A	2006
Bermuda	N/A	N/A	N/A
Brazil	1997	N/A	N/A
Canada	1995	1999	1980
Chile	1997	N/A	N/A
China	2007	2009	1984
Denmark	1998	N/A	2000
Finland	2006	N/A	1989
France	1999	1996	1994
Germany	2005	2004	1989
Hong Kong	N/A	N/A	N/A
Hungary	1996	2005	1979
India	2001	2002	1989
Ireland	1997	N/A	1997
Israel	2006	2005	1975
Italy	2010	N/A	1999
Japan	1996	N/A	2003
Korea	1996	1999	N/A
Luxembourg	2010	N/A	2001
Malaysia	2003	2005	N/A
Mexico	1995	1998	1992
Netherlands	2001	2002	1992
New Zealand	2001	2001	1982
Norway	2008	2005	N/A
Panama	N/A	N/A	N/A
Poland	1997	2003	1994
Portugal	2001	N/A	1994
Philippines	1995	N/A	N/A
Singapore	2006	2005	N/A
South Africa	1999	N/A	N/A
Spain	2006	2005	1990
Sweden	2007	2005	1994
Switzerland	1997	N/A	1996
Taiwan	2004	2005	N/A
Turkey	2007	N/A	1996

United Arab Emirates	N/A	N/A	N/A
United Kingdom	2010	2000	2001
United States	1994	1994	N/A

A4 Variables Definition and Sources

Variables	Definition	SOURCES
EXCHANGERATE	Currency exchange rate between U.S. dollars and a particular country currency	United Nations' UNCTAD Statistics database
GDPGROWTH	Real GDP growth rate	UNCTAD Statistics database
TPREG	Take a value of '1' for when the U.S. has transfer pricing regulation and host country does and 0 otherwise.	KPMG and OECD's reports on transfer pricing across countries.
TAXRATE	Differences in top corporate tax rates between the U.S. and host countries	World Tax Database provided by UMICH Business School and Price Waterhouse's publication.
GDPCAP	GDP per capita	World Bank Development Indicators
GDP	Gross Domestic Product (in billions)	World Bank Development Indicators
POP	Country's population in thousand	World Bank Development Indicators
EDU	Measure country's human capital proxy by the percent enrollment beyond secondary schools	World Bank Development Indicators
TAXTREAT	Taken a value of '1' for years which the country has a bilateral tax treaty with the U.S. and '0' for years when the two countries do not have any tax treaty.	U.S. internal Revenue Services
TRADEOPEN	Measure country level of trade openness in 2005 prices	Penn World Table 2010
DIST	Distant in miles between the U.S. and host country (measures between the two country capitals)	The French Center for Research and Studies on the World Economy (CEPII) database on geodesic distance
COMLANG	Takes the value of '1' when host country official language is English and 0 otherwise	The French Center for Research and Studies on the World Economy (CEPII) database on geodesic distance