TAXES, INSTITUTIONS AND FOREIGN DIVERSIFICATION OPPORTUNITIES

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ABSTRACT

Investors can access foreign diversification opportunities through either foreign portfolio investment (FPI) or foreign direct investment (FDI). By combining data on US outbound FPI and FDI, this paper analyzes whether the composition of US outbound capital flows reflect efforts to bypass home country tax regimes and weak host country investor protections. The cross-country analysis indicates that a 10% decrease in a foreign country's corporate tax rate increases US investors' equity FPI holdings by 21%, controlling for effects on FDI. This suggests that the residual tax on foreign multinational firm earnings biases capital flows to low corporate tax countries toward FPI. A one standard deviation increase in a foreign country's investor protections is shown to be associated with a 24% increase in US investors' equity FPI holdings. These results are robust to various controls, are not evident for debt capital flows, and are confirmed using an instrumental variables analysis. The use of FPI to bypass home country taxation of multinational firms is also apparent using only portfolio investment responses to within-country corporate tax rate changes in a panel from 1994 to 2005. Investors appear to alter their portfolio choices to circumvent home and host country institutional regimes.

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1.   *Introduction*

Alternative financial instruments that provide the same economic exposure can have differing tax treatments and control implications. For example, combinations of derivatives instruments can replicate payoffs to other instruments yet receive differing tax treatment and control rights. For outbound international investments from the U.S., foreign direct investment (FDI) and foreign portfolio investment (FPI) both provide access to country-specific diversification opportunities. However, they differ markedly in the degree to which investors are exposed to local investor protections and the degree to which those investments are subject to the U.S. corporate tax regime. Specifically, FDI outbound flows are typically associated with whole ownership of foreign corporations and are subject to the American worldwide corporate tax regime, while FPI flows are non-controlling stakes in foreign corporations that are only subject to the local corporate tax regime.[1]

Consider the example of American investors hoping to access newly available global diversification opportunities in China. Concerns about the rights available to minority investors might tilt investors towards accessing those opportunities via investments in US multinational firms that undertake FDI in China, to ensure that investor interests are better protected. On the other hand, investing through U.S. multinational firms to access Chinese diversification opportunities creates an additional corporate tax obligation, as the U.S. taxes the returns these firms earn in China upon repatriation.

This paper investigates whether the composition of outbound capital flows from the U.S. reflects these desires to circumvent the residual tax imposed by the U.S. and weak investor protections in host countries.[2] This paper employs data on patterns of outbound U.S. FPI from the Treasury International Capital (TIC) reporting system and on outbound U.S FDI from the Bureau of Economic Analysis (BEA). Figure 1 depicts the ratio of US equity FPI to US FDI for

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[1] Equity FPI involves the purchase of a minority stake (according to US tax rules, less than 10% of voting shares) in a foreign corporation by (typically) a US-resident individual. In contrast, FDI involves the purchase of a controlling stake (according to US tax rules, more than 10% of voting shares) in a foreign corporation by (typically) a US-resident corporation.

[2] Rather than investigating the extent of "home bias" in portfolio holdings, this paper investigates the use of equity FPI *relative* to US FDI, given some (possibly suboptimal) desire on the part of investors for global diversification.

a sample of countries with significant stock market activity.[3] As Figure 1 demonstrates, the ratio of outbound FPI to FDI varies significantly across countries that are of comparable levels of economic development, giving rise to the possibility that taxation and investor protections might affect the desirability of these alternative diversification vehicles.

The potential effects of taxation on FPI result from the interaction between home and host country taxes. In particular, the U.S. taxes multinational firms legally domiciled in the U.S. on their worldwide income. As a consequence of this policy regime, U.S. investors should prefer FPI as a means of accessing foreign diversification opportunities, particularly in low-tax countries where the residual tax imposed by the U.S. will be most burdensome. In effect, FPI allows investors to avoid any residual tax arising from the worldwide regime on investment income earned abroad. Conversely, the absence of the residual US tax should make US equity FPI sensitive to variations in foreign corporate tax rates, even controlling for any effects of corporate taxes on levels of US FDI. As such, the worldwide system of taxing income may vitiate the diversification benefits of multinational firms, emphasized in papers such as Errunza, Hogan and Hung (1999) and Cai and Warnock (2006).

A weaker institutional environment in the host country should make both FPI and FDI less attractive to US investors. More specifically, however, the extent of legal protections for minority shareholders against expropriation by controlling shareholders should differentially affect the attractiveness of FPI and FDI. In particular, weaker investor protections should make FDI, with its controlling feature, a more desirable means of accessing foreign diversification opportunities. This paper provides a simple framework that demonstrates these effects of corporate taxes and investor protections and the assumptions required for them to be operative.

This paper uses both cross-sectional and panel data to test these hypotheses. Overall, the analysis shows a large and robust negative effect of foreign countries' corporate tax rates on the amount of US equity FPI (relative to US FDI) that they attract. In the cross-sectional analysis, the estimated elasticity of equity FPI flows with respect to tax rates is -2.1, which is substantially larger than standard measures of the elasticity of FDI to tax rates. An index of investor protections for minority shareholders (based on disclosure requirements, liability standards, and

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[3] The sample, as described in Section 3, is based on the countries with the largest aggregate stock market capitalization in 1993 (La Porta *et al*., 2006), excluding those without significant amounts of either US equity FPI and US FDI.

anti-director rights) also influences the relative desirability of equity FPI. Specifically, a one standard deviation increase in the investor protection measure – approximately equivalent to the difference between Italy and Norway - increases FPI flows by 24%. These analyses are robust to a variety of controls. Reassuringly, these effects are not apparent for flows of debt FPI (for which both corporate tax rates and investor protections should be less relevant). An instrumental variables analysis (using legal origins, latitude and ethnolinguistic fractionalization as instruments for corporate tax rates and investor protection) reinforces these results.

A longitudinal analysis of changes in corporate tax rates over the period 1994-2005 provides an alternative test of the effects of taxes on FPI. Using only within-country variation in corporate tax rates, and controlling for other relevant factors and for country-specific time trends, reductions in corporate tax rates are associated with increases in equity FPI, relative to FDI. Patterns of FPI by U.S. investors thus appear to be significantly influenced by both corporate tax rates and investor protections.

This paper only investigates the portfolio choices of U.S. investors. While this is a limitation of the results, there are a number of offsetting advantages associated with this approach. First, data collected by the U.S. on both FPI and FDI outflows is of very high quality and, given the magnitude of U.S. outbound flows, cover a wide variety of countries with varying tax rates and investor protections. Second, the tax regime employed by the U.S. on outbound FDI creates a set of interactions with local corporate tax rates that can influence the choice between FPI and FDI. Finally, focusing exclusively on the behavior of U.S. investors also implicitly controls for a variety of host-country institutional and tax characteristics that may otherwise confound the analysis. It should also be noted that while the analysis in this paper is restricted to the choices of US investors, it is also applicable to other countries that tax the worldwide income of their corporations.

This paper extends the large literature on FDI and taxation to FPI and contributes to the emerging literature on how investor protections can shape cross-border capital flows.[4] As noted by Graetz and Grinberg (2003), FPI holdings have grown in recent decades and have become

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[4] Desai and Hines (2004) review the literature that examines how corporate taxes distort various aspects of FDI, including the location of real activity, its financing, its organizational form, and the allocation of profits across countries.

comparable in magnitude to FDI holdings,[5] yet analyses of their determinants and the role of taxation have been limited. The only previous paper to analyze the links between corporate taxation and FPI is Gordon and Jun (1993).[6] Gordon and Jun (1993) use data on inbound investment into the US from 10 foreign countries during the 1980's. They find some evidence that tax factors explain differences across countries in the composition of their capital flows to the US, but hypothesize that the small sample size and the presence of capital controls limit the observed responsiveness of FPI to taxes. The analysis in this paper extends Gordon and Jun (1993) by focusing on outbound FPI from the US, taking advantage of the rapid growth of FPI in more recent years, and incorporating a richer set of country controls, including investor protections.[7]

This paper is also related to the literature on how investor protections influence cross-border capital flows. This literature has recently expanded to consider the effects of investor protections in open economies. Specifically, Gertler and Rogoff (1990) and Shleifer and Wolfenzon (2002) develop models in which weak investor protections can influence capital flows. Antras, Desai and Foley (2007) show that multinational activity and FDI flows can arise endogenously in a world of varying investor protections. Albuquerque (2003), Alfaro *et al*. (2007) and Dharmapala and Hines (2006) examine how FDI flows respond to institutional variations. Kho, Stulz and Warnock (2006) argue that weak investor protections in many countries limit the number of shares that are available to outside shareholders (including foreign portfolio investors) and hence helps shape the location of US FPI. Two recent papers - Giannetti and Koskinen (2007) and Ju and Wei (2007) - develop models that jointly consider FDI and FPI and their relative merits in settings characterized by weak financial markets. This paper further

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[5] For instance, in the dataset used in this paper, the equity FPI holdings of US investors (averaged across the countries in the sample) exceeds the stock of FDI by US corporations (averaged across the same set of countries) – see Table 1.

[6] The neglect of taxation and FPI is somewhat ironic given that the original theoretical analyses of the determinants of global diversification (e.g. Black, 1974; Stulz, 1981) emphasized taxes, literally and figuratively, as barriers to international investment. While taxes were subsequently neglected in this literature, more recent work in this area has explored the role of informational and governance effects on international portfolio decisions using the TIC data. For example, Ahearne, Griever and Warnock (2004) highlight the role of information costs in determining which foreign firms US investors hold equity in; in particular, they argue that informational costs can be reduced by foreign firms cross-listing in the US. Ammer *et al*. (2006) show that US investors tend to hold more equity in foreign firms with higher quality accounting standards.

[7] The other literature on taxes and FPI emphasizes short-run trading strategies, such as dividend stripping (e.g. Christofferson, *et al*., 2005). More generally, studies of the role of taxes on portfolio choices, as reviewed in Poterba (2002), typically neglect the international dimension of taxes and portfolio decisions. Huizinga and Nicodeme (2004) examine the impact of taxes on international deposits, but do not analyze equity flows.

develops this line of inquiry by exploring these predictions with a data source that distinguishes between types of FPI, measures FDI and equity FPI comparably across a wide variety of countries, and jointly considers the role of taxes and investor protections.

The paper proceeds as follows. Section 2 elaborates on the effects of taxes and investor protections on FPI. Section 3 describes the data and the empirical methodology. Section 4 presents the results of the cross-sectional analysis and Section 5 presents the panel analysis. Section 6 concludes.

2. *Corporate Taxes, Investor Protection, and FPI: A Simple Framework*

The main hypotheses tested in this paper can be derived from an extremely simple framework. Within this setup, US-resident investors are assumed to choose some optimal mix of FPI and FDI as vehicles for foreign investment, based on the tax and institutional characteristics of the country to which exposure is sought.[8] Consider a U.S.-resident individual who desires exposure to the asset returns available in country F to achieve greater diversification. The investor can buy shares in a US-based multinational firm that owns a controlling stake in a corporation located in country F. Alternatively, she may buy shares in a corporation based in country F – i.e. engage in equity FPI – either individually or through an institutional investor such as a mutual fund. The basic question addressed in this paper is how the interaction of home and host tax regimes and the investor protections of the host country influence this choice.

First, consider the impact of taxes on this decision. Let r^F be the pretax rate of return available in country F, and define the following tax rates:

t^F_C: F's corporate tax rate

t^F_W: F's withholding tax rate on dividends

t^{US}_C: US corporate tax rate

t^{US}_P: US personal tax rate on dividends

When the investor invests in a US multinational firm that engages in FDI in country F, the subsidiary in country F earns a pretax return r^F that is subject to F's corporate tax. Then, the after-tax profits are repatriated to the US multinational, which is subject to US corporate tax on the repatriated income (but with a foreign tax credit allowed for taxes paid abroad). Finally, the

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[8] There is no presumption that the extent of investors' preference for international diversification is necessarily optimal – i.e. investors may suffer from "home bias" for a variety of reasons.

US multinational pays out the remaining income as dividends to the investor, who is subject to US personal tax on this dividend income.

On the other hand, if the investor engages in equity FPI, she buys shares in a corporation domiciled in country F. This corporation earns a pretax return r^F that is subject to F's corporate tax. The remaining income is paid out by the foreign corporation to its shareholders, including the investor in the US. These dividends would typically be subject to a withholding tax by country F. In addition, the US personal tax applies to the investor's dividend income (but with a foreign tax credit allowed for withholding taxes paid to F).

The range of possible scenarios can be simplified by making the following assumptions, both of which reflect current realities:[9]

$$t^F_C \leq t^{US}_C \tag{1}$$

$$t^F_W \leq t^{US}_P \tag{2}$$

i.e. the foreign corporate tax rate is no higher than that of the US, and the foreign withholding tax rate is no higher than the US personal tax rate on dividends. Then, an investor who chooses the FDI route to gaining exposure to country F will receive an after-tax return of:

$$r^F(1 - t^{US}_C)(1 - t^{US}_P) \tag{3}$$

whereas an investor who engages in equity FPI will receive an after-tax return of:

$$r^F(1 - t^F_C)(1 - t^{US}_P) \tag{4}$$

Here, variations in the foreign corporate tax rate t^F_C influence the after-tax return from FPI, but not that from FDI.

A comparison of Equations (3) and (4) demonstrates that the U.S. system of taxing multinational firms creates an incentive for investors to use FPI to access foreign diversification opportunities in low-tax countries. An implication of this comparison is that levels of U.S. FPI should be sensitive to the local corporate tax rate, after controlling for any effects of taxes on

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[9] The current top US statutory corporate tax rate is 35%, while the mean corporate tax rate for the sample of foreign countries in the dataset is 30%. More generally, as noted in Engen and Hassett (2003), the U.S. now has a higher tax rate than most of the major economies that are significant destinations for FPI and FDI. Since the 2003 tax reform, the top US personal tax rate on dividend income has been 15%. Most withholding tax rates imposed by foreign countries on dividends paid to US shareholders are no higher, and often lower, than 15% - see Anderson (2006, Chart 9.1).

U.S. FDI. It is important to note that this hypothesis does not relate to how local corporate taxes affect corporate activity generally, but rather specifically to an effect on US investors' choice of FPI versus FDI. In the empirical specifications outlined below, various measures of economic activity, including most importantly levels of FDI, are used as control variables, in order to isolate this specific "bypass" effect.

There are three important caveats to this characterization. First, the residual US corporate tax is levied only at the time of repatriation, creating a potential deferral advantage if the subsidiary in country F delays repatriation. As such, the after-tax return under the FDI scenario will generally depend on t^F_C as well as on t^{US}_C. Indeed, the empirical literature shows that US FDI is quite responsive to variations in foreign countries' tax rates (e.g. Desai and Hines, 2004). However, as long as the residual US tax imposes *some* additional burden, there would still remain an incentive for investors to bypass this residual tax. Thus, specifications that test if equity FPI is sensitive to t^F_C, controlling for FDI, remain valid tests of the hypothesis that investors use FPI to circumvent the residual tax owed to the US.

Second, r^F may not be the same for both types of investment. Firms engaging in FDI may receive economic rents so that the return to US FDI in country F may exceed the rate of return available to domestic firms in that country. The sources of these rents are typically thought to be firm-specific (i.e. intangible assets or managerial abilities) rather than country-specific. Nonetheless, it is possible that countries differ systematically in the degree to which these rents can be realized and this variation may happen to be related to variations in corporate tax rates. Thus, the empirical analysis seeks to control for a variety of country characteristics that are likely to be related to these synergies, and the panel analysis controls for this and other sources of unobserved heterogeneity across countries.

Finally, this logic assumes that corporate tax rates are not fully capitalized into pretax rates of return. Specifically, if the pretax return r^F fully adjusts to reflect t^F_C (as in the model of Gordon (1986)), then these effects would not be operative. For instance, suppose that there is a worldwide (after-corporate-tax) rate of return r^*. Then, if t^F_C is fully capitalized – so that $r^F = r^*/(1 - t^F_C)$ – variations in t^F_C across countries will be irrelevant to the equilibrium location of US FPI. There are many reasons to expect imperfect capitalization of t^F_C into pretax returns. For instance, if each country's equities have different risk characteristics, then stocks in one country

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will not be perfect substitutes for those in another country, giving rise to some degree of imperfect capital mobility. Such circumstances would constitute a sufficient condition for observing the results in this paper.[10]

The effects of investor protections on the location of FPI are more straightforward than the tax effects. Suppose that controlling shareholders in the foreign country are able to expropriate a fraction b of the returns from a foreign corporation. Then, the after-tax return from FDI remains identical to that shown in Equation (3), assuming that the US-based multinational's insiders do not expropriate shareholders, or equivalently normalizing $b = 0$ for the US. The after-tax expected return from FPI is now:

$$(1 - b)r^F(1 - t^F_C)(1 - t^{US}_P) \qquad (5)$$

Thus, the use of FDI effectively bypasses weak investor protections abroad. In other words, the value of the control that is conferred by FDI is more valuable in contexts with weak investor protection. Accordingly, the second basic hypothesis that is tested in the empirical analysis below is that the amount of US equity FPI, relative to US FDI, should be higher in countries with stronger investor protections. This is tested in a cross-sectional setting given the limited time series variation in investor protections during the sample period.

As minority shareholders can anticipate partial expropriation by insiders, it might be expected that weak investor protections will be fully capitalized into share prices, so that the pretax returns abroad rise to $r^F/(1 - b)$. In such circumstances, variation in the strength of investor protections across countries will not affect the location of US equity FPI. However, just as in the tax case, there are reasons to expect that full capitalization may not occur. Kho, Stulz and Warnock (2006) argue that weak investor protections lead to high optimal levels of insider ownership, limiting the number of shares that can be issued to outsiders (including foreign portfolio investors). Giannetti and Koskinen (2007) develop a model in which the equilibrium share price reflects both demand by insiders and outsiders. As the insiders' demand takes account of the private benefits that are available for capture, the equilibrium share price is not

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[10] It is not possible to infer from these results that there is imperfect capitalization of t^F_C in equilibrium. Consider the panel results in Table 4 below, which suggest that increases in t^F_C lead to outflows of US equity FPI. This result is consistent with a world with imperfect capitalization, but the results may also be interpreted as capturing the *disequilibrium* capital flows that help move r^F towards an equilibrium value of $r*/(1 - t^F_C)$. As such, it is not possible to draw any definitive inferences from these results about the incidence of the corporate income tax.

fully discounted for the possibility of expropriation. Under such conditions, countries with stronger investor protections would also be expected to attract larger amounts of US equity FPI.

3. *Data and Empirical Specification*

3.1. *Data*

The dataset used in this paper merges data on US investors' portfolio holdings of foreign securities with data on the FDI positions of US firms, foreign countries' corporate tax rates, the investor protection index constructed by La Porta *et al*. (2006), and a variety of control variables. The observations are at the country level (for the cross-sectional analysis) and the country-year level (for the longitudinal analysis). The main features of the data are described below, and more detailed explanations of the variables are provided in the Data Appendix.

The data on FPI by US investors are obtained from the US Treasury's Treasury International Capital (TIC) reporting system.[11] The TIC system reports the portfolio holdings of foreign securities by US investors, based on responses to periodic surveys from a defined panel of banks, other financial institutions, securities brokers and dealers. The location of the holdings is defined for each of approximately 120 countries and territories, and is available for 1994, 1997, 2001, 2003, 2004 and 2005. The data, which represent stocks of assets at year end, are divided into three categories – equity FPI (i.e. holdings of foreign stocks), long-term debt FPI, and short-term debt FPI.[12]

The TIC data are highly comprehensive, given the wide range of financial institutions and securities brokers and dealers that are surveyed, and likely to be accurately reported.[13] There are, however, several limitations of the data. First, while the data achieve comprehensive coverage of US investors' holdings through institutions and other reporting entities, they may not be as comprehensive for small individual investors' non-institutional holdings of foreign assets (Bertaut, Griever and Tryon, 2006, p. A67). Such holdings, however, are likely to be relatively

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[11] These data are available at www.treas.gov/tic/ and are described in more detail in the Data Appendix; see also Bertaut, Griever and Tryon (2006).

[12] Short-term debt FPI is not available prior to 2001. The firm-level data from TIC have previously been used to investigate the determinants of US investors equity holdings in foreign firms (e.g. Ahearne, Griever and Warnock, 2004; Ammer *et al*., 2006), but not to analyze the questions studied in this paper.

[13] Bertaut, Griever and Tryon (2006, p. A63) argue that: "The country attribution of the portfolio asset surveys should be extremely accurate. The annual position surveys, by design, attempt to collect information by country of issuer . . . precisely identifying each security issuer's country of residence – from information supplied by survey reporters as well as from commercial data sources – is a relatively straightforward task."

small in magnitude. Second, the data do not include stock swaps and cross-border derivatives positions (although data collection on the latter began in 2005). Importantly, however, US holdings of foreign assets through American Depositary Receipts (ADR's) are included.[14] Finally, the country of location is defined as the legal residence of the entity issuing the securities, and may not correspond to the country where the associated "real" economic activity is carried out. Thus, US investors' portfolio holdings in small offshore financial centers and tax havens are potentially difficult to interpret. However, most such countries are excluded from the dataset due to missing data on the investor protection index or other variables. The sample does include five countries that are often classified as tax havens (e.g. Dharmapala and Hines, 2006, Table 1, Column 3); however, the basic results – both in the cross-section and the panel – are robust to omitting these countries.

The data on FDI are obtained from the Bureau of Economic Analysis (BEA). The data represent the direct investment positions of US-based multinational firms in each of a large number of foreign countries. Including FDI in the analysis reflects the conceptual framework presented in Section 2, where FPI and FDI are envisaged as alternative channels for achieving foreign exposure.

The tax variable used in the analysis is the top statutory corporate income tax rate. This is obtained from the two sources – the World Tax Database maintained by the Office of Tax Policy Research at the University of Michigan,[15] and the data provided by the accounting firm PriceWaterhouseCoopers' worldwide summaries of corporate tax rates. The former is used in the cross-sectional analysis, but is not available for years after 2002. Thus, the longitudinal analysis uses only the PriceWaterhouseCoopers data. Clearly, the effective rates faced by firms may differ from the statutory rates. As long as variations across countries in statutory rates (or, in the panel analysis, variations over time in a given country's statutory tax rate) are associated with variations in effective rates, then the former should be a reasonable proxy for the latter.

La Porta *et al.* (2006) construct an index of investor protections based on the securities laws of various countries and on a questionnaire of law firms located in each country. This measure has three elements.[16] The first is an index of the disclosure requirements imposed on

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[14] See www.treas.gov/tic/

[15] This is available at: http://www.bus.umich.edu/OTPR/

[16] For more details, see La Porta *et al.* (2006, Table I).

issuers of equities by the country's corporate and securities law. These requirements relate to disclosures about controlling shareholders, insider ownership, and related-party transactions. The second is an index of the procedural difficulty associated with a shareholder bringing a civil suit and recovering damages from the corporation, its directors and officers, or its auditors for misleading statements in the prospectus or its accompanying financial statements. The third is an index of shareholder rights vis-à-vis the firm's directors, including the procedural ease with which shareholders' meetings can be called and directors replaced. These measures reflect the extent to which the legal system mandates disclosure and facilitates private enforcement by shareholders against the issuers of equities.

The investor protection index is only available for the cross-sectional analysis and is the principal component of the disclosure, liability and anti-director rights measures described above. The index takes on values from 0 to 1, with higher values indicating stronger shareholder rights. Note that this measure captures a very specific element of a country's institutional environment – the legal protections afforded to minority shareholders against expropriation by controlling shareholders and other insiders. Thus, an advantage of the investor protection measure is that it captures precisely the feature of the institutional environment that is most relevant to the choice between FPI and FDI. More general features of countries' institutions are controlled for in the empirical analysis using other variables described below. Summary statistics for the variables used in the analysis are presented in Table 1.

The index is available for the 49 countries with the largest stock market capitalization in 1993. Five countries are excluded in the analysis – the U.S., Nigeria (due to missing TIC data), and three countries where either equity FPI or FDI holdings are below US$5 million in 2005: Jordan, Kenya and Uruguay.[17] This leaves the set of 44 countries that are listed in the Data Appendix and for which the ratio of FPI to FDI is shown in Figure 1. While this sample is small, it includes most countries with significant stock market activity, and hence those locations that are most relevant for the portfolio investment choices of US investors. Additionally, the sample excludes most small tax havens and offshore financial centers, for which the interpretation of FPI is potentially problematic. For the countries being analyzed, the equity FPI holdings of US

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[17] The longitudinal analysis is also restricted to this same set of 44 countries, in the interests of comparability between the cross-sectional and panel results. In addition, to ensure consistency with the sample restrictions in the cross-section, the panel dataset also excludes observations for which either equity FPI or FDI holdings are less than US$5 million.

investors exceed (on average) the FDI holdings of US firms; the mean ratio of equity FPI to FDI among these countries is 2.25.[18] As Figure 1 demonstrates, this ratio varies considerably, even for countries of similar levels of economic development.

A simple comparison of the ratio of equity FPI to FDI across corporate tax rate and investor protection regimes provides a descriptive perspective on the effects hypothesized in Section 2. Figure 2 illustrates how this ratio varies with corporate tax rates and investor protections.[19] In Figure 2a, the two pairs of columns provide the mean ratio for subsamples divided at the median corporate tax and the median level of investor protections. For low-tax countries, the mean ratio is 2.82, whereas it is only 1.51 for high-tax countries. The difference across investor protection levels is smaller, but nonetheless substantial: countries with higher levels of investor protection have a mean ratio of 2.48, while those with lower levels of investor protection have a mean ratio of 2.03. Figure 2b illustrates the joint effects of these two factors: countries with both low tax rates and strong investor protection have a considerably higher ratio of equity FPI to FDI (a mean ratio exceeding 3) than do countries with neither of these characteristics (a mean ratio of 1.37), with countries that have only one of these features falling in between. While these figures are only suggestive, they are consistent with the hypotheses outlined in Section 2.

3.2. Empirical Specification

The basic empirical specification used for the cross-sectional analysis is:

$$Log\ of\ Equity\ FPI_i = \beta_0 + \beta_1\tau_i + \beta_2 Inv_i + \beta_3(Log\ of\ FDI_i) + \mathbf{X}_i\mathbf{\gamma} + \varepsilon_i \qquad (6)$$

The dependent variable is the log of equity FPI in country i, i.e. the log of the holdings of equities in country i by US investors in 2005, measured in millions of US$. The two independent variables of interest are the corporate tax rate in country i (τ_i) and the investor protection index for country i (Inv_i). The log of US FDI in country i in 2005 is included as an independent variable to ensure that the analysis focuses on variations in equity FPI holdings *relative* to FDI. The specification in Equation (6) imposes the restriction that the log of equity FPI and the log of

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[18] Finland appears to be an outlier in Figure 1, with an exceptionally large ratio of equity FPI to FDI. The results in the paper are robust to the exclusion of Finland.
[19] The correlation coefficient between the corporate tax rate and the investor protection index in this sample is approximately -0.1, so there are a substantial number of countries that have favorable characteristics by one measure but not the other.

FDI are linearly related, and explains deviations from this linear relationship using the other independent variables. This functional form may be too restrictive in some circumstances, but allowing the FDI variable to enter Equation (6) nonlinearly using various formulations does not affect the basic results.

A variety of other independent variables are included to address the possibility that FDI and equity FPI are simultaneously determined. If there are omitted explanatory variables that determine both FPI and FDI, then it is possible that the FDI variable and the error term ε_i may be correlated, potentially biasing the estimated coefficients in Equation (6). Ideally, this problem could be addressed through the estimation of a set of simultaneous equations, but this would require credible exclusion restrictions that are not readily available. In addition to the extensive set of controls to absorb the potential correlation between FDI and ε_i, an alternative specification that instead models the log of the *ratio* of equity FPI to FDI is used in robustness checks:

$$Log\ of\ (Equity\ FPI_i/FDI_i) = \beta_0 + \beta_1\tau_i + \beta_2 Inv_i + \mathbf{X}_i\gamma + \varepsilon_i \tag{7}$$

As the FDI variable does not appear on the right-hand side, there is no possibility of correlation between the explanatory variables and ε_i due to simultaneity between FPI and FDI. This specification also has the virtue of examining the relative use of FDI and FPI most directly. Unfortunately, this specification is restrictive as it is equivalent to imposing the restriction on Equation (6) that the coefficient of the log of FDI is 1. As discussed below, the specification in Equation (7) leads to results that are highly consistent with those from Equation (6).

$\mathbf{X}_i$ is a vector of control variables used in Equations (6) and (7). The log of country i's GDP per capita in purchasing power parity (PPP) terms and the log of country i's population provide basic information about country i's affluence and size. To capture the extent of diversification benefits, the correlation between country i's annual economic growth rate and the growth rate of the US over the period 1950-2004 is included; the lower this correlation, the greater the diversification of US-specific risk. Two "gravity" variables capture the proximity of country i to the US. One is the physical distance between the largest cities of country i and the US, weighted by the cities' shares in the countries' populations. The other is an indicator variable for contiguous countries (i.e. Canada and Mexico).[20] In addition, $\mathbf{X}_i$ includes regional

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[20] GDP and population are obtained from the World Bank's *World Development Indicators*. The correlation of growth rates is computed using data in the Penn World Tables. The distance and contiguity measures are from the

dummies to capture region-specific effects.[21] A number of other control variables are used in robustness checks, as described in Section 4 below.

The empirical specification for the longitudinal analysis is:

$$Log \ of \ Equity \ FPI_{it} = \beta_1\tau_{it} + \beta_2(Log \ of \ FDI_{it}) + \mathbf{X}_{it}\mathbf{\gamma} + \mu_i + \nu_t + \mu_i*(t-2000) + \varepsilon_{it} \qquad (8)$$

The dependent variable is the log of equity FPI held by US investors in country i in year t, measured in millions of US\$. This analysis is restricted to those years for which FPI data are available. The independent variable of interest is the corporate tax rate in country i in year t (τ_{it}). The log of US FDI in country i in year t is included as an independent variable, both to focus on variations in equity FPI holdings *relative* to FDI and to control for changes in otherwise unobserved country characteristics that affect the desirability of investment (in any form) in country i in year t. $\mathbf{X}_{it}$ is a vector of time-varying control variables that are discussed more fully in Section 5 below.

The specification also includes a country fixed effect (μ_i) and year effects (ν_t). The former captures unobserved factors affecting equity FPI in a given country that are fixed over time. Note that investor protections would be incorporated into the country fixed effect in this specification. The year effect captures common shocks to equity FPI that affect all countries. In addition, however, it is possible that different countries may experience different growth rates over time in US equity FPI. This is captured by country-specific time trends, implemented here through interactions between the country dummies and the years, with 2000 being used as the base year.

4. Taxes, Investor Protections and Equity FPI

4.1. Cross-Country Results

The basic results from the cross-sectional analysis are presented in Table 2. The first step is to establish the robustness of the effect of the corporate tax rate in a broad sample of countries. Column 1 reports the results of a specification that excludes the investor protection index, but is otherwise similar to Equation (6). The sample in Column 1 is not restricted to the baseline set of countries listed in the Data Appendix. In this wider sample, the corporate tax rate has a negative

Centre d'Etudes Prospectives et d'Informations Internationale (CEPII) dataset (available on Thierry Mayer's website at: http://team.univ-paris1.fr/teamperso/mayer/data/data.htm). These variables are described more fully in the Data Appendix.

[21] These are for Europe and Central Asia, Asia and the Pacific, the Americas, and the Middle East and North Africa, with Africa as the omitted category.

effect on equity FPI holdings by US investors, but it is only of borderline significance. This larger sample includes many countries for which both equity FPI and FDI are very small. This potentially gives rise to a large amount of random variation in the relative values of equity FPI and FDI, and hence to imprecision in the estimated effect. Restricting the sample to the 44 baseline countries leads to a larger and highly significant effect of the corporate tax rate, as shown in Column 2.

The results from the baseline specification in Equation (6) are shown in Column 3 of Table 2. As in Column 2, equity FPI holdings by US investors, controlling for the FDI holdings of US firms, are substantially larger in countries with lower corporate tax rates.[22] Moreover, this effect is robust to controlling for variations in investor protection across countries. The estimated coefficient of -0.07 implies an elasticity of equity FPI with respect to the corporate tax rate of approximately -2.1. Thus, a 10% reduction in a country's corporate tax rate (e.g. from 35% to 31.5%) would be predicted to lead to a 21% increase in the value of equity held by US investors. This is a much larger elasticity than has typically been estimated in the literature on the responsiveness of FDI to tax rates.[23] This result suggests that US investors use FPI to bypass the worldwide tax regime facing US multinational firms. The results in Column 3 of Table 2 also show that equity FPI, relative to FDI, is significantly larger in countries with stronger investor protection. The statistically significant estimated coefficient of approximately 1.1 implies that a one standard deviation increase in the index - approximately equivalent to the difference between Italy and Norway - is associated with a 24% increase in equity FPI holdings by US investors.

A potential omitted variable in the baseline specification in Column 3 is the extent of firms' access to debt financing. The availability of debt finance from either foreign or domestic sources may be a substitute for issuing equity and so reduce US equity FPI holdings. To address this issue, two new variables are added in Column 4. The log of debt FPI (also from the TIC dataset) captures the availability of debt finance from US sources to foreign firms and can also serve as a proxy for unobserved country characteristics that may influence both debt and equity

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[22] The corporate tax rate variable in the reported results is from the University of Michigan's Worldwide Tax Database, and is for 2002 (the latest available year). The results are essentially identical when using more recent tax rates (for 2004) from the PriceWaterhouseCoopers data.

[23] Early studies of FDI, reviewed in Hines (1999), found a tax elasticity of approximately -0.6. More recent estimates have been larger; for instance, Desai, Foley and Hines (2003) report an elasticity of -1.5 using data on FDI by US firms. Nonetheless, although there are some higher estimates (e.g. Altshuler and Grubert, 2004), most studies find that the elasticity of FDI with respect to corporate tax rates is smaller than the estimate in Column 3 of Table 2.

FPI. In addition, a country's financial depth - measured by the ratio of financial deposits to GDP, and obtained from an updated version of the Beck *et al.* (2000) database - serves as an indicator of the availability of domestic debt financing from that country's banking sector. As shown in Column 4, adding these variables does not affect the main results.

The basic results in Column 3 are also robust to the inclusion of a variety of additional controls. The quality of a country's governance institutions – such as the extent of judicial independence and the enforcement of property rights – may play a role in investment decisions, and may influence the relative attractiveness of FPI and FDI. Thus, an overall index of the quality of a country's governance institutions, constructed by Kauffmann, Kraay and Mastruzzi (2005), is included in the specification in Column 5. Since the extent of a country's communications infrastructure may affect investment levels the number of telephone mainlines in the country (from the World Bank's *World Development Indicators* (WDI)) is included in the specification in Column 5. The amount of FPI may also depend mechanically on a country's trade deficit; this is controlled for using the values of exports and imports relative to GDP (also obtained from WDI). Finally, cultural and linguistic familiarity may lead to greater investment (and perhaps reduce the desire for control through FDI). Thus, an indicator variable for the use of English as an official language is also included. As is shown in Column 5, the basic results are robust to the inclusion of all these variables.

The results are also robust to the inclusion of various other controls not reported in Table 2. First, natural resource abundance may induce greater FDI and potentially confound the results. However, adding a measure of the value of countries' subsoil assets (from World Bank (2006)) does not affect the results. Second, US investors have historically faced the same personal tax rate t^{US}_P on the returns from equity holdings, regardless of which country their investments are located in. However, the 2003 US tax reform introduced a distinction between countries based on whether dividends paid by their resident corporations to US individuals qualified for the lower dividend tax rate of 15%. Adding an indicator variable for those countries to which the lower dividend rate applies does not change the basic results.[24] Finally, adding the withholding tax

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[24] Qualification is based on the nature of the country's tax treaty with the US. The affected countries are defined as those listed in IRS Notice 2003-69 ("United States Income Tax Treaties That Meet the Requirements of Section 1(h)(11)(C)(i)(II)"), but excluding those listed countries that impose withholding taxes on US investors' dividends at a rate greater than 15% (based on the information in Anderson (2006, Chart 9.1)).

rates on dividends imposed by foreign countries (which would be important to tax-exempt US investors) leads to similar results.[25]

4.2. *Robustness checks*

If variables that influence both FPI and FDI have been omitted in the previous specifications, as suggested above, a specification using the ratio of FPI to FDI as a dependent variable (Equation (7)) may be preferable. Column 1 of Table 3 reports the results from estimating Equation (7). The basic results from Table 2 are robust to using this specification. The corporate tax rate effect remains negative and significant, while the investor protection index has a coefficient of substantial magnitude, though it is only of borderline significance. Overall, the results using Equation (7) are consistent with those from Equation (6), suggesting that the basic results are not substantially affected by simultaneity between FPI and FDI.

It is possible that the results in Table 2 are driven by unobserved heterogeneity across investment climates in a way that is not captured by any of the control variables used in the analysis. One approach to addressing this issue is to investigate whether regressions where debt FPI is substituted for equity FPI yield similar results. If the results are similar for debt FPI, then unobserved heterogeneity could explain these findings on equity FPI. Alternatively, under the hypotheses developed in Section 2, the desirability of debt FPI should be unrelated to both corporate tax rates and the strength of investor protection. The measure of investor protections is oriented around protections specifically available to equity investors, so this variable should not have an effect on debt FPI. Column 2 of Table 3 reports the results of the specification in Equation (6) but using *debt* FPI as the dependent variable:

$$Log\ of\ Debt\ FPI_i = \beta_0 + \beta_1\tau_i + \beta_2 Inv_i + \beta_3(Log\ of\ FDI_i) + \mathbf{X}_i\boldsymbol{\gamma} + \varepsilon_i \tag{9}$$

Using the baseline set of controls, neither the tax rate nor the investor protection index have an effect on debt FPI that is statistically significant and the coefficients are relatively small. The (unreported) results are very similar when the full set of controls is included.[26] The absence of any effect for debt FPI suggests that the results in Table 2 are indeed attributable to tax rates and investor protection, as opposed to some omitted variable.

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[25] Note that the sample size is substantially reduced by missing data for this variable.
[26] The latter specification includes controls for general governance quality, so it addresses the potential concern that debtholders' rights and equityholders' rights may be correlated.

A more general approach to addressing concerns about omitted correlated variables and about reverse causality is to use an instrumental variables specification. La Porta *et al*. (2006) argue that the historical origins of countries' systems of commercial law are valid instruments for their investor protection index. Dharmapala and Hines (2006, Table 7) find that these legal origins are also a significant determinant of countries' corporate tax rates. Drawing on these findings, the instrumental variables approach in Table 3 uses countries' legal origins, latitude and ethnolinguistic fractionalization (from La Porta *et al*. (1999)) as instruments for their tax rates and their values of the investor protection index.[27]

Column 3 of Table 3 reports the results from the IV estimation of Equation (6). It shows that the basic results from Table 2 are robust; the corporate tax rate and investor protection effects remain significant, and their magnitudes are larger than those found in Table 2 using OLS estimation. However, the exclusion restriction - that the instruments do not affect equity FPI other than through tax rates and investor protections - may be questioned. For instance, the effect of the instruments may operate through their relationship to countries' general governance environments, rather than specifically through tax rates and protections for minority shareholders. Alternatively, British legal origins may be correlated with the use of the English language, and it may be language (rather than taxes or corporate governance) that induces US investment.[28] Nonetheless, the IV results are similar when conditioning on the full set of controls (Column 4 of Table 3); in particular, this specification includes an overall measure of a country's current governance quality, and a control for the use of English an official language. The exclusion restriction can more reasonably be expected to be satisfied, conditional on this extensive set of controls. In general, notwithstanding these caveats about the IV approach, it is reassuring that it yields results consistent with the OLS results.

5.   *Panel Results*

The IV estimates described above provide some reassurance that the basic results are not driven by unobserved heterogeneity. They also address the potential problem of reverse causality. Another approach to addressing unobserved heterogeneity, described in this section, is

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[27] These instruments are jointly significant in the first-stage regressions.
[28] It may also be argued that having the same (i.e. British) legal origins facilitates more US investment. However, it is not entirely clear that it should lead to more FPI, *relative* to FDI; indeed, control may be more valuable to US multinationals in a more familiar legal environment.

to use panel data to focus on within-country variation over time in the corporate tax rate. This approach cannot be used to analyze the effects of investor protections, as investor protections change only infrequently over the sample period.[29] In the following panel results, the investor protection effect is absorbed in the country fixed effects included in Equation (8). The control variables are similarly restricted to those that are time–varying: the log of US FDI, the log of GDP per capita, the log of population, the log of aggregate stock market capitalization, the log of long-term US debt FPI,[30] financial depth, exports and imports relative to GDP, and an indicator variable for those country-years for which the lower dividend tax rate enacted in 2003 was applicable.

It is important to note that possible alternative explanations for the tax result relate not simply to unobserved heterogeneity across countries, but also to differential growth rates or trends in FPI across subsets of countries. For example, observed tax rates may be the outcome of a process of tax competition. In models where a "race to the bottom" occurs, all countries may reduce their tax rates, without affecting the equilibrium location of investment. In itself, such a process would merely create a bias against finding any tax effect. It is possible, however, that tax competition and the potential growth in investment flows only apply among a subset of countries. For these countries, a pattern of falling tax rates and growing FPI may be observed, but the relationship between the two variables would be spurious. More generally, US FPI has grown rapidly in recent years, and this growth may have been targeted towards particular countries (independently of their tax rates); year effects would not fully account for this phenomenon. Another possible explanation relates to the nontax motivations for FDI discussed in Section 2. If synergies between US firms and their overseas counterparts happen to have grown most rapidly in countries that have also increased their tax rates this would have led to increased FDI (and hence reduced equity FPI, relative to FDI) in these countries, and hence to a spurious relationship between taxes and FPI.

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[29] To the extent that changes in corporate governance institutions and securities laws (such as those in India analyzed by Black and Khanna (2007)) may have occurred, their effects would be substantially controlled for through the inclusion of the log of aggregate market capitalization (obtained from the World Bank's WDI database) as a control variable.

[30] The cross-sectional analysis used total debt FPI (i.e. the sum of short-term and long-term debt). However, short-term debt is only reported for years from 2001, so to ensure consistency in definition over time, the longitudinal analysis uses only long-term debt FPI.

To address these concerns, the panel specification in Equation (8) includes country-specific time trends, in addition to country and year effects. The results are reported in Table 4. Column 1 begins with a simple specification that includes country and year fixed effects, but no control variables or country-specific time trends. Using this simple specification, increases in the corporate tax rate are associated with significant decreases in US equity FPI holdings. The specification in Column 2 adds the full set of controls and country-specific time trends. Here, using only within-country variation in corporate tax rates, and controlling for other relevant factors and for country-specific time trends, reductions in corporate tax rates are associated with significant increases in equity FPI, relative to FDI. The magnitude of the effect is smaller in the panel results, but these results confirm the negative effect of corporate tax rates on equity FPI, relative to FDI, found in the cross-sectional analysis.

To test whether the results in Table 4 are driven by unobserved changes over time that are not captured by the year effects nor by the country-specific time trends, a variant of the debt FPI test used in Section 4 can be used. If these unobserved changes are driving the observed tax rate effect, then they should also be expected to affect debt FPI (even though debt FPI should be unaffected by tax rates *per se*). This test uses the following specification:

$$Log\ of\ Long\text{-}term\ Debt\ FPI_{it} = \beta_1\tau_{it} + \beta_2(Log\ of\ FDI_{it}) + \mathbf{X}_{it}\gamma + \mu_i + \nu_t + \mu_i*(t-2000) + \varepsilon_{it} \quad (10)$$

The results are shown in Column 3 of Table 4. While the estimated tax effect is negative, it is not close to statistical significance, unlike the tax effect in Columns 1 and 2, where the dependent variable is equity FPI. This test provides some reassurance that the estimated effect of corporate tax rate changes on equity FPI is not driven by unobserved shocks to a country's general investment climate.

6.   Conclusion

The composition of outbound U.S. capital flows reflects the responses of investors to home and host country institutional regimes. With respect to taxation, the worldwide system of taxation vitiates the role of multinational firms in providing access to global diversification opportunities: worldwide taxation results in FPI being a favored diversification vehicle, particularly in low-tax countries. On the other hand, investors seeking to access diversification opportunities in countries with weak investor protections are attracted by the control associated

20

with FDI via US multinational firms. In both cases, institutional regimes alter the choices undertaken by investors seeking to enjoy the benefits of global diversification.

These results open up several new lines of inquiry into the distortionary effects of taxation and investor protections on firm behavior and on portfolio allocation decisions. If the effects documented here translate into differences between foreign-owned and locally-owned firms in the cost of capital, then both types of regimes could influence the competitive dynamics between foreign and local firms. If the responsiveness of portfolio choices to corporate taxes extends to the choice of domestic versus foreign investment, then the U.S. corporate tax may give rise to substantial distortions in investors' international portfolio choices. Finally, the distortion to portfolio choices induced by corporate taxes suggests that welfare analyses of corporate taxation in a global setting should incorporate this new margin of distortion.

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Data Appendix

FPI:
Source: Treasury International Capital (TIC) reporting system, available at:
www.treas.gov/tic/
These data represent the portfolio holdings of foreign securities by US investors as of December 31 of each of the following years: 1994, 1997, 2001, 2003, 2004 and 2005. The TIC dataset is based on a series of surveys of banks, other financial institutions, brokers, and dealers undertaken by the US Treasury; see the website or Bertaut, Griever and Tryon (2006) for more details. The TIC data are divided into equity FPI, long-term debt FPI (with an original maturity of over one year), and short-term debt FPI (the last variable is only available for the years 2001, 2003, 2004 and 2005). The panel dataset uses the equity FPI and long-term debt FPI measures for the years 1994, 1997, 2001, 2003, 2004 and 2005; the cross-sectional dataset uses equity FPI and total debt FPI (the sum of long-term and short-term debt FPI) for 2005.

FDI:
Source: Bureau of Economic Analysis (BEA); available at:
http://www.bea.gov
The measure of FDI is the "direct investment position, on a historical cost basis" (in millions of US$) of US firms in each country in a given year. The panel dataset uses this measure for the years 1994, 1997, 2001, 2003, 2004 and 2005; the cross-sectional dataset uses the measure for 2005 only.

Corporate Tax Rates:
Source: the World Tax Database maintained by the Office of Tax Policy Research at the University of Michigan, available at:
http://www.bus.umich.edu/OTPR/
The cross-sectional dataset uses the top statutory corporate tax rate for 2002 (the latest available year). The panel dataset uses top statutory corporate tax rates from an alternative source, PriceWaterhouseCoopers' *Worldwide Summaries* of corporate taxation for each of the years that the FPI data are available.

Investor Protection Index:
Source: La Porta *et al*. (2006)
The principal component of three indices – of disclosure requirements, liability rules and anti-director rights – constructed by Porta *et al*. (2006). The index takes on values from 0 to 1, with higher values indicating stronger investor protection.

GDP per capita:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org
GDP per capita is expressed in US$, in PPP terms. The cross-sectional dataset uses GDP per capita for 2004. The panel dataset uses GDP per capita for each of the years that the FPI data are available. The GDP per capita variable is expressed in nominal rather than real terms, but the panel specification includes year effects.

Population:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org
The cross-sectional dataset uses the population in 2004. The panel dataset uses the population for each of the years that the FPI data are available.

Correlation with US Growth Rate:
Source: calculated from data in the Penn World Tables, available at:

http://pwt.econ.upenn.edu/
This variable represents the correlation coefficient between each country's annual economic growth rate and that of the US over the period 1950-2004.

Distance from the US:
Source: the Centre d'Etudes Prospectives et d'Informations Internationale (CEPII) dataset, available on Thierry Mayer's website at:
http://team.univ-paris1.fr/teamperso/mayer/data/data.htm
This is a measure of the physical distance of each country in the dataset from the US. It represents the distance in km between Washington, DC and the capital (or largest city) in the country, weighted by the fraction of the country's population that lives in the capital (or largest city).

Contiguity:
Source: the Centre d'Etudes Prospectives et d'Informations Internationale (CEPII) dataset, available on Thierry Mayer's website at:
http://team.univ-paris1.fr/teamperso/mayer/data/data.htm
An indicator variable that = 1 for Canada and Mexico, and = 0 for all other countries.

Ratio of Financial Deposits to GDP:
Source: an updated version (January 17, 2007) of the financial dataset in Beck *et al*. (2000), available at:
http://econ.worldbank.org/staff/tbeck
This variable represents deposits in deposit money banks and other financial institutions as a share of GDP (see Beck *et al*. (2000) for more details) in 2004 (for the cross-sectional dataset), and for each year for which FPI data is available (for the panel dataset).

Country Governance Index:
Source: Kaufmann, Kraay and Mastruzzi (2005)
This index is obtained by taking the (unweighted) mean of the 6 governance measures – for "voice and accountability," "political stability," "government effectiveness," "regulatory quality," "rule of law," and "control of corruption" - constructed by Kaufmann *et al.* (2005) for the year 2004. The methodology (described in detail in Kaufmann *et al.* (2005)) involves using principal components analysis on a large number of existing measures. The index is a continuous variable over the approximate interval (-2.5, 2.5), normalized to have mean 0 and standard deviation 1 (across all countries and territories), with higher values indicating better governance.

Telephone Mainlines:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org
The number of telephone mainline connections in the country in 2004 (for missing 2004 data, 2002 data are used instead, when available). WDI reports the number of telephone lines per 1000 population, but in Tables 2 and 3, the telephone lines variable is scaled by area.

Exports as a % of GDP and Imports as a % of GDP:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org
The value of exports and imports for each country, both expressed as percentages of the country's GDP. The cross-sectional dataset uses these percentages for 2004. The panel dataset uses these percentages for each of the years that the FPI data are available.

Use of English as an Official Language:
Source: based on information in the CEPII dataset (available on Thierry Mayer's website)
Indicator variable (= 1) if English is listed as one of the country's official languages, and 0 otherwise (note that the CEPII dataset lists up to 3 official languages for each country).

Aggregate Market Capitalization:
Source: the World Bank's *World Development Indicators* (WDI), available at http://econ.worldbank.org
Aggregate market capitalization is expressed in US$. The cross-sectional dataset uses aggregate market capitalization for 2004. The panel dataset uses aggregate market capitalization for each of the years that the FPI data are available. The aggregate market capitalization variable is expressed in nominal rather than real terms, but the panel specification includes year effects.

Ethnolinguistic Fractionalization:
Source: La Porta *et al*. (1999)
This is defined as the average value of 5 different indices of ethnic and linguistic fractionalization; the values range from 0 to 1, with higher values indicating greater heterogeneity. See La Porta *et al*. (1999, p. 238) for more details.

Latitude:
Source: La Porta *et al*. (1999)
The absolute value of the country's latitude, scaled to lie in the interval [0, 1].

Legal Origins:
Source: La Porta *et al*. (1999)
Indicator variables for each of 5 origins of the country's commercial law: British, French, German, Scandinavian, and Socialist. The sample of countries used in this paper does not include any with Socialist legal origins, so the IV estimation uses the first three only (with Scandinavian origins as the omitted category).

Area:
Source: the CEPII dataset (available on Thierry Mayer's website); area, measured in square km.

Tax Haven Status:
Source: Dharmapala and Hines (2006)
Indicator variable (=1 if the country appears on the list of tax havens in Dharmapala and Hines (2006, Table 1, Column 3) and 0 otherwise.

Subsoil Assets:
Source: World Bank (2006, Appendix 2)
The value of the stocks of subsoil mineral assets (oil, gas and coal, together with 10 metals and minerals - bauxite, copper, gold, iron ore, lead, nickel, phosphate rock, silver, tin, and zinc) per capita in US$ for the year 2000 (see World Bank (2006, p. 147) for more details).

Personal Tax Rate Variables:
Source: based on IRS Notice 2003-69 ("United States Income Tax Treaties That Meet the Requirements of Section 1(h)(11)(C)(i)(II)"), available at:
http://www.irs.gov/irb/2003-42_IRB/ar09.html
and on Anderson (2006, Ch. 9)
In the cross-sectional dataset, this is an indicator variable (= 1 for those countries listed in the IRS Notice as having a tax treaty with the US that satisfies the requirements for that country's corporations' dividends to receive favorable treatment (i.e. the 15% rate) under the Jobs, Growth and Tax Relief Reconciliation Act of 2003 (JGTRRA2003). However, those countries on the list that impose withholding taxes > 15% on dividends to US shareholders are excluded (based on the withholding tax rates in

Anderson (2006, Chart 9.1). The withholding tax rate is defined as the tax rate imposed by each foreign country on dividends paid by its resident corporations to their US shareholders.

In the panel dataset, the personal tax rate variable is an interaction between the indicator variable described above and an indicator variable for those years (2003, 2004, and 2005) in which JGTRRA2003 applied.

Regional Dummies:
Source: World Bank classifications; regions are Europe and Central Asia, Asia/Pacific, Americas, Middle East and North Africa (MENA), and Africa.

List of Countries in the Sample:
Note: this list of 44 countries is based on the set of 49 countries with the largest aggregate stock market capitalization in 1993 (La Porta *et al*. (2006)). From this set, it excludes:
- the US
- Nigeria (for which FPI data are missing)
- Jordan, Kenya, and Uruguay (which have either US equity FPI or FDI holdings of less than US$5 million in 2005)
This leaves the following set of countries:

Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, Denmark, Ecuador, Egypt, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Korea (South), Malaysia, Mexico, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Portugal, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Kingdom, Venezuela, Zimbabwe

The panel dataset is restricted to the same set of countries. In addition, country-year observations for these countries where either US equity FPI or FDI holdings are less than US$5 million are omitted.

Figure 1: The Ratio of Outbound U.S. FPI to FDI, 2005
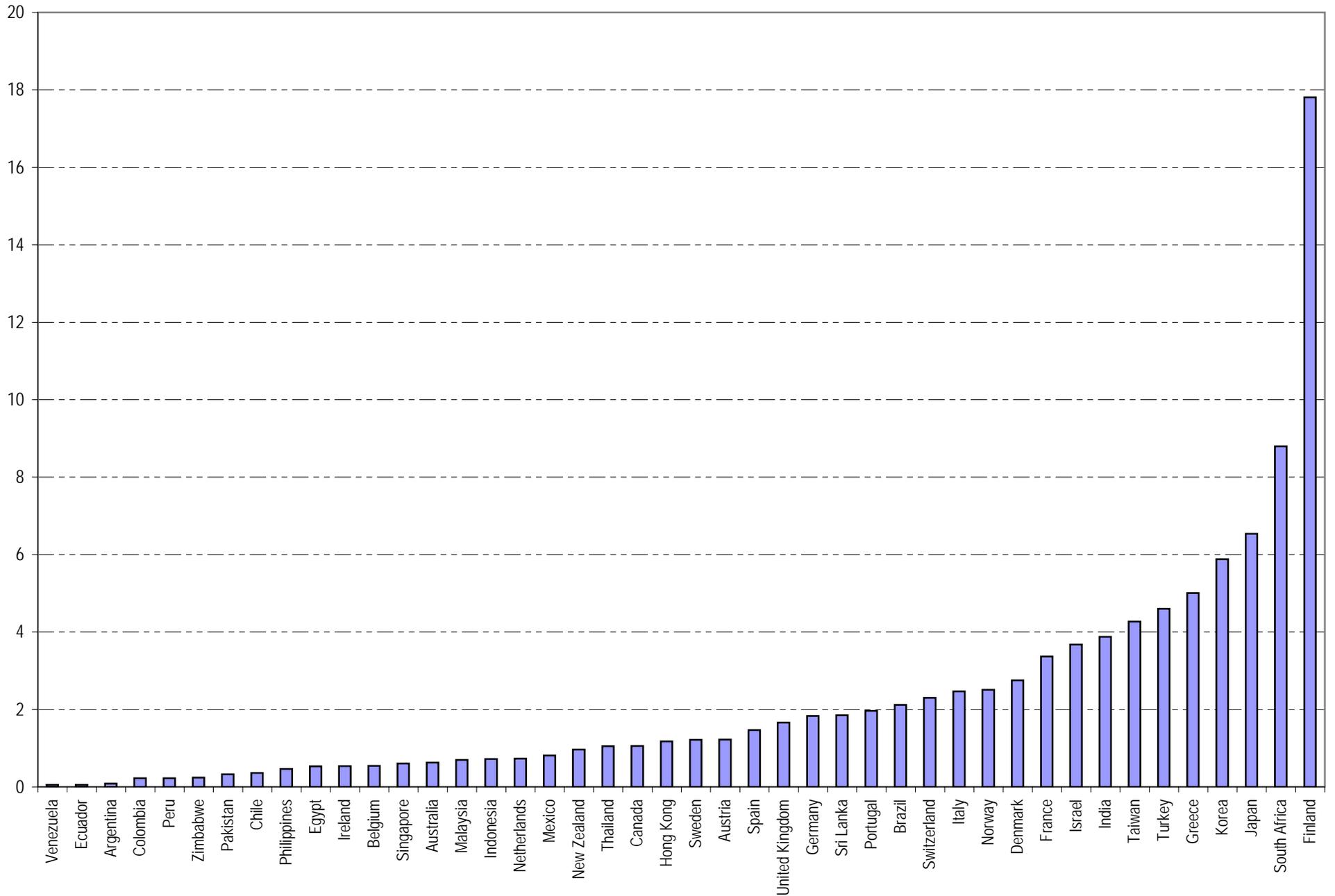
Note: This figure presents the ratio of U.S. outbound FPI to FDI in 2005 for the countries analyzed in La Porta *et al.* (2006), except for countries with FDI or FPI lower than $5mm.

Figure 2a: Corporate Taxes, Investor Protection and FPI

Bar chart with y-axis labeled "Ratio US FPI to US FDI" (0 to 3). Categories:
- Higher Corporate Tax Countries: ~1.5
- Lower Corporate Tax Countries: ~2.8
- Lower Investor Protection Countries: ~2.03
- Higher Investor Protection Countries: ~2.48
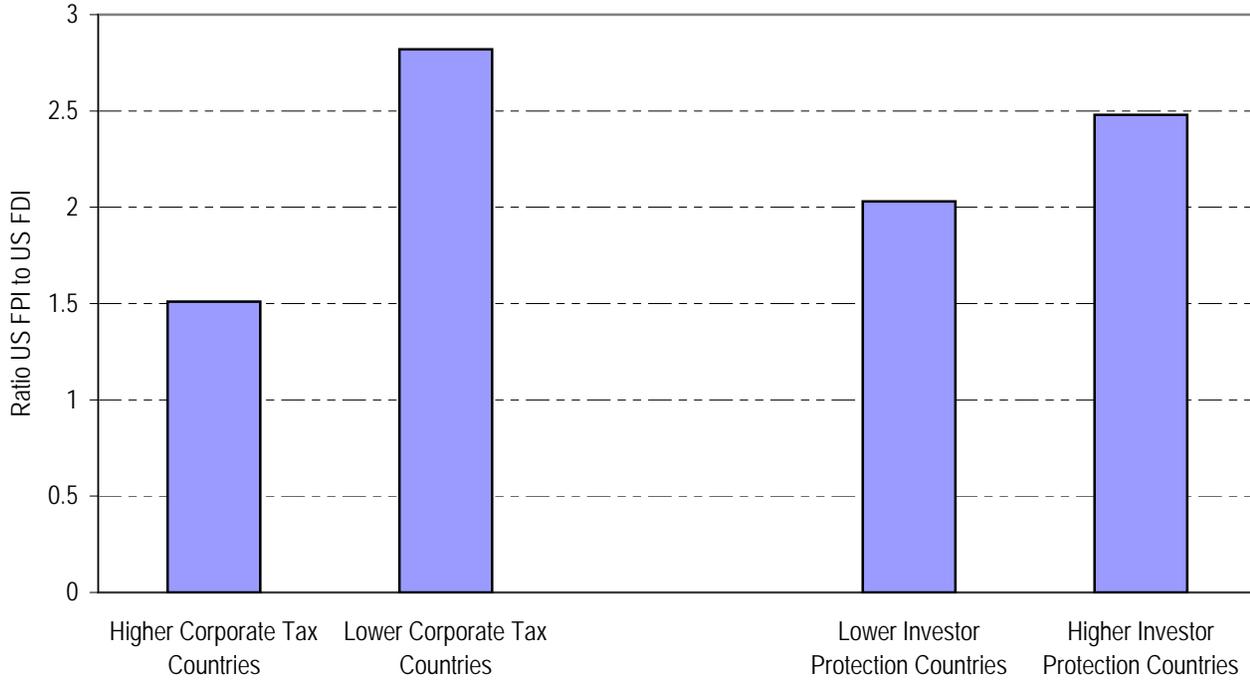
Figure 2b: Corporate Taxes, Investor Protection and FPI

Bar chart with y-axis labeled "Ratio US FPI to US FDI" (0 to 3.5). Categories:
- Higher Tax/Lower Investor Protection Countries: ~1.37
- Higher Tax/Higher Investor Protection Countries: ~1.67
- Lower Tax/Lower Investor Protection Countries: ~2.58
- Lower Tax/Higher Investor Protection Countries: ~3.03
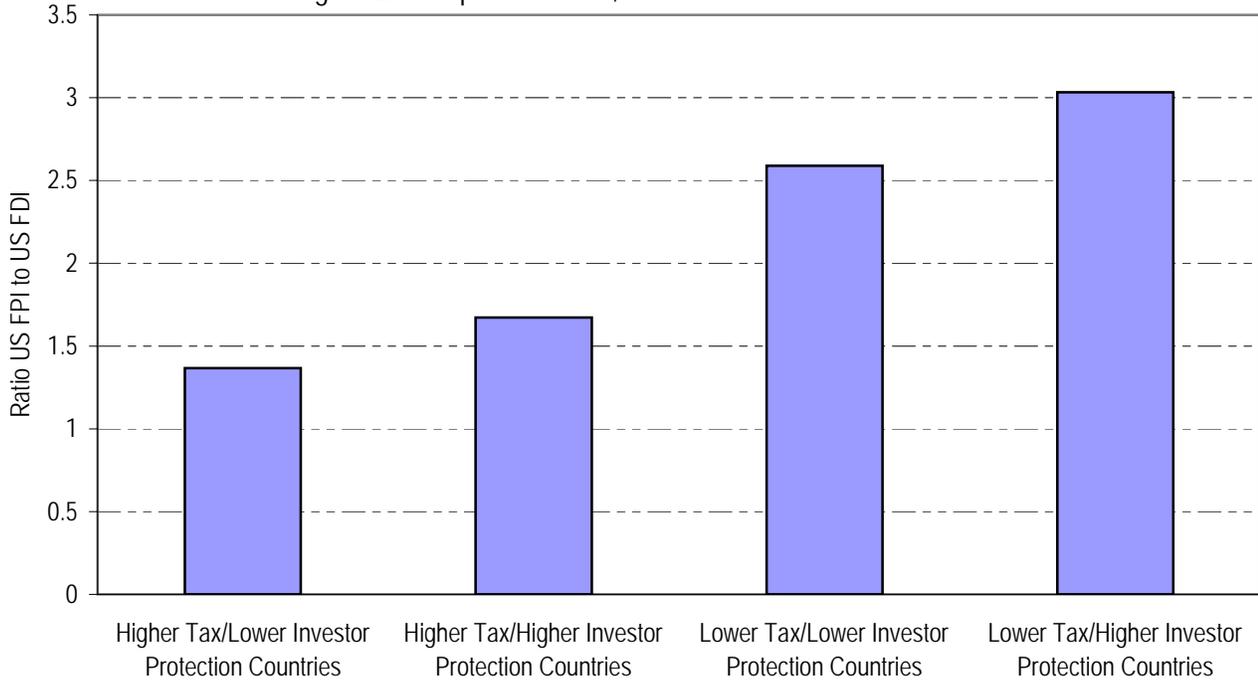
Note: The figures provide mean ratios of outbound U.S. FPI to FDI for subsamples of countries displayed in Figure 1. In Figure 2a, the two pairs of bars provide ratios for two pairs subsamples divided at the median corporate tax rate and the median level of investor protections. In Figure 2b, the sample of countries is divided into four subsamples at the median corporate tax rate and median level of investor protections.

Table 1: Summary Statistics

Note: Equity FPI is a measure of the portfolio holdings of foreign equities by US investors at the end of 2005 (cross-section) and at the end of 1994, 1997, 2001, 2003, 2004 and 2005 (panel). Debt FPI is a measure of the portfolio holdings of debt (both long-term and short-term) by US investors at the end of 2005. Long-term debt FPI is a measure of the portfolio holdings of debt (with an original maturity of over one year) by US investors at the end of 1994, 1997, 2001, 2003, 2004 and 2005. FDI is the direct investment position in millions of US$ of US firms for 2005 (cross-section) and each year for which FPI data is available (panel). The ratio of equity FPI to FDI uses the equity FPI and FDI variables defined above for 2005. The corporate tax rate is the top statutory corporate tax rate. The investor protection index is the principal component of three indices constructed by La Porta *et al*. (2006). GDP per capita, from the World Bank's WDI database, is expressed in US$ in PPP terms. Population is from the World Bank's WDI database. The correlation with the US growth rate is the correlation coefficient between each country's annual economic growth rate and that of the US over the period 1950 to 2004. Weighted distance from the US is from the CEPII dataset. The indicator for contiguous status (from CEPII) is = 1 for Canada and Mexico. The ratio of financial deposits to GDP is from an updated version of Beck *et al*. (2000). Aggregate market capitalization is from the World Bank's WDI database. The country governance index is from Kaufmann, Kraay and Mastruzzi (2005). The number of telephone mainlines is from the World Bank's WDI database. Exports and imports as a % of GDP is from the World Bank's WDI database. The English language variable (from CEPII) is an indicator variable (= 1) if English is listed as one of the country's official languages. The dividend tax rate variable (based on IRS Notice 2003-69 and Anderson (2006)) is an indicator = 1 for countries or country-years to which the lower rates under the 2003 tax reform applied. Legal origins, latitude and the ethnolinguistic fractionalization index are from La Porta *et al*. (1999).

Variable	Cross-Sectional Dataset			Panel Dataset		
	Mean	St. Dev.	Obs.	Mean	St. Dev.	Obs.
Log of US Equity FPI	9.495	2.367	44	8.966	2.245	256
Log of US Debt FPI	8.551	2.053	44			
Log of US Long-Term Debt FPI	8.418	1.977	44	8.074	2.049	256
Log of US FDI	9.376	1.836	44	9.101	1.693	248
Log of the Ratio of US Equity FPI to US FDI	0.119	1.291	44			
Corporate Tax Rate	29.950	7.160	44	30.100	6.951	256
Investor Protection Index	0.470	0.222	44			
Log of GDP per capita (PPP)	9.568	0.891	44	9.470	0.861	249
Log of Population	17.090	1.261	44	17.070	1.273	250
Correlation with US Growth Rate	0.170	0.183	44			
Weighted Distance from the US	9424.6	3577.4	44			
Contiguous (=1)	0.045	0.211	44			
Ratio of Financial Deposits to GDP	0.836	0.540	43	0.667	0.409	248
Log of Aggregate Market Capitalization	25.910	1.745	43	25.460	1.709	249
Country Governance Index	0.649	0.973	44			
Telephone Mainlines (scaled by area)	17.540	112.500	43			
Exports as a % of GDP	41.550	31.440	42	38.220	28.950	213
Imports as a % of GDP	38.960	28.760	42	36.920	26.760	213
English as an Official Language (=1)	0.295	0.462	44			
Lower Dividend Tax Rate (=1)	0.591	0.497	44	0.301	0.459	256
British Legal Origins	0.341	0.479	44			
French Legal Origins	0.432	0.501	44			
German Legal Origins	0.136	0.347	44			
Scandinavian Legal Origins	0.091	0.291	44			
Latitude (absolute value)	0.357	0.208	44			
Ethnolinguistic Fractionalization Index	0.241	0.232	44			

Table 2: Taxes, Investor Protections and FPI

Note: The dependent variable is the log of US equity FPI in 2005. The corporate tax rate is the top statutory corporate rate in 2002. The investor protection index is the principal component of the disclosure, liability and anti-director rights indices from La Porta *et al*. (2006). The log of US FDI is the log of the direct investment position of US firms in 2005. Log of GDP per capita (in US$, in PPP terms) is from the World Bank's WDI database, for 2004. Log of population is from the World Bank's WDI database, for 2004. Correlation with US growth rate is the correlation coefficient of annual economic growth rates with those for the US over the period 1950-2004, calculated from data in the Penn World Tables. Weighted distance from the US is a measure of physical distance (in km) of a country's capital city from Washington DC. Contiguous is an indicator=1 for Canada and Mexico, and 0 otherwise. Log of US debt FPI is for 2005. The ratio of financial deposits to GDP is from an updated version of Beck *et al*. (2000), for 2004. The country governance index is the unweighted mean of the 6 indices constructed by Kaufmann, Kraay and Mastruzzi (2005). Telephone mainlines is the number of telephone mainline connections in the country in 2004, from the World Bank's WDI database. Exports and imports as a % of GDP are from the World Bank's WDI database. English as an official language is an indicator = 1 if English is listed as one of the country's official languages, and 0 otherwise. Regional dummies are indicators for Europe and Central Asia, Asia and the Pacific, the Americas, and the Middle East and North Africa, with Africa as the omitted category. Robust standard errors are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent Variable:	Log of US Equity FPI				
	(1)	(2)	(3)	(4)	(5)
Corporate Tax Rate	-0.063 *	-0.070 ***	-0.070 ***	-0.060 ***	-0.070 ***
	(0.036)	(0.015)	(0.017)	(0.016)	(0.015)
Investor Protection Index			1.077 **	1.038 **	1.150 **
			-0.409	(0.418)	(0.481)
Log of US FDI	0.760 ***	0.304 ***	0.259 **	0.277 *	0.326 *
	(0.160)	(0.102)	(0.105)	(0.138)	(0.168)
Log of GDP per capita (PPP)	2.110 ***	2.206 ***	2.277 ***	2.242 ***	1.681 ***
	(0.478)	(0.240)	(0.239)	(0.311)	(0.383)
Log of Population	0.629 **	1.035 ***	1.086 ***	1.059 ***	1.116 ***
	(0.295)	(0.115)	(0.103)	(0.110)	(0.131)
Correlation with US Growth Rate	-0.949	-0.811	-1.244 **	-1.132 *	-1.454 *
	(1.227)	(0.523)	(0.526)	(0.623)	(0.737)
Weighted Distance from the US	0.0000	0.0000	0.0000	0.0000	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Contiguous (=1)	1.831 **	2.083 ***	2.046 ***	2.023 ***	1.483 ***
	(0.814)	(0.402)	(0.344)	(0.387)	(0.514)
Log of US Debt FPI				0.014	0.011
				(0.110)	(0.099)
Ratio of Financial Deposits to GDP				-0.209	-0.267
				(0.251)	(0.342)
Country Governance Index					0.633 *
					(0.328)
Telephone Mainlines (scaled by area)					0.002 ***
					0.000
Exports as a % of GDP					0.014
					(0.015)
Imports as a % of GDP					-0.012
					(0.018)
English as an Official Language (=1)					-0.258
					(0.287)
Constant	-26.425 ***	-29.241 ***	-30.428 ***	-29.723 ***	-24.769 ***
	(7.015)	(4.010)	(3.842)	(4.442)	(4.425)
Regional Dummies?	Y	Y	Y	Y	Y
Observations	99	44	44	43	42
R-squared	0.8	0.96	0.97	0.97	0.98

Table 3: Robustness Checks and IV Results

Note: The dependent variable in column 1 is the log of the ratio of US equity FPI to FDI in 2005. The dependent variable is the log of US debt FPI in column 2 and the log of US equity FPI in columns 3 and 4. The specifications in columns 1 and 2 are OLS and the specifications in columns 3 and 4 use legal origins, latitude, and ethnolinguistic fractionalization as instrumental variables for the corporate tax rate and the investor protection index. The corporate tax rate is the top statutory corporate rate in 2002. The investor protection index is the principal component of the disclosure, liability and anti-director rights indices from La Porta *et al* . (2006). The log of US FDI is the log of the direct investment position of US firms in 2005. Log of GDP per capita (in US$, in PPP terms) is from the World Bank's WDI database, for 2004. Log of population is from the World Bank's WDI database, for 2004. Correlation with US growth rate is the correlation coefficient of annual economic growth rates with those for the US over the period 1950-2004, calculated from data in the Penn World Tables. Weighted distance from the US is a measure of physical distance of a country's capital city from Washington DC. Contiguous is an indicator=1 for Canada and Mexico. Log of US debt FPI is for 2005. The ratio of financial deposits to GDP is from an updated version of Beck *et al* . (2000), for 2004. The country governance index is constructed by Kaufmann, Kraay and Mastruzzi (2005). Telephone mainlines is drawn from the World Bank's WDI database. Exports and imports as a % of GDP are from the World Bank's WDI database. English as an official language is an indicator=1 if English is listed as one of the country's official languages. Regional dummies are indicators for Europe and Central Asia, Asia and the Pacific, the Americas, and the Middle East and North Africa, with Africa as the omitted category. Robust standard errors are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent Variable:	OLS Estimates		IV Estimates	
	Log of the Ratio of US Equity FPI to US FDI	Log of US Debt FPI	Log of US Equity FPI	Log of US Equity FPI
	(1)	(2)	(3)	(4)
Corporate Tax Rate	-0.048 **	0.011	-0.120 **	-0.098 **
	(0.018)	(0.035)	(0.055)	(0.042)
Investor Protection Index	1.045 *	0.330	1.988 **	2.951
	(0.551)	(0.909)	(0.967)	(1.755)
Log of US FDI		0.715 ***	0.146	0.232
		(0.140)	(0.181)	(0.222)
Log of GDP per capita (PPP)	1.398 ***	0.961 **	2.385 ***	1.951 ***
	(0.483)	(0.439)	(0.315)	(0.443)
Log of Population	0.798 ***	0.116	1.236 ***	1.099 ***
	(0.137)	(0.173)	(0.214)	(0.137)
Correlation with US Growth Rate	-1.021	-0.575	-2.001 *	-2.145 *
	(0.843)	(1.317)	(1.016)	(1.157)
Weighted Distance from the US	-0.0002	0.0000	-0.0001	-0.0002 *
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Contiguous (=1)	0.495	-0.475	2.614 ***	2.351 **
	(0.493)	(0.564)	(0.830)	(1.081)
Log of US Debt FPI	-0.349 ***			0.048
	(0.106)			(0.160)
Ratio of Financial Deposits to GDP	-1.170 **			0.048
	(0.473)			(0.538)
Country Governance Index	0.779 *			0.202
	(0.424)			(0.527)
Telephone Mainlines	0.002 ***			0.002 **
	(0.001)			(0.001)
Exports as a % of GDP	-0.014			0.018
	(0.017)			(0.022)
Imports as a % of GDP	0.020			-0.023
	(0.018)			(0.026)
English as an Official Language (=1)	-0.659 **			-0.650
	(0.290)			(0.605)
Constant	-18.297 **	-9.191	-31.298 **	-25.368 **
	(5.516)	(5.761)	(4.359)	(4.219)
Regional Dummies?	Y	Y	Y	Y
Observations	42	44	44	42
R-squared	0.85	0.83		

Table 4: Tax Rate Changes and FPI, 1994-2005

Note: The dependent variable in columns 1 and 2 is the log of US equity FPI. The dependent variable in column 3 is the log of US long-term debt FPI. The corporate tax rate is the top statutory corporate rate in each year. The log of US FDI is the log of the direct investment position of US firms. Log of GDP per capita (in US$, in PPP terms) is from the World Bank's WDI database. Log of population is from the World Bank's WDI database. Aggregate market capitalization is drawn from the World Bank's WDI database. Log of US debt FPI is from TIC. The ratio of financial deposits to GDP is from an updatedversion of Beck *et al*. (2000). Exports and imports as a % of GDP are from the World Bank's WDI database. Robust standard errors are in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%.

Dependent Variable:	Log of US Equity FPI	Log of US Equity FPI	Log of US Long-term Debt FPI
	(1)	(2)	(3)
Corporate Tax Rate	-0.038 **	-0.026 **	-0.025
	(0.019)	(0.011)	(0.039)
Log of US FDI		-0.176	-0.026
		(0.234)	(0.361)
Log of GDP per capita (PPP)		1.820	2.529
		(1.677)	(1.854)
Log of Population		2.046	4.284 **
		(2.044)	(1.949)
Log of Aggregate Market Capitalization		0.614 **	-0.154
		(0.238)	(0.157)
Log of US Long-Term Debt FPI		0.092	
		(0.111)	
Ratio of Financial Deposits to GDP		0.012	-0.565
		(0.302)	(0.575)
Exports as a % of GDP		0.013	-0.032
		(0.023)	(0.024)
Imports as a % of GDP		-0.007	0.028
		(0.024)	(0.027)
Control for Changes in Dividend Tax Rates?	N	Y	Y
Country and Year Effects?	Y	Y	Y
Country-Specific Time Trends?	N	Y	Y
Observations	256	203	203
Countries	44	42	42
R-squared	0.94	0.99	0.97