WPS3797

Taking the Bad with the Good: Volatility of Foreign Portfolio Investment and Financial Constraints of Small Firms[1]

April M. Knill
Department of Finance
University of Maryland at College Park
1308G Van Munching Hall
College Park, MD 20742

Abstract

This paper examines the impact of the volatility 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 instability on capital issuance and firm growth across countries and firm characteristics, in particular size. After controlling for the endogeneity of foreign portfolio investment instability, as well as for firm-, industry- and country-level characteristics such as GDP growth as well as the levels of foreign portfolio and direct investment, I find that the volatility of foreign portfolio investment is only significantly associated with a decreased ability to issue publicly-traded securities for small firms in years when nations are considered less 'creditworthy.' Importantly, the volatility of foreign portfolio investment also only hinders the growth of small firms significantly in periods when nations are deemed less 'creditworthy.' These results underscore both the significance of a good financial system that minimizes capital flow volatility as well as the influence of property rights and country creditworthiness to instill confidence in foreign investors.

JEL Classification: D92, F32
Keywords: foreign portfolio investment, liberalization, emerging markets, small firm

World Bank Policy Research Working Paper 3797, December 2005

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent. Policy Research Working Papers are available online at http://econ.worldbank.org.

[1] Many thanks go to my adviser, Vojislav Maksimovic, for his advising on this research; his dedication to my work is very much appreciated. Others at UMD to whom I am grateful are to my committee members: Lemma Senbet, Gordon Phillips, Nagpurnanand Prabhala and Carmen Reinhart. Thanks also to Robert Marquez, Guillermo Calvo, Enrique Mendoza, Thorsten Beck, Asli Demirgüç-Kunt, Leora Klapper, Robert Cull, Ali Nejadmalayeri and Scott Merryman for their help, guidance and input. Chuck Lahaie was extremely helpful in the creation of my dataset.

"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

The volatility of foreign portfolio investment, and not the global capital flow itself, is thought by the majority of economists to be the limiting aspect of short-term foreign investment, and has motivated leaders such as former Malaysian Prime Minister Mahathir bin Mohammed to shut down country borders to foreign investment. Extant literature contends that the volatility of capital flows can be damaging to an economy, or at least will diminish the benefits derived from the foreign investment capital. But does the volatility of capital flows destroy all of the benefits derived from the capital flow itself, in particular the enhanced access to finance it provides for small firms? And for small firms, those particularly sensitive to macroeconomic variation, is volatility always damaging?

In this essay, I examine how the instability of foreign portfolio investment impacts the financial constraints, and ultimately the growth, of small firms. I do not find evidence that the volatility of foreign portfolio investment (also referred to as FPI) - examined without distinguishing terms of relative confidence (or country "creditworthiness") in a country, as measured by an institutional investors rating, is damaging to small firm access to finance, as measured by the probability of public capital issuance. Once examined in subsets of "investment grade" and "noninvestment grade" country-years, subsets which are a proxies 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 is only significantly

negatively associated with the volatility of FPI when nations are deemed less 'creditworthy,' or closer to crisis. Importantly, I also find that the volatility of foreign portfolio investment only hinders the growth of small firms in the same less 'creditworthy' subset. These results imply that the benefits derived from FPI are not depleted in times when country risk is deemed low. These benefits, 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)), have been linked to an increased level of access to finance (La Porta et al. (2000)) and to more efficient allocation of capital (Wurgler 2000; Love 2003; Rajan and Zingales 1998).

The paper most related to mine is Laeven (2003)[2]. His paper examines the impact of reform policies (e.g. liberalization) on financial constraints rather than any resulting changes in specific capital flows. Laeven (2003) differs from this paper on many dimensions. It focuses 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, his paper examines implied external financial constraints. This paper, instead, uses evidence of external financing (i.e. issuing equity and debt), which Fazzari et al. (1988) believe is relevant when examining financial constraints. Importantly, Laeven (2003) differs from this paper with regard to data. Laeven (2003) utilizes the Worldscope database, which some believe suffers from a large-firm bias. Inasmuch as my emphasis is on small firms, I create a unique database of over 195,000 observations and across 53 countries to circumvent this bias. Given the considerable differences across focus, methodology and scope, it is difficult to compare results, however, this paper suggests a sustained positive association of foreign portfolio investment

[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.

levels in the presence of volatility, which supports as well as extends the contentions set forth by Laeven (2003) nicely.

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 firms (Beck, Demirgüç-Kunt, and Maksimovic – henceforth BDM - 2005). 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.

The rest of the paper is structured as follows. Section I examines previous literature in area important to this analysis and provides motivation for the analysis, section II details the methodology used. Section III describes in detail the extensive data sample that I utilize in my examination. Section IV gives results, section V provides a robustness check and Section VI concludes the paper.

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 2005) 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 (Bekaert et al 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; Knill 2004)[3], improves the allocation of capital (Wurgler 2000) and 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[4], to "pull"[5] foreign portfolio investment to their economies motivates improvements in such things as corporate governance (Shinn 2000) and investor protection/property rights (Bekaert and Harvey 2003). This in turn leads to increased investment (Dahlquist et al 2002; Claessens and Laeven 2003)[6] 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.

[3] 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.
[4] 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 average 12-14% in North America, and Western Europe, 20-25% in Asia and Latin American and over 30% in Eastern Europe and Africa.
[5] See, for example, Calvo et al. (1993); Claessens (1995); Claessens et al. (1995)
[6] The opposite effect is also true – see Aggarwall et al. (2003) for characteristics investors look for in foreign investment countries.

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* – or equivalently, its 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 level of the capital flow, its variance sometimes referred to as its instability, causes pressures on the money supply, exchange rates and stock market volatility[7] [8] of its host nations, making keeping tight reigns on economic policy difficult for governments. At times, it can even increase a country's propensity for crisis, or exacerbate 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 in capital found to be associated with liberalization, 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. Demirgüç-Kunt and Detragiache (1999) 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 – the coincidental occurrence of banking and currency crises (Kaminsky and Reinhart, 1999) - but also because crises in the banking sector could devastate small firms due to their reliance on this form of financing.

[7] See also Patro and Wald (2005).
[8] Bekaert, Harvey and Lundblad (2004) however contends that this actually that the data do not support this.

Given that small firms are so very sensitive to macroeconomic conditions (Beck et al 2002; Tewari and Goebel 2002), increased volatility could diminish any benefit achieved through the increased supply of investment capital (Knill, 2004). 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 figures 1 and 2).

C. Weighing the Impact and Volatility of Capital Flows

Whether 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), 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[9] 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[10]. These laws seeking to improve corporate governance and

[9] See Khanna and Palepu (1999).

[10] 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 shares a company can

indirectly investor protection also seek to stabilize capital inflows, making them 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 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" (Kaminsky and Schmukler (2002), implying that any damages associated with FPI volatility are only short-term and importantly that FPI is ultimately beneficial.

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 3. In fact, the correlation between the two when using total value of listed securities traded as liquidity is a significant *positive* 0.5051[11]. This correlation, as well as studies that foreign investors do not destabilize markets any more than local investors (Dvorak 2001; Levine and Schmukler 2003), challenge the notion that market liquidity drops in volatile times (e.g. the

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.

[11] Using percent of market traded instead of total value traded yields a significant correlation of 0.3902.

flight of foreign capital)[12]. If the majority of the benefits of FPI with regard to small firm access to capital (see Knill 2004) flow through the enhanced market liquidity, and volatility is significantly positively correlated with market liquidity in "good" times, as defined as periods when confidence in a country's tranquility is increased, 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 FPI volatility in all times, I contend that the volatility of FPI, as measured by the logarithm of the variance of the 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

[12] 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.

countries such as Peru, yet they are able to absorb such things often without negative implications.

Bekaert and Harvey (2003), 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 disproven, and volatility does not materially impede the ability of these firms to raise capital in periods of enhanced country creditworthiness/low propensity for crisis, could it ever be perceived as less than damaging to small firm growth? Given the sensitive nature of small firms to macroeconomic factors, as well as the overall 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. Having said that, if H1 can not be disproved, it would follow that one would not find significant evidence that FPI volatility hinders small firm growth in all times.

> *H2) Controlling for the level of foreign portfolio investment, the volatility of foreign portfolio investment (scaled by gross domestic product) does not significantly hinder 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 et al. 1998), 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.

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

where FPIVol is the predicted level of FPI volatility from the first-stage in the instrumental variable probit regression (see equation (2) 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, 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; Baker and Wurgler 2002). Y is a vector of lagged alternate sources of capital

such as foreign direct investment, foreign portfolio investment, domestic credit, savings and GDP growth. FPI, as previously mentioned, is added to distinguish between investment level/trend[13]. 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 BDM 2003; Rousseau and Wachtel 2002[14]). 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[15]. The instrumental probit methodology used implements frequency weights to avoid data cloning issues and utilizes a bootstrapping methodology, which uses randomly chosen subsamples[16] 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 (1). Robust standard errors are

[13] 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.
[14] See also Demirgüç-Kunt, Laeven and Maksimovic (2003).
[15] 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.
[16] N=50 is used for bootstrap replication.

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 Knill (2004), relative interest rates and liquidity, based on work from Bekaert and Harvey (2003) and country sovereign risk as well as foreign exchange rate changes, based on work from Kaminsky et al. (1998) and Reinhart et al. (2003)[17]. The empirical model is as follows:

$$FPIVol_{j,t} = \gamma_0 + \gamma_1 \Delta FXRate_{j,t} + \gamma_2 Corr_{j,t} + \gamma_3 RelIR_{j,t} + \gamma_4 \Delta TVT_{j,t} + \gamma_5 \Delta IIR_{j,t} + t + \varepsilon \qquad (2)$$

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 (1) to be negative but insignificant for small firms in the investment grade sample. Small firms in the noninvestment grade sample will likely exhibit a significantly 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 by regressing the following:

$$Growth_{it} = \delta_0 + \delta_1 FPIVol_{j,t-1} + \delta_2 FPI_{j,t-1} + \delta_3 X_{i,t-1} + \delta_4 Y_{j,t-1} + I_i + t + \varepsilon \qquad (3)$$

[17] All instruments are significant at the 1% leel in this stage.

where $Growth_{i,t}$ is firm i's growth rate as calculated by the log difference in both total assets and (separately) sales revenue attained from year t through year t+1 scaled by the difference in time in period t+1 and time in period t. The denominator in this calculation is included to ensure that annual growth rates are attained in cases where there exist missing years in the sample. All other variables are as defined in equation (1). If foreign portfolio investment volatility hinders small firm growth, then the coefficient of FPIVol, δ_1, should be negative, reflecting in decrease in the growth rate with an increase in the volatility of foreign portfolio investment volatility.

III. Data

I obtain my data from the SDC Global New Issues database for the time period 1/1/1996 through 3/31/2003[18]. 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[19]. This follows the methodology of Asquith et al. (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

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

exclusion of international issuances is intentional due to endogeneity between foreign portfolio investment with 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 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 4). 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.

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[20]. 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, uniqueness profitability and risk span a range that is considerable in size. Not surprisingly, small firms seem to have much more leverage than their large peers (Cull et al 2004; Rajan and Zingales 1995). Profitability and risk for the small firms are considerably large, reflecting the higher growth rate of the small firms. The majority of the sample is not crosslisted. Corruption index scores, created by Transparency International, range from 1.7 (most corrupt) for Indonesia to 10 (least corrupt) for Denmark. Market capitalization ranges from 97 (Bolivia – U.S.$MM) to 16,600 (U.S. - $MM). Annual net foreign portfolio investment scaled by gross domestic product ranges from –157M (Germany) to $378M (U.S.). A full list of summary statistics for the dataset is provided in Table IA.

[20] 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.

A. Firm-specific information

Inasmuch as accounting practices differ widely across nations, some of the typical measurements used in domestic studies may not be used in international empirics lest the results acquired be meaningless. 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[21].

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

[21] 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.

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 for a one-year term.

External Financing Necessary is included to address those observations where firms do not issue capital not because they cannot, but because they possess sufficient internal capital to fund desired projects. To correct for any additional access a firm might have in other nations which might affect financial constraints (Lins et al. 1999) it is vital to include an indication of whether a firm has listings in other countries (i.e. ADR on a U.S. stock exchange). Thus I

Include 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.

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 et al. (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.

Instruments for FPI volatility are included based on work done by Kaminsky, Lizondo and Reinhart (1998) with regard to indicators of currency crises. **FXChg** controls for changes in the real foreign exchange rate, extreme levels in this serve as one of the definitions of, or a proxy for, currency crisis. 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 et al 2003). The variable **Relative Interest Rates** is included to control for 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). Finite changes in the rating institutional investors, or **IIRChange**, give a country can have

immense changes in the volatility of FPI and is thus included. Controlling for the investment environment, I include **Corruption**, which is an indices reflecting the level of corruption in a country by the International Country Risk Guide. Including proxies for the extent to which the level of corruption existing in a country follows the methodology of BDM (2002) and (2003), as well as many other examinations of access to finance in an international setting. Papers such as Claessens and Laeven (2003), Smarzynska and Wei (2001), and La Porta et al. (1998) point out the importance of investment climate as a determinant of financial development.

To control for the impact of other potential sources of funds for firms I include savings, domestic credit and foreign direct investment. **Savings** is the calculated as the difference between gross domestic product and consumption. Domestic Credit is a proxy for the amount of "bank debt" that is provided by both banks and other financial institutions to control for another important source of financing for small firms (Cull et al 2005). **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 (Harrison et al 2004). I further include the level **FPI** to distinguish between the effects of the volatility of the capital flow and its trend.

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 et al. (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 Kaminsky et al. (1998) which examines the timing and leading indicators of crises respectively.

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 interrelation 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.

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 II 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.

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 inhibit 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, for the investment grade sample, the marginal effect of GDP growth demonstrations that firms issue counter-cyclically, when they are more likely to need external financing. 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 II.

B. FPI Volatility and Firm Growth

Importantly, the results in Table III 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 Bekaert et al., (2003) suggest might ensue with this integration.

Corresponding nicely with the results in Table II is the fact that growth in the investment grade sample, growth in sales revenue is positively impacted by FPI volatility. Having said that, 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 II 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.

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 Harrison et al. (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[22]. 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 IV.

B. Proximity to Crisis

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

[22] 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 a portion of the examination period.

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 Beck et al. (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 et al. (1998), I regress the following:

$$Prob\ (y=1)_{j,t} = \omega_0 + \omega_1 FXRate_{j,t-1} + \omega_2 \Delta IIR_{j,t-1} + \omega_3 NetCapAcct_{j,t-1} + \omega_4 Reserves_{j,t-1} + \ddot{v} \qquad (4)$$

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.

B.1 In-sample

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

$$Prob(y=1)_{j,t} = \psi_0 + \psi_1 FPI_{j,t-1} + \psi_2 CrisisProp_{j,t-1} * FPI_{j,t-1} + \psi_3 FPI_{j,t-1} + \psi_4 X_{i,t-1} + \psi_5 Y_{j,t-1} + I_i + t + \varepsilon \qquad (5)$$

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 V 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 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[23].

Results regarding growth are similarly 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

[23] The inclusion of this variable also may bias upward a country's propensity for risis making the actual point at which FPI's benefits are neutralizes higher than 24%.

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.

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 (4) 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 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 VI.

VI. Conclusions

Although foreign portfolio investment is a possible additional source of investment capital for small firms, the volatility of this capital flow in times of crisis unfortunately imposes a

sobering effect on the benefits FPI provides with regard to enhanced access to finance. 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 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 potentially damaging to host economies. Specifically, FPI volatility can interrupt enhanced access to finance for small firms. 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.

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. Corruption is an assigned value for a given country regarding its level of corruption (0 highest; 6 lowest). Domestic Credit (banks) refers to credit provided by all banks scaled by GDP. FDI 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. FPI/GDP is foreign portfolio investment is investment (in dollars) in the equity of foreign companies scaled by GDP. FPI Volatility is the variance of FPI net flows scaled by GDP from time t-3 through t-1. 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 (%). 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. Relative interest rates refer to the prevailing interest rates adjusted for inflation scaled by the world average. Share is the percent of the world market capitalization represented by a country's market capitalization. Total value traded is the value of shares traded.

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
Corruption	352	3.831	1.325	1	6
Domestic Credit	352	78.712	47.630	11.357	202.510
FPI	352	-0.004	0.102	-0.419	0.488
FPI Volatility	352	4.60E+20	1.75E+21	0	1.62E+22
Δ FX Rate	334	0.004	0.057	-0.010	1.033
GDP Growth	352	0.033	0.024	-0.069	0.106
Institutional Inv. Rating	350	65.117	21.445	18.650	95.900
Property Rights	352	1.27	0.67	1	4
Relative Interest Rates	352	1.005	1.279	-5.990	8.772
Relative Volatility	352	0.090	0.009	0.051	0.106
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

Table 1B 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
US	42	121	3438	3620	17	7238
United Kingdom	7	.	1855	12	.	1874
Venezuela	19	.	38	1	.	58
Total	3205	495	23352	3762	17	31831

Table 1C Investment Around the World

FPI is net foreign portfolio investment scaled by GDP. FPI Volatility 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

Table ID 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

Table IE Geographic Distribution

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	Spain	519	0.28	61.27
Great Britain	15,527	8.30	28.65	Sri Lanka	69	0.04	61.31
Greece	1,338	0.72	29.37	South Korea	2,286	1.22	60.99
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

Table 1F Correlation

Panel A: 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***

Panel B: 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

	Δ IIR	Investment Grade	NonInvestment Grade	Reserves	Net Capital Acct
Investment~e	0.043	1.000			
NonInvestm~e	-0.043	-1.000	1.000		
ReservesDol	-0.109**	0.206***	-0.206***	1.000	
NetCapAcct~l	0.137**	-0.066	0.066	-0.425***	1.000

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

Table II 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 III 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 IV Alternate Definitions and Sample

The following probit model is specified, adjusting for frequency of country observation: $P(\text{Capital Issuance})_{i,t} = \beta_0 + FPIVol_{j,t-1}\beta_1 + FPI_{j,t-1}\ \beta_2 + X_{i,t-1}\beta_3 + Y_{j,t-1}\beta_4 + + I_i + t + \varepsilon$. 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 (1^{st} 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 V 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: $Prob\ (y=1)_{j,t} = \omega_0 + \omega_1 FXRate_{j,t-1} + \omega_2 \Delta IIR_{\ j,t-1} + \omega_3 Exports_{\ j,t-1} + \omega_4 NetCapAcct_{\ j,t-1} + \omega_5 Reserves_{\ j,t-1} + \ddot{v}$ 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.

	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 VI 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: $Prob\ (y=1)_{j,t} = \omega_0 + \omega_1 FXRate_{j,t-1} + \omega_2 \Delta IIR_{j,t-1} + \omega_3 Exports_{j,t-1} + \omega_4 NetCapAcct_{j,t-1} + \omega_5 Reserves_{j,t-1} + \hat{v}$ 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 Net Foreign Portfolio Investment Levels

Values are calculated as net portfolio investment excluding liabilities involving government reserves.

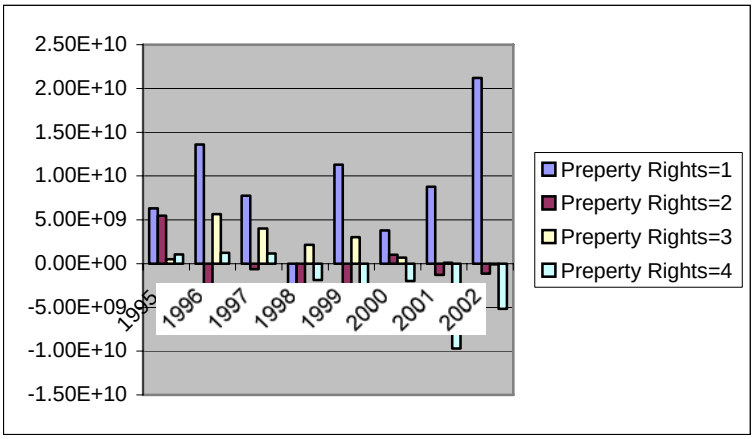


Figure 2 Volatility of Net Foreign Portfolio Investment Levels

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. Levels depicted in graph are in logarithm scale. Developed Property Rights (DPR) is defined as those country-years where Property Rights is either 1 or 2. Less developed property rights (LDPR) refers to those country-years where Property Rights is either 3 or 4.

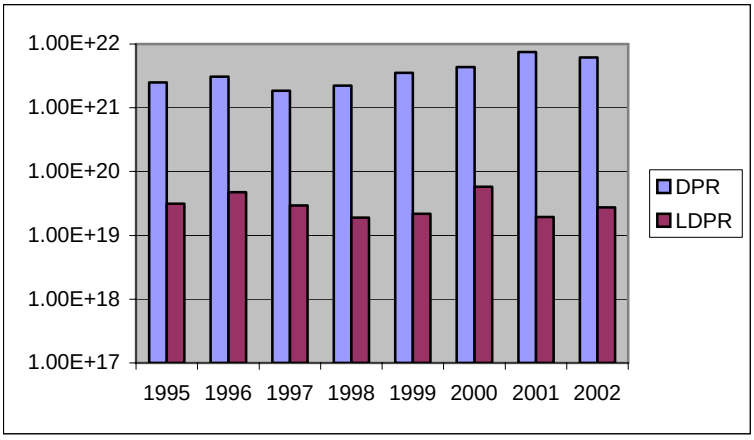
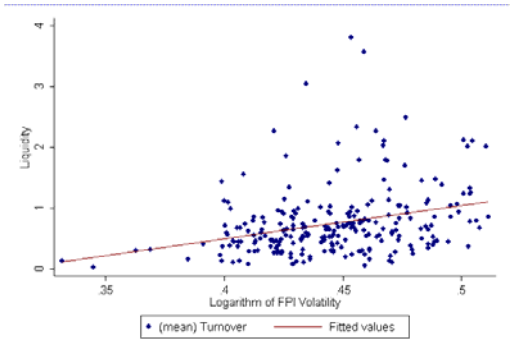
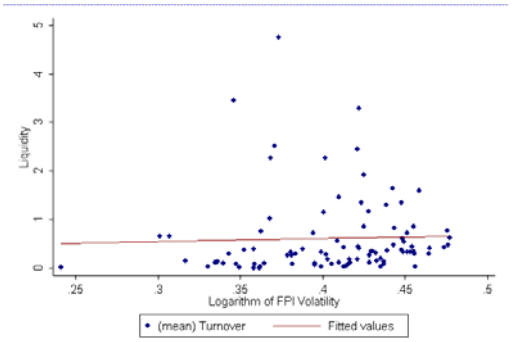
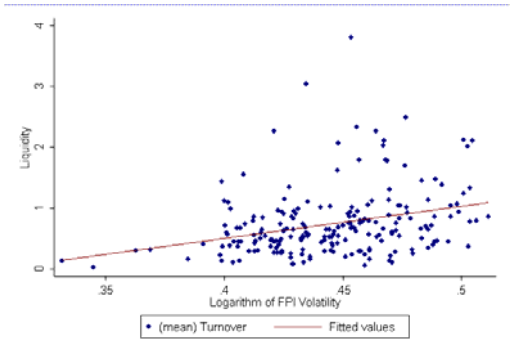


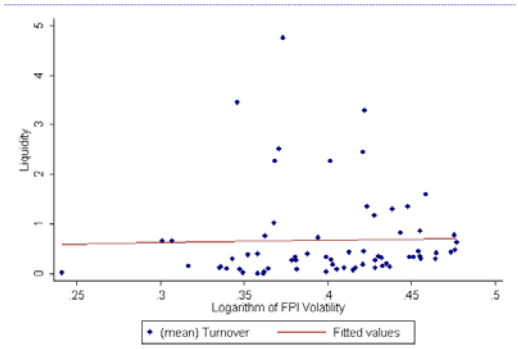
Figure 3 The Effect of FPI Volatility on Market Liquidity

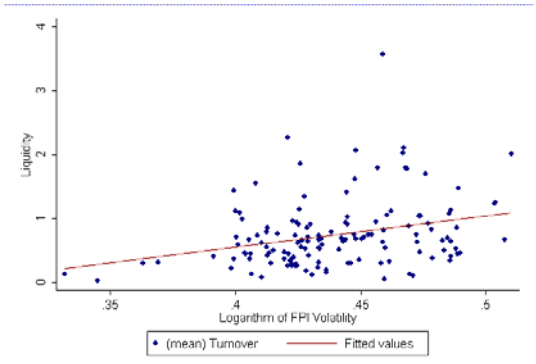
Graphs in the left column referred to countries with developed property rights and graphs in the right column refer to countries with less developed property rights. The first row includes the entire examination period 1996-2003. The second row examines only the country-years when a country's Institutional Investor Rating increases from the previous year and the third row examines only the country-years when this rating decreases. 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.











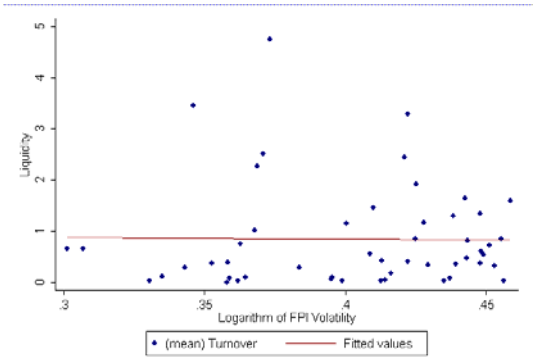


Figure 4 Database Coverage of Financials

	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

Appendix A 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*
Crosslisting	Dummy variable equal to one if a firm has stock listed on foreign exchanges and zero otherwise.
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(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 $ln(var(ROA_t, ROA_{t-1}, ROA_{t-2}))$
Industry	Macro Industry Code from SDC Platinum

Panel B: Macroeconomic Variable Definitions

Variable	Definitions	Source
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
FX Rate	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
FPI	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/GDP from time t-3 through t-1.	WDI; own calculation
GDP Growth	GDP per capital growth (%).	WDI
Investment Grade/Noninvestment Grade	Relative measure of confidence in a nation's solvency based on a specific year's Institutional Investor Rating relative the sample median rating for the term 1996-2003.	WDI; own calculation
Net Capital Account	Net capital account includes government debt forgiveness, investment grants in cash or in kind by a government entity, and taxes on capital transfers	WDI
Reserves	Total reserves comprise holdings of monetary gold, special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities.	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 et al., 2003
Relative Int. Rates	Interest rates adjusted for inflation scaled by the world average of the same.	WDI
Total Value Traded	The total value of shares traded during the period scaled by GDP.	WDI

References

Agarwal, R. 1997. Foreign portfolio investment in some developing countries: A study of determinants and macreconomic impact. *Indian Economic Review* 32 (July), 217-229.

Aggarwall, R., Klapper, L. and Wysocki, P. 2003. Portfolio preferences of foreign institutional investors. *Journal of Banking and Finance*, forthcoming.

Asquith, P. Gertner, R. and Scharfstein, D. 1994. Anatomy of financial distress: An examination of junk-bond issuers. *Quarterly Journal of Economics* 109(3), 625-658.

Baker, M. and Wurgler, J. 2002. Market-timing and capital structure. *The Journal of Finance* 57(1), 1-32.

Beck, T., Demirgüç-Kunt, A. and Levine, R. 2002. Bank Concentration, Competition and Crises: *World Bank Policy Research Paper 3041.*

Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. 2002. Funding growth in bank-based And market-based financial systems: Evidence from firm level data. *Journal of Financial Economics* 65(3), 337-363.

Beck, T., Demirgüç Kunt, A. and Maksimovic, V. 2003. Bank competition, financing obstacles and access to credit. *Journal of Money, Credit and Banking* 36, 627-648.

Beck, T., Demirgüç-Kunt, A. and Maksimovic, V. 2005. Financial and legal constraints to firm growth: Does size matter? *The Journal of Finance* 60,137-177.

Bekaert, G., Harvey, C. and R. Lumsdaine. 2002. Dating the integration of world capital markets, *Journal of Financial Economics* (65) 2, 203-248.

Bekaert, G., and Harvey, C. 2003. Emerging market finance. *The Journal of Empirical Finance* 10, 3-55.

Bekaert, G., Harvey, C. and Lundblad, C. 2003. Did financial liberalization spur growth. *Journal of Financial Economics*, forthcoming.

Bekaert, G., Harvey, C., Lundblad, C. 2004. Growth volatility and financial liberalization. NBER Working Paper 10560.

Booth, L. Aivazian, V. Demirgüç-Kunt, A. and Maksimovic, V. 1999. Capital structure in developing countries. *The Journal of Finance*, forthcoming.

Borensztein, E. and Gelos, G. 2001. A panic-prone pack? The behavior of emerging market mutual funds. IMF Working Paper No. 00/198.

Calvo, G., Leiderman, L. and Reinhart, C. 1993. Capital inflows and the real exchange rate appreciation in Latin America: The role of external factors. *IMF Staff Papers* 40(1):108-51.

Chaplinsky, S., and Niehaus, G. 1993. Do inside ownership and leverage share common determinants? *Quarterly Journal of Business and Economics* 32(1), 61-78.

Chari, A. and P. B. Henry. 2004. Is the invisible hand discerning or indiscriminate? investment and stock prices in the aftermath of capital account liberalizations. University of Michigan Working Paper.

Claessens, S. 1995, The emergence of equity investment in developing countries: An overview. The World Bank Economic Review 9 (1):1-18.

Claessens, S., Dooley, M. and Warner, A. 1995. Portfolio capital flows: Hot or cold? *The World Bank Economic Review* 9 (1): 153-74.

Claessens, S. and Laeven, L. 2003. Financial development, property rights and growth. *The Journal of Finance* 58(6), 2401-2436.

Cull, R. Davis, L., Lamoreaux, N. and J. L. Rosenthal. Historical financing of SMEs, World Bank Working Paper.

Dahlquist, M. Pinkowitz, L., Stulz, R.M., Williamson, R. 2002. Corporate governance and the home bias. Working paper, Ohio State University.

Demirgüç-Kunt, A. and Detragiache, E. 1999. Financial liberalization and financial fragility. *Proceedings of the World Bank Annual Conference on Development Economics*.

Demirgüç-Kunt, A. and Detragiache, E. 2005. Cross-country empirical studies of systemic bank distress: A survey. *National Institute Economic Review,* forthcoming.

Dvorak, T. 2001. Does foreign trading destabilize local stock markets? Working Paper, Williams College.

Fazzari, S., Hubbard, and Petersen, B. 1988. Financing constraints and corporate investment, *Brookings Papers on Economic Activity* 1, 141-195.

Feldman, R. and Kumar, M. 1995. Emerging equity markets: Growth, benefits and policy concerns. *The World Bank Research Observer*. 10(2).

FitzGerald, E.V.K. 1999. Policy issues in market based and non market based measures

to control the volatility of portfolio investment. UNCTAD Expert Group meeting.

Harrison, A., McMillan, M. and Love, I. 2004. Global capital flows and financing constraints, *The Journal of Development Economics*, 75 (1): pp. 269-301.

Henry, P. 2000. Do stock market liberalizations cause investment booms? *Journal of Financial Economics 58, 301-334.*

Henry, P. 2003. Capital-account liberalization, the cost of capital and economic growth. *American Economic Review* 93(2), 91-96.

Henry, P. and Lorentzen, P. 2003. The Future of Domestic Capital Markets in Developing Countries, Brookings Press, 179-214.

Jensen, M. and Meckling, W. 1976. Theory of the firm: Managerial behavior, agency costs, and capital structure. *Journal of Financial Economics* 3, 305-360.

Kaminsky, G. 2003. Varieties of currency crises. George Washington University Working paper.

Kaminsky, G. Lizondo, S. and Reinhart, C. 1998. Leading indicators of currency crisis. *IMF Staff Papers*, 5(1), 1-48.

Kaminsky, G. and Reinhart, C. 1999. The twin crises: The causes of banking and balance-of-payments problems. *American Economic Review*. 89(3), 473-500.

Kaminsky, G. and Schmukler, S. 2002. Short-run pain, long-run gain: The effects of financial liberalization. George Washington University Working Paper.

Karolyi, G. 1999. Did the Asian crisis scare foreign investors out of Japan? Dice Center Working Paper No. 99-6.

Khanna, T. and Palepu, K. 1999. Emerging market business groups, foreign investors and corporate governance. National Bureau of Economic Research Working Paper 6955.

Knill, A. 2004. Can foreign portfolio investment bridge the small firm financing gap around the world? Working Paper, University of Maryland.

Korajczyk, R. and Levy, A. 2003. Capital structure choice: Macroeconomic conditions and financial constraints. *Journal of Financial Economics* 68(1), 75-109.

Laeven, L. 2003. Does financial liberalization reduce financing constraints? *Financial Management* 32(1), 5-34.

La Porta, R. Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. 1998. Law and finance. *The Journal of Political Economy* 106, 1113-1155.

La Porta, R. Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. 2000. Investor Protection and corporate governance. *Journal of Financial Economics* 58, 3-27.

Levine, R. and Zervos, S. 1996. Capital Control Liberalization and Stock Market Development. World Bank Policy Working Paper No. 1622.

Levine, R. and Schmukler, S. 2003. Migration, spillovers, and trade diversion: the impact of internationalization on stock market liquidity. *World Bank Policy Research Working Paper No. 3046.*

Love, I. 2003. Financial development and financing constraints: International evidence from the structural investment model. *Review of Financial Studies* 6, 765-791.

Lins, K., Strickland, D. and Zenner, M. 1999. Do non-U.S. firms issue stock on U.S. equity markets to relax capital constraints? *Journal of Financial and Quantitative Analysis*, forthcoming.

McKinsey & Company Global Investor Opinion Survey, 2002.

Nejadmalayeri, A. Interest rates, taxes, bankruptcy and financing decisions. Working Paper, University of Nevada.

Patro, D., Wald, P. 2005. Firm characteristics and the impact of emerging market liberalization. *Journal of Banking and Finance* , 29(7), 1671-1695.

Rajan, R. and Zingales, L. 1995. What do we know about capital structure? Some evidence from international data. *The Journal of Finance* 50(5), 1421-1460.

Rajan, R. and Zingales, L. 1998. Financial dependence and growth. *American Economic Review* 88(3), 559-86.

Reinhart, C., Rogoff, K. and Savastano, M. 2003. Debt Intolerance. NBER Working Paper No. W9908.

Rousseau, P. and Wachtel, P. 2002. Inflation thresholds and the finance-growth nexus. *Journal of Inernational Money and Finance* 21, 777-793.

Shinn, J. 2000. Nitwits, barbarians, and the convergence cycle. Working Paper, Princeton University.

Samak, N. and Helmy, O. 2000. Foreign Portfolio Equity Investment in Egypt: An Analytical Overview. Cairo University Working Paper.

Smarzynska, B. and Wei, S. 2001. Corruption and composition of foreign direct investment: Firm level evidence. World Bank Policy Research Paper 2360.

Smith, C., 1977, Alternative methods for raising capital: Rights versus underwritten offerings. *Journal of Financial Economics* 5, 273-307.

Tewari, M. and Goebel, J. 2002, Small Firm Competitiveness in a Trade Liberalized World: lessons for Tamil Nadu Working Paper, Harvard University.

Titman, S. and Wessels, R. 1988. The determinants of capital structure choice. *The Journal of Finance* 43(1), 1-19.

Warner, J., 1977, Bankruptcy costs: Some evidence. *The Journal of Finance* 32, 337-47.

Welch, I. 2004. Capital structure and stock returns. *Journal of Political Economy* 112(1), 106-131.

Wurgler, J. 2000. Financial markets and the allocation of capital. *Journal of Financial Economics*. 58: 187-214.

Zhu, H. 2003. Credit constraints, financial liberalization and twin crises. BIS Working Paper No. 124.