International Corporate Taxation and U.S. Multinationals' Behavior: an Integrated Approach[*]

Céline Azémar[†]

August 2008

Abstract

Using data from the International Revenue Service, this paper explores the effects of corporate taxation on U.S. capital invested abroad and on tax planning practices (dividend payments, income shifting, and passive investment). The econometric analysis first indicates that investment is strongly influenced by average tax rates, with a magnified impact for particularly low-tax rates implying that the attractiveness of low-tax countries is not weakened by anti-deferral rules and cross-crediting limitations. Further explorations suggest that firms report higher profit and are less likely to repatriate dividends when they are located in low-tax jurisdictions. Firms also report higher Subpart F income in countries in which they shift their profit, suggesting that cross-crediting provides an incentive to shift passive income in low-tax countries and that passive investment can be an alternative strategy to minimize taxes when active investment opportunities are lacking. Finally, the paper estimates the role of effective transfer pricing regulation on income shifting activities using the quality of host countries' law enforcement. It appears that low degrees of law enforcement are associated with higher income-shifting.

Keywords: International taxation, U.S. capital, income shifting, dividend payments, Subpart F income, tax credit system.

JEL classification: F23, H25, H32.

1 Introduction

Over the last two decades, advances in the literature on international taxation has increased our understanding about the behavioral impact of foreign corporate tax rates on multinational activities. It is now widely accepted that tax differentials among countries and the interaction between the home and the host countries' tax systems not only influence the location and the amount of capital invested abroad, but also the financing of investment, the repatriation of dividends, and the transactions between related parties located in different jurisdictions (Hines, 1999).

Because each of these decisions has been investigated separately, the aim of this paper is to establish bridges among the disparate elements of the fructuous tax literature to provide a more complete picture of the impact of taxes on the behavior of multinational firms. The use of the U.S. Internal Revenue Service database makes such endeavor possible, allowing to consider the influence of taxation on four decisions: (i) real investment, (ii) income shifting, (iii) dividend repatriation, and (iv) Subpart F income. The approach is then twofold. First, the paper replicates existing studies on U.S. multinationals by using more recent data, additional covariates and panel data techniques. Second, the paper builds upon these previous studies in order to shed light on three issues that remain unconsidered.

First, it is well understood that deferral and cross-crediting alter the global capital export neutrality of the U.S. tax system and a number of papers find that taxes have a negative impact on foreign investment. However these studies do not consider whether there is an asymmetry of investment responses to low and high tax rates. The Joint Committee on Taxation (2003) emphasizes that anti-deferral rules and cross-crediting limitations imposed by the U.S. tax system should limit the incentive to invest in low-tax jurisdictions. If, the complications generated by anti-deferral and cross-crediting limitations have a significant impact on the capital invested abroad, this should empirically induce an asymmetry, with a lower elasticity between taxes and capital in low-tax countries. This paper tests whether there is a diverging elasticity between taxes and capital in low-tax and high-tax jurisdictions.

Once the investment is done, multinational firms have at their disposal various possibilities to reduce their overall tax liabilities. They can shift income from an affiliate located in a high-tax country to an affiliate located in low tax country and preserve these tax-saving benefits by deferring the repatriation of their profits, as long as they can find active use of their earnings. However, existing work on tax avoidance strategies does not detail the extent to which passive investment can be an alternative method to minimize taxes, when active investment opportunities are limited. Investors' passive investment strategies can be considered by investigating the links between foreign taxes and Subpart F income.

Finally, another limitation of the literature on tax avoidance is to make the assumption that countries do not differ in the enforcement of transfer pricing rules, by omitting to consider the level of development or the legislative maturity of the host country as determinants of income shifting. The paper investigates whether the ability to shift income is influenced by the level of development and the quality of law enforcement of the host country which are likely to be correlated with the maturity of its transfer pricing legislation.

The paper is organized as follows. The next section discusses why investment responses to low and high tax rates may be asymmetric, and addresses the role of passive investment and law enforcement on tax planning practices. Section 3 presents the data sources and descriptive statistics. Section 4 measures the impact of taxes on U.S. multinationals' investment and on tax planning activities. Section 5 offers concluding remarks.

2 U.S. Multinationals' Behavior and International Taxation

2.1 The Potential Asymmetry of Investment Responses to Low and High Tax Rates

Hines (1999) provides an overview of the literature that investigates the sensitivity of FDI to international taxation, concluding that foreign corporate tax rates influence the location and the volume of FDI. Two forms of empirical evidence can be distinguished. The first form is based on time-series aggregate data and investigates the relationship between FDI and after-tax rates of return in the United States. This type of study, such as Hartman (1984), Boskin and Gale (1987) and Newlon (1987), reports a positive relationship between both phenomena. The second form corresponds to cross-sectional or panel studies based on various measures of multinationals' activity. Among this literature, several studies exploit the corporate tax-differential across countries to identify the effect of taxes on U.S. FDI. Using the U.S. Commerce Department's 1982 Benchmark Survey data, Grubert and Mutti (1991) and Hines and Rice (1994) find that the level of average tax rate has a negative influence on the cross-sectional distribution abroad of the net stock of property, plant and equipment (PPE) of U.S. affiliates. Based on more recent data and measuring capital stock *via* U.S. Controlled Foreign Corporations (CFC) assets, Grubert and Mutti (2000) and Altshuler et al. (2001) also show that the capital of U.S. multinationals is significantly influenced by the average tax rate in 1984 and in 1992. This impact appears to be magnified for low tax rates and for countries with an open regime (Grubert and Mutti, 2000), and seems to have increased over time (Altshuler et al., 2001). In Mutti and Grubert (2004), the influence of taxes is also observed when the U.S. activity is measured by gross product originating (value added) and when fixed effects are incorporated. Their study covers the years

1982, 1989, and 1994.

A pure worldwide tax system would not distort the decision about whether to locate investment at home or abroad since companies would be subject to taxation on all income regardless of where that income is earned. The U.S. system of taxation can be considered as a hybrid, containing elements consistent with both capital-export neutrality and capital-import neutrality.[1] On the one hand, cross-crediting and tax deferral allow decisions on the location and volume of investment to be distorted by taxes. Indeed, in order to prevent double taxation, U.S. multinationals are able to claim a credit for income tax paid abroad up to the tentative U.S. tax. In practice, the U.S. method of calculating the foreign tax-credit limit, called 'worldwide averaging' or 'cross-crediting', uses the total worldwide foreign income of the taxpayer. When the foreign taxes paid exceed the U.S. tax liability on foreign source income, the investor is in an 'excess credit' position. By averaging foreign tax liabilities, this method provides an incentive for 'excess credit' investors to locate activities in low-tax countries, since taxes imposed by a high-tax country (i.e. tax rate higher than the U.S. one) can be used to offset U.S. taxes on income earned by the same tax payer in the low-tax country (i.e. tax rate lower than the U.S. one). In addition, the income earned abroad by foreign affiliates is subject to U.S. taxation only when it is remitted as dividends to the U.S. parent. Simple tax considerations therefore make it attractive to invest in low-tax countries and to defer the repatriation of profit, since deferral increases the reinvestment in each period (when the foreign taxes are lower than the U.S. statutory corporate tax rate), and thus increases the cumulative profit (net of taxation) at the end of the period.

On the other hand, to limit incentives for outward investment, the U.S. tax system has anti-deferral regimes for certain types of incomes[2] and cross-crediting limitations that allow averaging within basket only, since the inclusion of separate foreign tax-credit baskets in the 1986 Tax Reform Act.[3] According to the Joint Committee on Taxation (2003), limiting the ability of cross-crediting and deferral *"moves the tax treatment of the marginal outbound investment by a U.S. investor away from capital import neutrality and toward capital export neutrality."* (p27). The negative correlation between taxes and U.S. capital obtained by the literature does not indicate however, whether there is an asymmetry between taxes and capital in high-tax

---

[1]Capital export neutrality implies a neutrality towards the decision whether to invest at home or abroad. Capital flows are only influenced by economic fundamentals and employed where they are the most productive without being distorted by tax considerations. Capital export neutrality can be achieve with a worldwide tax system where investors pay domestic taxes on their foreign income. Investors can thus locate investment anywhere in the world and pay the same taxes. Under capital import neutrality, investors are subject to the same tax rate in the country in which they operate, no matter their nationality. Promoting competitiveness but allowing capital allocation to be diverted by taxes, capital import neutrality can be achieve with an exempt tax system, where income earned abroad is exempt from home country taxes.

[2]Passive income and various sales and services' activities do not benefit from deferral.

[3]Since 1986, investors may only cross-credit excess foreign tax paid to one country against U.S. tax on equivalent types of income earned in a low-tax country. For example, this separate foreign tax-credit basket rule avoids the cross-crediting between taxes of active and passive income.

jurisdictions and in low-tax jurisdictions. If the complications generated by anti-deferral and cross-crediting limitations have their expected effect, i.e. to remove the attractiveness of low-tax jurisdictions, an asymmetry should be observed between the sensitivity of U.S. capital relative to corporate taxes in low-tax and high-tax countries, with a lower elasticity between taxes and capital in low-tax countries as compared with high-tax countries.

2.2 The Role of Passive Investment

The strategies of multinational firms to minimize their tax liabilities are not limited to the decisions of the location and the size of their investments. Once the investment is realized and a profit generated, multinationals have at their disposal alternative methods to minimize their fiscal burden.

Since cross-crediting allows some income from low-tax countries to remain effectively untaxed in the U.S. when repatriated, and because deferral allows tax-saving benefits generated in or shifted to low-tax countries to be preserved, multinationals have incentives to shift profits from high-tax countries to low-tax countries. Grubert and Mutti (1991), Hines and Rice (1994), and Louie and Rousslang (2008) give credence to such a practice by investigating the impact of taxes on profitability measures. Their results suggest a negative relationship between foreign tax rates and U.S. affiliates' profitability, indicating that firms declare more income in low-tax jurisdictions. The advantages provided by cross-crediting and deferral are exclusive in that the first is generated by repatriation, the second, by definition, by deferral. The relationship between dividend and taxes found by the literature suggests that deferral is the privileged method: low-tax rates are associated with lower dividend remittance to the U.S. parents. Evidence of this behavior is provided first by Kopits (1972) who shows that dividend payments of U.S. manufacturing CFC are positively correlated with local tax rates. Grubert and Mutti (2001) corroborate these results. They show that, in 1992, the ratio of total dividends to the U.S. divided by total after-tax earnings and profits decreases with lower levels of host country average tax rates.

These studies leave open questions about the role of passive investment strategies in the tax avoidance process. The Subpart F provision, which is the main anti-deferral regime of relevance to a U.S.-based multinational, specifies that income from passive investment and from business service industries earned abroad is deemed to have been distributed by U.S. firms to their parents, and therefore is immediately subject to U.S. taxation. This provision is intended to prevent multinationals from avoiding taxes by shifting highly mobile passive income away from the U.S. or another high-tax country into a low-tax country. Indeed, what is the point of shifting passive income, if one can no longer take advantage of deferral? However, tax planning opportunities also arise if income earned in a low-tax jurisdiction can be offset with excess tax

credits from another jurisdiction. The ability to cross-credit between taxes on passive incomes can thus provide an incentive to shift this income in spite of the Subpart F rule as long as the investor is in an 'excess credit' position.[4]

Passive investment can also represent an alternative profitable way to use earnings when multinationals cannot find active use of their funds in low-tax countries (thus influencing active-income shifting and dividend retentions). As emphasized by Hines and Rice (1994), in spite of the Subpart F provision, investing profits in the world capital market can be more profitable than repatriation as long as $r^*/r > (1 - \tau)/(1 - \tau^*)$, where r^* is the rate of return of the passive investment, r is the U.S. domestic interest rate, τ^* is the foreign tax rate and τ the U.S. tax rate. Basic stylized facts calculated from the Internal Revenue Service database suggest a relationship between the level of taxes, reported income and dividend payments. Thus, between 1992 and 2000, U.S. CFC in countries with an average tax rate below or equal to 10%[5] had \$15.2 billions Subpart F income[6] out of \$69.9 billions earnings and profits, corresponding to 2.3 times the total amount of dividends repatriated from these countries; whereas, in countries with an average tax rate higher than 35%[7], Subpart F income represented less than one-forth of total dividend payments. The relationship between U.S. Subpart F income and corporate tax rates can reveal the degree to which multinational firms use passive investment as a tax minimization strategy.

2.3   Level of Development, Legislative Maturity, and Tax Avoidance

Another caveat with the literature on tax avoidance is to assume that countries do not differ in the enforcement of transfer pricing rules, by omitting to consider the level of development and the legislative maturity of the host country as determinants of income-shifting.

---

[4]Investors in an excess credit position can use this excess credit to offset any U.S. tax payments on foreign income made in the previous two years or the following five years (without interest). Inflation and a persistent excess credit position make passive income shifting profitable as long as the investor is in excess credit position, i.e. as long as the ratio of total foreign income tax paid on total foreign profit is higher than the U.S. statutory tax rate.

[5]Ireland, Poland, Costa Rica, Malaysia, Panama, Switzerland and Dominican Republic.

[6]Subpart F income mainly consists on income from passive investment but also includes other income that is readily movable from one jurisdiction to another. As defined by the Joint Committee on Taxation (2003), *"Subpart F income consists of foreign base company income, insurance income, and certain income relating to international boycotts and other violations of public policy. Foreign base company income consists of foreign personal holding company income, which includes passive income (e.g., dividends, interest, rents, and royalties), as well as a number of categories of non-passive income, including foreign base company sales income, foreign base company services income, foreign base company shipping income and foreign base company oil-related income."* (p12).

[7]Japan, Honduras, Morocco and Greece.

Developing countries[8] are more vulnerable to transfer pricing[9] abuses because the weaknesses of their legal system amplify the difficulty of establishing rules-based transfer pricing, audits and penalties (Brean, 1979; Plasschaert, 1985). One of the aims of the OECD Transfer Pricing Guidelines is to provide technical information on the implementation and administration of transfer pricing rules to help tax authorities of poor and emerging countries receive a fair share of the tax base of multinational companies. However, these countries are still limited by a lack of resources (required to run their tax authorities and to challenge in courts the multinationals accused of transfer pricing manipulation), their lack of experience in detecting transfer prices not established at arm's length standard, and the difficulty of collecting data (when comparable product does not exist locally).

Another complication comes from the fact that the U.S. tax treaty network is not well developed with developing countries and the exchange of information between the tax authorities of the home and the host countries is imperative to avoid income shifting.[10] The establishment of adequate expertise for transfer pricing in developing countries is thus not facilitated in the case of U.S. firms.

Finally, a further barrier that may prevent developing countries from regulating transfer pricing is a political one (Lall, 1979). The attraction of foreign investment is an important policy objective and the regulation of transfer pricing that increases effective tax rates may discourage capital inflows. Chan and Chow (1997) and UNCTAD (1999) stress that tax authorities may avoid auditing large and high technology affiliates, as they are afraid of losing them to another country.

All in all, the complexity of curbing tax evasion in less developed countries with, when they

---

[8]According to the World Bank, a developing country is a country in which the majority of population makes far less income, often lacks basic public services, and has significantly weaker social indicators, than the population in high-income countries. The World Bank classifies countries into the categories of (1) Low income, (2) Lower middle income, (3) Upper middle income and (4) High income. The commonly used term "Developing Countries" corresponds to the "Low income" plus the "Middle income" categories. Following the World Bank classification, developing countries considered in this paper correspond to countries of the sample with a GDP per capita that is lower than 10,000 USD in 1992.

[9]Transfer pricing is a common operation of multinational firms. It refers to the international transfer of goods, services and intangibles between related parties. The price charged for these transfers is known as a "transfer price" and is required to be paid at arm's length prices, i.e. at market prices. However arm's length prices are not always observable as in many situations goods are unique. It can be advantageous for multinational firms to reduce or avoid taxes by manipulating transfer prices. Affiliates located in low-tax countries can overprice their sales to other foreign affiliates in order to shift income from high-tax to low-tax jurisdictions.

[10]The primary purpose of bilateral tax treaties is the avoidance of double taxation and the avoidance of evasion of taxes on income and capital. However, of the total income treaties in effect with the U.S. (49 at October 31, 1999), only about a quarter are with developing countries. As emphasized by Toaze (2001), the difficulties encountered by the U.S. in extending its tax-treaty network with developing countries can be explained by the fact that they do not want to grant major tax incentives such as tax sparing provisions (see Hines (2001) and Azémar et al. (2007) for a discussion of tax sparing agreements and their impact on FDI activity). Among the sample, and during the sample period, 20 countries have not signed a bilateral tax treaty with the U.S. and they are almost all developing countries: Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Egypt, Guatemala, Honduras, Hong Kong, Kenya, Malaysia, Nigeria, Panama, Peru, Uruguay and Zimbabwe.

exist, less sophisticated transfer pricing regulations, can be a factor of multinational income-shifting, and by extension of dividend retentions. Because multinationals are less likely to experience a transfer pricing examination in the developing world and to a greater extent, of having an adjustment or penalty on audit in these countries than in well-enforced transfer pricing legislations, cross-country differences in transfer pricing regulations need to be taken into account when measuring tax planning practices.

3   Data Sources and Descriptive Statistics

The data employed in this paper are the 1992, 1994, 1996, 1998, and 2000 U.S. Treasury CFC files compiled by the Internal Revenue Service (IRS). The database includes, for each of the five periods, financial information about the 7,500 largest foreign corporations controlled by U.S. multinationals with total assets in excess of 500 million USD. According to the IRS, a foreign corporation is "controlled" if U.S. shareholders own more than 50% of the value of all its outstanding stock on any day during the foreign corporation's tax year. The database reports aggregate information (by foreign country) on U.S. subsidiary assets, earnings and profits, income taxes, Subpart F income, dividends repatriated, and other information on the distribution out of earnings and profits and on the receipts and payments made by the foreign corporations. The data are reported by corporations according to general U.S. accounting principles. They are historical book values, implying that they may be affected by local exchange rates and inflation.

The total assets of CFC is the measure of capital, and is the only measure of capital available in the dataset. Finding a good approximation of capital, i.e. a measure that reflects the productive activity of the firm, is a difficult task in empirical research. Capital is generally measured by fixed assets (PPE) or total assets. PPE, used in Grubert and Mutti (1991) and Hines and Rice (1994), is probably the measure that provides the best approximation for the distribution of production since fixed assets, as opposed to intangible and financial assets, can hardly be manipulated for tax purposes and should thus reflect the level of physical presence of affiliates (Hines and Rice, 1994; Lipsey, 2007). However, as emphasized by Lipsey (2007), in a world in which much of the production is the output from intangible assets, one limitation of PPE measure is to exclude these intangible assets. As in Grubert and Mutti (2000) and Altshuler et al. (2001), using total assets provides a broader picture of the activities of U.S. multinationals. However, the advantage of this measure - which is to include intangible and financial assets - is also its limitation. If these assets are rearranged between related affiliates to diminish their global tax liabilities, they may not reflect the real activity of the affiliates. The relationship between assets and PPE during the period considered by this paper indicates that both measures tell the same story, however. The correlation between U.S. assets (from the

Table 1: Descriptive Statistics for the Variables Used

Variables	Mean	Standard deviation	Minimum	Maximum
ln capital (assets)	16.210	1.935	11.861	20.919
ln E&P before tax	13.827	1.756	8.675	17.502
ln dividends	11.718	2.627	0	15.772
ln Subpart F	11.319	2.166	4.111	15.341
ln GDP	25.726	1.431	21.953	29.198
ln GDP per capita	9.218	0.908	6.650	10.467
ln trade	4.131	0.580	2.690	5.628
ln distance	8.844	0.586	6.307	9.692
ln inflation	1.780	1.056	-1.110	7.638
ln exchange rate	3.046	2.848	-0.552	13.564
ln physical infrastructure	2.964	0.522	1.198	4.191
Law and Order	4.639	1.417	1	6
Average tax rate	0.222	0.105	0.047	0.594

IRS U.S. treasury CFC database) and U.S. PPE (from the Bureau of Economic Analysis) for the years 1992-2000 is fairly high (0.94) and it only drops to 0.90 in first differences, indicating that assets provide a reasonably good approximation for the level of, and changes in the real activity of U.S. multinationals.

The average tax rate, which is an average corporate tax rate per host country, is also derived from the U.S. Treasury CFC files. The average tax rate for each country is calculated by dividing the total income tax paid by CFC located in that country by their total earnings and profits, for foreign corporations with current earnings and profits positive before income taxes.[11] This tax rate represents a good approximation of the tax liabilities effectively paid by U.S. investors. As argued by De Mooij and Ederveen (2003), the average corporate tax rate can *"take account of tax planning activities, complex tax provisions and discretionary administrative practices of tax authorities"* (p667). As summarized by Grubert and Mutti (2000), they *"reflect all provisions of the tax system as well as special arrangements."* (p829).

To estimate the influence of foreign taxes on the behaviors of U.S. multinationals, it is essential to control for the impact of other determinants of U.S. activity abroad. The papers that work on the allocation of U.S. capital, such as Grubert and Mutti (1991), Hines and Rice (1994), Grubert and Mutti (2000), Altshuler et al. (2001) or Mutti and Grubert (2004) generally use the size of the domestic market (GDP), the GDP per capita, the geographical proximity of

---

[11]The calculation of the average tax only includes CFC with positive income in order not to bias upward the tax measure.

the host country (distance), the level of inflation[12] and a measure of trade openness, to control for host country characteristics. The same variables are used in this paper. Host country GDP, GDP per capita and trade openness are taken from the World Bank *Global Development Network Growth Database.* Trade openness is measured by the sum of exports and imports of goods and services divided by GDP, and is lagged by two years to reduce any endogeneity bias. The bilateral distance data are taken from the CEPII. Finally, inflation at the consumer price index is from the International Monetary Fund (International Financial Statistics).

This analysis differs from the previous literature in that three additional control variables are included: real exchange rate, physical infrastructure, and a Law and Order index.

A real exchange rate variable is included for two reasons. On the one hand, a host country's depreciating currency can make firms more likely to invest in the country because the local acquisition costs will be lower. On the other hand, in developing countries, a weak currency can be seen as a signal of instability and generates uncertainty. Real exchange rate data come from the real annual country exchange rates compiled by Mathew Shane from the "Economic Research Service" of the United States Department of Agriculture.

Physical infrastructures are included to avoid an omitted variable bias, since they can be correlated with the measure of taxes if they are financed by taxes on capital. They are proxied by the number of telephone lines divided by GDP, taken from the World Bank *Global Development Network Growth Database.*[13]

Finally, the Law and Order index computed by the International Country Risk Guide (ICRG) is added to consider host country legislative maturity. This index is assessed separately for law and for order, with each sub-component being allocated from zero to three points. As explained by the ICRG: *"the law sub-component is an assessment of the strength and impartiality of the legal system, while the order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating - 3 - in terms of its judicial system, but a low rating - 1 - if it suffers from a very high crime rate or if the law is routinely ignored without effective sanction"*. This measure is particularly appropriate since the focus here is not only on the existence of law but on the quality of law enforcement. I expect the notion of well-enforced transfer pricing legislation to correspond to high values of this index, while weak or non-existent transfer pricing legislation should correspond to low values. The index of Law and Order (average value for the period 1992-2000) is listed for the countries of

---

[12]Inflation may have a negative impact on the volume of capital invested because it indicates increased macroeconomic instability. Furthermore, according to Altshuler et al. (2001), inflation may be correlated with the average tax rate since depreciation allowances are based on the historical costs of assets.

[13]According to Easterly and Levine (1997) and Collier and Gunning (1999), while telecommunications is the only infrastructure variable widely available for developing countries, it is likely that different kinds of infrastructure are highly correlated. However, the variation in stock of telecommunications is largely explained by GDP per capita (Forestier et al., 2002), so Fink and Kenny (2003) propose measuring infrastructure by the per-income stock of telephone lines in order to avoid correlations with market related variables.

the sample in Appendix. Table 1 provides descriptive statistics for all variables used.

4 Empirical Results

4.1 U.S. Capital and Foreign Tax Rates

Table 2 reports fixed-effects regressions of U.S. capital invested abroad on the level of foreign average corporate tax rates. The model estimated is

$$\ln(CAP_{it}) = \alpha_i + \beta_1\left(ATR_{it}\right) + \beta_2\ln(H_{it}) + \lambda_t + \varepsilon_{it} \tag{1}$$

where the U.S. capital invested abroad "CAP_{it}" depends on country-specific fixed effects α_i, on a set of standard determinants H_{it}, on the average tax rate ATR_{it} and on time dummies λ_t; ε_{it} is the error term. The subscript i denotes recipient countries while the subscript t denotes time. All variables, except the average tax rate variable, are in natural logarithms.[14]

A fixed-effect model is estimated because a Hausman test indicates that the individual-specific error component is correlated with the included explanatory variables. The resulting bias of this correlation, generally called heterogeneity bias, is a bias caused from omitting time-invariant variables. Without accounting for this country heterogeneity, such as government regulations on labor market, environment, or on FDI, the OLS estimators would be biased and inconsistent.[15] The fixed-effects procedure eliminates unobserved heterogeneity bias by removing this country-specific unobserved effect that is correlated with the explanatory variables.[16] With the bias thus eliminated, the effects of taxes on U.S. capital are identified from within variations; time-invariant factors being removed by the use of fixed-effects.

General tests for functional form misspecification, such as a link test and a RESET test, suggest that the model is well specified.[17] Influential observations, both in terms of leverage and outlierness, have been removed according to a Cook's D test. Checking for multicollinearity, the greatest variance inflation factor value among all the regressions is 6.39, indicating that

---

[14]This has two advantages: such transformation reduces the influence of large values and allows the coefficients to be interpreted as ordinary elasticities.

[15]For example, government ceilings on foreign ownership can influence the relationship between taxes and investment or between taxes and earnings and profits, dividend payments or subpart F income. For instance, the literature suggests that transfer pricing manipulation can be greater when the capital is totally controlled by the parent firm, as the decision to shift profit is taken unilaterally and thus not limited by the divergent interests of a partner (Kant, 1990; Desai et al., 2004). Consequently, investment and net incomes of wholly-owned affiliates are found to be significantly more sensitive to foreign tax rates than are investment and net incomes of partially-owned affiliates (Desai et al., 2004; Azémar and Corcos, 2008).

[16]U.S. capital into a host country can also depend on the FDI in neighboring countries (see for example Ekholm et al. (2003), Yeaple (2003), Baltagi et al. (2007) and Blonigen et al. (2007)). As shown by Blonigen et al. (2007), country-specific dummies capture such spatial interdependence.

[17]The link test creates two new variables, a variable of prediction and one of squared prediction. The second variable should not have any explanatory power if the model is properly specified when the model is refitted using the prediction and the squared prediction variables as predictors. The Ramsey (1969)'s regression specification error test (RESET) adds polynomials in the OLS fitted values to detect functional form misspecification.

there is no near perfect linear relationship among the predictors. Finally, standard errors are robust to heteroscedasticity and serial correlation.

Column (1) shows that among the control variables, GDP, trade openness and physical infrastructure are factors that positively and significantly drive U.S. investment. In contrast, the GDP per capita, the real exchange rate and the level of inflation are statistically insignificant. Of particular interest, the sign and magnitude of the average tax rate (-1.4) clearly indicate that an increase in corporate taxes significantly reduces investment. With this different sample of countries and a larger period, the magnitude of the average tax rate coefficient appears to be fairly close to the maximum semi-elasticities obtained by Grubert and Mutti (1991), Hines and Rice (1994), Grubert and Mutti (2000) and Altshuler et al. (2001) $(-0.6, -1.2, -1.7$ and -1.4 respectively); but is higher than their mean semi-elasticities values $(-1.7, -10.7, -4$ and -2.7 respectively).[18] The lower effect of corporate taxes on investment obtained in this paper (knowing that fixed effects are included) suggests that taxes in these previous studies might capture other effects.[19]

U.S. investors could be less reactive to tax rates below the U.S. statutory tax rate (t_{us}), since restrictions on deferral and cross-crediting limit the fiscal advantages provided by low-tax jurisdictions. In Column (2), the likely responsiveness of U.S. capital to corporate tax rates in high and low-tax jurisdictions is shown by interacting the average tax rate with a 'high-tax countries dummy' that takes the value of 1 when $ATR > t_{us}$. The interaction term has the expected sign but is not statistically significant, indicating that there is no significant difference in the sensitivity of capital to corporate taxes which are higher or lower than the U.S. statutory tax rate. Thus, the impact of taxes in low-tax jurisdictions indicates that the benefit provided by fiscal incentives is substantial, in spite of anti-deferral and cross-crediting limitations.

Does this result mean that there is a constant proportional negative effect of taxes on investment, as assumed in column (1)? Another possibility to consider non-linearity in the model is to test the Grubert and Mutti (2000) assessment of a magnified impact of very low tax rates on capital allocation decisions. As shown by column (3), the inverse of the average tax rate is statistically significant and support the hypothesis that this magnified effect occurs.[20] To illustrate this result, several level of average tax rates and their corresponding level of confidence are computed by simulations.[21] On average, a 1% increase of the tax rate significantly (95%

---

[18]See the summary statistics of the meta analysis of De Mooij and Ederveen (2003).

[19]The magnitude of the average tax rate coefficient obtained with a cross-section in Column 4 tends to support this hypothesis.

[20]Following Grubert and Mutti (2000) the inverse of 0.1 plus the average tax rate is used as the tax variable. The value 0.1 is added to avoid the extreme values that would otherwise be created at very low tax rates.

[21]To implement this approach, the CLARIFY software for Interpreting and Presenting Statistical Results computed by King et al. (2000) is used. In an unreported table, the parameters of the regression corresponding to column (3) are reestimated, and 1000 sets of simulated coefficients from their posterior distribution are obtained to finally compute the desired quantity of interest and its associated level of confidence.

Table 2: U.S. Capital and Foreign Tax Rates

	Dependent variable: ln capital (Assets)				
	(1)	(2)	(3)	(4)*	(5)*
ln GDP	1.140^a	1.132^a	1.171^a	1.199^a	1.158^a
	(0.298)	(0.292)	(0.298)	(0.18)	(0.162)
ln GDP per capita	0.28	0.209	0.364	−0.326	−0.114
	(0.466)	(0.457)	(0.487)	(0.368)	(0.334)
ln trade	0.686^c	0.688^c	0.717^c	1.282^a	1.320^a
	(0.405)	(0.4)	(0.41)	(0.401)	(0.344)
ln inflation	0.015	0.02	0.008	−0.09	0.003
	(0.04)	(0.044)	(0.04)	(0.205)	(0.187)
ln exchange rate	−0.026	−0.019	−0.03	−0.079	−0.079
	(0.031)	(0.031)	(0.031)	(0.053)	(0.055)
ln physical infrastructure	0.467^c	0.461^c	0.480^c	−0.188	−0.13
	(0.238)	(0.233)	(0.243)	(0.453)	(0.424)
Average tax rate (ATR)	-1.396^a	−0.811		-3.770^c	
	(0.401)	(0.654)		(1.897)	
ATR*high tax countries' dummy		−1.018			
		(1.428)			
High tax countries' dummy		0.218			
		(0.48)			
1/(ATR+0.1)			0.101^b		
			(0.04)		
Adjusted ATR					-3.895^c
					(1.882)
ln distance				-0.421^c	-0.520^b
				(0.209)	(0.228)
Constant	−13.306	−12.682	-15.471^c	-13.788^c	-13.399^c
	(8.751)	(8.645)	(8.532)	(7.155)	(6.507)
Observations	216	216	216	21	21
R-squared	0.70	0.71	0.69	0.94	0.94

Notes: The letters "a", "b" and "c" indicate respectively a significance level
of 1, 5 and 10 percent. Robust standard errors are in parenthesis. *
cross-section for the year 1992.

level of confidence) decreases U.S. capital by 5% when ATR is between 0 and 10%, by 1.7% when ATR is between 10 and 20%, by 0.8% when ATR is between 20 and 30%, and by 0.5% when ATR is between 30 and 40%. The higher sensitivity of capital to low tax rates may be due to the incentive to shift income to low-tax jurisdictions. To go further with this idea, the relationships between taxes and tax planning practices are examined in the following section.

One problem encountered by using backward-looking average tax rates is that this tax measure may be endogenous to the amount of U.S. capital invested abroad, as the rate can be lowered by large amounts of new investment. In theory, endogeneity can be overcome by instrumenting the troublesome variable with instruments satisfying both the exogeneity and relevance criteria. Altshuler et al. (2001) correct for this potential endogeneity bias by using host country's statutory tax rate which is obviously exogenous as its level does not reflect special fiscal incentives granted by the host country. However, the relevance of this instrument may be limited by its lack of variation across time as compared to the average tax rate.[22] Another alternative is to use the adjusted average tax rate computed by Grubert and Mutti (2000). Given their access to firm-level data, Grubert and Mutti (2000)'s approach to control for endogeneity is to calculate an adjusted average tax rate which is not distorted by recent investment, by using the age distribution of U.S. CFC. In Columns (4) and (5) the sample is restricted to a cross-section for the year 1992 in order to test the Grubert and Mutti's adjusted variable and to compare its coefficient to the non-adjusted one for the same period.[23][24] The adjusted average tax rate appears to have a very similar coefficient (-3.895) to the non-adjusted one (-3.770), indicating that the departure model does not suffer from biased estimators. A similar conclusion is reached in Grubert and Mutti (2000).

4.2 U.S. Tax Avoidance and Foreign Tax Rates

Equation (1) describes the relationship between taxes and investment. In a second step, I measure U.S. multinationals' tax planning practices by investigating the responsiveness of U.S. earnings and profit before taxation, dividends repatriated and Subpart F income, to the level of foreign tax rates. The models to be estimated are

---

[22]Altshuler et al. (2001) report a non negligible increase in the standard errors of the instrumented tax coefficient. In a non-reported table, when instrumenting the average tax rate by the statutory tax rate, a similar increase in the standard errors is also reported. This is because the correlation between the average tax rate and the statutory tax rate (0.32) is not very high. The Cragg-Donald F-statistics (15.66) is nevertheless fairly close to the 16.38 Stock-Yoko critical value for a 10% wald test, suggesting that the instrument is borderline valid (Stock and Yogo, 2005; Cragg and Donald, 1993). A Durbin-Wu-Hausman test indicates that the exogeneity of the average tax rate cannot be rejected. Therefore, the OLS estimator is consistant and more efficient than the IV estimator (the variance of the OLS estimator being smaller than the IV one).

[23]Grubert and Mutti (2000) only created this adjusted measure for the year 1992 because it performs similarly to the unadjusted one.

[24]As previously mentioned, the geographical proximity of the host country can affect U.S. capital. The time-invariant variable 'distance' that could not be estimated with the fixed-effect model is added when the sample is restricted to a cross-section.

14

$$\ln(Profit_{it}) = \alpha_i + \beta_1 \ln(Asset_{it}) + \beta_2 (ATR_{it}) + \beta_3 \ln(H_{it}) + \lambda_t + \varepsilon_{it} \qquad (2)$$

$$\ln(Dividend_{it}) = \alpha_i + \beta_1 \ln(Asset_{it}) + \beta_2 (ATR_{it}) + \beta_3 \ln(H_{it}) + \lambda_t + \varepsilon_{it} \qquad (3)$$

$$\ln(SubpartF_{it}) = \alpha_i + \beta_1 \ln(Asset_{it}) + \beta_2 (ATR_{it}) + \beta_3 \ln(H_{it}) + \lambda_t + \varepsilon_{it} \qquad (4)$$

Profit, dividend or Subpart F income are likely to be proportional to the size of operations. To remove undesired dimensional characteristics, the variable total assets is added as an explanatory variable.[25] This allows to interpret variations in the dependent variables as due to tax planning practices. Table 3 reports within-effects estimates of the coefficient of interest, β_2.

As previously mentioned, Grubert and Mutti (1991), Hines and Rice (1994), and Louie and Rousslang (2008) provide evidence of income shifting from high-tax jurisdiction to low-tax jurisdiction of U.S. affiliates, with a significant negative impact of taxes on profitability measures. Grubert and Mutti (1991) regress after-tax profit/equity ratios and after-tax profit/sale ratios[26] on corporate tax rates in 29 countries for the year 1982 (controlling for GDP growth), while Hines and Rice (1994) analyze the relationship between pre-tax income[27] and tax rates in 59 countries for the year 1982 (controlling for capital inputs and GDP per capita). Louie and Rousslang (2008) measure the effect of taxes on U.S. firms' after-tax profit/asset ratio in 47 countries for the years 1992, 1994 and 1996 (controlling for GDP growth, host-country governance, bilateral tax treaty and NAFTA agreement). Column (1), which presents estimated coefficients from equation (2), also displays a significant negative relationship between earnings and profit before taxation and average tax rate. Thus controlling for the size of operations and for unobserved country fixed-effects it appears that firms statistically significantly report higher profit in low-tax countries than the profit normally associated with their use of inputs. The estimates imply that a 1% point higher tax rate reduces reported earnings and profit by 1%. This result is consistent with the hypothesis of income shifting, and as suggested by Grubert and Slemrod (1998) it contradicts the *"usual presumption that, in order to equalize after-tax returns, high tax rates will require high pre-tax rates of return"*(p.366).

Column (2) reports the results of the estimation of the relationship between the repatriation of dividends and the host country average tax rate, corresponding to equation (3). This estimation gives evidence of a significant positive effect of host country tax rates on the distribution of dividends. Controlling for levels of productive inputs, a 1% point increase in the tax

---

[25]Note that by not imposing any constraint on β_1, this procedure is more flexible than scaling the dependent variable by total assets, since $ln(Profit_{it}/Asset_{it})$ implies that $\beta_1 = 1$.

[26]The use of sales and equity in their profitability measures is limited for several reasons and suggests to interpret the results with caution. Indeed, the measure of sales can be affected by transfer pricing manipulations and lower profit-to-equity ratios in high-tax countries may reflect financing strategies (it can be advantageous to be financed by debt in high-tax countries since interests are deductible).

[27]Total pre-tax net income and pre-tax non financial income (plus interest payments minus interest receipts).

Table 3: U.S. Tax Planning

	ln E&P before tax (1)	ln dividends (2)	ln Subpart F (3)
ln asset	0.719^a	0.417^c	0.916^a
	(0.06)	(0.225)	(0.202)
ln GDP	1.034^a	0.401	0.034
	(0.203)	(0.63)	(0.493)
ln GDP per capita	−1.386^a	1.218^c	−0.965^b
	(0.301)	(0.688)	(0.434)
ln trade	0.868^a	2.273^b	−0.058
	(0.264)	(0.851)	(0.52)
ln inflation	0.045^c	0.153	0.159^a
	(0.023)	(0.135)	(0.049)
ln exchange rate	−0.079	−0.692	0.082
	(0.078)	(0.432)	(0.076)
ln physical infrastructure	−1.016^a	−0.08	−1.353^a
	(0.101)	(0.299)	(0.452)
Average tax rate (ATR)	−1.023^a	2.466^c	−1.357^c
	(0.336)	(1.323)	(0.784)
Constant	−26.215^a	−24.938	−10.401
	(5.108)	(16.177)	(14.358)
Observations	191	151	190
R-squared	0.81	0.24	0.51

Notes: The letters "a", "b" and "c" indicate respectively a significance level of 1, 5 and 10 percent. Robust standard errors are in parenthesis. Times dummies are included. *E&P* is for earnings and profits.

rate is associated with 2.5% greater dividend payments. Because a decrease in the foreign tax rate increases tax differentials between the U.S. and the host country, subsidiaries located in low-tax countries are less likely to remit dividends to their U.S. parents. In line with Kopits (1972) and Grubert and Mutti (2001), these results suggest that U.S. affiliates are more likely to delay dividend repatriations when they are located in low tax countries. From this result, it is interesting to note that firms seem to take more advantage of deferring taxes until the repatriation of the profits than cross-crediting. As emphasized by Hines and Rice (1994), these two attractive ways of diminishing global tax liabilities are mutually exclusive, in that the former is triggered by deferral and the latter by repatriation.

Finally, column (3) investigates the relationship between the level of Subpart F income and the foreign tax rate, corresponding to equation (4). As previously explained, Subpart F income is required, under the Subpart F provision, to be treated as if it were distributed to its American owners (it is taxed without any delay). With this regime, Subpart F income should not be shifted to, and abnormally accumulated in low-tax destinations if investors can no longer take advantage of deferral. However, the possibility to cross-credit tax liabilities on passive income provides an incentive to shift this income in low-tax countries and since it can be

more advantageous to place earnings in passive investment than to repatriate them (Hines and Rice, 1994), an accumulation of Subpart F income in low-tax countries can be observed. The statistically significant negative sign of the tax coefficient in column (3) is in favor of the tax planning assumption since it indicates that U.S. subsidiaries significantly report more passive income in low-tax countries than what can be suggested by their activity.

4.3 Host Country's Stage of Development and Legislative Maturity as Determinants of Tax Avoidance

Investigating separately the influence of taxes on four decisions of multinational firms, it can be seen that investment, reported active and passive income and dividend retention are higher in low-tax countries. Because income shifting implies a manipulation of transfer prices, multinational firms may not only choose to exploit cross-country differences in corporate tax rates to minimize their fiscal burden, but also differences in transfer pricing regulations. Allowing potential differences in the role of corporate taxation at different levels of host country development, U.S. multinationals' tax planning activities are first investigated by adding an interaction term between the GDP per capita and the average tax rate in equations (2)-(4). This allows to assess whether there are magnified tax planning opportunities in less-developed countries where transfer pricing enforcement is difficult to implement. The results, reported in Table 4 (Columns (1), (3), and (5)), show that the interaction terms have the expected signs but are statistically insignificant.

The limited role of the country's stage of development in tax planning practices may be due to the fact that the level of host country GDP per capita is a very approximate proxy for the performance of the legal system. Supporting this assumption, Kaufmann and Kraay (2002) do not find evidence of a positive impact of incomes on the quality of governance. More precisely, they stress that a number of countries, generally Latin American countries, perform poorly in terms of rule of law relative to their per capita income because their elite benefits from the "statu-quo of low quality institutions".

The 'Law and Order' index developed by the ICRG that explicitly refers to the quality of law enforcement, may better reflect the strength of transfer pricing regulations than the level of GDP per capita. Indeed, with this index, a country that does not provide effective sanction when the law is ignored corresponds to a low score of Law and Order and is expected to be less able or more reluctant to regulate transfer pricing manipulations than a country with a better legal enforcement. Average values of the Law and Order index indicate that law is better enforced in developed countries (5.70) than in developing countries (3.51). However, as illustrated by a simple scatter-plot (see Figure 1 in Appendix), some countries perform poorly in terms of Law and Order relative to their level of GDP per capita. In line with Kaufmann and Kraay (2002) the figure illustrates that the majority of Latin American countries are below the regression line.

Table 4: Host Country Level of Development, Legislation Maturity, and U.S. Tax Planning

	ln E&P before tax		ln dividends		ln Subpart F	
	(1)	(2)	(3)	(4)	(5)	(6)
ln asset	0.724^a	0.734^a	0.420^c	0.478^c	0.926^a	0.957^a
	(0.063)	(0.056)	(0.224)	(0.245)	(0.198)	(0.191)
ln GDP	1.025^a	0.972^a	0.392	0.319	−0.002	−0.024
	(0.205)	(0.19)	(0.652)	(0.626)	(0.482)	(0.465)
ln GDP per capita	-1.395^a	-1.174^a	1.195	1.376^c	-1.020^b	-0.747^c
	(0.312)	(0.298)	(0.748)	(0.699)	(0.46)	(0.406)
ln trade	0.867^a	0.842^a	2.270^b	2.103^b	−0.055	−0.05
	(0.265)	(0.26)	(0.869)	(0.874)	(0.518)	(0.546)
ln inflation	0.045^c	0.045^c	0.154	0.148	0.152^a	0.146^a
	(0.023)	(0.025)	(0.135)	(0.134)	(0.05)	(0.051)
ln exchange rate	−0.078	−0.091	−0.695	−0.628	0.085	0.068
	(0.079)	(0.072)	(0.426)	(0.432)	(0.074)	(0.078)
ln physical infrastructure	-1.024^a	-0.995^a	−0.1	0.112	-1.409^a	-1.400^a
	(0.108)	(0.111)	(0.362)	(0.338)	(0.458)	(0.445)
Average tax rate (ATR)	−1.6	-3.159^a	1.287	3.572	−4.997	-5.180^b
	(2.593)	(0.948)	(12.428)	(3.337)	(5.003)	(2.135)
ATR*GDP per capita	0.066		0.13		0.401	
	(0.304)		(1.364)		(0.541)	
ATR* law and order		0.531^b		−0.265		0.891^c
		(0.223)		(0.706)		(0.463)
Law and order		-0.161^a		−0.046		−0.237
		(0.052)		(0.258)		(0.15)
Constant	-26.055^a	-25.747^a	−24.746	−22.427	−9.765	−11.018
	(5.176)	(4.794)	(16.826)	(15.936)	(14.333)	(13.911)
Observations	191	191	151	151	190	190
R-squared	0.81	0.82	0.24	0.25	0.51	0.53

Notes: The letters "a", "b" and "c" indicate respectively a significance level of 1, 5 and 10 percent. Robust standard errors are in parenthesis. E&P is for earnings and profits.

Therefore, despite a high coefficient of correlation between GDP per capita and Law and Order (0.76), these variables also have information not in common. An interaction term between Law and Order and average tax rate is included in columns (2), (4) and (6). It appears that the effect of foreign tax rates on earnings and profits before taxation and on Subpart F income significantly decreases with the strength of the rule of law. In other words, U.S. multinationals report more income from active and passive investment in low-tax low-legal system countries than would normally be associated with their total assets, suggesting that the degree of enforcement of the legal system is a significant determinant of multinational income shifting. Indeed, at the mean value of the Law and Order index (4.63), a 1% point decrease of taxes increases earnings and profits by 0.7% and Subpart F income by 1%. The same decrease of taxes when the Law and Order index equals 2 (corresponding to Brazil, Guatemala, Mexico, South Africa and Indonesia in 2000), increases earnings and profits by 2.1% and Subpart F income by 3.4%. Interestingly, contrary to illicit tax planning practices, the retention of dividends in low-tax countries is not significantly affected by the legal environment.

The statistically significant accumulation of Subpart F income in countries in which active income is shifted also suggest that passive investment appear to be more profitable than repatriation (in spite of the Subpart F rule), when active investment opportunities are lacking.

5 Conclusion

This paper has shown, through four interrelated approaches, that foreign corporate tax rates have an important impact on U.S. multinationals' behavior. The evidence indicates that taxes not only influence the allocation of investment abroad but once a profit is generated they play a role in the decisions about first, where to report this taxable profit and second, whether to reinvest the earnings abroad or to repatriate them. The accumulation of Subpart F income in countries in which abnormal profits and dividend retention are reported also suggests that passive investments represent a third alternative to the reinvestment in active business versus repatriation tradeoff. In spite of the Subpart F provision, this evidence tends to corroborate Hines and Rice (1994)'s assumption that deferral, and by extension income shifting, can be attractive even if active investment opportunities are lacking.

Overall, despite the complications generated by anti-deferral regimes and cross-crediting limitations, low-tax countries remain attractive locations for investors, driving real activities and taxable profit. The attractive power of low-tax jurisdictions appears however to be weakened when the host country has well-enforced transfer pricing regulation that prevents income shifting.

References

Altshuler, Rosanne, Harry Grubert, and Scott Newlon, "Has U.S. Investment Abroad Become More Sensitive to Tax Rates?," in James R. Hines, ed., *International Taxation and Multinational Activity*, 2001.

Azémar, Céline and Gregory Corcos, "Multinational Firms' Heterogeneity in Tax Responsiveness: the Role of Transfer Pricing," 2008. University of Glasgow Discussion Paper n2008-07.

_ , **Rodolphe Desbordes, and Jean-Louis Mucchielli**, "Do Tax Sparing Agreements Contribute to the Attraction of FDI in Developing Countries?," *International Tax and Public Finance*, 2007, *14* (5), 543–562.

Baltagi, Badi, Peter Egger, and Michael Pfaffermayr, "Estimating Models of Complex FDI: Are there Third-Country Effects?," *Journal of Econometrics*, 2007, *140*, 260–281.

Blonigen, Bruce, Ronald Davies, Glen Waddell, and Helen Naughton, "FDI in Space: Spacial Autoregressive Relationship in Foreign Direct Investment," *European Economic Review*, 2007, *51*, 1303–1325.

Boskin, Michael and William Gale, "New Results on the Effects of Tax Policy on the International Location of Investment," in Martin Feldstein, ed., *The Effects of Taxation on Capital Accumulation*, Chicago University Press, 1987.

Brean, Donald, "Multinational Firms, Transfer Pricing and the Tax Policy of Less Developed Countries," *Malayan Economic Review*, 1979, *24*, 34–45.

Chan, Hung and Lynne Chow, "An Empirical Study of Tax Audits in China on International Transfer Pricing," *Journal of Accounting and Economics*, 1997, *23*, 83–112.

Collier, Paul and Jan Gunning, "Explaining African Economic Performance," *Journal of Economic Literature*, 1999, *37* (1), 64–111.

Cragg, J.G. and S.G. Donald, "Testing Identifiability and Specification in Instrumental Variables Models," *Econometric Theory*, 1993, *9*, 222–240.

Desai, Mihir, Fritz Foley, and James Hines, "The Costs of Shared Ownership: Evidence From International Joint Ventures," *Journal of Financial Economics*, 2004, *73* (2), 323–374.

Easterly, William and Ross Levine, "Africa's Growth Tragedy: Policies and Ethnic Divisions," *Quarterly Journal of Economics*, 1997, *112* (4), 1203–1250.

Ekholm, Karolina, Rikard Forslid, and James R. Markusen, "Export-Platform Foreign Direct Investment," 2003. NBER Working Paper, n9517.

Fink, Carsten and Charles Kenny, "W(h)ither the Digital Divide?," *The Journal of Policy, Regulation and Startegy for Telecommunications*, 2003, *5* (6).

Forestier, Emmanuel, Jeremy Grace, and Charles Kenny, "Can Information and Telecommunications Technologies be Pro-Poor?," *Telecommunications Policy*, 2002, *26*, 623–646.

Grubert, Harry and Joel Slemrod, "Tax Effects on Investment and Income Shifting to Puerto Rico," *Review of Economics and Statistics*, 1998, *80*, 365–373.

_ **and John Mutti**, "Taxes, Tariffs and Transfer Pricing in Multinational Corporate Decision Making," *Review of Economics and Statistics*, 1991, *73* (2), 285–283.

_ **and** _ , "Do Taxes Influence Where U.S. Corporations Invest?," *National Tax Journal*, 2000, *53* (4), 825–840.

_ **and** _ , *Taxing International Business Income: Dividend Exemption versus the Current System*, Washington, D.C., the American Enterprise Institute Press, 2001.

Hartman, David, "Tax Policy and Foreign Direct Investment in the United States," *National Tax Journal*, 1984, *37* (4), 475–488.

Hines, James, "Lessons from Behavioral Responses to International Taxation," *National Tax Journal*, 1999, *52* (2), 305–322.

_ , "Tax Sparing and Direct Investment in Developing Countries," in Hines James, ed., *International Taxation and Multinational Activity*, 2001.

_ **and Eric Rice**, "Fiscal Paradise: Foreign Tax Havens and American Business," *Quarterly Journal of Economics*, 1994, *109* (1), 149–182.

Joint Committee on Taxation, "The U.S. International Tax Rules: Background and Selected Issues Relating to the Competitiveness of U.S. Business Abroad," 2003. JCX-68-03.

Kant, Chander, "Multinational Firms and Government Revenues," *Journal of Public Economics*, 1990, *42*, 135–147.

Kaufmann, Daniel and Aart Kraay, "Growth Without Governance," 2002. World Bank Working Paper, n° 2196.

King, Gary, Tomz Michael, and Wittenberg Jason, "Making the Most of Statistical Analyses: Improving Interpretation and Presentation," *American Journal of Political Science*, 2000, *44* (2), 341–355.

Kopits, George, "Dividend Remittance Behavior within the International Firm: A Cross Country Analysis," *Review of Economics and Statistics*, 1972, *54*, 339–342.

Lall, Sanjaya., "Transfer Pricing and Developing Countries: Some Problems of Investigation," *World Development*, 1979, *7*, 59–71.

Lipsey, Robert, "Defining and Measuring the Location of FDI Output," 2007. NBER Working Paper No. 12996.

Louie, Henry and Donald Rousslang, "Host-Country Governance, Tax Treaties and US Direct Investment Abroad," *International Tax and Public Finance*, 2008, *15*, 256–273.

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

Mutti, John and Harry Grubert, "Empirical Asymetries in Foreign Direct Investment and Taxation," *Journal of International Economics*, 2004, *62*, 337–358.

Newlon, Timothy Scott, "Tax Policy and the Multinational Firm's Financial Policy and Investment Decisions," 1987. Ph.D dissertation. Princeton: Princeton University.

Plasschaert, Sylvain, "Transfer Princing Problem in Developing Countries," in A. Rugman and L. Eden, eds., *Multinationals and Transfer Pricing*, St. Martin's Press Editor, New York, 1985, pp. 247–266.

Ramsey, J.B., "Tests for Specification Errors in Classical Linear Least-Squares Analysis," *Journal of the Royal Statistical Association*, 1969, *71*, 350–371.

Stock, J.H. and M. Yogo, "Testing for Weak Instruments in IV Regression," in D.W.K Andrews and J.H Stock, eds., *Identification and Inference for Econometrics Models: A Festschrift in Honor of Thomas Rothenberg*, Cambridge University Press, 2005, pp. 80–108.

Toaze, Deborah, "Tax Sparing: Good Intentions, Unintended Results," *Canadian Tax Journal*, 2001, *49* (4), 879–924.

UNCTAD, "Transfer Pricing," 1999. UNCTAD Series on issues in international investment agreements, New York and Geneva.

Yeaple, Stephen Ross, "The Complex Integration Strategies of Multinationals and Cross Country Dependencies in the Structure of Foreign Direct Investment," *Journal of International Economics*, 2003, *60* (2), 293–314.

Table 5: Appendix of Average Law and Order index (1992-2000)

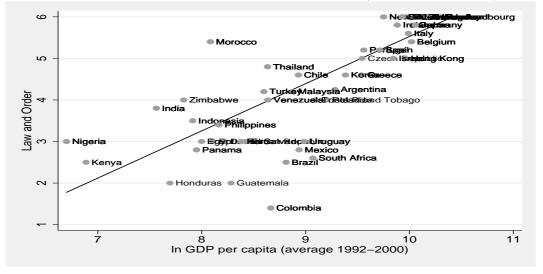| Host country	Law and Order	Host country	Law and Order
Colombia	1.4	Greece	4.6
Guatemala	2	Korea	4.6
Honduras	2	Thailand	4.8
Brazil	2.5	Czech Republic	5
Kenya	2.5	Hong Kong	5
South Africa	2.6	Israel	5
Mexico	2.8	Portugal	5.2
Panama	2.8	Spain	5.2
Dominican Republic	3	Belgium	5.4
Ecuador	3	Morocco	5.4
Egypt	3	Italy	5.6
El Salvador	3	Germany	5.8
Nigeria	3	Ireland	5.8
Peru	3	Japan	5.8
Uruguay	3	Australia	6
Philippines	3.4	Austria	6
Indonesia	3.5	Canada	6
India	3.8	Denmark	6
Costa Rica	4	Finland	6
Poland	4	France	6
Trinidad and Tobago	4	Luxembourg	6
Venezuela	4	Netherlands	6
Zimbabwe	4	New Zealand	6
Malaysia	4.2	Norway	6
Turkey	4.2	Sweden	6
Argentina	4.25	Switzerland	6
Chile	4.6	United Kingdom	6

Source: ICRG.

Figure 1: Law and Order and GDP per capita (average 1992-2000)