ABSTRACT

Title of Dissertation:	**FOREIGN PORTFOLIO INVESTMENT AND THE FINANCIAL CONSTRAINTS OF SMALL FIRMS**
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This essay examines the impact of foreign portfolio investment on the financial constraints of small firms. Utilizing a dataset of over 195,000 firm-year observations across 53 countries, I examine the impact of foreign portfolio investment on capital issuance and firm growth across countries and firm characteristics, in particular size. After controlling for firm-, industry- and country-level characteristics such as change in foreign exchange rate, share of market capitalization, relative interest rates and investment climate, I find that foreign portfolio investment helps to bridge the gap between the amounts of financing small firms require and that which they can access through the capital markets. Specifically, I find that foreign portfolio investment is associated with an increased ability to issue publicly traded securities for small firms in all nations, regardless of property rights development. For those small firms that do

issue, the form of capital appears to be debt. Since small firms often rely heavily on bank lending, I also test for potential increases in credit for small firms utilizing the bank lending theory of monetary transmission. Results show significantly decreased shortterm debt and increased long-term debt, supporting the contention that bank debt maturity to these firms has increased. This transition to longer-term debt could also be as a result of the increased public debt securities these firms are more able to access. The overall increased access to capital only leads to value-enhancing growth at the firm level in nations with more developed property rights. I find that the volatility of foreign portfolio investment is significantly negatively associated with the probability of small firms issuing publicly-traded securities as well as their firm growth, in periods when their domicile nations are deemed less 'creditworthy.' Results underscore the significance of a good financial system that minimizes information asymmetry and enhances liquidity, as well as property rights and country creditworthiness, to instill confidence in foreign investors.

FOREIGN PORTFOLIO INVESTMENT AND

THE FINANCIAL CONSTRAINTS OF SMALL FIRMS

By

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Dedication

To my parents, who have been there for me from day one. Thank you for all of the love, support, encouragement and dedication.

To my husband, who has been there for me for the last five years and who has the patience of a saint. Thank you for all of your love, support, help, encouragement and dedication.

This is a tribute to the three of you.

Acknowledgement

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Introduction

> *"The causes of the currency crises in emerging markets during the late 1990s have been the subject of much debate—especially considering that, before the crises, many of the Asian countries tended to have balanced budgets and generally sound macroeconomic performance. ...Some observers argue that given the generally favorable macroeconomic conditions, that the crises were not caused by incompatibility between fiscal and monetary policies and exchange rate pegs, but rather by the unexpected and self-fulfilling panics of foreign investors."*

> *Federal Reserve Bank San Francisco: Economic Letter*

Although most policy-makers encourage the opening of financial markets to foreigners, foreign portfolio investment, or 'hot money,' seems to be perceived in a very negative light. Its short-term nature seems to be blamed for almost every economic ill when it comes to crises and to well-publicized disputes such as that between former Malaysian Prime Minister Mahathir bin Mohammed and financier George Soros. It is further often compared to its much more stable and longer-term global capital flow counterpart, foreign *direct* investment and found lacking. If countries have opened their borders to foreign investors and maintained a dearth of capital controls, it would seem intuitive that there exist at least some positive attributes to this form of private capital flow. Indeed, a publication of the International Finance Corporation states the following:

> *"In many markets, relatively small amounts of foreign capital have been enough to act as a catalyst. ...Foreign [capital] entry typically has set off two parallel virtuous cycles. First, an institutional development cycle. International investors—and, by proxy, the managers of their funds—demand high standards in regulation and information. Spurred by the prospect of new investment, market regulators often undertake reform as part of the opening-up process. In addition, fund managers require local services, such as brokers, custody and transfer agents, and information on local companies. In response to this demand, local providers spring up, competition increases and standards improve."*

> *Viewpoint, The World Bank Group*

In this paper, I strive to understand better the impact of foreign portfolio investment and whether there exists a positive impact of foreign portfolio investment. Specifically, in the first chapter, I examine whether foreign portfolio investment, or 'hot money,' eases the financial constraints of small firms. I further examine which route this impact takes: a direct route, through the capital markets, or an indirect route, through bank lending. Finally, I examine whether this impact ultimately leads to growth at the firm level. Due to the information asymmetry and agency costs associated with foreign portfolio investment (also referred to as FPI), it isn't immediately obvious whether small firms would be able to access this additional source of financing. In the second chapter, I examine how the instability of foreign portfolio investment impacts the financial constraints and whether this impact destroys the benefits of foreign portfolio investment with regard to access to finance and ultimately, the growth of small firms.

Given the recent emphasis in literature on global cash flows and access to finance, this study may find an audience with those that follow this area of financial literature such as advocates of liberalization and policy makers. Small firms that have access to the public capital markets, as well as organizations whose intent it is to support small firm vitality may also be interested.

I find that financial constraints are eased by foreign portfolio investment for small firms in nations with more developed property rights (also referred to as DPR nations), as demonstrated by an increase in the probability that such a firm in need of financing issues capital when there is an increase in foreign portfolio investment in its domicile nation. I also find evidence that small firms in nations where property rights are less developed (LDPR nations) are helped by foreign portfolio investment as demonstrated by a

significant increase in the probability of issuing capital. Conditional on a firm reaching the capital markets, the probability of equity issuance is negatively associated with an increase in foreign portfolio investment for small firms. These results, coupled with evidence of an increased access to capital provided by foreign portfolio investment, imply that the form of capital for the small firms that access it is debt. The route that foreign portfolio investment takes to ease the financing constraints of small firms in DPR nations is primarily direct, as seen through the increased probability of capital issuance and only very weak evidence of an indirect route, as seen in a modest increase in the liquidity of bank balance sheets combined with a decrease in the level of domestic credit provided. The positive impact of foreign portfolio investment on access to finance, either directly or indirectly, translates into growth for small firms in only those nations with more developed property rights (DPR), which underscores the importance of an attractive investment climate and growth-nurturing financial development in a firm's domicile nation.

With regard to FPI volatility, I do not find evidence that the volatility of foreign portfolio investment (also referred to as FPI) - examined without distinguishing terms of relative confidence in a country (or country "creditworthiness"), as measured by a rating by institutional investors - is damaging to small firm access to finance, as measured by the probability of public capital issuance. This is true regardless of the development of property rights. Once examined in subsets of "investment grade" and "noninvestment grade" country years, a proxy for the level of confidence institutional investors have in a country's distance from crisis, and controlling for the level of foreign investment, I find that small firm access to finance in countries is only significantly negatively associated

with the volatility of FPI in the noninvestment grade subset. Importantly, I also find that the volatility of foreign portfolio investment only hinders the growth of small firms only when nations are deemed less 'creditworthy' or closer to crisis. These results imply that the benefits derived from FPI such as increased liquidity and an enhanced investment environment (Levine and Zervos (1996)) through better corporate governance, investor protection and transparency (Feldman and Kumar (1995)), which have been linked to an increased level of access to finance (La Porta, Lopez-de-Silanes, Shleifer and Vishney (2000) – henceforth these authors are referred to as LLSV) and to more efficient allocation of capital (Wurgler (2000); Love (2001); Rajan and Zingales (1998)), are not depleted in times when country risk is deemed low enough in nations where investors are protected. This finding is striking given the fact that volatility is actually larger on average in those countries considered investment grade.

The papers most related to mine are Harrison, McMillan and Love (2004) (henceforth these authors are referred to as HML) and Laeven (2003). Although similar in intent, these papers differ from mine on many dimensions. HML (2004) focuses on the impact of foreign *direct* investment[1] and examines this capital flow as a proportion of all investment, controlling for the proportion of total investment rather than the size of the market in question. Laeven (2003) examines the impact of liberalization or reform policies on financial constraints rather than the specific cash flows resulting from said reformation. These papers also differ from mine with regard to methodology. Both

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[1] Foreign direct investment is defined by the IMF (Balance of Payments Manual (1993)) as inflows of investment including short-term and long-term equity capital and reinvestment of earnings for the purpose of acquiring a lasting management interest in a foreign company. Foreign portfolio investment is defined by the IMF (Balance of Payments Manual, 1993) as equity and debt issuances including country funds, depository receipts and direct purchases by foreign investors of less than 10% control.

papers focus on the result of financial constraints (i.e. investment sensitivity to cash) whereas I look to the source of the financial constraints, capital markets and bank credit. Utilizing the Euler equation, these papers examine implied external financial constraints instead of more direct evidence - capital issuance, or the lack thereof. External financing (i.e. issuing equity and debt) can be used to finance investments and is in fact used when firms are financially constrained. As such, evidence of this form of financing should be considered when examining financial constraints (Fazzari, Hubbard and Petersen (1988)). In fact, the *type* of security issued can be indicative of the level of financial constraint a firm faces (Chittenden, Hall and Hutchinson (1996) - henceforth these authors are referred to as CHH). Importantly, these papers differ from mine with regard to their data. Both HML (2004) and Laeven (2003) utilize the Worldscope database. Inasmuch as my emphasis is on small firms, I create a unique database of over 195,000 observations and across 53 countries to circumvent the larger firm bias from which many existing international databases suffer. Given the considerable differences across focus, methodology and scope, it is difficult to compare results of these papers with mine. HML (2004) find that foreign *direct* investment as a proportion of overall investment alleviates financial constraints and that foreign portfolio investment as a proportion of overall investment does not. Although arguably these results are in contradiction with my results superficially, the differences in small firm focus, data and definition of foreign portfolio investment leave room for differences in these results and consequently are not directly challenged by my results. Laeven (2003)[2] finds that liberalization alleviates financing constraints. Although the scope of his research question is significantly

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[2] Samak and Helmy (2000) provide a very thorough analysis of foreign portfolio investment in Egypt but is not a true empirical work so is not considered a related paper.

different, my results are not in disagreement of those of Laeven (2003) inasmuch as I provide results specific to property rights development subsamples, which can be loosely compared and whose results provide additional support to those of Laeven (2003).

This paper contributes to three main areas of literature. The first is small firm access to capital. As markets become more integrated, foreign portfolio investment is a potential source of new investment capital for these financially constrained (Beck, Demirgüç-Kunt and Maksimovic (2005) – henceforth these authors are referred to as BDM) firms. Information as to whether this additional source of capital for small firms is feasible given the information and agency environments is useful in extending this literature.

This work is also related to the literature on global capital flows. As more and more countries consider reforming foreign investment policy to enable capital market integration, this area of research becomes a resource for many.

Lastly, this research touches on that of liberalization. Although, not a study on liberalization, this paper offers insight into the impact of one potential factor in a country's investment environment, foreign portfolio investment. Capital market liberalization opens country borders to foreign investment, which may ultimately broaden and deepen financial markets but can also open countries to vulnerability to the fickleness of foreign investment. Understanding what drives the aftermath of liberalization, such as the impact of a change in foreign portfolio investment, may offer insight into the debate on liberalization.

Chapter 1: Can Foreign Portfolio Investment Bridge the Small Firm Financing Gap Around the World?

I.   Motivation

A. The Challenges of Small Firms

According to a report of the President on the state of small business for the year 1999-2000, small businesses[3] represent 99% of all businesses, employ half of those Americans who are gainfully employed and create two-thirds of the job openings that occur in the United States. Other countries have a similarly large proportion of total firms represented by the small firm (Klapper, Sarria-Allende and Sulla (2002)).   These firms often face a lack of liquidity (BDM (2002); Beck, Demirgüç-Kunt, Laeven and Maksimovic (2003)) and an excessive sensitivity to government regulation that could result in premature failure (BDM (2005); Tewari and Goebel, (2002)). Accessing public equity capital is generally even more difficult for small firms (CHH (1996)). When it can be, it is more expensive for the small firm relative to large firms (Warner (1977); Smith (1977)). The size-bias small firms face from potential investors is one of the main challenges facing these firms.   The cumulative effect of these challenges is called a "finance gap" (Macmillan Committee (1931); Wilson Committee (1979)) and reflects the lack of capital available to these informationally opaque firms (Berger and Udell (1998)).

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[3] Small firms here are defined by the Small Business Administration as any firm that does not exceed at least one of the following: 1) 500 employees for most manufacturing and mining industries, 2) 100 employees for all wholesale trade industries, 3) $6 million for most retail and service industries, 4) $28.5 million for most general & heavy construction industries, 5) $12 million for all special trade contractors or 6) $0.75 million for most agricultural industries

Looking to the international capital markets for funding does not necessarily make matters much better for the small firm. Beyond the same biases facing them in the domestic market, small firms face challenges from international capital sources for several reasons – most notably, supply. Increasing the supply of capital, either domestically or internationally, could at least in part remedy this situation.

HML (2004) find that global capital flows are associated with a reduction in the financing constraints of firms. As an increasingly vital part of global capital flows (see figure 1), foreign portfolio investment helps to increase financial development thus furthering the cause of decreasing financing constraints (Love (2003)) and more specifically, enhancing the development of markets (Levine and Zervos (1996)), which affords firms more opportunities to raise external capital (Demirgüç-Kunt and Maksimovic (1998)). Perhaps most important for this analysis is the fact that the competition for these cash flows motivates an improvement at the firm level in such things as transparency, disclosure and corporate governance (Bekaert and Harvey (2003); Evans (2002); Levine and Zervos (1996); Feldman and Kumar (1995)), which is particularly important for those investors looking to invest internationally (Aggarwall, Klapper and Wysocki (2003)). The financially-constrained small firms striving to capture some of this additional source of capital have an even greater incentive to do so.

B. *The Path of Investment*

Small firms tend to be partially dependent on bank lending to finance their growth (Warner (1977); Cull, Davis, Lamoreaux and Rosenthal (2004) – henceforth these authors are referred to as CDLR). A portion of small firms reaches the capital markets and may use public financing to grow their businesses. Those who do go public may still

rely at least in part on bank lending to finance their growth. As such, there are two ways in which foreign portfolio investment may reach the small firm: the 'direct' route - through the capital markets, and the 'indirect' route - through banks who will in turn invest in or be able to extend more credit to these small firms (see Figure 2).

B.1 The 'Direct' Path of Investment

If competition for a scarce resource, such as capital, improves the investment environment through superior transparency, disclosure and/or corporate governance – an effective improvement in the investment environment, the set of firms in which foreign investors consider investing is increased to include some firms who previously had difficulty obtaining financing due to information asymmetry and/or agency costs. This implies an improvement in the allocation of capital which has been associated with market development (Wurgler (2000)). Small firms with their informationally opaque nature may be included in this marginal group of firms. This is relevant due to the challenge of small firms in accessing capital in any form. Firms perceived as 'investible' who need external financing should realize an increased probability of domestic capital issuance with an accompanying increase in foreign portfolio investment. An increase in the probability of capital issuance stems from the increase in supply of capital and is not identified as due to foreign or domestic investors. I examine whether the level of foreign portfolio investment helps to ease the financial constraints of small firms. More explicitly stated,

> *H1a) The probability of capital issuance for small firms is significantly positively related to the level of foreign portfolio investment of a country (e.g. the financial constraints of small firms are relaxed).*

Beyond whether a firm issues, I examine the *type* of security a firm issues. Inasmuch as small firms are typically debt-laden (CDLR (2004)), the ability to issue equity could be perceived to be a greater alleviation of financing constraints since there are no fixed payments associated with this form of capital. This 'choice' of capital form, therefore, becomes informative. Not much has been written in the international arena examining the feasibility of capital choice for constrained firms. Korajczyk and Levy (2003) provide an examination of capital structure choice for both financially constrained and financially unconstrained firms in the United States. Although solely a domestic study, the main result in Korajczyk and Levy's work is that constrained firms issue what they can when they are able. There isn't any compelling reason, beyond an increased disclosure and governance at the firm-level, that would lead us to believe that these firms would be able to access equity as a result of the increase of the supply of capital available to firms, domestically or internationally. We should see that although small firms will indeed see an easing of their financial constraints, this easing would mainly be in the form of debt capital[4]. To that end, I hypothesize the following:

> *H1b) Conditional on firms issuing capital, the probability of small firms issuing equity capital will not be significantly positively related to foreign portfolio investment.*

B.2 The 'Indirect' Path of Investment

For those firms who are dependent on bank lending and/or remain unable to access publicly issued securities, the 'direct' path of foreign portfolio investment is irrelevant. An 'indirect' path through financial institutions instead is relevant. The theory behind this path of investment stems from the bank-lending theory of monetary

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[4] Also see Henderson, Jegadeesh, and Weisbach (2004).

policy (Bernanke and Blinder (1988); Kashyap and Stein (1995); Kashyap, Rajan and Stein (2002)). Kashyap and Stein (2000) is particularly relevant in that they find that small banks are particularly sensitive to monetary policy. This is relevant since small banks are most likely to be the banks to serve small firms. The lending theory finds that money supply tightening (expansion) appears to decrease (increase) the ability of banks to loan funds based on the relative illiquidity of their balance sheets. What this implies is that if there is a positive money shock into a country, bank balance sheets become relatively more liquid thus enabling them to increase the amount of credit extended to the public. Although this money supply augmentation is due to monetary policy in Kashyap and Stein's paper, this theory could be extended to consider a different source of 'money supply' – in this case foreign portfolio inflows. An increase in the liquidity of the bank's balance sheet through increased outside investment enables banks to lend in the same manner as if there were a change in money supply caused by monetary policy[5]. More concisely stated,

> *H2) The liquidity of bank balance sheets, as well as the amount of domestic credit, are significantly positively related to the level of foreign portfolio investment of a country.*

C. Foreign Portfolio Investment as a Derivative of Growth

Although it is informative to know whether foreign portfolio investment increases small firm access to finance, it is at least equally important to know whether that additional access to finance helps the firm to grow. Assuming the investment environment is sufficient to nurture small firm growth and foreign investment in general (as is the case in nations with developed property rights); we would expect this to be the

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[5] This can be through investment in the banking sector or due to the implications increased money supply

case. In other words, if the property rights of a nation support investment sufficiently that small firms may realize less financial constraint; the additional access of capital provided by FPI should translate into firm growth. According to Guiso, Sapienza and Zingales (2003), the integration of capital markets leads to local financial development, and ultimately to small firm growth. In this context, it could be inferred that to the extent that an increase in foreign portfolio investment coincides with the integration of capital markets we would expect the small firms to grow at a rate closer to their unconstrained growth rate. To examine whether that in fact is true, I test whether foreign portfolio investment helps small firms to grow.

Empirically tested this becomes,

H3) The growth rate of small firms, as defined by the percentage change in total assets (and separately sales revenue), is significantly positively related to the level of foreign portfolio investment of a country in DPR nations.

II. Methodology

A. To Issue or not to issue

Inasmuch as my goal is to examine the impact of FPI on small firm financing constraints, I utilize the findings of BDM (2005) and assume that all small firms are financially constrained. As such, I limit my sample to small firms, as defined by the bottom tercile of firms ranked by total assets[6]. In so doing, I assume that any firm-year where capital issuance does not occur represents financial constraint.

The results of a Durbin-Wu-Hausman test for endogeneity for foreign portfolio investment demonstrate that endogeneity is a concern. In support of this evidence are the

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has on the ability of banks to raise reservable forms of finance.
[6] Size terciles are created annually within countries so that firms are allowed to move into and out of size categories.

results of Agarwal (1997), which shows that the significant determinants of foreign portfolio investment are the (change in the) real exchange rate, share of the domestic capital market in the world capital market and some proxy for economic activity. As such, I utilize an instrumental variable methodology that in the first stage regresses total foreign portfolio investment (average across years t-3 through t-1) on the above variables with relative interest rates (country interest rates scaled by world interest rates) serving to explain the economic activity and add to this list liberalization and FPI volatility to predict foreign portfolio investment with its significant determinants. The reason behind the additional variables is based on much of the liberalization work down by Bekaert and Harvey, Henry, and Patro and Wald[7]. The first stage regression then becomes:

$$FPI_{j,t} = \beta_0 + \beta_1 \Delta FXRate_{j,t} + \beta_2 Share_{j,t} + \beta_3 RelIntRates_{j,t} + \beta_4 Lib_{j,t} +$$

$$\beta_5 FPIVol_{j,t} + t + \varepsilon \qquad (1)$$

To discern the impact of foreign investment on access to capital (as proxied by the probability of capital issuance), I divide the sample into halves based on property rights. Controlling for country and industry fixed effects, as well as firm-level capital structure choice determinants (such as cash flow, debt/asset level, profitability, risk, growth, and asset tangibility) to ensure that my results determine the extent of the access firms possess to issue necessary external capital (versus discretionary choice), I isolate the impact of foreign portfolio investment on the ability of firms to access capital. Why the "potentially"? If it is not significant in DPR countries you would not expect it to be significant n LDPR countries. If it is that calls for more set-up at this stage. Empirically, I use an instrumental variable probit model wherein I first instrument the foreign portfolio

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[7] See Bekaert and Harvey (2003), Henry (2000; 2003) and Patro and Wald (2004).

investment flows (scaled by gross domestic product) and in a second stage estimate the impact of these flows on the ability of small firms to access capital. The probit methodology is used due to the limited nature of the dependent variable and the panel format of the data. The dependent variable in this model is the probability of capital issuance (i.e. occurrence of issue: $y = 1$; no capital issuance: $y = 0$).

$$Prob(y=1)_{i,t} = \gamma_0 + \gamma_1 FPI_{j,t-1} + \gamma_2 Y_{j,t-1} + \gamma_3 X_{i,t-1} + I_i + t + \varepsilon \qquad (2)$$

where FPI is the predicted level of foreign portfolio investment from the first-stage regression (represented in equation (1)) in the instrumental variable probit regression (see equation (1) for the first stage), X is a vector of lagged firm-specific variables such as cash flow, debt/asset level, profitability, risk, growth, and asset tangibility. These variables control for occurrences wherein firms would be more likely to issue (Korajczyk and Levy (2003)). Y is a vector of lagged macroeconomic variables such as GDP growth, levels of other potential sources of capital such as foreign direct investment and savings, and variables of development such as private credit, law and order and corruption levels. Macroeconomic variables are calculated as three year trailing moving averages in order to abstract from business cycles. This methodology is often used in cross-country analyses to smooth out annual fluctuations that can otherwise confound results (see Beck, Demirgüç-Kunt and Levine (2003) – henceforth these authors are referred to as BDL; Rousseau and Wachtel (2002)[8]). I is a vector of industry dummies to control for industry effects and t represents time dummies, which control for any time effect in the panel. A description of the firm-, industry- and country-specific variables is

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[8] See also Beck, Demirgüç-Kunt, Laeven and Maksimovic (2003).

in the data section as well as in the appendices[9]. The instrumental probit methodology utilizes weights frequency to avoid data cloning issues and a bootstrapping methodology which uses randomly chosen subsamples[10] of the dataset with replacement to avoid dependence on assumption of the normality of distribution or the absence of stochastic influences on the data. The bootstrapping technique is vital in ensuring that the standard errors are correct and that resulting significance is accurate. Based on my hypothesis, H1, I expect γ_1 to be both positive and significant for small firms in DPR countries and potentially for small firms in LDPR countries.

B. Capital Choice

The relevance of capital choice lies in its informative nature with regard to the extent of the relaxation of a firm's financial constraints. Due to the reliance of small firms on debt, the issuance of equity capital could be perceived as an increased easing of financial constraints.

Inasmuch as the debt vs. equity capital "choice" implies that the capital issuance variable is positive (y=1 in equation (2)), equation (3) represents the second stage of the conditional logit model begun in the previous section. This model enables me to estimate the extent to which foreign portfolio investment alleviates financial constraints, since enabling small firms to obtain equity capital would not only meet their need for capital but also provide much needed financial flexibility by offering this capital without the fixed payments associated with debt. In the model illustrated below, the dependent variable represents capital choice, specifically y=1 for equity issuance and y=0 for debt.

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[9] Tobin's Q is not included in my analysis due to the sparsity and lack of consistency of information on market pricing in both less and more developed nations around the world.
[10] N=50 is used for bootstrap replication.

$$Prob(y=1)_{i,t} = \zeta_0 + \zeta_1 FPI_{j,t-1} + \zeta_2 X_{i,t-1} + \zeta_3 Y_{j,t-1} + I_i + t + \varepsilon \qquad (3)$$

where definitions of variables are as in equation (2). Once again controlling for country, industry and time fixed effects as well as frequency of country observations and utilizing bootstrapping techniques, I ascertain the affect of foreign portfolio investment on the ability of small firms to issue longer-term capital. Given that the vast majority of the additional capital coming into the financial markets is debt (Henderson, Jegadeesh and Weisbach (2004)) and the fact that these firms typically suffer from an inability to access equity capital (CHH (1996) ; CDLR (2004)), domestic or otherwise, I see no compelling reason that the probability of issuing equity capital would be significantly increased. I anticipate that this coefficient, ζ_1, will not be significant for small firms since these firms typically suffer from an inability to access equity capital, domestic or otherwise.

C. Domestic Credit

To address those small firms in my dataset that are at least in part reliant on bank debt, I examine the impact of foreign portfolio investment on domestic credit. I examine the impact of foreign portfolio investment separately on two proxies of credit availability as well as a measure of bank balance sheet liquidity. Utilizing a cross-sectional time-series of country-level data, I first regress the following:

$$Debt_{j,t} = \theta_0 + \theta_1 FPI_{j,t-1} + \theta_2 Y_{j,t-1} + t + \varepsilon \qquad (4)$$

where $Debt_{j,t}$ represents two proxies (regressed separately) for the level of credit available in country j. These proxies include the level of domestic credit available and the level of domestic credit available that is provided by banks. If the implications of the bank-lending channel are true in the case of foreign portfolio investment, the coefficient on

FPI, θ_1, will be positive. Clustering at the country level is undertaken to avoid any issues of data cloning.

Utilizing the same equation, I test the potential impact of foreign portfolio investment on changes in the bank balance sheet liquidity by utilizing a proxy for bank liquidity – Bank's liquid reserves to asset ratio. Empirically, this becomes the following:

$$Liquidity_{j,t} \; \lambda_0 + \lambda_1 FPI_{j,t-1} + \lambda_2 Y_{j,t-1} + t + \varepsilon \qquad\qquad (5)$$

Other definitions of variables are once again as they are in equation (2). Additional variables included in $Y_{j,t-1}$ are fiscal burden, based on the tax implications of credit (Desai, Foley and Hines (2004)), and relative interest rates, based on the cost of debt implications (Kashyap and Stein (2000)) on the *demand* for bank credit. If foreign portfolio investment does increase the liquidity of the balance sheets of banks as the theory implies, we would expect to see a positive λ_1.

I also test the impact of FPI on bank credit at the firm level. This provides an opportunity to examine how not only total leverage changes with levels of FPI, but also the maturity of the debt utilized by small firms. Indeed, a decrease in the level of short-term debt, a debt maturity upon which these firms most typically depend (Barclay and Smith (1995)), in favor of longer-term debt, i.e. an increase in the maturity of outstanding debt, would imply a reduction in financial constraints as longer-term debt involves less interest rate risk and provides capital over a longer term. Utilizing a similar version of the regression in equation (2) that uses as its regressand leverage I regress the following:

$$(Short\text{-}term/Long\text{-}term/Total)\ Lev_{i,t} = \varphi_0 + \varphi_1 FPI_{j,t-1} + \varphi_2 Y_{j,t-1} + \varphi_3 X_{i,t-1} + I_i + t + \varepsilon \qquad (6)$$

where $Lev_{i,t}$ refers to the amount of leverage (of each type separately) firm i holds in time t and all other variables are as they appear in equation (2). Additional variables real interest rates and fiscal burden are used to control for capital choice as well as overall credit demand/supply issues. φ_1 for short-term debt will be positive if access to capital has increased enough to reduce small firm dependence on bank lending. If the contention that FPI helps to alleviate the financial constraints of small firms through an extension of the maturity of their outstanding debt is true, the coefficient on FPI in specifications using long-term and total debt as the regressand, φ_1, will be. Frequency weights and bootstrapping techniques are once again utilized.

D. Growth

To examine whether the direct or indirect route of foreign portfolio investment ultimately leads to firm growth, I utilize the growth rates of these firms, ascertaining whether foreign portfolio investment impacts their growth (both in sales and in total assets) by regressing the following:

$$Growth_{i,t} = \psi_0 + \psi_1 FPI_{j,t-1} + \psi_2 Y_{j,t-1} + \psi_3 X_{i,t-1} + I_i + t + \varepsilon \qquad (7)$$

where $Growth_t$ is the growth rate attained from year t through year t+1. All other variables are as defined in equation (2), frequency weights are included and bootstrapping techniques are once again utilized. If foreign portfolio investment is beneficial to firm growth, then the coefficient of FPI, or ψ_1, should be positive, reflecting in increase in the growth rate with an increase of the cumulative foreign portfolio capital flow of the previous three years.

III. Data

I obtain my data for this work from the SDC Global New Issues database for the time period 1/1/1996 through 3/31/2003[11]. Global new issues for all countries are not readily available proceeding this era in SDC. Following Korajczyk and Levy (2003), I exclude financial services due to the special circumstances of their asset base and utility firms (Macro Industry: Financial Services, Real Estate and Energy and Power) due to the abnormal stability and predictability of cash flow. I also exclude those firms that have gone bankrupt due to the special set of issues that are included in capital structure determination when a company is failing[12]. This follows the methodology of Asquith, Gertner and Scharfstein (1994) who found that such situations generally cause a major restructuring of capital structure outside of the scope of financial constraint relaxation. Lastly I exclude IPOs. Welch (2004) finds that the firms who undertake IPOs find themselves in unique environment, which contains a different set of issues than the post-IPO period. Including these firms would bias the results.

I collect observations for common stock, non-convertible debt, convertible debt, non-convertible preferred stock and convertible preferred stock issued domestically only. The exclusion of international issuances is intentional due to endogeneity between foreign portfolio investment and international issues. Financials for the companies issuing domestically are hand-collected from REUTERS. This approach enables me to have a much richer sample of global new issues around the world of firms than afforded me by SDC Platinum alone. REUTERS provides financial information on all publicly traded firms for the majority of countries in the world and as such does not suffer from

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[11] Data before the beginning date of this period is sporadic.
[12] Firms going bankrupt would have additional difficulty obtaining capital, which would confound results.

the bias toward large firms to the extent that other international databases such as Worldscope/Datastream/Research Insight do. In fact, REUTERS even covers pink sheets and OTC/Bulletin Board firms whereas the others do not. As such, the coverage is much more comprehensive (see figure 3). The only firms not covered in REUTERS are those that have gone bankrupt or have merged with another firm. The first group has deliberately been excluded from the sample as previously mentioned above. The second group would only be a problem if the issuing company had acquired a firm in the sense that the capital structure control variables in these observations will have different relationships with the dependant variable than the remainder of the sample. Due to the omission of these groups of firms, there exists some survivorship bias in my sample.

Worldscope, Datastream and Research Insight are used to confirm accounting values and to append the sample where available. The 31,929 observations represent issues of equity, debt (either convertible or straight), or preferred equity (either convertible or straight) and the relevant financial environment around which the company makes its decision regarding type of security to issue. Including the time series of these capital issuances brings my sample to over 106,000.

I further collect data on firms not issuing capital during this period of time to represent those public companies that either cannot issue capital or have sufficient funds internally. For less developed country firm-year observations, I collect the financials for 1996-2003 for the most exhaustive list of firms for each country as possible from REUTERS, collecting the exact same data utilized for the issuer dataset. Developed country firm-year observations are collected from Worldscope, due to the inability of REUTERS to provide such large amounts of data given the fact that it is intended for

practitioners researching only a few companies at a time. I believe this does not cause a bias due to the careful matching of accounting information. Including these non-issuer firm-year observations, the number of observations in my dataset totals approximately 195,000 firm-year observations.

Seven countries out of the original 53 were dropped due to insufficient data[13]. In these cases there were only one or two observations of capital issuance, not enough from which to obtain any statistically significant results. Two more countries (Taiwan and Bermuda) fall out due to insufficient macroeconomic data, leaving the sample number of countries to be 44. The exclusion of these countries decreases the sample size by 3294 firm-year observations, which is less than two percent of the overall sample.

Given the fact that there are over 24,000 firms in my sample, it is not surprising that the range of firm-level statistics such cash, leverage, profitability and risk is considerable. Not surprisingly, small firms seem to have much more leverage than their larger peers (CDLR (2004); Rajan and Zingales (1995)). Profitability and risk for the small firms are considerably larger, reflecting the higher growth rate of the small firms (and based on the fact that the figure is scaled by assets, controlling for size). Market capitalization ranges from 97 (Bolivia – U.S.$MM) to 16600 (U.S. - $MM). Annual net foreign portfolio investment scaled by gross domestic product ranges from –157M (Germany) to $437B (U.S.). A full list of summary statistics for the dataset is provided in Table IA.

[Insert Table IA here]

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[13] These countries are Costa Rica, Czech Republic, Iceland, Luxembourg, Papau New Guinea, South Africa and Bangladesh.

Descriptions, as well as sources, of both firm-specific and macroeconomic variables as well as definitions of financial data used in the analysis are provided in Appendix A. Size, country development and geographic distributions for the entire sample, as well as correlations for the variables used in my analysis are provided in Tables IB - IF.

[Insert Tables IB-IF here]

A. Firm-specific information

Databases, such as REUTERS, obtain financials for these listed companies from the exchanges. To the extent that these different exchanges in the different countries have different reporting requirements, financial definitions may vary. Differences in currency value are avoided by using ratios, which will be comparable across countries. This is executed through a scaling by total assets unless otherwise noted.

As many empiricists have attributed size as a determinant of capital structure, I assign size categories based on **Total Assets**. Korajczyk and Levy (2003) and Baker and Wurgler (2002) find a positive relationship between leverage and size. Titman and Wessels (1988) find that size influences not only the extent of leverage but also the type. My proxy for this follows both Titman and Wessels (1988) and Rajan and Zingales (1995) and is calculated as total assets[14].

Profitability of firms would be an obvious influence on firms inasmuch as this impacts how well a firm could either pay interest and/or dividends. Titman and Wessels (1988) provide two measurements for this variable that are fairly applicable universally. They are operating income divided by sales and operating income divided by total assets.

I utilize both in my analysis but provide results for profitability based on sales only for the sake of brevity.

Also relevant to capital structure determination is **Asset tangibility.** This refers to how palpable the assets of a firm are and relates to capital structure concerns through its limitations on debt levels due to the ability to provide collateral. A firm has less collateral the less tangible its assets are. This, arguably, could be said to increase the probability of bankruptcy due to the inability to obtain funds when there are especially needed. This follows logically from the fact that a company without material assets would not be able to liquidate to obtain the necessary funds to pay off debtors if it were necessary. This variable is created by calculating fixed assets divide by book value of assets (following Rajan and Zingales (1995)). Once again, within-country industry averages are used in those cases where there is missing data. For the same reasons given above justifying the rationale for industry average substitution as proxies for uniqueness of assets, industry averages are suitable proxies here.

Similar to profitability, the **Growth** of a firm impacts how well a firm is able to pay interest and/or dividends and is a typical capital structure determinant. Proven to be an influential variable in capital structure (Jensen and Meckling (1976); Titman and Wessels (1988); Chaplinsky and Niehaus (1993)), I include a proxy as calculated by the percentage change in total assets and also in sales revenue for a one-year term.

To correct for any additional access a firm might have in other nations which might affect financial constraints (Lins, Strickland and Zenner (1999)) it is vital to include an indication of whether a firm has listings in other countries (i.e. ADR on a U.S.

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[14] This is done annually so that firms may switch size groupings over years. The analyses are also done using average size of the eight year periods. As results are unchanged, they are omitted for brevity.

stock exchange). Including a dummy variable for **Crosslisting** that takes on a value of 1 if a firm is listed on an exchange outside of its nation of domicile and 0 otherwise. I run equation 3 for a second time, this time including the crosslisting dummy to ascertain the impact in light of any additional sources of capital.

B. Industry information

Differences in industry classification are avoided by using as industry indicator the SDC Platinum **Macro industry code** as my categorization. An industry dummy is included to account for any industry fixed effects.

C. Macroeconomic information

Based on results from such papers as Booth, Aivazian, Demirgüç-Kunt and Maksimovic (1999), Welch (2004), and Nejadmalayeri (2001) I include macroeconomic factors to capture their impact on capital structures in different countries. All macroeconomic variables, unless otherwise stated are averaged over a lagged three year period to abstract from business cycle effects.

GDP growth is the percentage growth in gross domestic product per capita is included to control for the size and development of the country.

To control for the impact of other potential sources of funds for firms I include both savings and foreign direct investment. **Savings** is the calculated as the difference between gross domestic product and consumption. **Foreign Direct Inv.**, or foreign direct investment, is included to control for the effect provided by the more stable of the two global capital flows on capital issuance. This is important given the fact that the impact of foreign direct investment is likewise beneficial for alleviating financing constraints (HML (2004)).

Controlling for the investment environment, I include **Invest, Law** and **Corruption**, which are indices reflecting the investment environment attractiveness, the level of legal development and the level of corruption (respectively) in a country by the International Country Risk Guide. Including proxies for the extent to which a country's investment environment attracts investors, that laws are developed and that the level of corruption existing in a country follows the methodology of BDM (2002) and BDL (2003), as well as many other examinations of access to finance in an international setting. Papers such as Claessens and Laeven (2003) and LLSV (1997) point out the importance of investment climate as a determinant of financial development.

The variable of interest in this study, foreign portfolio investment, is included in its net form (inflows minus outflows) for the countries in the sample. Actual levels of foreign portfolio investment scaled by the country's GDP and are reflected in the variable **FPI**. These scaled values are use to illicit predicted values of scaled net foreign portfolio capital flows based on the work of Agarwal (1997).

Instruments of the variable of interest are included due to the endogenous nature of foreign portfolio investment. The variable **Relative Interest Rates** is included given the potential demand for foreign investment in certain countries based on the return available for investment relative to other countries providing implications on both domestic economics and international business (Samak and Helmy (2000)). **Share** is included to address both timings of issuance that may occur (this is generally in more developed capital markets) or the decrease in the cost of equity and the resulting increase in the price of existing shares that theoretically occurs when market integration happens (Patro and Wald (2004); Henry (2000)). Providing an additional determinant of

international trade/investment, I include **ΔFXRate**, to provide a meaningful value indicator of capital investments (Agarwal (1997)). The variable of interest in this study, foreign portfolio investment volatility, or **FPIVol**, is included in log difference terms and scaled by foreign portfolio investment levels for the countries in the sample. These scaled values are use to illicit predicted values of scaled net foreign portfolio capital flows based on the work of Agarwal (1997). Bekaert, Harvey and Lundblad (2003) (henceforth these authors are referred to as BHL), Henry (2000), Patro and Wald (2004) and a host of other papers addressing the multi-faceted environment, as well as the impacts, of **Liberalization**. To control for these potentially confounding impacts of liberalization I include a dummy variable which takes on a 1 if it is included in the official liberalization dates of Bekaert, Harvey and Lumsdaine (2002) and/or Henry (2000) and a 0 otherwise.

Analogous to Kashyap and Stein (2000), I use proxies for the level of bank lending to test the impact of an increase/decrease in the 'money supply' (in my case foreign investment). Specifically, **Domestic Credit from banks and Domestic Credit** are utilized. To test the other theory discussed in the aforementioned paper, the 'balance sheet channel,' I use the **Liquid Reserves to Assets Ratio.** These variables serve as acceptable proxies for the theories mentioned and are used instead of firm-level data due to the lack of loan-level data available and provide a macro-level proxy of the same. **Fiscal Burden**, from Heritage Foundation is used to control for the tax implications of debt in these indirect route of foreign portfolio investment analyses. This variable takes into consideration the proven relationship between taxes and lending in a multinational setting (Desai, Foley and Hines (2004)).

The basis of nation type for the analysis, **Property Rights**, is utilized to examine the ultimate impact of the importance of the development of the same. It would seem reasonable that without developed rights and the availability of recourse, investors would not consider investing in risky firms, small firms ranking among the top of them. This variable is chosen based on literature finding the importance of security law and investor protection such as LLSV (1997),(1998) and La Porta Lopez-de-Silanes and Shleifer (2004).

D. Data Correlation

Table IF provides a correlation matrix for all of the variables used in the analysis. There are no notable significant relationships in the firm-specific data. The only variables that exhibit any correlation are some of the macro variables. The correlation of several macroeconomic variables is significant, which is generally an issue in many international studies. As a result, empirical examinations using different specifications including select macroeconomic variables and the subsequent addition of problematic variables are executed to provide robustness to the results given the potential empirical biases based on correlation between the macroeconomic independent variables.

[Insert Table IF here]

IV.   Results

A. The Capital Issuance Choice

The results of the analysis overall support the contention that foreign portfolio investment assists firms in easing their financial constraints. Looking first to LDPR nations in Table II, we see that there exists a positive impact of foreign portfolio investment. Small firms in LDPR nations see a statistically significant increase of on

average 2.76% in the probability of issuing capital for a one percent increase in foreign portfolio investment.

[Insert Table II here]

In DPR nations, the impact of FPI is also positive and significant. Small firms in nations with more developed property rights see on average a 0.922% increase for a one percent increase in FPI. This figure is not only statistically significant, but also economically large – especially when one considers the fact that increases in foreign portfolio investment in the term I examine have been as much as 17% (Ireland in 2000) for these DPR nations. It is worth mentioning that my results in these nations for foreign direct investment are counter to those found in HML (2004)[15] where the sample examined includes larger firms. The results using only small publicly-held firms finds that the relationship between foreign *direct* investment and capital issuance in DPR nations is instead one of a financial constraint increase. The marginal effect on foreign direct investment for firms in these nations seems to be significantly negative, implying that form of foreign investment either crowds out small firms by entering into this type of investment only with large firms (De Backer and Sleuwaegen (2004)), or that any small firms that do enter into these types of financial arrangements do so as a substitute of capital issuance in the public markets. Appealing to our intuition is the fact that domestic credit exhibits a negative association with capital issuance, demonstrating that bank credit is a substitution for accessing capital from the public markets. Savings also exhibits a positive significant association with capital issuance demonstrating that this is yet another source of capital which provides liquidity for a nation.

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[15] Performing the relevant analysis on the larger firms in my sample results in similar findings to that of HML (2004)

Importantly, I find that investment environment variables are influential in capital issuance. Not surprisingly, supporting the findings of such papers as LLSV (1998), the development of law and order is positively and significantly related to access to finance in DPR nations. Supporting LLSV (2000) is the positive and significant coefficient on corruption across property rights development. The marginal impact is greater in LDPR nations implying that a larger benefit may be derived in improving access to finance in these nations with a corresponding decrease in corruption.

Overall, firm-level variables, exhibit the expected marginal coefficients. Intuitively appealing is the fact that in DPR nations, variables such as leverage and cash are significantly positively related and risk and profitability are significantly negatively associated with capital issuance. In LDPR nations there are fewer significant firm-level variables, suggesting that access to capital has less to do with these characteristics and more to do with country-level influences as well as infrastructure. Leverage and cash are exceptions to this, exhibiting a significant positive and negative relationship with capital issuance respectively.

These impacts, taken collectively imply that foreign portfolio investment reaches small firms in both DPR and LDPR nations directly through the capital market, effectively easing the financing constraints of firms who face difficulties accessing finance[16].

B. The Debt/Equity Choice

Examining the second step in the capital issuance process reveals many of the previously unearthed contentions in empirical corporate finance literature. Indeed, I find

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[16] These results are robust to clustering around industries. These results are left out for the sake of brevity.

that in general, variables such as cash and leverage increase the probability of equity issuance, the former likely due to its evidence of liquidity and the latter supporting the contentions of capital structure theory. Variables such as risk and asset tangibility decrease the probability of equity issuance the former supported by theory based on information asymmetry (see, for example, Barclay and Smith (1995)) and the latter since this proxies a sort of collateral, against which debt may be waged. As these variables serve to provide control for extant literature and exhibit expected relationships with the dependent variable, they are left out of the tables for brevity.

With regard to the variable of interest, Table III demonstrates that foreign portfolio investment, in general, does not seem to assist small firms to increase their probability of issuing equity. In fact, the probability of small firms in DPR nations is virtually unchanged with a 1% increase in foreign portfolio investment. This is not all that surprising when considering the inability of small firms to access equity capital in general. Foreign investors would be no more likely to extend equity capital to informationally opaque firms than domestic investors, especially since the vast majority of the additional investment is in the form of debt (Henderson, Jegadeesh and Weisbach (2004)).

[Insert Table III here]

Keeping in mind the significant impact of foreign portfolio investment on capital issuance for small firms in both DPR and LDPR nations, these results reflect the actual breakdown of the portfolio investments, i.e. debt versus equity. Although foreign portfolio investment assists small firms in accessing finance, equity capital seems to be confined to larger firms. This further supports the contention that small firms 'take what

they can get when they can get it' since these debt-laden firms would most benefit from obtaining equity. It is worth noting that evidence of an international extension of Korajczyk and Levy (2003) is found in the coefficient on GDP growth in DPR nations. This negative and significant relationship with equity issuance supports their findings - specifically that constrained firms issue leverage procyclically.

C.   The Impact on Credit Availability

Statistically significant evidence consistent with an enhanced liquidity of banks is found in DPR nations (see Table IV). The amount of domestic credit however, both in terms of banks and all financial institutions, is relatively unaffected by FPI in these nations. Collectively, this impact demonstrates mixed results about extending the bank lending channel of monetary transmission (Kashyap and Stein (2000)) to money shocks generically. The increase in the liquidity of bank balance sheets could imply that banks may be able to 'risk shift' their portfolio to include more risky holdings, potentially including more loans to small firms. This effect combined with the results of Tables II and III wherein small firms in DPR nations are more able to access capital in general but less able to access equity capital given they are able to issue, suggests that these firms are able to obtain public debt from the capital markets and perhaps additional sources of bank credit since the banks that are more able to lend credit (given the very modest enhancement in credit levels) are the very banks lending to small banks (Kashyap and Stein (2000)). The impact in LDPR nations is almost a mirror image to that in DPR nations - credit levels increase insignificantly while liquidity of bank balance sheets seem to decrease, also insignificantly. These results are not surprising once we consider the volatility of these capital flows and the less supportive property rights and investor

protection in these nations. It appears that the same investment environment that limits the amount of foreign portfolio investment that enters a nation forbids any benefits that foreign portfolio investment capital flows might offer through the banking channel. Additionally, banks in these nations are often very closed to outside investors and corruption within this channel is omnipresent.

[Insert Table IV here]

Results at the firm level suggest that short-term and total leverage significantly decrease with an increase in FPI in DPR nations. This supports the substitution effect and lends support to the notion that with enhanced access to finance, small firms would not be as dependent on bank lending. Results in LDPR nations put forward a decrease in short-term debt but it is statistically insignificant, suggesting that these firms remain more dependent on bank credit. The long-term debt, however, exhibits a significantly positive marginal effect whose magnitude is significant as well. This likely complements the results in Tables II and III, which demonstrate that increases in FPI enhance access to finance through increased access to public debt instruments.

Collectively these results imply that foreign portfolio investment mainly flows through the capital markets. Any impact through the indirect route of bank lending is very modest so that the results are seen mainly insignificantly.

D. Growth

Table V demonstrates the results of the analysis of foreign portfolio investment and firm growth. Not surprisingly, factors such as cash stock, profitability and GDP growth play an important positive role in firm growth. Leverage seems to enhance firm

growth in more developed nations only implying that debt in firm capital structures can be utilized as a tool for growth only in relatively stable environments.

[Insert Table V here]

The growth of small firms is found to be significantly positively associated with FPI in DPR nations only, as demonstrated by a statistically significant marginal coefficient of 1.297% for these firms. It is important to remember that the cumulative effect given a substantial increase in FPI that can be achieved in these nations implies that foreign portfolio investment may provide a very real benefit for small firms in DPR nations with regard to growth. A positive and significant coefficient on leverage in DPR nations (not shown) offers a nice explanation as to how this growth is achieved when coupled with the increased probability that small firms will issue debt should they issue capital. Small firms in LDPR nations also see a significant increase in growth of total assets with a 1% increase in foreign portfolio investment of on average 2.56%.

Growth enhancement in terms of sales revenue is only apparent for firms in DPR nations. Small firms in developed property rights nations see an average 1.501% increase with a 1% increase in sales revenue growth. Results for LDPR nations with regard to sales revenue growth compliment an IMF study that finds that foreign portfolio investment has not benefited growth at the country level in developing countries.   Some might argue that sales revenue is the more meaningful measure of growth since growth in total assets in not necessarily value creation (e.g. in the case of "empire building").

The significantly enhanced growth rates in terms of both total assets and sales revenue for firms in DPR nations are important in light of the controversy around foreign portfolio investment and its short-term nature. Much of the literature demonizing this

tool of globalization has implied that the volatility implicit in this form of investment must ultimately be harmful for productivity. At the firm level, this analysis casts doubt on this contention given a sufficient level of property rights is present. This provides hope for small firms and should motivate top officials to increase the level of property rights in their domicile nations and to further encourage firm-level improvements in corporate governance/disclosure.

V. Robustness

A. Financial Constraint Definition

To provide an additional test of the impact of foreign portfolio investment on the financial constraints of *all* constrained firms, I need to first determine the external financing each firm needs. BDM (2002) finds that firms seem to employ more long-term capital for growth in market-based environments. It is from this paper that I take my methodology for discerning financial need, or external funds necessary. They derive their dependent variable from the "percentage of sales" approach to financial planning[17], calculating the external funds necessary. I use a slightly different version of the same equation to estimate my need for external financing. Based on these results, I further include proxies for both market and bank development. The altered 'external funds necessary' (or EFN) is calculated as follows:

$$EFN_t \quad = \quad (A_t/S_t)(S_t - S_{t-1}) - (L_t/S_t)\ (S_t - S_{t-1}) - M_t\ (S_t)(RR) \qquad (8)$$

where A_t is the total assets of the firm in time t, S_{t-1} and S_t are the sales of the firm in times t-1 and t respectively, L_t is the liabilities of the firm in time t, M_t is the profit

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[17] Demirgüç-Kunt and Maksimovic (1998) also uses this methodology.

margin of the firm as defined by net income divided by sales for time t, RR is the retention ratio for the firm. As noted by BDM (2002) several simplifying assumptions are made in order for this methodology to be implemented. First, both the asset utilization (A/S) and the profit margin of the firm must remain constant per unit of sale. Further, the use of the formula to discern additional funds necessary depends on true values of assets being reported (relative to their depreciable basis).

I adopt the Rajan and Zingales approach (Rajan and Zingales (1998)) to obtain unconstrained growth rates for the sample since using firm-specific information would imply that the resulting predicted growth rates would be optimal[18]. The growth rates of the relatively unconstrained firms in the US are mapped by both industry and size to all other countries and these observations are subsequently dropped from the analysis[19]. Beyond industry matching, firms are matched by size due to the fact that small firms in countries with even the most developed property rights have difficulty accessing capital (BDM (2005); Koraczjyk and Levy (2003)). This methodology avoids any downward bias based on access to capital and any bias for analysis on US firms after using these firms to obtain the unconstrained growth rates.

Dropping those firm-year observations where EFN is negative and testing the primary hypothesis of the paper once again (H1) yields very similar results[20] with regard to sign. Magnitude of the impact seems to be enhanced considerably however for firms in DPR nations. This would suggest that there were firms in the previous sample who perhaps did not need financing, diluting the effect such that magnitude was decreased.

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[18] Rajan and Zingales examine inter-country differences between industries based on both macro and firm-specific information
[19] This results in 52, 276 observations being dropped.

Small firms in LDPR nations unfortunately do not see the same enhancement, suggesting that relative to their larger counterparts, these firms do not benefit as much. Table VI Panel A shows these results.

[Insert Table VI here]

B. Measurement of FPI Flows

Inasmuch as the portfolio investment cash flows given in this analysis are net (i.e. cash inflows minus cash outflows), an increase in foreign portfolio investment does not necessarily imply an increase in domestic investment. To infer when foreign portfolio investment *inflows* increase, I test sub periods of the data. IMF's Coordinated Portfolio Investment Survey (2001) reports the previously mentioned trend toward investment in emerging markets during the 90s and later the mass exodus of foreign investment capital flows changing the percent invested in developing nations from 65% to 9% (see figure 4 and 5). Foreign portfolio investment continues to grow but thus far this decade, it appears this increase in investment occurs in developed nations. As such, I provide tests on time subsets of data for different market capitalization groups. For less developed nations, I test equation (2) and (3) using the years 1996-1999. For more developed firms I test the same equations over the term 2000-2003. In so doing, the results remain. Not surprisingly, they are even enhanced by this investment trend horizon for LDPR nations. This could imply that in these good times for hot money, small firms in these nations have a fighting chance to access capital. Results may be seen in Table VI Panel B.

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[20] Only approximately 25% firms dropped using this methodology issued at some point during this eight-year term, compared with approximately 44% of firms with a positive EFN.

C. Interactions with Investment Environment Variables

Examining the effect interactive effect of FPI with investment environment variables gives us a better idea of the cumulative effect of FPI on small firm access to capital. Examining the implications of FPI interacted with these variables on the entire dataset (across firm size) offers further insight that investment environment is important. This should be fairly intuitive given the results of the vast literature by such authors as LLSV, Bekaert and Harvey and Wurgler. The impact of FPI including investment, a variable that refers to a governments attitude toward foreign investment, is one that implies decreasing margin to return. For those governments at the bottom of the index (invest=0), the marginal impact of FPI on access to capital is large – 1% for each percent increase in FPI. For those governments already open to FPI, the marginal effect of becoming more open is less. Those governments with that investment index equal to twelve, for example, would see only a 0.766% marginal benefit of FPI on access to capital. The impact of FPI given law and order is also important. Although its magnitude is less than that of investment, it possesses increasing returns to scale. Firms in nations where this index is low (law=1) can expect a 0.327% increase in access to capital with a 1% increase in FPI. Those nations where law and order is more developed (e.g. law=6) will see a more impressive 0.707% increase. Lastly, the impact of FPI given corruption seems to be quite influential. The cumulative impact suggests that the impact of FPI in the presence of this variable is pivotal. For example, looking to those nations where corruption is rampant, the cumulative impact of FPI is decidedly negative for firm access to capital - (-)4.736%. In those nations where corruption is well under control (e.g. corruption=6), the impact is equally large with regard to magnitude but this time

positive – (+)4.394%. These results suggest that although all three investment environment variables are important, corruption levels within a nation can determine whether the marginal impact of FPI is positive or not. Results may be found in Table VII.

[Insert Table VII here]

D. Alternate Definitions

Performing sensitivity analysis around definitions of key variables such as FPI and firm size, as well as altering sample country inclusion definition provides some robustness for the results. To use another definition for foreign portfolio investment, I scale the net flow by gross private capital flows into a nation instead of the previous scale – gross domestic product. This is the FPI variable utilized in HML (2004). Instead of defining size annually, I instead use average size over the term examined. To alter sample country inclusion specifications, I drop countries that may bias results due to changes in capital control policy or specific laws which may bias results such as in China, where only B shares were offered on the market for foreign investors during this term and foreign banking was not possible before 2002. These countries include China, Malaysia, Hong Kong, Korea and Chile[21]. Performing these three specifications changes things only slightly.

The utilization of the definition of FPI from HML (2004), scaling by total private global flows instead of GDP, proffers the main difference from previous results. This point is brought out earlier in the methodology section of the paper and supports the

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[21] Malaysia had capital controls until 10/1/1998 and South Korea was liberalized in 1998, which is two years after the first year of the examination period. Chile initiated the encaje, which is legislation that may have had an impact on FPI levels and Hong Kong did not have FPI levels for part of the sample period.

reconciliation of the differences in results in this work and those of HML (2004). Overall, results remain similar and can be found in Table VIII.

[Insert Table VIII here]

VI. Chapter Conclusions

Small firms play a distinctive and influential role in both the present and the future economic situations in which nations find themselves. Financial constraints for these firms are exacerbated by both firm- and macro-level influences, and as such, additional sources of investment as potential additions to accessible finance are worthy of investigation. Examining the importance of foreign portfolio investment in the capital issuance process, I find that foreign portfolio investment enhances the accessibility of investment capital through financial markets for small firms in countries across property rights development, but through the bank lending channel only in those countries where property rights are more developed. Further, the enhanced access to capital for small firms only leads to significant value-enhancing growth in those nations that have more developed property rights. The fact that small firms in nations with more developed property rights can look forward to enhanced firm-level growth with increases in foreign portfolio investment underscores the importance of investment environment fundamentals. Improvements in a country's foreign investment environment serve to increase the probability of financial constraint alleviation, for small firms in less developed nations.

The positive influence of foreign portfolio investment on small firm access to capital supports the ideals of those who strive for optimal policy reformation in those nations who do not support foreign investment and whose markets are excessively

volatile or underdeveloped with regard to investor property rights. Easing foreign portfolio investment restrictions on capital flows; stabilizing these investment cash inflows and improving the treatment of foreign companies and investors could have a very real influence on the longevity of the small firm.

Chapter 2: Taking the Bad with the Good: Volatility of Foreign Portfolio Investment and Financial Constraints of Small Firms

I. Motivation

A. The Benefits of Market Integration

Research done at the macro level shows that liberalization of investment regulations reduces the cost of capital in a country through capital market integration, increases capital flows such as foreign portfolio investment into the host country (Bekaert and Harvey (2003)), increases stock returns during the process (Patro and Wald (2004)) increases the liquidity and size of markets (Levine and Zervos (1996)), and leads to an increase in the real economic growth over a medium-term (BHL (2003)). Focusing on the stock market impacts mentioned, the supply-side of capital increases, and the increased depth of financial markets caused by the *level* of foreign portfolio investment flowing into a financial market potentially eases the financial constraint of firms (Laeven (2003); Chapter 1)[22], improves the allocation of capital (Wurgler (2000)) and importantly is often accompanied by improvements in transparency of accounting reporting and corporate governance (Feldman and Kumar (1995)).

Importantly, the desire of countries, and the companies within them[23], to "pull"[24] foreign portfolio investment to their economies motivates improvements in such things as

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[22] See also Chari and Henry (2004) who find that the growth rate of a firm's capital stock exceeds that of its pre-liberalization rate.

[23] A McKinsey & Company Global Investor Opinion Survey (2002) finds that investors are prepared to pay a premium for companies exhibiting enhanced corporate governance standards. This premium is on

corporate governance (Shinn (2000)) and investor protection/property rights (Bekaert and Harvey (2003)). This in turn leads to increased investment (Dahlquist, Pinkowitz, Stulz and Williamson (2002); Claessens and Laeven (2003))[25] and a cycle of investment environment improvement ensues. This cycle is longer-term in nature and is not likely to stop suddenly based on changes in the level of foreign investment.

B. The Costs of Market Integration

The impacts of the influx of capital flows and capital market integration that occur in such events as liberalization, however, are not necessarily all good. Bekaert and Harvey point out in their liberalization literature survey that liberalization, and the resulting increase in investment capital, may also have negative impacts. These negative impacts are vastly due to the short-term nature of this capital flow - its *volatility,* and the potential to cause investor unease or panic. This panic can either be a result of, or caused by, crisis within a country. In contrast to the capital flow level, the variance of the flow, sometimes referred to as its instability, causes pressures on the money supply, exchange rates and stock market volatility[26][27] of its host nations, making keeping tight reigns on economic policy difficult for governments and at times arguably increasing a country's propensity for crisis or exacerbating the impact of an existing crisis. Henry (2003) points out that crises such as those in Asia, Russia and Latin America have challenged the merit of capital-account liberalization. Henry (2000) questions the permanency of the increase

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average 12-14% in North America, and Western Europe, 20-25% in Asia and Latin American and over 30% in Eastern Europe and Africa.

[24] See, for example, Calvo, Leiderman and Reinhart (1993); Claessens (1995); Claessens, Dooley and Warner (1995)

[25] The opposite effect is also true – see Aggarwall, Klapper and Wysocki (2003) for characteristics investors look for in foreign investment countries.

[26] See also Patro and Wald (2004).

[27] Bekaert, Harvey and Lundblad (2004) however contends that this actually that the data do not support this.

in capital, suggesting that the increase in liquidity may only be temporary. Henry and Lorentzen (2003) differentiate between liberalization with regard to equity and debt, stating the latter can be dangerous since it leads to a reliance on debt in the capital structure. This is provocative given the fact that debt comprises about 90% of new capital issued internationally around the world (Henderson, Jegadeesh and Weisbach (2004)). Demirgüç-Kunt and Detragiache (1998) find that banking crises are more likely to occur in liberalized economies. This is relevant to small firm access to finance not only due to the frequency of twin crises, but also because crises in the banking sector could devastate small firms due to the fact that bank loans are the mainstay of their financing.

Given that small firms are so very sensitive to macroeconomic conditions (BDM (2002); Tewari and Goebel (2002)), increased volatility could diminish any benefit achieved through the increased supply of investment capital. Indeed, Samak and Helmy (2000) find in their examination of foreign portfolio equity investment in Egypt that maximizing the ultimate value of this form of foreign investment is dependent upon macroeconomic stability and a strong existing market infrastructure. To complicate matters further, the areas that seem to have the most to gain from global investment capital flows such as foreign portfolio investment seem to enjoy these capital flows only accompanied by potentially damaging capital flow volatility (see figure 4 and 5).

C. Weighing the Impacts of the Capital Flows and its Volatility

Whether or not the potentially damaging aspect of FPI, volatility, overpowers the benefits derived from the actual capital flow itself (e.g. increased liquidity, improved allocation of capital, improved corporate governance/investor protection/transparency)

which could ultimately reverse the enhanced small firm access to capital, depends upon the impact of FPI volatility on these benefits. Investment environment improvements such as corporate governance, investor protection and/or transparency are put into effect because of capital inflow volatility and are supported by the company trying to obtain financing, government officials trying to attract foreign investment, foreign investors with a potential stake in their investment[28] and official aid organizations such as the World Bank with the intent to decrease the volatility of capital flows. Examples of government legislation requiring these improvements in disclosure/transparency as well as improved corporate governance in less developed nations are increasing[29]. These laws seeking to improve corporate governance and indirectly investor protection also seek to stabilize capital inflows, making it less likely to be positively correlated with FPI volatility or crisis. Improvements of corporate governance at the firm level, induced by competitive forces for capital – both domestic and foreign - are not likely to be dropped by firms simply because their domicile nation is in crisis or that FPI becomes more volatile perhaps even leaving the country for a year or two. In fact, this might induce firms to improve corporate governance measures such as board of director composition or disclosure even further, or at least to maintain the improvements already made to attract future foreign capital and to maintain or establish better access to capital domestically. The benefits of FPI may actually serve to ultimately decrease a country's dependence on foreign investment by improving the investment environment enough to stabilize domestic investment which will eventually decrease the damaging impacts of the

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[28] See Khanna and Palepu (1999).
[29] Korea has implemented a law requiring domestic companies to produce quarterly results. China is switching from "cash" to "accrual" accounting. Brazil has just legally limited the number of non-voting

volatility of these capital flows. Assuming this is true, any potentially damaging effects

of FPI could be attributed to "short run pain for long run gain[30]."

Although liquidity is more short-term in nature and would likely be impacted by

volatility in the level of foreign portfolio investment, the positive impact of FPI would

only be nullified if market liquidity reverses in the presence of FPI volatility. This does

not seem to be the case. The liquidity of markets does not systematically decrease with

FPI volatility, as is seen in figure 6. In fact, the correlation between the two when using

total value of listed securities traded as liquidity is a significant *positive* 0.5051[31]. This

correlation as well as studies that foreign investors do not destabilize markets any more

than local investors (Dvorak (2001)) challenges the notion that market liquidity drops in

volatile times (e.g. the flight of foreign capital)[32]. If the mechanisms by which the

majority of the benefits of FPI with regard to small firm access to capital (see Chapter 1)

is enhanced market liquidity, and volatility is significantly positively correlated with

market liquidity in countries considered "investment grade," as defined as periods when

confidence in a country's tranquility is higher than the sample median for that time

period, it could be posited that FPI volatility does not destroy the enhanced access to

capital small firms achieve coincidental to FPI flows.

Given the lack of compelling evidence that FPI volatility damages or neutralizes

the positive benefits of FPI along with the anecdotal evidence that liquidity may not be

decreasing with volatility in all times, I contend that the volatility of FPI, as measured by

shares a company can issue. Mexico has created a law which precludes holding companies from gaining a
controlling share of a company to force minority shareholders to sell at below market value.
[30] See Kaminsky and Schmukler (2002).
[31] Using percent of market traded instead of total value traded yields a significant correlation of 0.3902.
[32] See also Borensztein and Gelos (2001) and Karolyi (1999), who find that the herding of investors, which
is often cited as the cause of the volatility of this capital flow, is not significantly different in crisis versus
noncrisis periods.

the logarithm of the variance of FPI net flows scaled by a proxy for the size of an

economy, gross domestic product (GDP), for the period t-1 through t-3, does not

significantly decrease the access to finance of small firms in all times. In periods when

foreign institutional investors have more confidence that the country is relatively immune

to imminent crisis (i.e. lower country risk), waves of foreign portfolio investment should

not hinder small firm access to finance. Tested empirically this becomes:

> *H1) Controlling for the level of foreign portfolio investment, the volatility in*
> *foreign portfolio investment (scaled by the size of the host county) does not*
> *significantly impede small firm access to capital, as measured by the probability*
> *of capital issuance, in times of increased country confidence, as measured by an*
> *increase in the institutional investor rating.*

It is worth noting here the importance of the inclusion of the FPI *level* so that the

impact of the volatility of the flow can be disentangled from the level itself. Including

this variable should enable the true effect of the *instability* of this capital flow to be

uncovered. Also relevant is the fact that volatility is scaled by gross domestic product.

This is to address the fact that large developed countries such as the United States

actually have a larger FPI volatility than smaller countries such as Peru, yet they are able

to absorb such things often without negative implications.

Bekaert and Harvey, Henry (2000) and Henry and Lorentzen (2003), papers

described earlier in the motivation, point out the potentially negative attributes of capital

flows such as increased pressure on money supply, exchange rates and market volatility,

and mainly base these contentions on the volatility inherent in this short-term capital

flow. Given the potentially fickle nature of this capital flow coupled with the sensitivity

of small firms to macroeconomic volatility (BDM (2005)), would an increase in FPI

volatility impact the growth of small firms? Even if H1 can not be disproved, and

volatility increases the ability of these firms to raise capital in periods of enhanced

country creditworthiness/low propensity for crisis, is it ever good for small firm growth? Given the sensitive nature of small firms to macroeconomic factors, as well as the negative impact of macroeconomic volatility on small firm access to capital, it is likely that volatility has a negative impact on the growth of these firms.

>   *H2) Controlling for the level of foreign portfolio investment, the volatility of foreign portfolio investment (scaled by gross domestic product) hinders the growth of small firms as measured by the log difference in both total assets and sales revenue.*

II.   Methodology

A.   *Volatility in Foreign Investment*

To test whether the volatility of foreign portfolio investment, as calculated as the logarithm of the variance of foreign portfolio investment over years t-1 through t-3 is damaging to small firm access to capital, I divide my sample of 44 countries into subsets based on the creditworthiness of the country-year – "investment grade" for those country-years more than the annual sample median Institutional Investor Rating and "noninvestment grade" for those country-years less than the annual sample median. This is important given the fact that "shifts in international portfolio composition usually correspond to changes in perceptions of country solvency by international investors rather than to variations in underlying asset value (FitzGerald (1999)). It is also important given the responsibility that investors are given for their role in crises. The quote at the beginning of this essay from the Federal Reserve Bank in San Francisco points to the popular perception that investor panic causes crises - not asset value – thus investor perception of risk is an important factor in the potential downside of FPI. Inasmuch as sovereign risk is determined to be a leading indicator of crisis (Kaminsky, Lizondo and Reinhart (1998) – henceforth these authors will be referred to as KLR), but

not a significant predictor of FPI values (Agarwal (1997)), concerns of interdependence between these categories and FPI volatility should be allayed. Estimating the impact of sustained volatility on small firm access to finance, as measured by the probability of capital issuance (y=1 where firm i issues capital in time t and equals zero otherwise), I perform the following regression.

$$Prob(y=1)_{j,t} = \beta_0 + \beta_1 FPIVol_{j,t-1} + \beta_2 FPI_{j,t-1} + \beta_3 X_{i,t-1} + \beta_4 Y_{j,t-1} + I_i + t + \varepsilon \qquad (10)$$

where FPIVol is the predicted level of FPI volatility from the first-stage in the instrumental variable probit regression (see equation (11) for the first stage) and is calculated as the variance of foreign portfolio investment scaled by gross domestic product (GDP), FPI is the average level of foreign portfolio investment scaled by GDP in the period t-1 through t-3 (parallel to the volatility term), X is a vector of lagged firm-specific variables such as cash flow, debt/asset level, profitability, risk, growth, external financing necessary, asset tangibility and crosslisting. These variables control for occurrences wherein firms would be more likely to issue (see for example, Korajczyk, and Levy (2003), BDM (2002), Baker and Wurgler (2002)). Y is a vector of lagged alternate sources of capital such as foreign direct investment, foreign portfolio investment, domestic credit and savings. FPI, in particular, is added to distinguish between investment level/trend[33]. Macroeconomic variables are averaged over the years t-1 through t-3 to in order to parallel the volatility term and to abstract from business cycles. This methodology is often used in cross-country analyses to smooth out annual fluctuations that can otherwise confound results (see BDL (2003); Rousseau and Wachtel

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[33] Any concerns that interdependence between foreign portfolio investment flows and FPI volatility may drive results should be resolved by the fact that pairwise correlation of these two is once again below 10% and insignificant.

(2002)[34]). I is a vector of industry dummies to control for industry effects and t represents time dummies, which control for any time effect in the panel. A description of the firm-, industry- and country-specific variables is in the data section as well as in the appendices[35]. The instrumental probit methodology used implements frequency weights to avoid data cloning issues and utilizes a bootstrapping methodology, which uses randomly chosen subsamples[36] of the dataset with replacement to avoid dependence on assumption of the normality of distribution or the absence of stochastic influences on the data.

According to Agarwal (1997), the significant determinants of foreign portfolio investment are inflation, the real exchange rate, market capitalization and some proxy for economic activity. Inasmuch as the actual capital flows are suffering from potential endogeneity issues, volatility of these capital flows will likely suffer the same. Supporting this contention is the statistically significant correlation between FPI volatility and other macroeconomic variables utilized in the analysis. Since endogeneity of the volatility of foreign portfolio investment is a concern, I utilize an instrumental variable approach that in the first stage estimates FPI volatility and in a second stage estimates the regression in equation (10). Robust standard errors are adjusted to allow for within firm correlation of observations and a two-stage approach. I regress foreign portfolio investment instability (I define volatility in absolute, relative log difference terms, as well as the change in volatility to ensure robustness) on relevant variables, such as corruption based on the relevance found in Chapter 1, relative interest rates and liquidity, based on

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[34] See also Demirgüç-Kunt, Laeven and Maksimovic (2003).
[35] Tobin's Q is not included in my analysis due to the scarcity and lack of consistency of information on market pricing in both less and more developed nations around the world.
[36] N=50 is used for bootstrap replication.

work from Bekaert and Harvey (2003) and country sovereign risk as well as foreign exchange rate changes, based on work from KLR (1998) and Reinhart, Rogoff and Savastano (2003)[37]. The empirical model is as follows:

$$FPIVol_{j,t} = \gamma_0 + \gamma_1 \Delta FXRate_{j,t} + \gamma_2 Corr_{j,t} + \gamma_3 RelIR_{j,t} + \gamma_4 \Delta TVT_{j,t} + \gamma_5 \Delta IIR_{j,t} + t + \varepsilon \qquad (11)$$

Performing the two-stage regression, I examine the impact of endogenously-determined FPI volatility on the probability of a firm issuing public capital. Controlling for other influences in capital issuance, the relationship that exists between a finite change in volatility (increase or decrease) and the probability of capital issuance will offer support or help to reject the hypothesis, H1. I expect this coefficient, β_1, in equation (10) to be positive and significant for small firms in the investment grade sample. Small firms in the noninvestment grade sample will likely exhibit a negative association with capital issuance due to the negative relationship between liquidity and volatility in these times and in regressions that don't delineate between increased or decreased country risk.

B. Growth

To examine whether the volatility of foreign portfolio investment ultimately hinders firm growth (H2), I utilize the growth rates of these firms (in total assets and in sales revenue) and whether that impact is disproportionate by regressing the following:

$$Growth_{it} = \delta_0 + \delta_1 FPIVol_{j,t-1} + \delta_2 FPI_{j,t-1} + \delta_3 X_{i,t-1} + \delta_4 Y_{j,t-1} + I_i + t + \varepsilon \qquad (12)$$

where $Growth_{i,t}$ is firm i's growth rate attained from year t through year t+1. All other variables are as defined in equation (10). If foreign portfolio investment volatility hinders small firm growth, then the coefficient of FPIVol, δ_1, should be negative,

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[37] All instruments are significant at the 1% level in this stage.

reflecting in decrease in the growth rate with an increase in the volatility of foreign portfolio investment volatility.

III.   Additional Data

The collection and contents of the dataset utilized for this dissertation are outlined in Section III of Chapter 1 of this work. Additional data necessary for this chapter are listed in this Chapter/Section. Descriptions of all variables, for the cumulative work are available in the appendix.

The liquidity of capital markets, proxied by **Total Value Traded**, is included to instrument FPI volatility. This is due to the negative effect reduced market liquidity has on the confidence of foreign investors (Aggarwall, Klapper and Wysocki (2003)).

The variable of interest in this study, foreign portfolio investment volatility, or **FPIVol**, is included in log difference terms and scaled by foreign portfolio investment levels for the countries in the sample. These scaled values are use to illicit predicted values of scaled net foreign portfolio capital flows based on the work of Agarwal (1997).

Investment Grade and **Noninvestment Grade** are variables created to depict the environment within which investors find themselves. This classification is created based on a rating of the creditworthiness of the country – the **Institutional Investor Rating**. This rating is used by Reinhart, Rogoff and Savastano (2003) to infer the general impression of a country's solvency with regard to foreign debt and has implications on how volatile short-term investment may be as a result of confidence (or the lack thereof) in a nation's proximity to crisis. The relevance of institutional investor's impression of the solvency of country sovereign debt has also been mentioned in Samak and Helmy (2000) as an important factor in the "pull" of foreign portfolio investment to a country.

Lastly, I include **Propensity for Crisis** in the robustness section of this chapter. This is used as an alternative and perhaps more direct measure of a country's proximity to crisis based on the works of Kaminsky (2003) and KLR (1998) which examines the timing and leading indicators of crises respectively.

IV.   Results

A. Small Firm Access to Capital

The volatility of foreign portfolio investment could theoretically pose a threat to existing investors via security values and the firms via asset values if and when capital leaves the country very rapidly in times when investor confidence is quite low, for example, in crisis periods. This volatility, however, does not have to translate into a decreased level of access to finance if the short-term effects such as a decrease in liquidity does not outweigh the longer-term benefits of foreign portfolio investment that make this enhanced level of financing access possible, such as strides to improve the investment environment. In support of that logic, Table IX displays an economically insignificant negative coefficient for small firms in all three samples – on average of 0.012 – that is a 0.012% decrease for a 1% increase in the level of volatility. Even in a multiplicative sense given probable swings in the level of volatility, this is a very small number. Checking the coefficient on the control for the *level* in FPI, it is further apparent that the volatility coefficient (marginal effect) is not large enough to completely reverse the benefits of FPI. In fact, it hinders it minimally when defining volatility in this manner. Firm access to capital in the noninvestment grade sample is not even statistically significant, suggesting that volatility in these country-years is absorbed and goes relatively unnoticed.

[Insert Table IX here]

Using a relative measure of volatility as defined as the level of volatility relative to global volatility provides similar results. Only the magnitude of the marginal effects changes, increasing to an average of 0.065, implying that it is the relative, rather than the absolute, level of volatility that matters with regard to the level of impact. Having said that, the noninvestment grade sample (specification 3) is insignificant – this was not the case when using a straight-forward volatility definition. This is perhaps due to the fact that when a country-year is deemed noninvestment grade, its volatility relative to other country-years is not as important as the fact that it is currently considered a bad investment.

Looking to the change in volatility, it becomes obvious that changes in the variance of FPI net flows inhibits access to capital in general. Both the economic and statistical significance of this negative association of FPI volatility perhaps speaks more to proximity to periods of crises and the confidence of not only foreign investors but also to domestic investors. Increases in the level of variance suggest a much more volatile macroeconomic environment, one that would decrease the pool of "investible" firms by causing a flight to quality by investors to safe investments. The marginal effect of the change in volatility on access to public finance is negative and significant across the board for this definition of volatility. What's more, the economic significance has increased to on average 0.127, implying a more significant effect once one considered the potential multiplicative effect of this coefficient given swings in FPI volatility.

Alternate sources of capital demonstrate expected relationships with capital issuance (access to public finance). Foreign direct investment has a positive influence on

capital issuance as does national savings. Domestic credit, a substitute for public capital issuance, is negative. Interestingly, the marginal effect of GDP growth demonstrations that firms issue counter-cyclically, when they are more likely to need external financing – in the investment grade sample. Noninvestment grade, and to a certain extent, the whole sample, show a positive relationship with GDP growth and access to finance which could imply some type of capital rationing wherein firms only receive access to capital in better times. Comprehensive results may be found in Table IX.

B. FPI Volatility and Firm Growth

Importantly, the results in Table X show that volatility may indeed be bad for small firm growth but it seems as if it doesn't always have to be. Perhaps surprisingly, we see that growth in the base specification ("all" times) for growth in total assets is not significantly negatively associated with an increase in FPI volatility and growth in sales revenue actually reflects a positive significant association with the same. This is good news for proponents of capital market integration since it implies that FPI instability does not have to hinder firm growth, which in turn implies that it may not derail the economic growth that BHL (2003) suggest might ensue with this integration. Corresponding nicely with the results in Table IX is the fact that growth in the investment grade sample, growth in sales revenue is positively impacted by FPI volatility. However, it is not statistically significant. The noninvestment grade sample seems to be the only specification where FPI volatility exhibits a significantly negative association with growth. This impact is not surprising given the results for these firms in Table IX demonstrating a decreased probability of being able to access public financing in two of the three volatility definitions, coupled with the typically enhanced risk aversion of investors in these times.

The extent of this marginal effect relative to the benefits of FPI seems to be more significant than the effect on access to finance. For growth in total assets in particular these marginal effects, although insignificant, demonstrate a potentially threatening force for these small firms. Growth in sales revenue seems to offer a more pronounced effect, suggesting that this form of growth is more immediately reactive to cash flow, but reflects a much less threatening effect, offering some support to the contention that FPI benefits are not neutralized in the presence of its volatility. Overall, these results should help to allay fears that volatility hinders these firms, at least in the short run.

[Insert Table X here]

V. Robustness

A. Alternate Definitions and Sample

Performing sensitivity analysis around definitions of key variables such as FPI, as well as altering sample country inclusion definition provides some robustness for the results. To use another definition for foreign portfolio investment, I scale the net flow by gross private capital flows into a nation instead of the previous scale – gross domestic product – and calculate the logarithm of the variance of the term t-1 through t-3 based on this definition. This definition of FPI is utilized in HML (2004). I also define FPI scaling by market capitalization. Lastly, to alter sample country inclusion specifications, I drop countries that may bias results due to changes in capital control policy or specific laws which may bias results such as in China, where only B shares were offered on the market for foreign investors during this term and foreign banking was not possible before

2002.   These countries include China, Malaysia, Hong Kong, Korea and Chile[38].

Performing these three specifications leaves the vast majority of the results in place.   The

magnitude of the marginal effects is slightly altered but overall, results remain similar

and can be found in Table XI.

[Insert Table XI here]

B. Proximity to Crisis

To address concerns that the volatility measure utilized does not capture fully the

downside of FPI, I reexamine the data using a measure which captures a country's

proximity to crisis perhaps more directly.   Using the country-years depicted in Kaminsky

(2003) as currency crisis years and BDL (2002) and Demirgüç-Kunt and Detragiache

(2005) for banking crisis years, I create a dummy variable which takes on a value of one

if a country is in either a currency or a banking crisis and zero otherwise.   The inclusion

of the banking crisis variable is due to the frequency of banking crises and currency

crises to occur simultaneously – the so-called "twin crises"   (Kaminsky and Reinhart

(1999); Zhu (2003)).   Using leading indicators of crises from Kaminsky, Lizonda and

Reinhart (1998), I regress the following:

$$Prob\ (y=1)_{j,t} = \omega_0 + \omega_1 FXRate_{j,t-1} + \omega_2 \Delta IIR_{j,t-1} + \omega_3 NetCapAcct_{j,t-1} +$$
$$\omega_4 Reserves_{j,t-1} + \breve{\upsilon} \qquad (13)$$

where FXRate is the real exchange rate, ΔIIR is change in the institutional investors'

Country Sovereign risk rating, NetCapAcct is the net capital account level, and Reserves

is a country's amount of reserves.   I perform this cross-sectional probit regression both in

and out-of sample.

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[38] South Korea was liberalized in 1998, which is two years after the first year of the examination period.
Chile initiated the encaje, which is legislation that may have had an impact on FPI levels and Hong Kong

B.1 In-sample

Looking at the in-sample regression first, the following regression is run.

$$Prob(y=1)_{j,t} = \psi_0 + \psi_1 FPI_{j,t-1} + \psi_2 CrisisProp_{j,t-1} * FPI_{j,t-1} + \psi_3 FPI_{j,t-1} +$$
$$\psi_4 X_{i,t-1} + \psi_5 Y_{j,t-1} + I_i + t + \varepsilon \qquad (14)$$

where CrisisProp is the propensity for a country to go into crisis as defined as the instrumented value, or the first stage of a two-stage least squared regression. All other variables are defined as previously in the paper.

Results from this analysis provide insight as to how the benefits of foreign portfolio investment deteriorate with an increase in a country's risk of crisis. The interaction term in Table XII shows that this impact is not surprisingly negative. Taken collectively with the positive and significant effect of the FPI term implies that as the propensity for crisis grows large for country j, the benefit derived from FPI decreases. In fact, this benefit is completely reversed when the propensity for crisis reaches only 24%. This fits in nicely with the volatility analysis since we see that all countries can be hindered by the volatility in this capital flow but not in all times. Although the enhanced access to finance gained from this foreign capital flow falls with an increase in the propensity for crisis, a positive benefit is retained for most of the sample. Indeed, the mean propensity for crisis in the sample is only 18.5%, indicating that this is not the case for the majority of the sample. The results do indicate, however, that for those countries particularly sensitive to crisis, enhancements in access to finance may not be maintained if stability in these economies is interrupted. In fact, the effect seen in the interactive variable coefficient relative to the crisis propensity variable alone shows us that FPI

did not have FPI levels for a portion of the examination period.

actually does exacerbate the effect of the crisis – as the popular press accuses. Although this is not great news for advocates of market integration, it underscores the importance of a stable infrastructure and investment environment that will endure the challenges that currency and/or banking crisis offer an economy. Recognizing that the definition of crisis in this examination includes banking crises and acknowledging once again that currency crises and banking crises may well occur contemporaneously, the banking sector, as well as financial markets, plays a large role in the stability maintenance of countries[39].

Results regarding growth are similar supportive of earlier findings. Looking to growth in sales revenue, the definition of growth that many economists feel is more valuable to the economy, we see that although FPI is positive and significantly related to small firm growth, its effects diminishes when combined with a nation's propensity for crisis. The sample average of 18.5% just nullifies any positive influence FPI has on growth. Indeed, this positive influence is more rapidly negated than the influence on capital issuance. This is not particularly surprising given the risk aversion during crisis periods and the reactions firms have with regard to their operations.

[Insert Table XII here]

B.2 Out-of-sample

Using estimates of propensity for crisis outside of the sample period instead of within, I examine the cross-section of the sample in each year, utilize the fitted value of equation (6) for the preceding four-year period (i.e. 1991-1995 for time=1996, 1992-1996 for time=1997, etc.). Doing so provides more detail in the results, which highlights the

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[39] The inclusion of this variable also may bias upward a country's propensity for risis making the actual

Asian Crisis and its contagion in the results. Years other than 1998-99 offer very similar results to those in the in-sample analysis. The two-year period of the crisis interrupts these relationships quite a bit. The interactive term looses its significance, more than likely because a significant portion of the sample is either in crisis or influenced by crisis due to contagion. Fitting in nicely with this is the fact that we see that the coefficient for FPI is actually negative here. FPI provides value as long as a country's propensity for crisis is not above the average for the sample – the significant difference between the variables of interest as well as the majority of the control variables demonstrates nicely how few macroeconomic factors aren't affected negatively by crisis making the case that FPI is one factor among many that may lead to decreased access to capital when a country is in crisis. These results may be seen in Table XIII.

[Insert Table XIII here]

VI. Conclusions

Although foreign portfolio investment serves a potential additional source of investment capital for small firms, the volatility of this capital flow in times of crisis threatens the benefits FPI provides such as an enhanced access to capital. Importantly, the short-term growth of these firms seems to be relatively unaffected by the variability in this capital flow, except in those periods of decreased investor confidence (alternatively - in periods of higher country risk). In these less "investible" periods, FPI volatility hinders the small firm when taking growth into consideration, implying that access to finance may be interrupted, and that the risk aversion that ensues with volatility in these

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point at which FPI's benefits are neutralizes higher than 24%.

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capital flows decreases benefits derived from it in these times through decreased liquidity.

Results in this paper support the contention that volatility of capital flows is potential damaging to host economies. Specifically, FPI volatility can interrupt enhanced access to finance for small firms through a reduction in the liquidity of financial markets. The results do not support the contention that volatility is harmful in all times, finding that waves of investment do not significantly decrease the probability that a small firm is able to issue capital in the public markets in times when investor confidence is increased and does not necessarily hinder firm growth in the short term. A policy implication of this is that countries should try to stabilize capital flows by way of increasing institutional investor confidence in their nation. Fortunately, having open borders to foreign investors goes part of the way toward that end, since liberalized nations see increases in both the size and the liquidity of markets, as well as improvements in corporate governance and disclosure.

Dissertation Conclusions

Foreign portfolio investment has the potential to influence foreign investment at the country, firm and investor level to motivate actions which influence change to better the investment environment, which will in turn draw more investment. The longer-term benefits of this capital flow such as improvements in corporate governance, and disclosure are not likely to reverse based on fluctuations in this flow. Shorter-term benefits of this capital flow, such as market liquidity, may reverse in the presence of severe fluctuations. These fluctuations and the resulting decrease in liquidity may serve to lessen or negate the benefits of the capital flow itself. Results of examinations of both the capital flow and its volatility imply that although the benefits of foreign portfolio investment may be potentially economically large and worthy of market integration, the instability has the potential to destroy the benefits initially derived by the capital flow.

Based on the results of this study, policy implications are that countries that wish to benefit from foreign portfolio investment should strive to improve property rights and investor protection such that confidence in these countries reaches a level which is minimum for investors to remain when macroeconomic changes occur. In the end, policies that will minimize volatility while still allowing for the benefits of foreign portfolio investment may be put into place to begin a beneficial investment cycle that will improve foreign investment and domestic financial development for the long run.

Table IA Summary Statistics

Cash is defined as cash and/or marketable securities scaled by total assets. Leverage is total liabilities scaled by total assets. Asset tangibility is defined as fixed asset divided by the book value of total assets. Profitability is defined as operating income divided by sales. Risk is defined as the standard deviation of the firm's profitability ratio over the previous three years. Crosslisting is a dummy variable which takes on a value of 1 if a firm is crosslisted. Growth in total assets/sales is defined as the annual growth rate in percent form. Bank Liquidity Ratio is the ratio between a bank's liquid assets and reserves. Domestic Credit refers to credit provided by financial institutions scaled by GDP. Domestic Credit (banks) refers to credit provided by all banks scaled by GDP. FPI is foreign portfolio investment is investment (in dollars) in the equity of foreign companies. Initial FPI is the value of FPI in period t-3. FPI Vol is the variance of FPI net flows from time t-3 through t-1. FPI/PCF is FPI scaled by gross private capital flows. ΔFX Rate is the official exchange rate with the dollar. Fiscal Burden is a measure of the level of taxes usurped by the government from corporations from 1(fewer taxes) to 5 (higher taxes). GDP growth is the growth rate of gross domestic product. Institutional Inv. Rating is an index of a country's credit worthiness. Inflation is defined as the increase in consumer price index (%). M2 refers to the money supply scaled by GDP. Market Cap Percent is the market capitalization of listed companies (% of GDP). FDI/GDP is the amount of foreign direct investment. Property Rights is a measure from 1 (most effective) to 5 (least effective) measuring the efficacy of a country's legal system. Real interest rates refer to the prevailing interest rates adjusted for inflation. Share is the percent of the world market capitalization represented by a country's market capitalization. Corruption is an assigned value for a given country regarding its level of corruption (0 highest; 6 lowest). Invest is an index of the risk involved in investing in a country. Law is an index which refers to the level of legal development. Income is an index referring to a nation's level of income. Liberalization is a dummy variable taking on a value of 1 if a country has undergone a liberalization in the current period and zero otherwise.

Panel A: Small Firm Characteristics

Variable	Obs	Mean	Std. Dev.	Min	Max
Asset Tangibility	41503	0.41	0.57	0.00	73.42
Cash	31814	18.68	21.25	0	100
Crosslisting	41723	0.14	0.35	0	1
EFN	33015	0.23	4.57	-369.56	397.26
Growth in Sales	26667	0.23	1.04	-10.91	15.77
Growth in Total Assets	27019	0.27	0.97	-10.38	14.37
Leverage	33727	1.48	137.43	0	25155
Profitability	35125	-7.11	127.61	-7150.50	1548.37
Risk	41501	0.59	9.90	-180.18	911.88
Total Assets/GDP	35765	0.04	5.19	0	972.71

Panel B: Large Firm Characteristics

Variable	Obs	Mean	Std. Dev.	Min	Max
Asset Tangibility	36927	37.48	59.95	0	72.98
Cash	34089	15.24	19.48	0	155
Crosslisting	41913	0.07	0.26	0	1
EFN	32301	0.22	29.41	-18.87	5221.79
Growth in Sales	23525	0.04	0.88	-12.88	12.43
Growth in Total Assets	23767	0.04	0.80	-13.56	9.33
Leverage	32780	1.10	41.32	0	6799
Profitability	34197	-3.46	131.12	-11102.00	744.48
Risk	40408	3.14	458.98	-3.73	91268.34
Total Assets/GDP	34848	0.4	16.23	0	2540.48

Panel C: Country-level Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Bank Liquidity Ratio	311	6.663	7.323	0.024	60.800
Corruption	352	3.831	1.325	1	6
DomCredit (bank)/GDP	352	93.580	53.295	12.279	320.557
DomCredit/GDP	352	78.712	47.630	11.357	202.510
FDI/GDP	352	0.089	0.561	-0.027	6.185
FPI	345	-0.006	0.106	-0.419	0.488
FPI Volatility	352	4.87E+20	1.80E+21	0	1.62E+22
Δ FX Rate	352	0.071	0.292	-1	2.490
GDP Growth	352	0.034	0.023	-0.069	0.106
Institutional Inv. Rating	352	60.06	23.01	14.45	95.90
Invest	352	8.281	2.033	2.417	12
Law	352	4.727	1.347	1	6
Property Rightss	352	1.887	0.932	1	4
Relative Int. Rates	352	1.005	1.279	-5.990	8.772
Share	352	8.908	16.789	0.002	100
Total Value Traded	352	0.450	0.639	0.000	4.834

Panel D: Crisis Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
CrisisStar (across time)	347	0.185	0.165	0.001	0.999
Propensity for Crisis (1995)	347	0.202	0.261	0	1
Propensity for Crisis (1996)	347	0.218	0.225	0	1
Propensity for Crisis (1997)	347	0.276	0.260	0	1
Propensity for Crisis (1998)	347	0.128	0.197	0	1
Propensity for Crisis (1999)	347	0.146	0.259	2.61E-06	1
Propensity for Crisis (2000)	347	0.211	0.227	5.45E-09	1
Propensity for Crisis (2001)	347	0.224	0.270	0	1
Propensity for Crisis (2002)	347	0.050	0.086	0	0.996
Avg Propensity for Crisis (1991-1994)	347	0.250	0.129	0.060	0.664
Avg Propensity for Crisis (1992-1995)	347	0.245	0.128	0.040	0.672
Avg Propensity for Crisis (1993-1996)	347	0.250	0.129	0.024	0.639
Avg Propensity for Crisis (1994-1997)	347	0.254	0.126	0.005	0.626
Avg Propensity for Crisis (1995-1998)	347	0.236	0.120	0.003	0.592
Avg Propensity for Crisis (1996-1999)	347	0.225	0.126	0.000	0.583
Avg Propensity for Crisis (1997-2000)	347	0.238	0.130	0.001	0.579
Avg Propensity for Crisis (1998-2001)	336	0.233	0.130	0.000	0.582
Chg in Propensity (1995)	339	-0.092	0.063	-0.237	0.316
Chg in Propensity (1996)	336	-0.001	0.001	-0.002	0.003
Chg in Propensity (1997)	336	0.000	0.002	-0.002	0.008
Chg in Propensity (1998)	336	-0.001	0.003	-0.002	0.008
Chg in Propensity (1999)	336	-0.001	0.002	-0.002	0.008
Chg in Propensity (2000)	336	-0.001	0.001	-0.002	0.002
Chg in Propensity (2001)	336	-0.001	0.002	-0.002	0.008
Chg in Propensity (2002)	336	-0.002	0.000	-0.002	0.000

Panel E: Security Issuance by Country For Sample

Country	Debt	Conv. Debt	Equity	Preferred	Conv. Preferred	Total
Argentina	29	10	61	2	.	102
Australia	21	58	8245	48	.	8372
Austria	2	.	91	.	.	93
Belgium	.	.	173	.	.	173
Bolivia	6	.	.	1	.	7
Brazil	94	25	51	35	.	205
Canada	.	.	26	14	.	40
Chile	37	.	160	.	.	197
China	7	.	1291	.	.	1298
Colombia	23	.	32	.	.	55
Denmark	.	1	192	.	.	193
Finland	6	1	224	.	.	231
France	48	11	1207	.	.	1266
Germany	6	1	585	7	.	599
Greece	.	2	133	.	.	135
Hong Kong	4	5	900	.	.	909
Hungary	.	.	16	.	.	16
India	125	.	179	.	.	304
Indonesia	40	.	128	.	.	168
Ireland	.	.	41	.	.	41
Israel	.	.	8	.	.	8
Italy	3	.	203	1	.	207
Japan	2149	239	1951	.	.	4339
Malaysia	64	2	418	1	.	485
Mexico	91	1	33	.	.	125
Netherlands	10	1	136	6	.	153
New Zealand	2	5	42	3	.	52
Norway	1	1	102	.	.	104
Pakistan	.	.	22	.	.	22
Peru	143	.	3	.	.	146
Philippines	18	.	42	.	.	60
Poland	.	2	32	.	.	34
Portugal	.	.	46	1	.	47
Singapore	59	.	314	.	.	373
South Korea	.	.	397	9	.	406
Spain	5	.	98	.	.	103
Sri Lanka	.	.	11	.	.	11
Sweden	22	.	236	.	.	258
Switzerland	51	7	104	1	.	163
Thailand	71	2	77	.	.	150
Turkey	.	.	11	.	.	11
United Kingdom	7	.	1855	12	.	1874
US	42	121	3438	3620	17	7238
Venezuela	19	.	38	1	.	58
Total	3205	495	23352	3762	17	31831

Panel F: Investment Around the World

FPI is net foreign portfolio investment scaled by GDP. FPI Vol is the logarithm of the variance of FPI net flows scaled by GDP, from time t-3 through t-1. MarketCapDollars is the market capitalization of country j in U.S. dollars. Property Rights is an index of the level of property rights in country j. FXRate is country j's local currency per $1. Values are averaged over the sample period 1996-2003.

	FPI	FPI Volatility	MarketCap Dollars	Property Rights	FXRate
Argentina	1.538	0.449	9.61E+10	2.5	1.263
Australia	2.708	0.446	3.41E+11	1	1.238
Austria	1.076	0.456	3.24E+10	1	12.304
Belgium	-5.116	0.465	1.67E+11	1	36.052
Bolivia	-0.297	0.324	2.45E+08	3.125	5.849
Brazil	2.059	0.460	2.11E+11	3	1.635
Canada	0.250	0.453	6.61E+11	1	1.462
Chile	-0.250	0.414	6.41E+10	1	509.906
China	-0.191	0.439	3.33E+11	4	8.293
Colombia	0.713	0.402	1.35E+10	3.25	1658.071
Denmark	-1.039	0.454	9.36E+10	1	6.998
Finland	-0.135	0.425	1.96E+11	1	5.311
France	-0.947	0.481	1.07E+12	2	5.899
Germany	0.018	0.490	1.08E+12	1	1.770
Great Britain	1.420	0.497	2.27E+12	1	0.641
Greece	2.725	0.430	8.65E+10	2.25	261.711
Hong Kong	-0.120	0.464	4.99E+11	1	7.763
Hungary	3.258	0.422	1.11E+10	2	217.940
India	0.591	0.416	1.39E+11	3	41.160
Indonesia	0.236	0.415	4.42E+10	3.375	6679.344
Ireland	-8.426	0.442	4.56E+10	1	0.707
Israel	1.777	0.417	5.17E+10	2	3.827
Italy	1.221	0.477	5.52E+11	2	1761.769
Japan	-0.876	0.471	3.19E+12	1.25	115.400
Malaysia	-0.993	0.402	1.52E+11	2.375	3.370
Mexico	1.375	0.460	1.22E+11	3	8.636
Netherlands	-2.477	0.456	5.53E+11	1	1.968
New Zealand	-0.085	0.413	2.63E+10	1	1.417
Norway	-5.081	0.443	6.04E+10	1	7.623
Pakistan	0.854	0.377	7.88E+09	3.375	47.615
Peru	1.048	0.395	1.23E+10	3.125	3.049
Phillipines	2.085	0.424	5.11E+10	2.375	38.559
Poland	0.678	0.413	2.11E+10	2	3.545
Portugal	0.413	0.428	4.92E+10	2	179.444
Singapore	-12.366	0.437	1.44E+11	1	1.624
South Korea	0.0001	0.443	6.54E+10	1	1103.469
Spain	0.082	0.472	3.85E+11	2	148.772
Sri Lanka	0.058	0.334	1.56E+09	2.875	70.373
Sweden	-4.389	0.449	2.92E+11	1.625	8.364
Switzerland	-7.079	0.457	6.46E+11	1.125	1.470
Thailand	1.108	0.416	5.58E+10	1.75	36.057
Turkey	-0.002	0.430	5.84E+10	2.25	617279.900
USA	1.997	0.501	1.28E+13	1	1.000
Venezuela	-0.055	0.408	2.65E+10	3	239.550

Panel G: Country Development and Size Distribution

Property Rights groups are assigned on a yearly basis and are based on market capitalization. Size groups are assigned on both a yearly and within country basis and are based on total assets.

Property Rights	Freq.	Percent	Cum.	Size	Freq.	Percent	Cum.
Developed	181,395	94.21	94.21	Small	43,072	33.26	33.26
Less Developed	11,146	5.79	100	Large	43,257	33.4	100

Developed Property Rights				Less Developed Property Rights			
Size	Freq.	Percent	Cum.	Size	Freq.	Percent	Cum.
Small	39,343	33.29	33.29	Small	2,870	32.71	32.71
Medium	39,417	33.33	66.63	Medium	2,909	33.72	66.43
Large	39,491	33.37	100	Large	2,908	33.57	100

Panel H: Geographic Distribution of Sample

Nation	Freq.	Percent	Cum.	Nation	Freq.	Percent	Cum.
Argentina	381	0.20	0.20	Italy	1,031	0.55	35.05
Australia	14,907	7.97	8.17	Japan	29,724	15.9	50.95
Austria	418	0.22	8.39	Malaysia	3,217	1.72	52.69
Belgium	571	0.31	8.71	Mexico	691	0.37	53.06
Bolivia	22	0.01	8.74	Netherlands	785	0.42	53.48
Canada	91	0.05	8.79	New Zealand	856	0.46	53.94
Chili	1,542	0.82	9.61	Norway	1,353	0.72	54.66
China	6,345	3.39	13.00	Pakistan	979	0.52	55.18
Colombia	165	0.09	13.09	Peru	502	0.27	55.47
Denmark	554	0.30	13.40	Philippines	2,474	1.32	56.79
Ecuador	11	0.01	13.41	Poland	1,329	0.71	57.50
Finland	1,354	0.72	14.13	Portugal	630	0.34	57.84
France	7,634	4.08	18.21	Singapore	3,581	1.92	59.76
Germany	3,997	2.14	20.35	South Korea	2,286	1.22	60.99
Great Britain	15,527	8.30	28.65	Spain	519	0.28	61.27
Greece	1,338	0.72	29.37	Sri Lanka	69	0.04	61.31
Hong Kong	3,618	1.94	31.31	Sweden	2,748	1.47	62.78
Hungary	458	0.24	31.55	Switzerland	756	0.40	63.18
India	1,560	0.83	32.39	Thailand	3,748	2.00	66.84
Indonesia	2,946	1.58	33.97	Turkey	2,718	1.45	68.29
Ireland	727	0.39	34.36	United States	57,992	31.02	99.31
Israel	260	0.14	34.50	Venezuela	58	0.03	99.34

Panel I: Firm-Level Variable Correlation

	Cash	Leverage	Asset Tangibility	Profitability	Risk	Crosslisting	Growth in Total Assets
Leverage	-0.366***	1					
Asset Tangibility	-0.239***	0.114***	1				
Profitability	-0.027***	0.015***	0.010***	1			
Risk	0.251***	-0.107***	-0.100***	-0.042***	1		
EFN	0.015***	0.031***	-0.003	-0.001	0.030***	1	
Crosslisting	-0.005*	0.012***	0.040***	0.005*	0.021***	-0.001	
Growth in Total Assets	0.084***	0.038***	0.000	-0.011***	-0.047***	0.017***	1.000
Growth in Sales	0.116***	-0.006	-0.008**	-0.118***	0.005	0.019***	0.712***

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Panel J: Chapter 1 Country-level Variable Correlation

	Property Rights	FPI	Δ FX Rate	Share	FPI Volatility	GDP Growth	FDI/GDP	Bank Liquidity Ratio	Dom. Credit /GDP	Dom. Credit (bank) /GDP	Invest	Law
FPI	0.243***	1.000										
Δ FX Rate	0.065	0.059	1.000									
Share	-0.303***	0.025	0.026	1.000								
FPI Volatility	-0.226***	0.123**	-0.066	0.425***	1.000							
GDP Growth	0.099*	-0.192***	0.041	-0.075	-0.121**	1.000						
FDI/GDP	-0.111**	-0.462***	-0.017	-0.041	-0.089*	0.023	1.000					
Bank Liquidity Ratio	0.519***	0.140**	0.041	-0.255***	-0.196***	0.169***	-0.066	1.000				
Dom. Credit/GDP	-0.511***	-0.246***	-0.130**	0.364***	0.274***	0.036	0.088*	-0.435***	1.000			
Dom. Credit (bank)/GDP	-0.440***	-0.177***	-0.126**	0.452***	0.254***	-0.077	0.029	-0.392***	0.914***	1.000		
Invest	-0.363***	-0.239***	-0.081	0.055	0.180***	0.003	0.136**	-0.191***	0.279***	0.196***	1.000	
Law	-0.763***	-0.232***	-0.032	0.260***	0.210***	0.059	0.101*	-0.423***	0.502***	0.434***	0.241***	1.000
Corruption	-0.632***	-0.134**	-0.012	0.136**	0.116**	-0.075	0.113**	-0.302***	0.290***	0.224***	0.236***	0.676***

Panel K: Chapter 2 Country-level Variable Correlation

	FPI Vol	Rel Vol	Del Vol	FPI	GDP Growth	FDI	Δ FX Rate	TVT	Rel Int. Rates	Corruption	Savings	Dom Credit	Investment Grade
Rel Vol	0.057	1.000											
Δ Vol	0.102*	0.208***	1.000										
FPI	-0.013	-0.063	-0.024	1.000									
GDP Growth	0.018	-0.197***	0.009	-0.190***	1.000								
FDI	0.040	0.060	0.060	-0.453***	0.051	1.000							
Δ FX Rate	0.024	-0.057	0.011	0.051	0.064	-0.030	1.000						
TVT	0.126**	0.281***	0.066	-0.241***	0.060	-0.032	-0.093*	1.000					
Rel Int. Rates	-0.042	-0.081	-0.056	0.190***	-0.128**	-0.049	0.106**	-0.205***	1.000				
Corruption	0.097*	0.304***	-0.007	-0.141***	-0.079	0.079	-0.025	0.145***	-0.207***	1.000			
Savings	-0.009	0.060	-0.029	-0.422***	0.400***	0.184***	-0.019	0.145***	-0.281***	0.065	1.000		
Dom Credit	-0.017	0.427***	0.004	-0.255***	0.056	0.091*	-0.137**	0.530***	-0.280	0.301	0.432	1.000	
Investment Grade	-0.037	0.257***	-0.011	-0.154***	-0.232***	0.152	-0.024	0.350***	-0.116**	0.112**	0.005	0.229***	1.000
NonInvestment Grade	0.037	-0.257***	0.011	0.154***	0.232***	-0.152***	0.024	-0.350***	0.116**	-0.112**	-0.005	-0.229***	-1.000

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Δ IIR	Investment Grade	NonInvestment Grade	Reserves	Net Capital Acct
Investment Grade	0.043	1.000			
NonInvestment Grade	-0.043	-1.000	1.000		
Reserves	-0.109**	0.206***	-0.206***	1.000	
Net Capital Acct	0.137**	-0.066	0.066	-0.425***	1.000

*, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Table II Access to Capital

The following probit model is specified: $P(Capital\ Issuance)_{i,t} = \gamma_0 + FPI_{j,t-1}\,\gamma_1 + X_{i,t-1}\,\gamma_2 + Y_{j,t-1}\,\gamma_3 + I_i + t + \varepsilon.$ Development groups are based on the level of property rights in a nation. Size groups are formed based on terciles. FPI is foreign portfolio investment standardized by gross domestic product and represents the instrumented value obtained from the following first stage regression: $FPI_{j,t} = FPI_{j,t} = \beta_0 + \Delta FXRate_{j,t-1}\beta_1 + Share_{j,t-1}\beta_2 + RelIntRates_{j,t-1}\beta_3 + Lib_{j,t-1}\,\beta_4 + FPIVol_{j,t-1}\,\beta_5 + t + \varepsilon.$ $\Delta FXRate$ is the change in the real foreign exchange rate. Share is country j's market cap scaled by world market capitalization. RelIntRates is country j's interest rate scaled by world interest rates. Lib is a dummy variable equal to 1 if country j is liberalized in time t. FPIVol is the variance of FPI flows in times t-1 through t-3. GDP Growth is the average of GDP growth. Foreign Direct Inv. is the level of foreign direct investment scaled by its GDP. Domestic Credit is the level of credit provided to the public by domestic banks and financial institutions. Savings is the difference between GDP and consumption, scaled by GDP. Investment is the perceived investment environment of credit extended by banks. Law is an index referring to the development of the legal system. Corruption is an index that reflects the level of corruption. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Developed Property Rights (N=25202)				Less Developed Property Rights (N=1775)			
	1	2	3	4	1	2	3	4
FPI	0.937***	0.874***	0.847***	1.028***	2.595***	2.960**	3.396***	2.083
	[0.209]	[0.058]	[0.144]	[0.104]	[0.286]	[1.299]	[0.150]	[2.806]
GDP Growth	-3.049***	-2.384***	-3.365***	-3.351***	1.046	1.153	1.233	1.738
	[0.311]	[0.534]	[0.010]	[0.290]	[0.985]	[0.867]	[1.852]	[1.118]
Foreign Direct Inv.	-1.557***	-1.194***	-1.799***	-1.811***	1.809	1.546	1.259	1.675
	[0.226]	[0.219]	[0.151]	[0.213]	[1.132]	[2.976]	[1.745]	[1.170]
Domestic Credit	-0.254***	-0.242***	-0.293***	-0.266***	-0.037	-0.061	-0.072	-0.003
	[0.023]	[0.011]	[0.003]	[0.012]	[0.175]	[0.285]	[0.196]	[0.019]
Savings	1.626***	1.385***	1.818***	1.794***	1.311**	1.450**	1.610*	1.122
	[0.193]	[0.020]	[0.134]	[0.091]	[0.622]	[0.574]	[0.968]	[0.818]
Investment		-0.016***				0.007		
		[0.005]				[0.025]		
Law and Order			0.062***				0.000	
			[0.006]				[0.045]	
Corruption				0.023***				0.086***
				[0.002]				[0.018]
R-squared (1st stage)	0.361	0.363	0.381	0.363	0.857	0.861	0.871	0.867
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	1119***	1175***	1123***	1153***	374***	374***	374***	376***

Table III Access to Equity Capital

The following probit model is specified: $P(Equity\ Issuance\ |\ Capital\ Issuance=1)_{i,t} = \zeta_0 + FPI_{j,t-1}\ \zeta_1 + X_{i,t-1}\ \zeta_2 + Y_{j,t-1}\ \zeta_3 + I_i + t + \varepsilon$. Development groups are based on the level of property rights in a nation. Size groups are formed based on terciles. FPI is foreign portfolio investment standardized by gross domestic product and represents the instrumented value obtained from the following first stage regression: $FPI_{j,t} = FPI_{j,t} = \beta_0 + \Delta FXRate_{j,t-1}\beta_1 + Share_{j,t-1}\beta_2 + RelIntRates_{j,t-1}\beta_3 + Lib_{j,t-1}\ \beta_4 + FPIVol_{j,t-1}\ \beta_5 + t + \varepsilon$. $\Delta FXRate$ is the change in the real foreign exchange rate. Share is country j's market cap scaled by world market capitalization. RelIntRates is country j's interest rate scaled by world interest rates. Lib is a dummy variable equal to 1 if country j is liberalized in time t. FPIVol is the variance of FPI flows in times t-1 through t-3. GDP Growth is the average of GDP growth. Foreign Direct Inv. is the level of foreign direct investment scaled by its GDP. Domestic Credit is the level of credit provided to the public by domestic banks and financial institutions. Savings is the difference between GDP and consumption, scaled by GDP. Investment is the perceived investment environment of credit extended by banks. Law is an index referring to the development of the legal system. Corruption is an index that reflects the level of corruption. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Developed Property Rights (N=17177)				Less Developed Property Rights (N=1703)			
	1	2	3	4	1	2	3	4
FPI	0.000	0.000	0.000	-0.003	0.042	0.049	0.039	0.032
	[0.002]	[0.003]	[0.003]	[0.003]	[0.033]	[0.039]	[0.031]	[0.026]
GDP Growth	-2.041***	-1.651***	-2.012***	-1.252***	1.948	2.904	1.840	3.290
	[0.310]	[0.295]	[0.307]	[0.336]	[1.565]	[2.339]	[1.507]	[2.612]
Foreign Direct Inv.	0.566*	1.558***	0.550*	0.353	-2.215	-2.661	-1.986	-1.815
	[0.250]	[0.311]	[0.252]	[0.299]	[1.932]	[2.365]	[1.826]	[1.825]
Domestic Credit	-0.057***	-0.023	-0.055**	-0.064***	0.037	0.084	0.037	0.125
	[0.017]	[0.017]	[0.017]	[0.018]	[0.039]	[0.073]	[0.039]	[0.112]
Savings	0.250***	-0.064	0.238**	0.162*	0.490	0.330	0.394	0.086
	[0.071]	[0.086]	[0.081]	[0.072]	[0.398]	[0.303]	[0.352]	[0.252]
Investment		-0.018***				-0.019		
		[0.003]				[0.016]		
Law and Order			-0.003				0.008	
			[0.006]				[0.010]	
Corruption				-0.023***				0.067
				[0.005]				[0.053]
R-squared (1st stage)	0.326	0.327	0.341	0.328	0.705	0.711	0.802	0.742
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	1119***	1175***	1123***	1153***	374***	374***	374***	376***

Table IV Access to Bank Credit

Panel A utilizes the following robust OLS model: $Debt_{j,t}/Liquidity_{j,t} = \theta_0 + FPI_{j,t-1}\theta_1 + Y_{j,t-1}\theta_2 + t + \varepsilon$. Specification (1) uses Domestic Credit from banks only as the dependent variable, specification (2) uses Domestic Credit provided by banks and other financial institutions and specification (3) uses the liquidity of bank assets as a dependent variable. Panel B utilizes the following robust OLS: $(Short\text{-}term/Long\text{-}term/Total)\ Lev_{i,t} = \varphi_0 + FPI_{j,t-1}\varphi_1 + Y_{j,t-1}\varphi_2 + X_{i,t-1}\varphi_3 + I_i + t + \varepsilon$. Specification (1) uses Short-term Leverage as the dependent variable, specification (2), Long-term leverage and specification (3) total leverage. Development groups are based on the level of property rights in a nation. Dependent variables are listed across the top of both panels. FPI is foreign portfolio investment standardized by gross domestic product and represents the instrumented value obtained from the following first stage regression: $FPI_{j,t} = FPI_{j,t} = \beta_0 + \Delta FXRate_{j,t-1}\beta_1 + Share_{j,t-1}\beta_2 + RelIntRates_{j,t-1}\beta_3 + Lib_{j,t-1}\beta_4 + FPIVol_{j,t-1}\beta_5 + t + \varepsilon$. $\Delta FXRate$ is the change in the real foreign exchange rate. Share is country j's market cap scaled by world market capitalization. RelIntRates is country j's interest rate scaled by world interest rates. Lib is a dummy variable equal to 1 if country j is liberalized in time t. FPIVol is the variance of FPI flows in times t-1 through t-3. GDP Growth is the average of GDP growth. Foreign Direct Inv. is the level of foreign direct investment scaled by its GDP. Domestic Credit is the level of credit provided to the public by domestic banks and financial institutions. Savings is the difference between GDP and consumption, scaled by GDP. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Panel A: Country Level

	Developed Property Rights			Less Developed Property Rights		
	1	2	3	1	2	3
FPI	-10.067	-5.816	0.452	0.258	-0.666	-0.777
	[6.416]	[4.276]	[0.304]	[1.706]	[1.827]	[0.711]
Foreign Direct Inv.	-22.289	-12.864	0.29	4.037**	6.157***	0.550
	[13.242]	[7.696]	[0.494]	[1.644]	[1.326]	[0.835]
Relative Int. Rates	-47.975*	-35.162**	3.054*	-0.654	0.487	0.700
	[27.157]	[16.318]	[1.763]	[2.426]	[2.580]	[1.053]
Fiscal Burden	-55.234	-37.393	2.132	10.21	5.967	-2.395
	[36.135]	[23.447]	[1.457]	[9.378]	[9.060]	[4.288]
Savings	-5.838	-2.718	0.316	2.661***	2.422***	0.104
	[4.983]	[3.218]	[0.205]	[0.368]	[0.348]	[0.130]
GDP Growth	-3.477	-1.768	0.213	0.08	0.941*	-0.323
	[4.034]	[2.432]	[0.178]	[0.382]	[0.503]	[0.372]
N	153	153	132	72	72	71
Model R-squared	0.34	0.35	0.31	0.74	0.78	0.09

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Panel B: Firm Level

	Developed Property Rights			Less Developed Property Rights		
	1	2	3	1	2	3
FPITotal	-0.063***	0.027***	-3.245***	0.022	0.022	1.525
	[0.005]	[0.010]	[0.393]	[0.016]	[0.040]	[1.117]
GDP Growth	-0.081***	0.092***	-2.228***	-0.021	0.032	-2.123*
	[0.008]	[0.013]	[0.560]	[0.018]	[0.037]	[1.228]
Foreign Direct Inv.	0.043***	-0.059***	1.580***	-0.007	0.116**	0.821
	[0.008]	[0.011]	[0.574]	[0.026]	[0.049]	[2.009]
Domestic Credit	0.005***	0.003***	0.351***	0.004***	-0.002	0.179*
	[0.000]	[0.001]	[0.034]	[0.001]	[0.004]	[0.103]
Savings	-0.026***	-0.002	-2.181***	0.012*	-0.022	0.499
	[0.004]	[0.007]	[0.286]	[0.007]	[0.021]	[0.582]
N	24528	19913	25202	1768	1374	1775
R-squared (1st stage)	0.345	0.344	0.346	0.577	0.585	0.577
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model R-squared	0.11	0.12	0.13	0.11	0.13	0.13

Table V Growth

The following OLS model is specified: $Growth_{i,t} = \psi_0 + FPI_{j,t-1}\psi_1 + Y_{j,t-1}\psi_2 + X_{i,t-1}\psi_3 + I_i + t + \varepsilon$ where Growth is defined as the log difference in total assets (Panel A) and sales revenue (Panel B) divided by the number of years between observations. Development groups are based on the level of property rights in a nation. Dependent variables are listed across the top of both panels. FPI is foreign portfolio investment standardized by gross domestic product and represents the instrumented value obtained from the following first stage regression: $FPI_{j,t} = FPI_{j,t} = \beta_0 + \Delta FXRate_{j,t-1}\beta_1 + Share_{j,t-1}\beta_2 + RelIntRates_{j,t-1}\beta_3 + Lib_{j,t-1}\beta_4 + FPIVol_{j,t-1}\beta_5 + t + \varepsilon$. $\Delta FXRate$ is the change in the real foreign exchange rate. Share is country j's market cap scaled by world market capitalization. RelIntRates is country j's interest rate scaled by world interest rates. Lib is a dummy variable equal to 1 if country j is liberalized in time t. FPIVol is the variance of FPI flows in times t-1 through t-3. GDP Growth is the average of GDP growth. Foreign Direct Inv. is the level of foreign direct investment scaled by its GDP. Domestic Credit is the level of credit provided to the public by domestic banks and financial institutions. Savings is the difference between GDP and consumption, scaled by GDP. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Panel A: Growth in terms of Total Assets

	Developed Property Rights (N=17353)				Less Developed Property Rights (N=874)			
	1	2	3	4	1	2	3	4
FPI	1.176*	1.280**	1.588***	1.145*	2.516**	2.380**	2.632**	2.697***
	[0.601]	[0.602]	[0.587]	[0.661]	[1.067]	[1.085]	[1.218]	[1.034]
Foreign Direct Inv.	0.015	-0.846	-0.529	0.115	1.246	2.197	1.185	1.199
	[0.625]	[0.667]	[0.732]	[0.754]	[1.330]	[1.506]	[1.345]	[1.325]
GDP Growth	3.279***	1.425*	3.120***	3.381***	2.568**	2.534**	2.625**	2.823**
	[0.682]	[0.844]	[0.662]	[0.692]	[1.089]	[1.099]	[1.141]	[1.149]
Domestic Credit	-0.04	-0.069	-0.110*	-0.036	-0.148	-0.034	-0.147	-0.166
	[0.043]	[0.043]	[0.059]	[0.048]	[0.172]	[0.159]	[0.168]	[0.189]
Savings	-0.234	0.352	0.377	-0.295	0.49	0.098	0.511	0.582
	[0.465]	[0.498]	[0.592]	[0.574]	[0.810]	[0.735]	[0.829]	[0.882]
Investment		0.039***				-0.052**		
		[0.009]				[0.022]		
Law and Order			0.075**				-0.002	
			[0.037]				[0.035]	
Corruption				-0.007				0.023
				[0.018]				[0.046]
R-squared (1st stage)	0.373	0.374	0.402	0.377	0.848	0.852	0.864	0.858
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model R-squared	0.03	0.03	0.03	0.03	0.10	0.11	0.11	0.10

Panel B: Growth in terms of Sales Revenue

	Developed Property Rights (N=17337)				Less Developed Property Rights (N=885)			
	1	2	3	4	1	2	3	4
FPI	1.327**	1.422**	1.828***	1.427**	0.879	1.482	0.691	1.345
	[0.604]	[0.610]	[0.600]	[0.686]	[1.954]	[1.836]	[1.896]	[1.896]
Foreign Direct Inv.	-1.124*	-1.843**	-1.814**	-1.246	-0.736	-1.297	-0.651	-0.975
	[0.644]	[0.728]	[0.772]	[0.804]	[2.129]	[2.789]	[2.118]	[2.185]
GDP Growth	4.993***	3.475***	4.792***	4.922***	3.181*	3.266**	3.399*	2.865*
	[0.690]	[0.864]	[0.673]	[0.695]	[1.641]	[1.647]	[1.734]	[1.511]
Domestic Credit	-0.009	-0.035	-0.094	-0.017	-0.149	-0.195	-0.124	-0.139
	[0.048]	[0.049]	[0.066]	[0.054]	[0.208]	[0.191]	[0.205]	[0.194]
Savings	-0.036	0.459	0.709	0.068	0.279	0.57	0.22	0.319
	[0.484]	[0.531]	[0.626]	[0.619]	[1.157]	[1.007]	[1.160]	[1.087]
Investment		0.032***				0.011		
		[0.009]				[0.035]		
Law and Order			0.093**				-0.017	
			[0.038]				[0.041]	
Corruption				0.007				-0.038
				[0.019]				[0.046]
R-squared (1st stage)	0.372	0.373	0.401	0.376	0.848	0.852	0.862	0.857
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model R-squared	0.03	0.03	0.02	0.03	0.11	0.11	0.11	0.11

Table VI Robustness Check on Measurements

The following probit model is specified: $P(Capital\ Issuance)_{i,t} = \gamma_0 + FPI_{j,t-1}\ \gamma_1 + X_{i,t-1}\ \gamma_2 + Y_{j,t-1}\ \gamma_3 + I_i + t + \varepsilon.$ FPI is foreign portfolio investment standardized by gross domestic product and represents the instrumented value obtained from the following first stage regression: $FPI_{j,t} = FPI_{j,t} = \beta_0 + \Delta FXRate_{j,t-1}\beta_1 + Share_{j,t-1}\beta_2 + RelIntRates_{j,t-1}\beta_3 + Lib_{j,t-1}\ \beta_4 + FPIVol_{j,t-1}\ \beta_5 + t + \varepsilon.$ ΔFXRate is the change in the real foreign exchange rate. Share is country j's market cap scaled by world market capitalization. RelIntRates is country j's interest rate scaled by world interest rates. Lib is a dummy variable equal to 1 if country j is liberalized in time t. FPIVol is the variance of FPI flows in times t-1 through t-3. GDP Growth is the average of GDP growth. Foreign Direct Inv. is the level of foreign direct investment scaled by its GDP. Domestic Credit is the level of credit provided to the public by domestic banks and financial institutions. Savings is the difference between GDP and consumption, scaled by GDP. Investment is the perceived investment environment of credit extended by banks. Law is an index referring to the development of the legal system. Corruption is an index that reflects the level of corruption. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

Panel A: Alternative Measure of Constraint

	Developed Property Rights (N=28722)				Less Developed Property Rights (N=4165)			
	1	2	3	4	1	2	3	4
FPI Total * Small	4.203***	6.380***	5.684***	12.365***	-6.798	-7.653	-7.019***	-5.545
	[0.859]	[0.908]	[0.200]	[1.537]	[6.711]	[6.432]	[1.693]	[5.875]
FPI Total * Large	-0.85	-1.718***	-0.133	-4.824***	8.491*	9.530*	8.620***	7.748*
	[0.563]	[0.432]	[0.174]	[0.815]	[4.877]	[5.249]	[0.145]	[4.099]
GDP Growth	1.930***	2.092***	2.673***	1.881***	-1.994***	-1.975***	-2.057**	-1.673
	[0.180]	[0.130]	[0.257]	[0.186]	[0.766]	[0.611]	[0.845]	[1.061]
Foreign Direct Inv.	-2.130***	-2.859***	-3.475***	-4.211***	0.818	0.246	0.804	0.898
	[0.105]	[0.255]	[0.042]	[0.380]	[2.211]	[2.104]	[0.765]	[1.126]
Savings	1.091***	1.374***	2.600***	1.805***	2.753***	2.965***	2.748***	2.787***
	[0.019]	[0.093]	[0.146]	[0.120]	[0.171]	[1.062]	[0.051]	[0.576]
Investment		0.012***				0.024		
		[0.001]				[0.029]		
Law and Order			0.143***				0.004	
			[0.002]				[0.033]	
Corruption				0.057***				0.026
				[0.004]				[0.023]
R-squared (1st stage)	0.301	0.334	0.314	0.308	0.833	0.883	0.836	0.836
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	4380***	4409***	4630***	4600***	902***	906***	903***	924***
Small-Large	0.027**	0.000***	0.000***	0.000***	0.000***	0.005***	0.179	0.295

Panel B: Implied Increases in Foreign Portfolio Investment

	Developed Property Rights (N=18737)				Less Developed Property Rights (N=381)			
	1	2	3	4	1	2	3	4
FPITotal	0.856***	0.848***	0.502***	0.749***	4.015*	4.162	3.879***	2.922**
	[0.189]	[0.130]	[0.136]	[0.150]	[2.226]	[4.238]	[1.145]	[1.172]
GDP Growth	-3.438***	-3.050***	-4.160***	-3.332***	4.018	2.735*	4.457	3.448**
	[0.172]	[0.503]	[0.271]	[0.444]	[2.519]	[1.577]	[2.844]	[1.498]
Foreign Direct Inv.	-1.685***	-1.315***	-1.563***	-1.548***	-4.358	0.104	-6.33	-3.333
	[0.323]	[0.209]	[0.323]	[0.136]	[4.615]	[2.001]	[6.225]	[2.353]
Domestic Credit	-0.289***	-0.282***	-0.307***	-0.284***	0.815	-0.029	0.976*	0.479
	[0.018]	[0.021]	[0.023]	[0.010]	[0.801]	[0.721]	[0.558]	[0.426]
Savings	1.584***	1.377***	1.531***	1.473***	-0.291	1.717	0.13	0.592
	[0.193]	[0.056]	[0.182]	[0.119]	[2.518]	[1.494]	[1.559]	[1.181]
Investment		-0.013***				0.151**		
		[0.002]				[0.074]		
Law and Order			0.065***				-0.102	
			[0.009]				[0.245]	
Corruption				-0.008				-0.097
				[0.005]				[0.087]
R-squared (1st stage)	0.651	0.698	0.658	0.664	0.974	0.986	0.976	0.985
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	2201***	2205***	2226***	2299***	92***	95***	98***	99***

Table VII Robustness: Interaction with Investment Environment

The following probit model is specified, adjusting for frequency of country observation: $P(Capital\ Issuance)_{i,t} = \gamma_0 + FPI_{j,t-1}\ \gamma_1 + X_{i,t-1}\ \gamma_2\ + Y_{j,t-1}\ \gamma_3 + FPI*(Invest/Law/Corr)\gamma_4 + (Invest/Law/Corr)\gamma_5 + I_i + t + \varepsilon$. Development groups are based on the level of property rights in a nation. Size groups are formed based on terciles. FPI is foreign portfolio investment standardized by gross domestic product and represents the instrumented value obtained from the following first stage regression: $FPI_{j,t} = FPI_{j,t} = \beta_0 + \Delta FXRate_{j,t-1}\beta_1 + Share_{j,t-1}\beta_2 + RelIntRates_{j,t-1}\beta_3 + Lib_{j,t-1}\ \beta_4 + FPIVol_{j,t-1}\ \beta_5 + t + \varepsilon$. ΔFXRate is the change in the real foreign exchange rate. Share is country j's market cap scaled by world market capitalization. RelIntRates is country j's interest rate scaled by world interest rates. Lib is a dummy variable equal to 1 if country j is liberalized in time t. FPIVol is the variance of FPI flows in times t-1 through t-3. GDP Growth is the average of GDP growth. Foreign Direct Inv. is the level of foreign direct investment scaled by its GDP. Domestic Credit is the level of credit provided to the public by domestic banks and financial institutions. Savings is the difference between GDP and consumption, scaled by GDP. Investment is the perceived investment environment of credit extended by banks. Law is an index referring to the development of the legal system. Corruption is an index that reflects the level of corruption. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	1	2	3
GDP Growth	-0.361	-2.089***	-3.099***
	[0.315]	[0.652]	[0.326]
Foreign Direct Inv.	0.19	-1.385***	0.992***
	[0.155]	[0.495]	[0.334]
Domestic Credit	-0.110***	-0.250***	-0.144***
	[0.019]	[0.011]	[0.016]
Savings	0.394***	1.828***	1.630***
	[0.117]	[0.135]	[0.086]
FPI	1.008**	0.251	-6.562***
	[0.479]	[1.693]	[1.335]
FPI*Investment	-0.202***		
	[0.061]		
Investment	-0.023***		
	[0.002]		
FPI*Law and Order		0.076	
		[0.333]	
Law and Order		0.061***	
		[0.012]	
FPI*Corruption			1.826***
			[0.324]
Corruption			0.001
			[0.002]
Observations	26977	26977	26977
R-squared (1st stage)	0.264	0.253	0.279
F-Test (instruments)	0.000***	0.000***	0.000***
Model χ^2	999***	894***	994***

Table VIII Alternate Definitions

The following probit model is specified: $P(Capital\ Issuance)_{i,t} = \gamma_0 + FPI_{j,t-1}\,\gamma_1 + X_{i,t-1}\,\gamma_2 + Y_{j,t-1}\,\gamma_3 + I_i + t + \varepsilon$. Development groups are based on the level of property rights in a nation. Specification (1) uses FPI as a proportion of gross private capital flows as an alternative FPI definition. Specification (2) uses the average size classification (i.e. size=small, medium or large) for the examiniation period. Specification (3) drops China, Malaysia, Hong Kong, Korea and Chile from the sample to avoid any bias due to changes capital controls during the period examined. FPI is foreign portfolio investment standardized by gross domestic product and represents the instrumented value obtained from the following first stage regression: $FPI_{j,t} = FPI_{j,t} = \beta_0 + \Delta FXRate_{j,t-1}\beta_1 + Share_{j,t-1}\beta_2 + RelIntRates_{j,t-1}\beta_3 + Lib_{j,t-1}\,\beta_4 + FPIVol_{j,t-1}\,\beta_5 + t + \varepsilon$. ΔFXRate is the change in the real foreign exchange rate. Share is country j's market cap scaled by world market capitalization. RelIntRates is country j's interest rate scaled by world interest rates. Lib is a dummy variable equal to 1 if country j is liberalized in time t. FPIVol is the variance of FPI flows in times t-1 through t-3. GDP Growth is the average of GDP growth. Foreign Direct Inv. is the level of foreign direct investment scaled by its GDP. Domestic Credit is the level of credit provided to the public by domestic banks and financial institutions. Savings is the difference between GDP and consumption, scaled by GDP. Investment is the perceived investment environment of credit extended by banks. Law is an index referring to the development of the legal system. Corruption is an index that reflects the level of corruption. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Developed Property Rights			Less Developed Property Rights		
	1	2	3	1	2	3
FPI	-0.072***	0.334***	1.515***	-0.061	5.133***	4.156***
	[0.002]	[0.062]	[0.511]	[0.071]	[1.629]	[1.247]
GDP Growth	-3.069***	-0.349***	-2.926***	-0.274	1.792	2.532***
	[0.367]	[0.067]	[0.367]	[0.856]	[1.907]	[0.069]
Foreign Direct Inv.	0.675***	-0.458***	-0.981***	3.777**	-0.566	1.235
	[0.031]	[0.085]	[0.354]	[1.688]	[2.381]	[3.534]
Domestic Credit	-0.119***	-0.143***	-0.277***	-0.092	-0.039	-0.227
	[0.013]	[0.004]	[0.014]	[0.162]	[0.245]	[0.235]
Savings	0.643***	0.677***	2.335***	0.935	2.462**	1.921***
	[0.020]	[0.057]	[0.421]	[0.582]	[1.186]	[0.653]
Observations	25290	28546	24696	1787	2354	1714
R-squared (1st stage)	0.361	0.394	0.531	0.857	0.834	0.853
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	1022***	804***	1068***	377***	552***	337***

Table IX Volatility and Access to Capital

The following probit model is specified: $P(Capital\ Issuance)_{i,t} = \beta_0 + FPIVol_{j,t-1}\beta_1 + FPI_{j,t-1}\beta_2 + X_{i,t-1}\beta_3 + Y_{j,t-1}\beta_4 + + I_i + t + \varepsilon$. Specification (1) is the whole sample while specifications (2) and (3) are Investment Grade and Noninvestment Grade country-years respectively. Investment grade (non-invesetment grade) is those country-years greater than (less than) the annual median of the Institutional Investor Rating, which is a measure of a nation's creditworthiness. FDI is the level of foreign direct investment scaled by its GDP. Domestic Credit is the amount of credit loaned to the private sector. Savings is a nation's GDP minus consumption. GDP Growth is annual growth in a nation's gross domestic product. FPI is net foreign portfolio investment flows scaled by GDP. Volatility of FPI is the logarithm of the variance of FPI net flows from time t-3 through t-1 and represents the instrumented value obtained from the following first stage regression: $FPIVol_{j,t-1} = \gamma_0 + \Delta FXRate_{j,t-2}\gamma_1 + Corr_{j,t-2}\gamma_2 + RelIR_{j,t-2}\gamma_3 + \Delta TVT_{j,t-2}\gamma_4 + \Delta IIR_{j,t-2}\gamma_5 + t + \varepsilon$. $\Delta FXRate$ is the change in the real exchange rate. Corr is an index denoted the level of corruption. RelIR is country j's interest rate scaled by world interest rates (by year). TVT is total value of listed shares traded. ΔIIR is the change in the institutional investor rating, which proxies for changes in investor confidence or proximity to crisis. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Volatility			Relative Volatility			Change in Volatility		
	1	2	3	1	2	3	1	2	3
FPI Volatility	-0.007**	-0.026	-0.004**	-0.108**	-0.029	-0.058	-0.209***	-0.021***	-0.151***
	[0.003]	[0.037]	[0.002]	[0.048]	[0.032]	[0.042]	[0.023]	[0.004]	[0.038]
Foreign Direct Inv.	0.912***	0.524	0.992**	0.884***	0.264	1.024***	1.867***	0.837*	1.426***
	[0.300]	[0.799]	[0.503]	[0.072]	[0.496]	[0.221]	[0.260]	[0.452]	[0.272]
Domestic Credit	-0.158***	-0.259***	-0.142***	-0.076***	-0.146***	-0.103***	-0.061***	-0.175***	-0.044
	[0.011]	[0.090]	[0.020]	[0.013]	[0.016]	[0.039]	[0.019]	[0.050]	[0.028]
Savings	0.346***	0.874	0.271***	0.255**	0.159	0.245*	-0.189***	0.294	-0.125
	[0.098]	[0.638]	[0.092]	[0.106]	[0.310]	[0.137]	[0.034]	[0.418]	[0.110]
GDP Growth	1.147	-7.718***	1.235***	0.222	-6.014***	0.745***	1.880***	-5.109***	1.824***
	[0.774]	[0.891]	[0.286]	[0.181]	[0.856]	[0.233]	[0.282]	[0.734]	[0.575]
FPI	0.502***	0.352*	0.498***	0.447***	0.289***	0.442***	0.342***	0.182	0.404***
	[0.142]	[0.200]	[0.063]	[0.023]	[0.062]	[0.084]	[0.018]	[0.141]	[0.055]
Observations	52883	27738	25145	54072	28415	25657	54070	28415	25655
R-squared (1st stage)	0.106	0.711	0.146	0.376	0.819	0.146	0.068	0.522	0.096
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	334***	501***	9805***	15003***	2672***	9805	14964***	2679***	10044***

Table X Volatility and Firm Growth

The following OLS model is specified: $Growth_{it} = \delta_0 + FPIVol_{j,t-1}\delta_1 + FPIVol_{j,t-1}\delta_2 + FPI_{j,t-1}\delta_3 + X_{i,t-1}\delta_7 + Y_{j,t-1}\delta_6 + I_i + t + \varepsilon$. Size groups are formed based on terciles. Specification (1) is the whole sample while specifications (2) and (3) are Investment Grade and Noninvestment Grade country-years respectively. Investment grade (noninvesetment grade) is those country-years greater than (less than) the annual median of the Institutional Investor Rating, which is a measure of a nation's creditworthiness. Growth is defined as the logarithm of the difference in total assets scaled by the difference in years. FDI is the level of foreign direct investment scaled by its GDP. Domestic Credit is the amount of credit loaned to the private sector. Savings is a nation's GDP minus consumption. GDP Growth is annual growth in a nation's gross domestic product. FPI is net foreign portfolio investment flows scaled by GDP. Volatility of FPI is the logarithm of the variance of FPI net flows from time t-3 through t-1 and represents the instrumented value obtained from the following first stage regression: $FPIVol_{j,t-1} = \gamma_0 + \Delta FXRate_{j,t-2}\gamma_1 + Corr_{j,t-2}\gamma_2 + RelIR_{j,t-2}\gamma_3 + \Delta TVT_{j,t-2}\gamma_4 + \Delta IIR_{j,t-2}\gamma_5 + t + \varepsilon$. $\Delta FXRate$ is the change in the real exchange rate. Corr is an index denoted the level of corruption. RelIR is country j's interest rate scaled by world interest rates (by year). TVT is total value of listed shares traded. ΔIIR is the change in the institutional investor rating, which proxies for changes in investor confidence or proximity to crisis. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Growth in Total Assets			Growth in Sales Revenue		
	1	2	3	1	2	3
FPI Volatility	-1.237	-1.012	-3.610***	2.366*	2.329	-1.13
	[1.789]	[1.562]	[1.233]	[1.435]	[1.656]	[1.240]
Foreign Direct Inv.	0.965	0.914	1.792*	-0.168	-0.266	0.595
	[0.915]	[0.947]	[1.043]	[0.434]	[0.472]	[1.044]
Domestic Credit	-0.001	-0.008	0.076	-0.052	-0.036	0.089
	[0.060]	[0.070]	[0.067]	[0.041]	[0.049]	[0.075]
Savings	0.368	0.372	-1.654***	0.276	0.252	-1.031*
	[0.656]	[0.692]	[0.600]	[0.223]	[0.238]	[0.571]
GDP Growth	-0.573	-0.512	0.039	1.205**	1.121*	2.214
	[0.886]	[0.691]	[1.947]	[0.605]	[0.667]	[2.005]
FPI	0.282	0.231	0.492**	-0.209*	-0.236*	0.144
	[0.294]	[0.312]	[0.221]	[0.113]	[0.135]	[0.177]
Constant	0.217	0.084	1.761***	-1.340**	-1.383*	0.548
	[0.777]	[0.673]	[0.670]	[0.668]	[0.745]	[0.686]
Observations	35749	19515	16234	35493	19491	16002
R-squared (1st stage)	0.106	0.711	0.146	0106	0.711	0.146
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model R-squared	0.10	0.12	0.07	0.04	0.03	0.23

Table XI Alternate Definitions and Sample

The following probit model is specified, adjusting for frequency of country observation: P(Capital Issuance)$_{i,t}$ = β_0 + FPIVol$_{j,t-1}\beta_1$ + FPI$_{j,t-1}$ β_2 + X$_{i,t-1}\beta_3$ + Y$_{j,t-1}\beta_4$ + + I$_i$ + t + ε. Development is based on level of property rights and size groups are formed based on terciles. Specification (1) uses FPI as a proportion of gross private capital flows as an alternative FPI (and FPI volatility) definition. Specification (2) uses FPI as a proportion of market capitalization as an alternative FPI (and FPI volatility) definition. Specification (3) drops Malaysia and China from the sample to avoid any bias due to capital controls. FDI is the level of foreign direct investment scaled by its GDP. Domestic Credit is the amount of credit loaned to the private sector. Savings is a nation's GDP minus consumption. GDP Growth is annual growth in a nation's gross domestic product. FPI is net foreign portfolio investment flows scaled by GDP. Volatility of FPI is the logarithm of the variance of FPI net flows from time t-3 through t-1 and represents the instrumented value obtained from the following first stage regression: $FPIVol_{j,t-1} = \gamma_0 + \Delta FXRate_{j,t-2}\gamma_1 + Corr_{j,t-2}\gamma_2 + RelIR_{j,t-2}\gamma_3 + \Delta TVT_{j,t-2}\gamma_4 + \Delta IIR_{j,t-2}\gamma_5 + t + \varepsilon$. ΔFXRate is the change in the real exchange rate. Corr is an index denoted the level of corruption. RelIR is country j's interest rate scaled by world interest rates (by year). TVT is total value of listed shares traded. ΔIIR is the change in the institutional investor rating, which proxies for changes in investor confidence or proximity to crisis. All country-level variables are three year trailing moving averages. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Investment Grade			Noninvestment Grade		
	1	2	3	1	2	3
FPI Volatility	-0.000***	-0.048**	-0.000***	-0.000***	-0.006	-0.003***
	[0.000]	[0.022]	[0.000]	[0.000]	[0.016]	[0.001]
Foreign Direct Inv.	0.106	2.993***	0.636	0.997***	-1.611	1.317***
	[0.116]	[0.941]	[0.637]	[0.194]	[1.823]	[0.267]
Domestic Credit	-0.194***	-0.164***	-0.260***	-0.129***	-0.388***	-0.127***
	[0.018]	[0.019]	[0.030]	[0.007]	[0.062]	[0.021]
Savings	0.521***	0.732***	0.767***	0.187*	2.287***	0.607***
	[0.052]	[0.202]	[0.113]	[0.103]	[0.840]	[0.022]
GDP Growth	-6.369***	-0.186	-7.610***	0.313	-3.583***	1.151***
	[0.631]	[0.772]	[0.265]	[0.512]	[0.611]	[0.256]
FPI	0.261***	0.074	0.543***	0.451***	1.063***	0.869***
	[0.051]	[0.145]	[0.029]	[0.023]	[0.146]	[0.076]
Observations	28415	25694	28415	25693	26006	24194
R-squared (1st stage)	0.773	0.095	0.576	0.209	0.842	0.162
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	2805***	9914***	2688***	9957***	2708***	10791***

Table XII Access to Capital and the Propensity for Crisis
In Sample Estimation

The following probit model is specified: $P(Capital\ Issuance)_{i,t} = \psi_0 + FPI_{j,t-1}\ \psi_1 + CrisisProp_{j,t-1}*FPI_{j,t-1}\psi_2 + FPI_{j,t-1}\psi_3 + X_{i,t-1}\psi_4 + Y_{j,t-1}\psi_5 + I_i + t + \varepsilon$. Low (High) are based on whether the domicile country for the firm-year observation is lower (higher) than the median value for the sample that year. Propensity for Crisis is the fitted value of the following equation: $Prob\ (y=1)_{j,t} = \omega_0 + \omega_1 FXRate_{j,t-1} + \omega_2 \Delta IIR_{j,t-1} + \omega_3 Exports_{j,t-1} + \omega_4 NetCapAcct_{j,t-1} + \omega_5 Reserves_{j,t-1} + \tilde{v}$ where FXRate is the foreign exchange rate, ΔIIR is the change in the institutional investor rations, Exports is the level of exports, NetCapAcct is a country's net capital account, and reserves is a country's level of foreign exchange reserves. FPI is average net foreign portfolio investment flows scaled by GDP, from time t-3 through t-1. GDP Growth is the growth in gross domestic product. Domestic Credit is the level of credit provided to the private sector scaled by GDP. Savings is gross domestic product minus investment, scaled by GDP. Corr is an index denoted the level of corruption. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	Capital Issuance			Growth in Revenue		
	All	Low	High	All	Low	High
Propensity for Crisis*FPI	-6.100***	1.851***	-8.057***	-0.108**	0.052	-0.066
	[1.572]	[0.367]	[0.729]	[0.043]	[0.042]	[0.245]
FPI	1.456***	0.104***	2.292***	0.017*	-0.015	0.000
	[0.321]	[0.015]	[0.147]	[0.009]	[0.012]	[0.004]
Foreign Direct Inv.	1.254***	0.070***	3.082***	-0.001*	0.002**	0.045**
	[0.378]	[0.023]	[0.368]	[0.000]	[0.001]	[0.020]
Propensity for Crisis	-0.023***	0.364***	-0.179***	0.025**	-0.017	-0.017*
	[0.006]	[0.021]	[0.006]	[0.010]	[0.015]	[0.009]
GDP Growth	-1.895***	-0.708***	-0.637***	-0.025*	0.003	0.043***
	[0.411]	[0.052]	[0.179]	[0.015]	[0.010]	[0.009]
Domestic Credit	-0.153***	0.005	-0.051***	-0.002***	-0.002***	-0.002**
	[0.021]	[0.003]	[0.004]	[0.000]	[0.000]	[0.001]
Savings	0.891***	0.265***	0.070**	0.001	0.005***	0.021***
	[0.111]	[0.051]	[0.031]	[0.003]	[0.002]	[0.008]
Corruption	0.008**	0.003***	-0.004*	-0.000***	0.000	0.001***
	[0.003]	[0.000]	[0.002]	[0.000]	[0.000]	[0.000]
N	50817	21486	22019	38379	16602	16073
F-Test (1st Stage-Crisis)	0.238	0.354	0.3	0.238	0.300	0.355
F-Test (instr.-Crisis)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
F-Test (1st Stage-FPI)	0.291	0.464	0.268	0.291	0.268	0.464
F-Test (instr.-FPI)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	10754***	3859***	6540***	53***	12***	16***

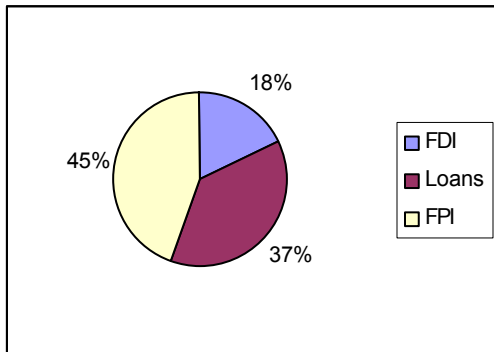## Table XIII Access to Capital and the Propensity for Crisis
Out of Sample Estimation

The following cross-sectional probit model is specified: $P(Capital\ Issuance)_{it} = \psi_0 + FPI_{j,t-1}\ \psi_1 + CrisisProp_{j,t-1}*FPI_{j,t-1}\psi_2 + FPI_{j,t-1}\psi_3 + X_{i,t-1}\psi_4 + Y_{j,t-1}\psi_5 + I_i + t + \varepsilon$. Propensity for Crisis is the fitted value of the following equation for the trailing four-year period: $Prob\ (y=1)_{j,t} = \omega_0 + \omega_1 FXRate_{j,t-1} + \omega_2 \Delta IIR_{j,t-1} + \omega_3 Exports_{j,t-1} + \omega_4 NetCapAcct_{j,t-1} + \omega_5 Reserves_{j,t-1} + \ddot{v}$ where FXRate is the foreign exchange rate, ΔIIR is the change in the institutional investor rations, Exports is the level of exports, NetCapAcct is a country's net capital account, and reserves is a country's level of foreign exchange reserves. FPI is average net foreign portfolio investment flows scaled by GDP, from time t-3 through t-1. GDP Growth is the growth in gross domestic product. Domestic Credit is the level of credit provided to the private sector scaled by GDP. Savings is gross domestic product minus investment, scaled by GDP. Corr is an index denoted the level of corruption. Observations are firm-year specific. Firm-level control variables are left out for brevity. Robust standard errors are in brackets. Detailed variable definitions are listed in the appendix. *, **, *** indicate significance levels of 10, 5, and 1 percent respectively.

	1995	1996	1997	1998	1999	2000	2001
Propensity for Crisis*FPI	-11.556***	-1.342**	-0.334***	-0.008	1.327	-0.265***	-1.228***
	[0.888]	[0.605]	[0.058]	[0.009]	[0.948]	[0.079]	[0.023]
FPI	0.253***	0.520***	0.381***	-0.023**	-0.006	0.073***	1.148***
	[0.014]	[0.109]	[0.070]	[0.010]	[0.020]	[0.012]	[0.280]
Propensity for Crisis	0.004	0.000	-0.021***	-0.002***	-0.008	0.000	0.118*
	[0.006]	[0.006]	[0.004]	[0.001]	[0.011]	[0.002]	[0.064]
GDP Growth	-0.757***	-0.204***	-0.975***	0.003***	-0.084	-0.088	0.622
	[0.097]	[0.040]	[0.168]	[0.000]	[0.103]	[0.079]	[0.804]
Foreign Direct Inv.	0.230***	0.498***	0.184***	-0.137**	-0.451*	0.011	-0.983
	[0.087]	[0.064]	[0.067]	[0.062]	[0.231]	[0.042]	[1.297]
Domestic Credit	-0.276***	-0.050***	-0.051***	-0.006**	-0.046***	-0.048***	-0.181***
	[0.026]	[0.003]	[0.009]	[0.003]	[0.008]	[0.003]	[0.015]
Savings	0.188***	0.280***	0.490***	0.026**	0.350***	0.185***	2.094***
	[0.034]	[0.028]	[0.083]	[0.012]	[0.044]	[0.003]	[0.544]
Corruption	-0.015***	-0.001	0.005**	0.001**	0.014***	0.008***	0.106***
	[0.002]	[0.003]	[0.002]	[0.000]	[0.002]	[0.001]	[0.009]
N	5706	6294	7590	8138	8795	8268	4964
F-Test (1st Stage)	0.765	0.857	0.810	0.419	0.630	0.484	0.761
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
F-Test (1st Stage)	0.743	0.765	0.694	0.697	0.775	0.699	0.582
F-Test (instruments)	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
Model χ^2	1316***	2112***	2162***	2903***	2715***	1040***	540***

Figure 1 Composition of Capital Inflows[*]

Industrialized Nations
1988-92

Pie chart:
- FDI: 18%
- Loans: 37%
- FPI: 45%

1993-98

Pie chart:
- FDI: 19%
- Loans: 27%
- FPI: 54%
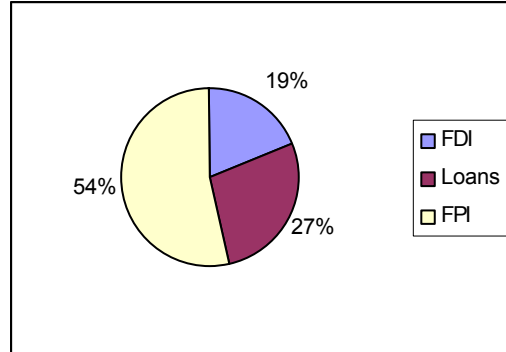
Developing Countries
1988-92

Pie chart:
- FDI: 54%
- Loans: 25%
- FPI: 22%

1993-98

Pie chart:
- FDI: 51.5
- Loans: 12.9
- FPI: 35.6
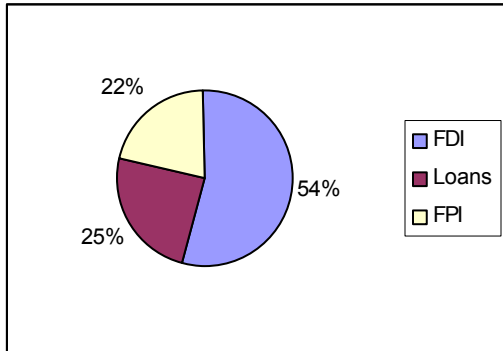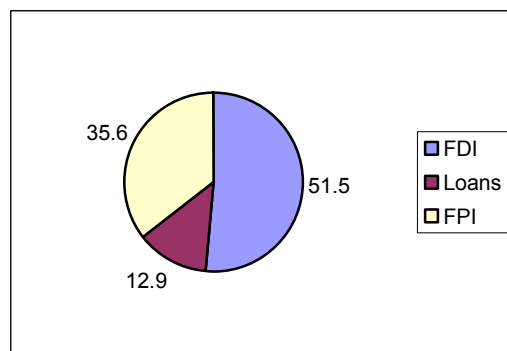
Figure 2 Foreign Portfolio Investment Paths

Direct Investment

Improvement in investment environment

Foreign Portfolio Investors → Capital Markets → ? → Firm Growth

Foreign Portfolio Investors → Banks → Capital Markets

Indirect Investment

Bank-lending Channel

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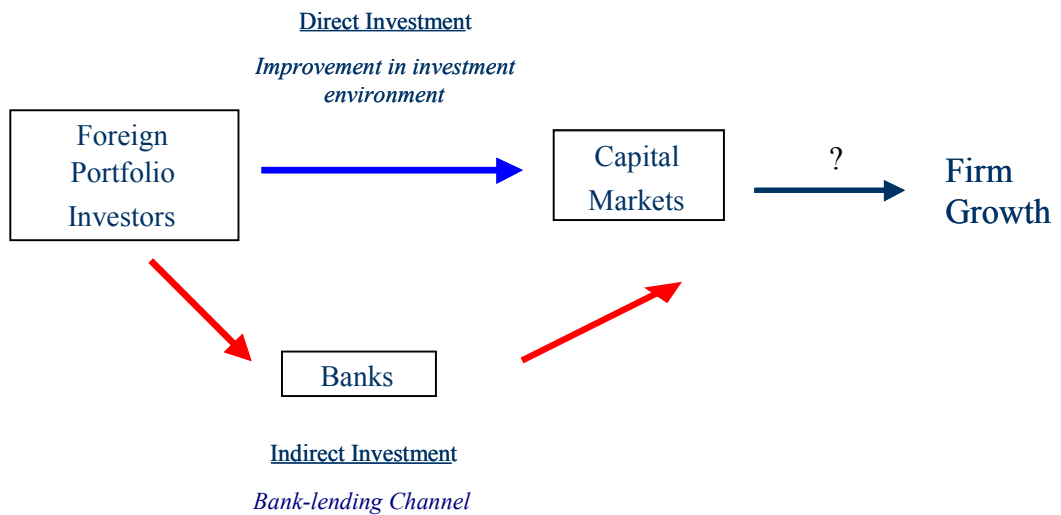
[*] Information obtained from Hull and Tesar, 2000.

Figure 3 Database Coverage of Financials

	Number of Companies	% of Companies with Financials	Coverage
Datastream	18414	34%	Listed Securities
Worldscope	15810	67%	Listed Securities
REUTERS	Over 21,000	Over 90%	Listed Securities Pink Sheets OTC/BB

Figure 4 Net Foreign Portfolio Investment Levels
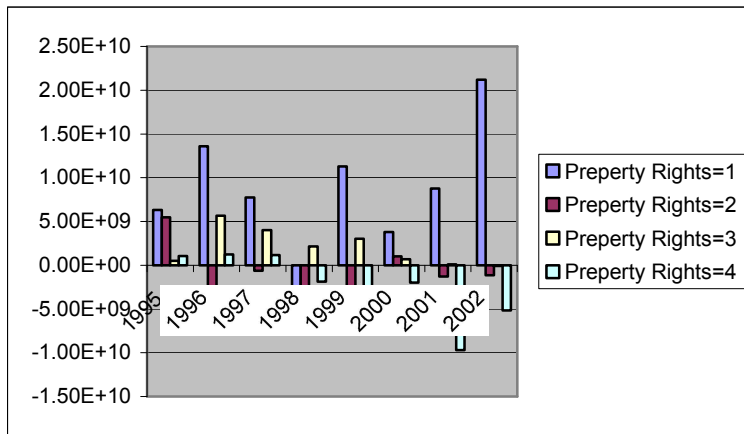Values are calculated as net portfolio investment excluding liabilities involving government reserves.

Figure 5 Volatility of Net Foreign Portfolio Investment Levels
Values are calculated as volatility of net foreign portfolio investment as measured by the variance of the previous three years scaled by net FPI flows for the same term.
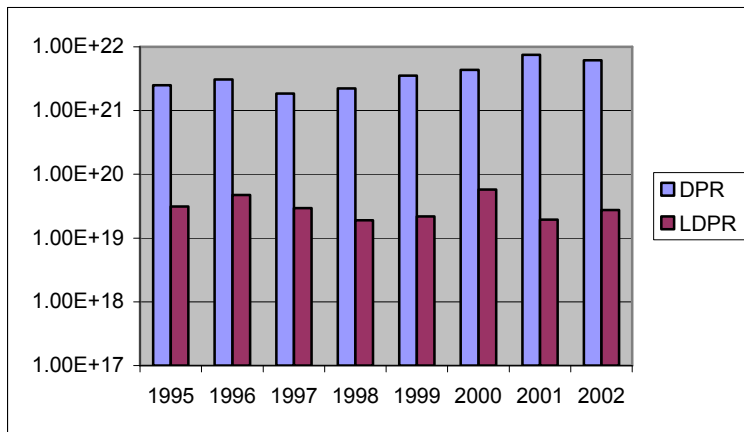
Figure 6 The Effect of FPI Volatility on Market Liquidity
Graphs in the left column referred to countries with developed property rights and graphs in the right column refer to countries with less developed property rights. The first row includes the entire examination period 1996-2003. The second row examines only the country-years when a country's Institutional Investor Rating is considered investment grade and the third row examines only the country-years when a country is considered noninvestment grade. Liquidity is measured as market turnover. FPI volatility is the logarithm of the variance of FPI net flows from the period t-1 through t-3.
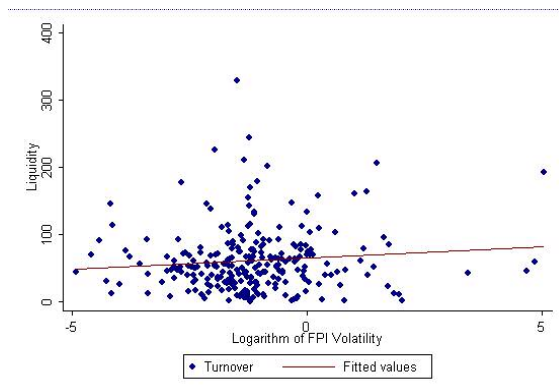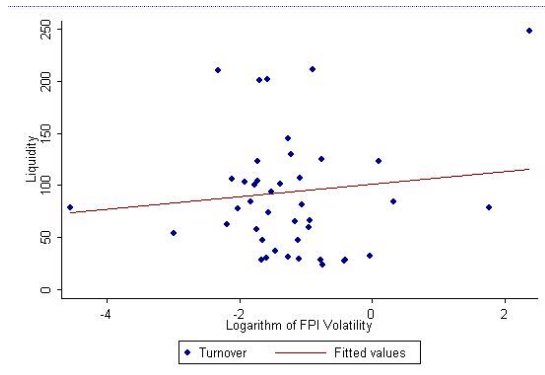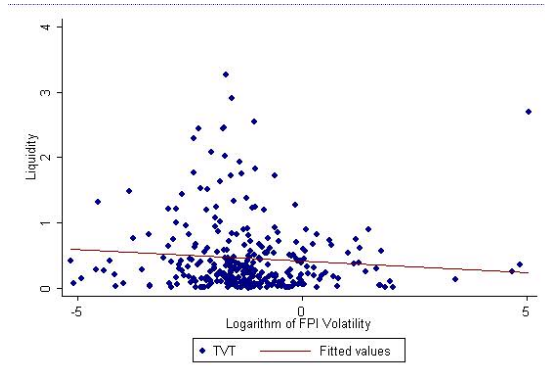
Appendix Variable Definitions

Panel A: Firm- and Industry-specific

Variable	Definitions
Asset tangibility	Fixed assets divided by the book value of total assets; industry average is used in cases of missing data *FA/TA*
Cash	Cash or cash-equivalent divided by total assets *Cash/TA*
Growth in assets	Log difference of growth in total assets $((\ln(TA_{t+1}) - ln(TA_t))/(Year_{t+1} - Year_t)$
Growth in sales	Log difference of growth in sales $((\ln(Rev_{t+1}) - ln(Rev_t))/(Year_{t+1} - Year_t)$
Leverage	The logarithm of total Liabilities divided by total assets *ln(Short-term, Long-term or Total) Liabilities/TA*
Profitability	Operating income divided by sales *OpInc/Sales (in Thous)*
Risk	The log of the variance of the firm's profitability ratio over the three years prior to issue; industry average is used in cases of missing data $ln(var(ROA_t, ROA_{t-1}, ROA_{t-2}))$
Size	Total Assets
Industry	Macro Industry Code from SDC Platinum

Panel B Macroeconomic Variable Definitions

Variable	Definitions	Source
Bank Liquidity Ratio	Ratio of bank liquid reserves to bank assets is the ratio of domestic currency holdings and deposits with the monetary authorities to claims on other governments, nonfinancial public enterprises, the private sector, and other banking institutions.	World Development Indicator (WDI)
Corruption	An index from 0 (most) to 6 (least) of perceived corruption in a country based on the likelihood of solicited bribes from a country in relation to such factors of business as exchange controls, tax assessment, and loan protection.	International Country Risk Guide
Crosslisting	A dummy variable which takes on a value of 1 if the firm has stock listed on additional exchanges and a 0 otherwise.	REUTERS
Domestic Credit	Credit provided by financial institutions, with the exception of credit to the central government, scaled by gross domestic product.	WDI
Domestic Credit from banks	Credit provided by monetary authorities and deposit money banks, as well as other banking institutions (where data is available), including all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net.	WDI
Fiscal Burden	A score from 1 (very low) to 5 (very high) assigned to a country based on the level of income tax rates, corporate tax rates, and government expenditures as a percent of output.	Heritage Foundation
FPI/GDP	Foreign portfolio investment excluding liabilities constituting foreign authorities' reserves covers transactions in equity securities and debt securities. Data are in current U.S. dollars and are scaled by gross domestic product.	WDI
FPI Volatility	The logarithm of the variance of FPI net flows from time $t-3$ through $t-1$.	WDI; own calculation
GDP Growth	GDP per capital growth (%).	WDI
Good/Bad Times	Relative measure of confidence in a nation's solvency based on a specific year's Institutional Investor Rating relative to that country's average rating for the term 1996-2003.	WDI; own calculation
Income	An index from 1 (high) to 4 (low) indicating the level of income in the country.	WDI
Inflation	Percentage increase in consumer price levels.	WDI
Institutional Investor Rating	A rating from 0 (less) to 100 (credit) for each country based on their creditworthiness. This rating is biannual and based on surveys of economists and sovereign risk analysts at global banks and securities firms.	Institutional Investor; Reinhart, Rogoff and Savastano, 2003

Variable	Definitions	Source
Invest	A measure from 0 (worst/closed) to 12 (best/open) of the government's attitude toward inward investment as determined by four components: the risk to operations, taxation, repatriation, and labor costs.	International Country Risk Guide
Law	An index from 0 (worst) to 6 (best) of law of a nation. It is two measures comprising one risk component. Each sub-component equals half of the total. The "law" sub-component assesses the strength and impartiality of the legal system, and the "order" sub-component assesses popular observance of the law.	International Country Risk Guide
Liberaliza-tion	A dummy variable which takes on a value of 1 if liberalization occurred in time t and a 0 otherwise.	Beckaert, Harvey and Lumsdaine 2002; Henry, 2000
M2/GDP	Money or quasi-money scaled by gross domestic product.	WDI
Property Rights	A score measuring the efficacy of law in enforcing contracts (1- very effective: 5 – very ineffective).	Heritage Foundation
Real Int. Rates	Interest rates adjusted for inflation.	WDI
Savings	Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption) as a % of GDP.	WDI
Share	A country's market capitalization divided by the average market capitalization of the world.	WDI; own calculation
ΔExchange Rates	The annual % change in the official exchange rate as determined by national authorities or to the rate determined in the legally sanctioned exchange market (annual or averaged annually from monthly rates).	WDI

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