

# Emerging markets finance

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## Abstract

Emerging markets have long posed a challenge for finance. Standard models are often ill suited to deal with the specific circumstances arising in these markets. However, the interest in emerging markets has provided impetus for both the adaptation of current models to new circumstances in these markets and the development of new models. The model of market integration and segmentation is our starting point. Next, we emphasize the distinction between market liberalization and integration. We explore the financial effects of market integration, as well as the impact on the real economy. We also consider a host of other issues such as contagion, corporate finance, market microstructure and stock selection in emerging markets. Apart from surveying the literature, this article contains new results regarding political risk and liberalization, the volatility of capital flows, and the performance of emerging market investments.

*Keywords:* Market liberalization, portfolio flows, market reforms, economic growth, risk sharing, contagion, privatization, capital flows, market microstructure, inequality, productivity, volatility of capital flows, performance of emerging market investments.

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We have benefited from discussions with Karl Lins and Chris Lundblad. We appreciate the comments of Stijn Claessens, Vihang Errunza, Kristin Forbes, Andrew Frankel, Eric Ghysels, Angela Ng, Enrico Perotti, Roberto Rigobon, Frank Warnock. We thank Frank Warnock for providing us with an early release of his U.S. holdings estimates. \*Corresponding author. E-mail address: gb241@columbia.edu.

## **1. Introduction**

In the early 1990's, developing countries regained access to foreign capital after a decade lost in the aftermath of the debt crisis of the mid-1980's. Not only did capital flows to emerging markets increase dramatically, but their composition changed substantially as well. Portfolio flows (fixed income and equity) and foreign direct investment replaced commercial bank debt as the dominant sources of foreign capital. This could not have happened without these countries embarking on a financial liberalization process, relaxing restrictions on foreign ownership of assets, and taking other measures to develop their capital markets, often in tandem with macroeconomic and trade reforms. New capital markets emerged as a result, and the consequences were dramatic. For example, in 1985, Mexico's equity market capitalization was 0.7 percent of gross domestic product (GDP) and the market was only accessible by foreigners through the Mexico Fund that traded on the New York Stock Exchange. In 2000, equity market capitalization had risen to 21.8 percent of GDP and U.S. investors alone were holding through a variety of channels about 25 percent of the market.<sup>1</sup>

These developments raise a number of intriguing questions. From the perspective of investors in developed markets, what are the diversification benefits of investing in these newly available emerging markets? And from the perspective of the developing countries themselves, what are the effects of increased foreign capital on domestic financial markets and ultimately on economic growth?

Market integration is central to both questions. In finance, markets are considered integrated when assets of identical risk command the same expected return irrespective of their domicile. In theory, liberalization should bring about emerging market integration with the global capital market, and its effects on emerging equity markets are then clear. Foreign investors will bid up the prices of local stocks with diversification potential, while all investors will shun inefficient sectors. Overall, the cost of equity capital should go down, which in turn may increase investment and ultimately increase economic welfare.

Foreign investment can also have adverse effects, as the 1994 Mexican and 1997 Southeast Asian crises illustrate. For example, foreign capital flows may complicate monetary policy, drive up real exchange rates, and increase the volatility of local equity markets. Moreover, in diversifying their portfolios toward emerging markets, rational international investors should consider that the integration process might lower expected returns and increase correlations between emerging market and world market returns. To the extent that the benefits of diversification are severely reduced by the liberalization process, there may be less of an increase in the original equity price. Ultimately, all of these questions require empirical answers, which a growing body of research on emerging markets has attempted to provide.

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<sup>1</sup> See Thomas and Warnock (2002) for the estimates of U.S. holdings.

Of course, it is unlikely that liberalization will lead to the full integration of any emerging market into the global capital market. After all, the phenomenon of home asset preference leads many international economists to believe that even developed markets are not well integrated. In fact, much of the literature has proceeded to compute the benefits of full market integration in the context of theoretical models of market integration and international risk sharing. The results of these counterfactual exercises depend very much on the model assumptions [see Lewis (1996) and van Wincoop (1999)]. The liberalization process in emerging markets offers an ideal laboratory to test directly some of the predictions of the market integration and risk sharing theoretical literature.

In this article, we start in Section 2 by focusing on the market integration and how it is related to the liberalization process in emerging markets. We discuss the theoretical effects of financial market liberalization and the problems in measuring when market integration has effectively taken place. Section 3 surveys the financial effects of market integration, from the cost of capital and equity return volatility to diversification benefits.

We also present some new results that examine the volatility of capital flows, the impact of financial liberalizations on country risk, and the performance of emerging market investments. Some of these results challenge conventional wisdom. For example, we find that capital flows to emerging markets as a group is less volatile than capital flows to developed countries as a group. We also find that, despite growing reports on the irrational behavior of foreign investors in emerging markets, the emerging market portfolios of U.S. investors outperform a number of natural benchmarks.

Section 4 shifts attention to the real sector. We examine the effects of the liberalization process on economic growth, real exchange rates, and income inequality. We present empirical evidence that suggests that, for equity market liberalizations, there is a positive average effect. Nevertheless, a large literature stresses the disastrous effects free-wheeling capital has had through severe currency, equity and banking crises in Mexico in 1995, Asia in 1997, and Russia in 1998. A comprehensive review of this evidence is beyond the scope of this article; however, in Section 5, we do offer a brief survey and suggest a somewhat different perspective on the rapidly growing contagion literature. In Section 6, we briefly review the important aspects of emerging market finance we do not discuss elsewhere in detail, including corporate finance and governance issues, the microstructure of emerging equity markets, the emerging fixed income markets, and individual security analysis in emerging markets. Some concluding remarks are offered in the final section.

## 2. Market integration and liberalization

### 2.1. *The theory of market integration*

It is important to be clear by what we mean by financial liberalization. In the development literature, it often refers to domestic financial liberalization (see Gelos and Werner (2001) and Beim and Calomiris (2001), for example), which may include banking sector reforms or even privatizations. By financial liberalization, we mean allowing inward and outward foreign equity investment. In a liberalized equity market, foreign investors can, without restriction, purchase or sell domestic securities. In addition, domestic investors can purchase or sell foreign securities.

There are other forms of financial openness regarding bond market, banking sector and foreign exchange reforms. The popular International Monetary Fund (IMF) capital account openness measure lumps all of these together in a 0/1 variable (see below).

Even with our limited focus, the liberalization process is extremely complex, and there is no established economic model that adequately describes the dynamics of the process. That is, while there are general equilibrium models of economies in integrated states and segmented states, there is no model that specifies the economic mechanisms that move a country from segmented to integrated status.<sup>2</sup>

To gain some intuition, we consider a simple model that traces the impact of market integration on security prices from the perspective of an emerging market. The model is a straightforward extension of the standard static integration/segmentation model (see Errunza and Losq (1985), Eun and Jankiramanan (1986), Alexander, Eun and Jankiramanan (1987), Errunza, Senbet and Hogan (1998), and Martin and Rey (2000)). Within the context of a simple quadratic utility specification, we examine a three-period problem for the world market and an emerging market. We assume that there is one share outstanding of each asset. In period three, dividends are paid out and, hence, there are only two trading periods. In period two, the government in the developing/emerging country may integrate the market with the world market or it may not. Each market has a price-taking agent who only consumes in the third period. In period one, agents attach a probability,  $\lambda$ , to the government integrating the market with the world market in the second period.

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<sup>2</sup> One possibility is to model investments in international markets as being taxed by the host country, Stulz (1981). A segmented (integrated) country is a country that imposes taxes (no taxes) on incoming and outgoing investments. A change in regime is a change in the tax rate. For a simple version of this idea, see Bachetta and van Wincoop (2000). The Errunza-Losq (1985) model, a limiting case of Stulz (1981), also lends itself to an analysis of a continuum of market structures. .

For simplicity, the risk-free rate is set equal to zero and currency considerations are ignored. Risky assets in the world market (emerging market) yield a random per capita payoff of  $D_i^W$  ( $D_i^E$ ) with  $i = 1, \dots, N_W$ , ( $i = 1, \dots, N_E$ ) in the third period. Denote the aggregate, market payoff as  $D_M^W = \sum_{i=1}^{N_W} D_i^W$  and

$$D_M^E = \sum_{i=1}^{N_E} D_i^E.$$

We focus on equity prices in the emerging markets. The second-period prices under perfect integration  $P_2^I$  or perfect segmentation  $P_2^S$  are well-known:

$$P_2^S = E[D_M^E] - \rho \text{Var}[D_M^E]$$

$$P_2^I = E[D_M^E] - \rho \text{Cov}[D_M^E, D_M^W]$$

where  $\rho$  is the risk aversion coefficient and where we assumed the weight of the emerging market in the global world market to be negligible.

In period 1, agents know that prices in period 2 will either be  $P_2^S$  or  $P_2^I$ . The attraction of the quadratic utility framework is that in period 1, the price will be:

$$P_1 = \lambda P_2^I + (1 - \lambda) P_2^S$$

where  $\lambda$  is the probability (in period 1) that the government will integrate the market in period 2. It is important to realize that  $P_2^S < P_2^I$ , since the variability of local cash flows will be high, whereas the covariance between local and world cash flows may be quite low.

Suppose the government announces a liberalization in period 1 to occur in period 2. The model predicts that prices will jump up and that the size of the jump is related both to the credibility of the government's announcement (and policies in general), as captured by the  $\lambda$  parameter, and the diversification benefits to be gained from integrating the market, as reflected in  $P_1^I$ . Foreign capital flows in when the market finally liberalizes (in period 2), and the price rises again since all uncertainty is resolved. This last price rise may be small if the announcement was credible.

Fig. 1 presents the implications of this simple model for equity prices and capital flows. Of course, this model is very stylized and ignores many interesting dynamic effects. This simple model suggests that variables such as dividend yields and market capitalization to GDP may change significantly during liberalization as they embed permanent price changes. This simple story already reveals complex timing issues. Market prices can change upon announcement of a liberalization or as soon as investors anticipate a liberalization may occur in the future. However, foreign ownership can only be established when allowed by the authorities. That is, capital flows may only occur after the "return to integration" has already taken place, so that foreign investors may not enjoy this

return. (Note that we assume that capital inflows exceed capital outflows upon liberalization.)

The model suggests that expected returns (cost of capital) should decrease. The reason is that the volatility of emerging market returns is much higher than their covariances with world market returns. Holding the variances and covariances constant, this implies that prices should rise (expected returns decrease) when a market moves from a segmented to an integrated state. However, when a market is opened to international investors, it may become more sensitive to world events (covariances with the world may increase). Even with this effect, it is likely that these covariances are still much smaller than the local variance, which would imply rising prices.

It also makes sense that the liberalization process may be reflected in activity in the local market. As foreigners are allowed to access the local market, liquidity may increase along with trading volume.

There could also be some structural changes in the market. For example, if the cost of capital decreases, new firms may present initial public offerings. Market concentration may decrease as a result of these new entrants. In addition, individual stocks may become less sensitive to local information and more sensitive to world events. This may cause the cross-correlation of individual stocks within a market to change. Morck, Yeung and Wu (2000) find that stock prices in poor economies move together more (that is, the cross-correlation is higher) than in rich countries, but they link this phenomenon to the absence of strong public investor property rights in emerging markets.

The liberalization process is intricately linked with the macro-economy. Liberalization of markets could coincide with other economic policies directed at inflation, exchange rates or the trade sector (see Henry 2000a for details), and it may be correlated with other financial reforms aimed at developing the domestic financial system. Liberalization may also be viewed as a positive step by international bankers that may lead to better country risk ratings. Hence, these ratings may contain valuable information regarding the integration process, as well as the credibility of reforms.

## *2.2 Measuring market integration*

Once we leave the pristine world of theory, it soon becomes clear that the degree of market integration is very difficult to measure. Investment restrictions may not be binding, or there may be indirect ways to access local equity markets, for example, through country funds or American Depositary Receipts (ADRs). For example, the Korea Fund was launched in 1986, well before the liberalization of the Korean equity market. Also, there are many kinds of investment barriers, and the liberalization process is typically a complex and gradual one.

Bekaert (1995) distinguishes between three different kinds of barriers. First are legal barriers arising from the different legal status of foreign and domestic investors with regard to, for example, foreign ownership restrictions and taxes on foreign investment. Second are indirect barriers arising from differences in available information, accounting standards, and investor protection. Third are barriers arising from emerging market specific risks (EMSRs) that discourage foreign investment and lead to de facto segmentation. EMSRs include liquidity risk, political risk, economic policy risk, and perhaps currency risk. Nishiotis (2002) uses country fund data to examine the differential pricing effects of these types of barriers and finds indirect barriers and EMSRs to have often more important pricing effects than direct barriers. Some might argue that these risks are, in fact, diversifiable and not priced; however, World Bank surveys of institutional investors in developed markets found that liquidity problems were seen as major impediments to investing in emerging markets. Moreover, Bekaert, Erb, Harvey and Viskanta (1997) find political risk to be priced in emerging market securities. When Bekaert (1995) measures the three types of broadly defined investment barriers for nine emerging markets, he finds that direct barriers to investment are not significantly related to a return-based quantitative measure of market integration. However, indirect barriers, such as poor credit ratings and the lack of a high-quality regulatory and accounting framework, are strongly related cross-sectionally with the integration measure. These results reveal the danger in measuring market integration purely by investigating the market's regulatory framework. Nevertheless, many researchers have tried this, including Kim and Singal (2000), Henry (2000a), and Bekaert and Harvey (2000a). Bekaert and Harvey provide an Internet site with detailed time lines for 45 emerging markets that provided the basis for the dates in Bekaert and Harvey (2000a).<sup>3</sup> Bekaert (1995) and, more recently, Edison and Warnock (2001) have proposed to use the ratio of market capitalization represented by the IFC Investable Indices, which correct for foreign ownership, to the market capitalization represented by the IFC Global Indices. This ratio has the advantage that it captures gradual liberalizations, as in South-Korea where foreign ownership restrictions were relaxed gradually over time.<sup>4</sup>

There are a number of potential solutions to the problem posed in trying to date regulatory reforms.

First, Bekaert and Harvey (1995) measure the degree of integration directly from equity return data using a parameterized model of integration versus segmentation (a regime-switching model). The model yields a time-varying measure of the extent of integration, between 0 and 1. Importantly, the model allows for the possibility of gradual integration. In many countries, with

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<sup>3</sup> See [http://www.duke.edu:80/~charvey/Country\\_risk/chronology/chronology\\_index.htm](http://www.duke.edu:80/~charvey/Country_risk/chronology/chronology_index.htm). Also, see Bekaert and Harvey (2000b) and Bekaert, Harvey and Lundblad (2003).

<sup>4</sup> De Jong and De Roon (2002) apply this measure to a model of emerging market expected returns. Bae, Chan and Ng (2002) use the measure to model time-varying volatility.

Thailand as a stark example, variation in the integration measure coincides with capital market reforms. In contrast to general perceptions at the time this article was written, its results suggest that some countries became less integrated over time.<sup>5</sup>

Carrieri, Errunza and Hogan (2002) study eight emerging markets over the period 1976-2000. Their results suggest that although local risk is the most relevant factor in explaining time-variation in emerging market expected returns, global risk is also conditionally priced for three countries, while for two countries it exhibits marginal significance. Further, there are substantial cross-market differences in the degree of integration. More interestingly, they observe evolution towards more integrated financial markets. This conforms to our *apriori* expectations based on the reduction in barriers to portfolio flows, the general liberalization of capital markets, the increased availability of ADRs and country funds, better information, and investor awareness. Finally, their results strongly suggest the impropriety of using correlations of marketwide index returns as a measure of market integration.

Laeven and Perotti (2001) argue that credibility of liberalizations evolves over time. Their evidence suggests that the positive impact of privatizations occurs during the actual privatization, rather than during the announcement period. This is consistent with the importance of allowing for gradual integration.

Second, Bekaert and Harvey (2000a,b) use bilateral capital flow data in conjunction with IFC index returns to construct measures of U.S. holdings of the emerging market equities as a percentage of local market capitalization. The use of more liquid securities represented in the IFC indices to compute the returns of foreign investors is consistent with Kang and Stulz (1997), who show that foreign investors in Japan mostly buy large and liquid stocks. Bekaert and Harvey then determine the time at which capital flows experienced a structural break as a proxy for when foreign investors may have become marginal investors in these markets. Although this measure avoids the necessity of having to specify an asset-pricing model and avoids noisy return data, the capital flow data that they use are complicated by the existence of financial intermediary centers (e.g., large flows to the U.K. are channeled to other countries), and by the fact that the United States is the only country for which we have detailed data on bilateral monthly flows with emerging markets.<sup>6</sup>

In Table 1, we show the U.S. holdings measure for various periods for 16 emerging markets. We contrast its value in the 1980s versus the 1990s and pre- and post-liberalization, where the liberalization date is the Official Liberalization date from Bekaert and Harvey (2000a). The message here is

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<sup>5</sup> The Bekaert and Harvey (1995) model has been extended in Bhattacharya and Daouk (2002), Hardouvelis, Malliaropoulos and Priestley (2000), Carrieri, Errunza and Hogan (2002), and Adler and Qi (2002). A related model in Bekaert and Harvey (1997) is extended by Rockinger and Urga (2001).

<sup>6</sup> Also, see Warnock and Cleaver (2002), and Tesar and Werner (1995) for an earlier study.



simple: on average, liberalizations are associated with increased capital flows. In dollar terms, U.S. holdings increase ten-fold in the five years post-liberalization versus the five years pre-liberalization, but in percent of market capitalization, the increase is much more modest, but still quite substantial (from 6.2% to 9.4%). This modest percentage increase is influenced by the steep drop in holdings in the Philippines, where American capital was substantially present before the official liberalization. Also, the dating of the liberalization may be incorrect. Comparing the 1980s to the 1990s the U.S. share of the IFC market capitalization increases from 6.6% to 12.9%.

Third, Bekaert, Harvey, and Lumsdaine (2002b) exploit the idea that market integration is an all-encompassing event that should change the return-generating process, and with it the stochastic process governing other economic variables. They use a novel methodology both to detect breaks and to “date” them, looking at a wide set of financial and economic variables. The resulting break dates are mostly within two years of one of four alternative measures of a liberalization event: a major regulatory reform liberalizing foreign equity investments; the announcement of the first ADR issue; the first country fund launching; and a large increase in capital flows.<sup>7</sup> Finally, the macroeconomic and development literature has mostly focused on a broader concept of financial or capital market openness, using information in the IMF’s *Annual Report on Exchange Arrangements and Exchange Restrictions* (AREAER). Within the AREAER, there is a category called “capital account restrictions,” which researchers have used to mark complete liberalization, that is, when the restrictions go to nil.<sup>8</sup> Unfortunately, as Eichengreen (2001) stresses, the IMF measure is an aggregate measure of many different types of capital controls and may be too coarse. Subcategories have only become available recently (see Miniane (2000)), and improvements in the measure for previous years (in particular, see Quinn (1997)) are available only for a few recent years.

### 3. Financial Effects of Market Integration

There has been an extensive number of articles that measure the effects of the liberalization process on financial variables. We split the discussion into five parts. The first part focuses on the equity return generating process: moments of equity returns (mean, volatility, beta with respect to world returns, etc.). The second part addresses capital flows, in particular equity flows. The third part focuses on political risk. The fourth part focuses more generally on diversification benefits. We end this section evaluating the actual investment performance of U.S. investors in emerging markets.

Before we begin, it is important to realize that our analysis, from a historical perspective, is based only on the liberalizations that occurred over the last 20

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<sup>7</sup> Garcia and Ghysels (1998) also find strong evidence of structural change when applying different asset pricing models to emerging markets, but they do not “date” the changes.

<sup>8</sup> See Mathieson and Rojáz-Suarez (1992) as well as Edwards (1998) and Rodrik (1998).

years. Some emerging markets were thriving markets earlier in the 20<sup>th</sup> century (e.g., Argentina; see Taylor (1998)) and re-emerged. Goetzmann and Jorion (1999) study the bias in returns and betas that re-emergence might cause. For studies of late 19<sup>th</sup> century globalization, see Taylor and Williamson (1994) and Williamson (1996).

### *3.1. Liberalization and returns*

Bekaert and Harvey (2000a) measure how liberalization has affected the equity return-generating process in 20 emerging markets, focusing primarily on the cost of equity capital.<sup>9</sup> Given the complexity of the liberalization process, they define capital market liberalization using three alternative measures: official regulatory liberalization; the earliest date of either an ADR issue, country fund launch, or an official liberalization date; and the date denoting a structural break in capital flows (leading to increased flows). To measure the cost of capital, they use dividend yields. The integration process should lead to a positive return-to-integration (as foreign investors bid up local prices), but to lower post-liberalization returns. Given high return volatility and considerable uncertainty in timing equity market liberalization, average returns cannot be used to measure changes in the cost of capital. Dividend yields capture the permanent price effects of a change in the cost of capital better than noisy returns.

With a surprising robustness across specifications, they find that dividend yields decline after liberalizations, but that the effect is always less than one percent on average. The results are somewhat stronger when they use the liberalization dates from Bekaert, Harvey and Lumsdaine (2002b) discussed earlier. Edison and Warnock (2003) find that the decrease in dividend yields is much sharper for those countries that experienced more complete liberalizations. Henry (2000a) finds similar, albeit somewhat stronger, results using a different methodology and a slightly different sample of countries.

The impact of equity market liberalization on returns is presented in Figs 2-7. First, consistent with Bekaert and Harvey (2000a) and Henry (2000a), Fig 2 shows that average returns decrease after financial liberalization. This is consistent with finance theory as depicted in Fig. 1. Also, it is possible that the pre-liberalization returns are upwardly biased from the affects of integration with the world market.<sup>10</sup>

Consistent with Bekaert and Harvey (1997), Fig. 3 shows that there is no significant impact on unconditional volatility. Indeed, it is not obvious from finance theory that volatility should increase or decrease when markets are

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<sup>9</sup> Kawakatsu and Morey (1999) focus on market efficiency. Jain-Chandra (2002) examines efficiency after liberalizations.

<sup>10</sup> See also Errunza (2001), who shows that there is significant growth in market capitalization divided by GDP, trading volume divided by GDP, the turnover ratio, and the number of listings after liberalization.

opened. On the one hand, markets may become informationally more efficient, leading to higher volatility as prices quickly react to relevant information, or hot speculative capital may induce excess volatility. On the other hand, in the pre-liberalized market, there may be large swings from fundamental values leading to higher volatility. In the long run, the gradual development and diversification of the market should lead to lower volatility.<sup>11</sup>

Bekaert and Harvey (2000a) argue that correlation and beta with the world market increase after equity market liberalizations. Figs. 4 and 5 show that unconditional correlations and betas both increase after liberalization. Indeed, of the 20 countries, only three countries experience a decrease in their correlations and betas, and the decrease is small. Figs. 6 and 7 present the time-series of rolling unconditional correlations and betas. Around the time of a clustering of equity market liberalizations in the late 1980s and early 1990s, both the average correlations and betas with the world increase. There is an even larger increase at the end of the 1990s, which may reflect further integration and overall higher market volatility (see section 5), or the increase may be temporary, brought about by a potential bubble in global technology stocks (see Brooks and Del Negro (2002)). These results are corroborated in a recent study by Carrieri, Errunza and Hogan (2002).

The analysis in Figs. 2-7 is unconditional. That is, we look at simple averages before and after liberalization. However, this type of analysis does not control for other financial and economic events that may coincide with equity market liberalization. Bekaert and Harvey (2000a) estimate panel regressions with a set of variables that are designed to control for coincidental financial and economic events. Interestingly, the message is similar to the unconditional analysis: after liberalizations, expected returns decrease, correlations and betas increase, and there is no particular impact on volatility.

There exists interesting corroborating evidence from the firm-level price effects of ADRs. An ADR from a country with investment restrictions can be viewed as investment liberalization. For example, when Chile had repatriation restrictions in place, it had to lift them for companies listing their shares overseas to make cross-market arbitrage possible. When the ADR is announced, we expect positive abnormal returns and presumably ex-post under performance, indicating lower expected returns after the liberalization. Of course, benchmarking ADR firms may be difficult, especially because the local market may experience significant spillover effects (See Urias (1994)). Overall, these predictions are borne out by the data, and the announcement effect of ADR issuance is significant, being typically larger than 1% (see Miller (1999) and Foerster and Karolyi (1999)). Using a sample of 126 ADRs from 32 countries, Errunza and Miller (2000) document a very significant decline in the cost of capital. In addition, they show that the decline is driven by the inability of U.S.

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<sup>11</sup>See also Richards (1996), De Santis and Imrohoroglu (1997), Aggarwal, Inclan, and Leal (1999) and Kim and Singal (2000) for studies of the effects of liberalization on stock market volatility.

investors to span the foreign security with domestic securities prior to cross-listing. Of course, there are many reasons, apart from liberalization, why ADR issues may induce a positive price effect, including additional liquidity and the relaxation of capital constraints (Lins, Strickland and Zenner (2001), for example). For further details, we refer to the excellent survey by Karolyi (1998). Recent studies by Chari and Henry (2001) and Patro and Wald (2002) also generally confirm the liberalization effects documented above using firm-specific data.

### *3.2. Liberalization and capital flows*

With the emerging markets crises in the second half of the 1990s, the role of foreign capital in developing countries once again came under intense scrutiny. One country, Malaysia, imposed severe capital controls on October 1, 1998, in an effort to thwart the perceived destabilizing actions of foreign speculators. After a decade of capital market liberalizations and increased portfolio flows into developing countries, the process seemed to stall or even reverse. It is, therefore, important to develop an understanding of the dynamics, causes and consequences of capital flows in emerging markets. In particular, we need to understand the role of financial liberalization in these dynamics.

There is a growing body of research that studies the joint dynamics of capital flows and equity returns [see, for example, Warther (1995), Choe, Kho and Stulz (1999), Froot, O'Connell and Seasholes (2001), Clark and Berko (1997), Edelen and Warner (1999), Stulz (1999), Edison and Warnock (2001), Richards (2002), and Griffin, Nardari and Stulz (2002)]. The first hypothesis of interest is whether foreign investors are "return chasers," in the terms of Bohn and Tesar (1996), that is, are flows caused by changes in expected returns? A related hypothesis is that international investors are momentum investors, leading to a positive relation between past returns and flows. A second set of hypotheses focuses on the effect of flows on returns. Both Froot et al. (2001) (focusing on 28 emerging markets) and Clark and Berko (focusing on Mexico) find that increases in capital flows raise stock market prices, but the studies disagree on whether the effect is temporary or permanent. If the increase in prices is temporary, it may be just a reflection of "price pressure," which has also been documented in developed markets for mutual fund flows and stock indices [Warther (1995) and Shleifer (1986)]. If the price increase is permanent, it may reflect a long-lasting decrease in the cost of equity capital associated with the risk sharing benefits of capital market openings in emerging markets.

When focusing on emerging markets, the structural changes associated with capital market liberalization complicate any empirical analysis of capital flows, since these changes can cause permanent or at least long-lasting changes in the data-generating processes. Bekaert, Harvey, and Lumsdaine (2002a) investigate the joint dynamics of returns and net U.S. equity flows, acknowledging the important effects capital market liberalization may have. They precede their

analysis with a detailed endogenous break-point analysis that helps define the relevant time-period over which to conduct the analysis. In general, they find sharply different results if their models are estimated over the entire sample — which ignores a fundamental nonstationarity in the data — versus a post-break (liberalization) sample. They find that net capital flows to emerging markets increase rapidly after liberalization, as investors rebalance their portfolios, but that they level out after three years. As Figure 1 indicates, if capital market liberalizations induce one-time portfolio rebalancing on the part of global investors, one may expect net flows to increase substantially after a liberalization and then to decrease again [see Bacchetta and van Wincoop (2000) for a formal model generating such dynamics]. The empirical pattern appears consistent with this conclusion.

Furthermore, Bekaert, Harvey and Lumsdaine (2002a) add two variables to the bivariate vector autoregression set-up of returns and equity flows in Froot et al. (2001): the world interest rate and local dividend yields. The low level of U.S. interest rates has often been cited as one of the major reasons for increased capital flows to emerging markets in 1993 [see World Bank (1997), as well as Calvo, Leiderman and Reinhart (1993, 1994) and Fernandez-Arias (1996)]. However, Bekaert, Harvey and Lumsdaine (2002a) do not find a significant effect on capital flows to emerging markets from an unexpected reduction in world interest rates.

Other main findings include that unexpected equity flows are indeed associated with strong short-lived increases in returns. However, they also find that they lead to permanent reductions in dividend yields, which may reflect a change in the cost of capital. Hence, the reduction in the dividend yield suggests that additional flows reduce the cost of capital, and that the actual return effect is not a pure price pressure effect, because it is partially permanent.

In more recent work, the focus has shifted towards detailed studies of the trading behavior of foreign investors in an effort to detect herding behavior and other behavioral biases. Two such studies, focusing on Korea before and during the currency crisis in 1997, are Cho, Kho and Stulz (1999) and Kim and Wei (2002a). Cho, Kho and Stulz find evidence of positive feedback trading and herding by foreign investors before the crisis, but not during the crisis period. They find no evidence that trades by foreign investors had a destabilizing effect on Korea's stock market, and found the market to adjust quickly and efficiently to large sales by foreign investors. Kim and Wei find that foreign investors outside Korea are more likely to engage in positive feedback trading strategies and in herding than the branches and subsidiaries of foreign institutions in Korea or foreign individuals living in Korea. This difference in trading behavior is possibly related to the difference in information possessed by the two types of investors.

One problem that such studies face is that it is quite difficult to distinguish between irrational and rational trading in a country that is still liberalizing, has stocks trading with and without associated ADRs, and is hit with an enormous

economic crisis. Another problem is that however detailed the data, some foreign transactions are bound to be undetected and may undermine testing behavioral hypotheses. For example, hedge funds may hold Korean equity exposure through an asset swap with a local company, which will not be detected by the usual capital flow statistics. Apart from trades executed through derivatives, 1998 was also a very active ADR issue year for Korea, again making the determination of net positions difficult. Of course, such problems also complicate the interpretation of the more aggregate studies discussed earlier. There is another related and rapidly growing literature that investigates the behavior of mutual funds investing in emerging markets. These include Borensztein and Gelos (2001), Kim and Wei (2002b), and Frankel and Schmukler (2000). Given that there already exists a survey article on this topic (Kaminsky, Lyons and Schmukler (2001)), we do not further discuss these articles.

Much has been made about the increased volatility of capital flows post liberalization (see Stiglitz (2000)). This discussion strikes us, in many ways, as odd. The emerging countries start with little or no capital flows and move to an environment (post liberalization) with significant capital flows which are, as expected, subject to portfolio rebalancing. Consequently, it is no mystery that the volatility of capital flows increases. In fact, if we revisit Fig. 1, the segmentation model predicts that volatility should spike around the time of market liberalization, but should then subside once the large capital inflow has occurred. Of course, there is always the worry that portfolio flows are not as “sticky” as foreign direct investment (FDI) and may disappear at a whim, causing a crisis in the process (see Claessens, Dooley and Warner (1995) for an attempt to distinguish between hot and other forms of capital).

In Fig. 8, we provide a very simple measure of the evolution of capital flow volatility over time. We computed the coefficient of variation (volatility over mean) of the U.S. holdings measure previously referenced above for 16 emerging countries. Figure 8 graphs the three-year rolling window coefficient of variation for the aggregate U.S. holdings in these markets over time. Note that the volatility measure starts to increase sharply in the early 1990s, when many liberalizations take place, and continues to increase, reaching its peak in 1995 at the time of the Mexican peso crisis. After falling sharply, the volatility measure reaches another, but much lower peak at the end of 1997, around the time of the Asian crisis. Interestingly, the 2000 was also a rather volatile year, but volatility in 2001 fell back to levels observed in the very early 1990s. It is very difficult to establish whether this volatility is excessive. Indeed, for comparison, we also consider the three-year coefficient of variation of U.S. holdings in developed markets.<sup>12</sup> There is an even more substantial increase in the mid- to late-1990s in capital flows volatility for developed markets. In fact, both measures show

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<sup>12</sup> The set of developed countries follows Harvey (1991). We omit Hong Kong and Singapore/Malaysia from the set of MSCI developed markets. We also omit New Zealand, because of lack of holdings data.

similar patterns, and capital flows to developed countries were more volatile than flows to emerging markets.

### *3.3 Liberalization and political risk*

What is the relation between equity market liberalizations and political risk? Bekaert and Harvey (2000a) present some evidence that country ratings significantly increase (lower risk) with one of their measures of equity market liberalization. This is important because Erb, Harvey and Viskanta (1996a,b) show a significant cross-sectional relation between country rating and future equity returns, and Bekaert, Erb, Harvey and Viskanta (1997) make the case that political risk is a priced risk in emerging markets. That is, increased ratings lead to lower costs of capital.

Table 2 summarizes the behavior around liberalizations in 20 emerging markets studied in Bekaert and Harvey (2000a) with respect to the International Country Risk Guide's (ICRG's) measures of political, economic, and financial risk ratings. We report the rating at time  $t$ , which is the month of the official liberalization, reported in Bekaert and Harvey. We also report one year earlier,  $t-1$ , as well as one and two years after the liberalization,  $t+1$  and  $t+2$ . The results are striking. The ICRG measure of political risk rating increases by 10.8% from  $t-1$  to  $t+2$  (indicating lower political risk). During this same period, the largest change is with the financial risk rating measure, which increases by 26.8%, while the composite risk rating measure, which combines the three components, increases by 15.8%. This evidence is consistent with political risk and the cost of capital decreasing after equity market liberalizations. One market measure of political risk is the yield spread on dollar-denominated emerging market bonds, relative to dollar yields. Adler and Qi (2002) study market integration between the U.S. and Mexico using Brady bond spreads as an indicator of effective market integration and find that the spread significantly affects expected returns. Country risk measures may reflect the credibility of the government's market-oriented reforms and its commitment to open capital markets. Perotti and Van Oijen (2001) show that privatizations (see below) are significantly associated with lower political risk over time. Perotti (1995) presents the theoretical framework that links credible privatization and political risk.

### *3.4 Liberalization and diversification benefits*

Although emerging market equity returns are highly volatile, they are relatively less correlated with equity returns in the developed world, making it possible to construct low-risk portfolios. Whereas the pioneering study of Errunza (1977) was largely ignored by both the academic and practitioner communities, interest in emerging market investments re-surfaced in the early 1990s. Early studies show very significant diversification benefits for emerging market investments (Divecha, Drach and Stefek (1992), De Santis (1993),

Harvey (1995)). However, these studies used market indexes compiled by the IFC that generally ignore the high transaction costs, low liquidity, and investment constraints associated with emerging market investments.

Bekaert and Urias (1996, 1999) measure the diversification benefits from emerging equity markets using data on closed-end funds (country and regional funds), and ADRs.<sup>13</sup> Unlike the IFC indexes, these assets are easily accessible to retail investors, and transaction costs are comparable to those for U.S.-traded stocks. The distinguishing feature of closed-end funds is that fund share prices generally deviate from the market value of all securities in the portfolio (known as “net asset value”); they may trade at a premium when the assets are invested in closed or restricted markets, or at a discount when the foreign market has unusual political risk. Historically, they provided access to restricted markets, while open-end funds and ADRs were relatively unimportant before 1993.

Bekaert and Urias (1996, 1999) generally find that investors give up a substantial part of the diversification benefits of investing in foreign markets when they do so by holding closed-end funds. Other studies, such as Bailey and Stulz (1990), Bailey and Lim (1992) and Chang, Eun and Kolodny (1995), found larger diversification benefits, but had not taken small sample biases in the statistical tests into account. Open-end funds, on the other hand, track the underlying IFC indices much better than other investment vehicles and prove to be the best diversification instrument in the Bekaert and Urias sample.

De Roon, Nijman and Werker (2001) and Li, Sarker and Wang (2003) take the transactions costs that investors in emerging markets face directly into account when measuring diversification benefits. De Roon, Nijman and Werker find that the diversification benefits of investing in emerging markets are eliminated when transactions costs and, in particular, short-sale constraints are introduced. However, they admit that there is some evidence of bias in their asymptotic spanning analysis. Unlike the asymptotic mean variance tests, Li, Sarker and Wang use a Bayesian approach that incorporates the uncertainty of finite samples into their analysis. They argue that the diversification benefits to investing in emerging markets remain substantial even in the presence of short-sale constraints. These two articles use the IFC indices to test for diversification benefits. Errunza, Hogan and Hung (1999) show that most of these diversification benefits can be obtained using domestically traded assets (ADRs and country funds).

By removing price segmentation, liberalizations may increase correlations and hence reduce diversification benefits. Using a model in which conditional correlations depend on world volatility and variables tracking the degree of integration, Bekaert and Harvey (1997) measure the time-variation in correlations for 17 emerging markets. For some countries, for example, Thailand, correlations increase markedly around the time of liberalization. The average response of these conditional correlations to liberalizations in 17

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<sup>13</sup> Also see Diwan, Errunza and Senbet (1995).



emerging markets is a small, but statistically significant, increase of 0.08 at most.

### *3.5 How well have emerging market portfolios done?*

As we outlined before, there is some discussion in the literature suggesting that those who invest in emerging markets are subject to herding and other irrational behavior. Rather than focusing on one emerging market, we carry out two simple exercises to assess the overall performance of portfolio investment in emerging markets.

Our first exercise examines the performance of actual portfolio investments by U.S. investors in emerging countries. That is, the definition of U.S. investor is comprehensive, including all U.S. investments covered by the aggregate equity flow statistics, in contrast to studies such as Froot et al. (2001), who only focus on institutional investors. We compare their actual emerging market holdings through time to both an equally-weighted and a value-weighted benchmark investment strategy as well, as to the IFC Composite return. The difference between the U.S. portfolio weights and the benchmark investment weights represents U.S. investors' "over" or "under" weighting in these markets. We compute these weights using the accumulated capital flow data from the U.S. Treasury and from Warnock and Cleaver (2002)..

The results in Table 3 suggest that U.S. investors' country allocation led to substantially higher returns than all three benchmarks. For example, in the 1990s, the U.S. portfolio return was 11.4% compared to only 4.4% for the value-weighted benchmark of the 16 countries where we have U.S. holdings.<sup>14</sup> It is unlikely that this out performance would be overturned if additional countries were considered. During this period, the broader IFC Composite index returned only 0.1% on average.

The second exercise looks at aggregate investment in emerging markets versus developed markets. We conduct the following experiment. Using holdings data for both developed and emerging markets, we calculate the total U.S. foreign holdings. We determine the proportion of U.S. holdings in emerging markets versus developed markets (not including the U.S.). Using the same countries for which we have holdings data, we then calculate market capitalization weighted indices for both emerging and developed markets. Again, we can determine the proportion of total capitalization in emerging and developed markets.

The results are in Table 4. The first two columns provide summary statistics for the U.S. holdings weight times both value and equally weighted developed and emerging market indices. That is, the portfolio mimics the actual allocation between emerging and developed markets, but uses market indices within these

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<sup>14</sup> Holdings data are not available for Jordan, Nigeria and Zimbabwe. The revised data from Warnock and Cleaver (2002) also do not include data for Pakistan.

broad groups. In the next two columns, we replace the holdings weights with market capitalization weights. The difference in performance is due to the difference in U.S. allocation to emerging markets relative to developed markets, rather than any particular country selection. That is, the weights, whether holdings-based or capitalization-based, are multiplied by the same return indices. The results suggest that there is not much difference between the capitalization weights and the holdings weights in terms of the returns. For example, since 1990, the returns to the holdings-based weights and the market capitalization weights are both 4.4% per annum. The volatility is also very similar. Interestingly, even a fixed 90% weight in developed markets and 10% weight in emerging markets (see the last column) produces similar results. Hence, the overall U.S. allocation performance is quite similar to the performance that would have obtained from market capitalization weighting.

While the previous exercise is necessary for comparison, the analysis does not fairly represent the U.S. investor performance. We use the holdings to determine the aggregate weights in developed and emerging markets and then allocate to passive market capitalization benchmarks for these two groups of markets (that is, we ignore the country selection). But the results in Table 3 have already demonstrated some ability to choose the right countries. The fifth column of Table 4 allows for country selection. We use the weights in developed and emerging markets and create a developed and emerging market benchmark that reflects the country weighting chosen by U.S. investors. Consistent with the emerging market analysis, U.S. investors substantially outperform the market capitalization benchmark. For example, from 1990, the U.S. return is 7.6% per annum, compared to a value-weighted benchmark return of 4.4%. The volatility of the U.S. strategy is 130 basis points lower than the volatility of the value-weighted benchmark. Indeed, the U.S. global return is even higher than the MSCI world market composite return, which includes a substantial weight for U.S. equity (which we know has done well over the past 12 years). All in all, the overall investment performance of U.S. investors is much rosier than the country-by-country results which focus on behavioral biases. Disyatat and Gelos (2001) study the asset allocation of emerging market funds and find that it is not inconsistent with mean-variance optimizing behavior. Their results are similar in spirit to ours. However, Frankel and Schmukler's (2000) study on country funds suggests that the holders of the underlying assets (the portfolio managers) have more information than the country fund holders (the investors).

#### **4. Real effects of financial market integration**

From 1980 to 1997, Chile experienced average real GDP growth of 3.8 percent per year, while the Ivory Coast had negative real growth of 2.4 percent per year. Why? Attempts to explain differences in economic growth across countries have again taken center stage in the macroeconomic literature. Although there is no agreement on what determines economic growth, most of

the literature finds evidence of conditional convergence. Poor countries grow faster than rich countries, once it is taken into account that poor countries tend to have lower long-run per capita GDPs, for example, because of the poor quality of their capital stock (both physical and human). Sachs and Warner (1995) have argued that policy choices, such as respect for property rights and open international trade, are important determinants of the long-run capacity for growth. Williamson (1996) has already argued that fast growth, globalization, and convergence are positively correlated from the historical perspective of the end of the nineteenth century until now. Here we focus on the real effects of the most recent wave of liberalizations.

There are some interesting differences between the two countries we mentioned. First, the Ivory Coast has a larger trade sector than Chile, but the role of trade openness remains hotly debated. Second, Chile liberalized its capital markets, in particular its equity market, to foreign investment in 1992. After the liberalization, the Chilean economy grew by 6.3 percent per year.

#### *4.1 Why would financial liberalization affect economic growth?*

There are a number of channels through which financial liberalization may affect growth. First, foreign investors, enjoying improved benefits of diversification, will drive up local equity prices permanently, thereby reducing the cost of equity capital. Consequently, the real variable most sensitive to the cost of capital should be real investment. Bekaert and Harvey (2000a), Bekaert, Harvey and Lundblad (2002a), and Henry (2000b) all find that investment increases post equity market liberalization. If this additional investment is efficient, then economic growth should increase. However, in the aftermath of the recent crises, some economists feel that foreign capital has been wasted on frivolous consumption and inefficient investment, undermining the benefits of financial liberalization. Bekaert, Harvey and Lundblad (2002a) show that not only does the ratio of investment to GDP actually increase, but also that the ratio of consumption to GDP does not increase after liberalization. The additional investment appears to be financed by foreign capital, as the trade balance significantly decreases.

Second, there is now a large literature on how more developed financial markets and intermediation can enhance growth and how well-functioning equity markets may promote financial development [see, for example, Levine (1991), King and Levine (1993), Levine and Zervos (1996, 1998a,b), and Levine, Loayza and Beck (2000)]. Furthermore, foreign investors may also demand better corporate governance to protect their investments, reducing the wedge between the costs of external and internal financial capital, further increasing investment. There is, in fact, a large and growing literature on how the relaxation of financing constraints improves the allocation of capital and promotes growth [see Rajan and Zingales (1998), Love (2002), Wurgler (2001)]. Lins, Strickland and Zenner (2000) show that firms in emerging markets listing

on U.S. exchanges are able to relax financing constraints. Since ADRs can be viewed as firm-specific investment liberalizations, this research directly establishes a link between liberalization and financing constraints. Galindo, Schiantarelli and Weiss (2001) show that financial liberalization improves the efficiency of capital allocation for individual firms in 12 developing countries. Laeven (2001) has examined the role of banking liberalization in relaxing financing constraints for emerging markets. Forbes (2002) finds that Chilean capital controls significantly increased financial constraints for smaller firms. The interplay between economic growth, financial development and corporate finance is likely to be an important area for future research, and is a topic to which we return in Section 5.

#### *4.2 Measuring the Liberalization Effect on Economic Growth*

Bekaert, Harvey and Lundblad (2001) propose a time series panel methodology that fully exploits all the available data to measure how much an equity market liberalization increases growth. They regress future growth (in logarithmic form), averaged over periods ranging from three years to seven years, on a number of predetermined determinants of long-run steady state per capita GDP, including secondary school enrollment, the size of the government sector, inflation, trade openness, and on initial GDP (measured in logarithms) in 1980. The right-hand side variables also include an indicator of liberalization based primarily on an analysis of regulatory reforms in Bekaert and Harvey (2000a). To maximize the time-series content in their regressions, they use overlapping data. For example, they use growth from 1981 to 1986 and from 1982 to 1987 in the same regression. They correct for the resulting correlation in the model's residuals in the standard errors. Estimating the model by the Generalized Method of Moments, they can also adjust for the correlation of residuals across countries and different variances of residuals both across countries and over time (heteroskedasticity).

Bekaert, Harvey, and Lundblad (2001) consider the liberalization effect in a small sample of 30 emerging and frontier markets as defined by the IFC and found that economic growth increased by 0.7 to 1.4 percent per year post liberalization.

Bekaert, Harvey and Lundblad (2002a) expand the sample to 95 countries, including to countries that may not even have financial markets, as well as to developed countries. The liberalization effect now has a cross-sectional component that measures the difference in growth between segmented and financially open countries, as well as a temporal component (countries before and after liberalization). It is this cross-sectional dimension that has been the main focus of the trade openness literature.

Expanding the sample of countries strengthens the results. Taken by itself, financial liberalization leads to an increase in average annual per capita GDP growth of 1.5 to 2.3 percent per year. When they factor in a host of other

variables that might also boost economic performance, improvements associated with financial liberalization still remain strong, 0.7 to 1.4 percent per year. In examining a number of different samples (whose size depends on the availability of control variables), the financial liberalization effect seems robust. They also consider an alternative set of liberalization dates. The main results are robust to these alternative dates. Further, they carry out a Monte Carlo experiment whereby one country's liberalization date is assigned randomly to another country. This allows them to test whether these results primarily reflect overall economic growth in the late 1980s and early 1990s (when the liberalization dates are concentrated). The Monte Carlo exercise shows that the liberalization dates do not really explain economic growth when they are decoupled from the specific country to which they apply, showing that the effect is not related to the world business cycle during these years.

### *4.3. Intensity and simultaneity problems in measuring real liberalization effects*

#### *4.3.1. Intensity of the reforms*

There is a heated debate about the effect of capital account openness on economic growth and economic welfare, especially in developing countries [see, for example, Rodrik (1998), Edwards (2001), Arteta, Eichengreen and Wyplosz (2001)]. Eichengreen (2001) suggests that the weak and inconsistent results might be due to the fact that the IMF's AREAER was used as a measure of capital account restrictions. Because this measure does not differentiate between capital account restrictions, it is too coarse to yield meaningful results. When capital account restrictions are more finely measured, as in Quinn (1997), Quinn, Inclan and Toyoda (2001), and Edwards (2001), there does appear to be a growth effect, although it is fragile [see Arteta, Eichengreen and Wyplosz (2001)]. Bekaert, Harvey and Lundblad (2001, 2002a), focusing on equity liberalization only, find a robust growth effect. Moreover, they also employ a measure that captures the intensity of the liberalization by taking the ratio of the market capitalization of the IFC's investable index versus the IFC's global index [see also Bekaert (1995) and Edison and Warnock (2003)], or the number of investable securities compared to the total number of securities. These measures also point to a strong positive growth effect from liberalization.

#### *4.3.2. Financial liberalization and macroeconomic reforms*

It is possible that financial liberalizations typically coincide with other more macro-oriented reforms, which are the source of increased growth, and not the financial liberalizations. However, when Bekaert, Harvey and Lundblad (2002a) add variables capturing macroeconomic reforms, such as inflation, trade openness, fiscal deficits and the black market premium, the liberalization effect remains intact. In some specifications, it does weaken somewhat, suggesting that

macroeconomic reforms may, indeed, account for some of the liberalization effect.

#### *4.3.3. Financial liberalization and financial market development*

Another possibility is that financial liberalization is the natural outcome of a financial development process, and that, consistent with many endogenous growth theories, it is financial development that leads to increased growth. When Bekaert, Harvey and Lundblad (2002a) add a number of banking and stock market development indicators to their regressions, the liberalization effect is reduced only marginally in most specifications, but more substantially in a specification excluding the poorest countries. Moreover, they find that financial liberalization predicts additional financial development, but that the decision to liberalize does not seem to be affected by the degree of financial development. Hence, it is likely that one channel through which financial liberalization increases growth is by its impact on financial development.<sup>15</sup>

#### *4.3.4. Functional capital markets*

A final possibility acknowledges the imperfection of capital markets, which drives a wedge between the cost of internal and external capital and makes investment sensitive to the presence of internally generated cash flows. Foreigners may demand better corporate governance and financial liberalizations, then, may coincide with security law reforms that enforce better corporate governance. Improved corporate governance may lead to lower costs of capital and increased investment [see Dahlquist, Pinkowitz, Stulz and Williamson (2002)]. To capture this, Bekaert, Harvey and Lundblad (2002a) use a variable constructed by Bhattacharya and Daouk (2002), who trace the implementation and enforcement of insider trading laws in a large number of countries. Bekaert, Harvey and Lundblad find that the enforcement of insider trading laws has a positive effect on growth and is statistically significant in three of their four samples. Importantly, it does not diminish the impact of financial liberalizations on economic growth. Another reason to suspect that corporate governance matters for growth prospects is that Bekaert, Harvey and Lundblad (2001) find larger liberalization effects for countries with an Anglo-Saxon legal system, which are thought to have better corporate governance systems [see Shleifer and Vishny (1997)]. On a more basic level, it appears that more secure property rights lead to better capital accumulation and higher growth [see Claessens and Laeven (2003)].

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<sup>15</sup> See Beck, Demirgüç-Kunt and Levine (2000), Beck, Levine and Loayza (2000), Demirgüç-Kunt and Levine (1996b), Demirgüç-Kunt and Maksimovic (1996), and Rajan and Zingales (2001), for work on financial development and growth.

#### 4.4. *Other real effects of financial liberalization*

The positive growth effects are very surprising from the perspective of a large literature focusing on the detrimental effects of financial liberalization. Fig. 9 is taken from a World Bank document on private capital flows to emerging markets. The consensus view is simple. Financial integration naturally leads to increased capital inflows. This, in turn, increases asset prices (either rationally or irrationally), improves liquidity, and triggers a rapid expansion in bank credit. The lending boom then leads to a consumption binge, and potentially a real estate bubble. Apart from the appreciation in asset prices, the real exchange rate appreciates as well, aggravating macroeconomic vulnerability. A weak and inadequately regulated banking sector may aggravate this process by lending for speculative purposes, consumption and frivolous investments, including the fuelling of a construction boom. When inflated assets are used as collateral to justify further borrowing, a boom-bust cycle is clearly in the making. The consensus view appears to be that liberalization dramatically increases financial sector vulnerability in many countries, and that a weak banking sector played a large role in both the Mexican and Asian crises.

While this interpretation of how foreign capital can wreak havoc in the real economy of developing countries is widely accepted, it is surprising that empirical evidence for this view is very scarce. Bekaert and Harvey (2000b) conduct a very simple exercise. First, they find the date at which foreign investors may have become marginal investors in the local equity market by using structural break tests applied to empirical measures of U.S. holdings of local market capitalization (see also, above). Second, they test for changes in a number of real variables, finding a larger trade sector, less long-term country debt, lower inflation, and lower foreign exchange volatility. They also test whether the real exchange rate appreciates after the equity flow breaks, and find that it does in 9 of 16 countries. However, there is a significant depreciation in four countries. Overall, panel estimates reveal a real appreciation of 5- 10 % that is statistically significant in about half of the specifications. Hence, the empirical evidence for the real appreciation story is not as strong as typically believed.

Finally, there is a clear sense that increased volatility in financial markets post liberalization (for which the empirical evidence is tenuous) also translates into real variability. Bekaert, Harvey and Lundblad (2002b) test this prediction directly. Investigating a large cross-section of liberalized and segmented markets, and using information before and after liberalization for a large number of emerging market economies, they establish that the volatility of consumption and GDP growth did not significantly increase post-liberalization. When they focus on the years preceding the recent Asian crisis, volatility actually decreases, which is especially true for the volatility of consumption growth. When they include the crises years (1997-2000) and focus on a subset of developing economies, this strong result is weakened. However, even with the crises years, in no case does volatility significantly increase.

Bekaert, Harvey and Lundblad (2002b) also strip out predictable consumption growth and focus on idiosyncratic consumption growth variability, as in Athanasoulis and van Wincoop (2000, 2001).<sup>16</sup> They find that consumption growth volatility mostly significantly decreases post-liberalization. The analysis indicates that the drop in idiosyncratic volatility is economically large. The assertion that globalization has gone too far for emerging economies is not supported by their empirical analysis. Nevertheless, the crises that did occur do suggest that financial integration is best accompanied by vigorous reforms of the domestic financial sector.

## 5. Contagion

### 5.1. *Currency crises and contagion*

In the mid to late 1990s, a number of emerging markets experienced spectacular currency crises, first Mexico in 1994 (the “Tequila Crisis”), then South-East Asia in 1997 (the “Asian Flu” crisis), and Russia in 1998 (the “Russian Virus” crisis). These crises not only rejuvenated research on speculative currency attacks, but also created a new buzzword: “contagion.” We divide this literature roughly into two components. First, there is the work that explores why crises occur in the first place. Second, there is a large body of work on why crises spread. The literature is too vast to cover here adequately. For many more references, we refer to the survey articles of Claessens, Dornbusch and Park (2001), Claessens and Forbes (2001), DeBandt and Hartmann (2000), and Krugman (2001). Of course, some articles examine both what causes currency crises and how they spread across countries.

#### 5.1.1 *Predictable currency crises?*

There are two main explanations for why a currency may experience speculative pressures that can lead to a crisis and devaluation (or the floating of the currency).

The first explanation, building on the seminal work of Krugman (1979) and Flood and Garber (1984), simply argues that if governments follow policies inconsistent with the currency peg, a speculative attack is unavoidable. Speculators will sell the local currency and buy foreign currency. The central bank will lose foreign reserves defending the peg until a critical level of low reserves is reached, at which point the central bank will give up. Whereas initial models focused on expansionary fiscal policies, expansionary monetary policies can also lead to speculative attacks. Of course, this model carries the strong implication that speculative attacks should be partially predictable. In fact, growing budget deficits, fast money growth and rising wages and prices should precede speculative attacks. If prices rise while the nominal exchange rate

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<sup>16</sup> Lewis (1996, 2000) provides an analysis of risk sharing in developed markets.



remains unchanged, the real exchange rate will appreciate. Hence, real exchange rate over-valuations should also signal an imminent crisis. The combination of budget deficits and real exchange rate over-valuation may also lead to excessive current account deficits. Consequently, if Krugman is correct, speculative pressures should be predictable from economic data.

The second explanation recognizes that, sometimes, speculative attacks seem to come out of the blue. That is, the crises are self-fulfilling, caused by “animal spirits,” as Keynes once phrased it. A significant group of investors simply starts speculating against the currency, provoking a large capital outflow that leads to the eventual collapse of the exchange rate, thereby validating the negative expectations regarding the survival chances of the peg. The authorities have no choice but to change their policies and accept the devalued currency, even though there are ex-ante no fundamental reasons for dropping the peg.<sup>17</sup> The empirical prediction of these models is very strong, in that a currency crisis is essentially unpredictable; government policies will only become expansionary after the currency has been attacked and devalued.

More recent contributions to this literature [see Ozkan and Sutherland (1998) and Bensaid and Jeanne (2001)] introduce interaction with fundamental variables in this class of models. Basically, a deterioration of fundamentals (for instance, in unemployment) may make defending the currency more costly (for instance, by raising interest rates), eventually leading to a crisis. However, the actual occurrence and timing of the crisis is still determined by the animal spirits of speculators.

Krugman (2001) distinguishes third generation models in which currency crises lead to severe short-term real output declines. Inspired by the Asian crisis, these models may stress moral hazard driven excessive investment [Corsetti, Pesenti and Roubini (1999)] or bank runs in a fragile banking system [Chang and Velasco (2001)] as the source of an eventual exchange rate collapse.

Because we have competing theories, with different empirical predictions, it would be nice if the data would provide a clear indication of which theory is correct, and definitively establish whether devaluations are predictable or not. Unfortunately this is not the case. Although there have been many empirical studies, they differ in the countries and sample periods covered, as well as in the questions addressed. For example, it may be that a currency experiences speculative pressure, but that the government successfully defends the currency and that no devaluation occurs. Some studies focus on predicting this kind of speculative pressure [see, e.g., Eichengreen, Rose and Wyplosz (1995)]. One could also distinguish between actual devaluations and regime transitions, like flotations.

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<sup>17</sup> Technically, such self-fulfilling attacks are possible in models with multiple equilibriums. There is a stable equilibrium, in which the government follows the right policies consistent with the peg, but there is also another equilibrium, in which speculators attack the currency and the government accommodates the lower exchange rate [see, for example, Obstfeld (1986), or Masson (1999)]. Drazen (1998) provides a different approach in studying political contagion.

Overall, there appear to be macro-economic signals that predict currency crises. Eichengreen, Rose and Wyplosz, focusing on devaluations in OECD (developed) countries, find that monetary factors, current account deficits and inflation matter, but fiscal deficits do not matter. Past crises matter for current ones, indicating that credibility is important. Esquivel and Larrain (2000) include also developing countries in their sample and find that real exchange rate misalignment, high monetary growth rates, low foreign exchange reserves and current account imbalances predict currency crises.

Klein and Marion (1997) and Goldfahn and Valdes (1997) also confirm that real exchange rate over-valuation is an important factor in predicting currency crises. Kaminsky, Lizondo, and Reinhart (1998) claim that a currency crisis is imminent when variables such as exports, output, the money/international reserves ratio and equity prices cross threshold levels. The empirical results, therefore, fall somewhere between the first two models: there is some, but rather weak, predictive power. The evidence on currency crisis predictability seems inconclusive.

### *5.1.2 Currency crisis contagion*

It is from the perspective of the self-fulfilling attack literature, that contagion seems easiest to understand. This literature defines contagion, in the context of currency crises, as the effect on the probability of a speculative attack, which stems from attacks on *other* currencies [see also De Gregario and Valdes (2001)]. When speculators attack one currency successfully, they may well try another. However, it is important to realize that contagion may also be truly rational and, perhaps, predictable, for a variety of reasons. For example, trade is a strong linkage between countries that has an obvious currency component ([see Gerlach and Smets (1994)]. When the British pound leaves the European Monetary System (EMS) in 1992 and depreciates but the Irish punt remains in the EMS and does not devalue, it is likely that the Irish punt experiences a real exchange rate appreciation relative to the pound (unless inflation rapidly reacts to the changes in exchange rates, which, in 1992, it did not). Hence, the real exchange rate appreciation adversely affects the competitive position of Irish exporters, eventually causing economic and political pressure to devalue. A related channel of apparent contagion is an income effect — reduced growth and lower income levels after a crisis reduce the demand for imports from other countries. A third channel is the “wake up call.” It may be that the second country experienced similar negative macroeconomic conditions, or followed similar inconsistent policies.

In addition to these channels, Forbes (2000) analyzes two other channels by which crises spread: a credit crunch (banks affected by a crisis in one country reduce lending to other countries) and a forced-portfolio recomposition or liquidity effect (investors that suffer losses from a crisis in one country sell assets in other countries). Forbes uses data from over 10,000 firms to test for

the relative importance of each of these five channels of “contagion” during the Asian and Russian crises and finds that the first two channels (based largely on trade) are the most important

Esquivel and Larrain (2000) document some evidence of regional contagion, in that a currency is more likely to devalue if a neighboring country has experienced a devaluation, even controlling for other determinants of devaluation. Eichengreen, Rose and Wyplosz (1996) also find that contagion is primarily due to trade links. More research seems warranted on the channels through which contagion may occur.

### *5.2. Contagion and Equity Markets*

Contagion in equity markets refers to the notion that markets move more closely together during periods of crisis. A first problem in the literature is then to define what constitutes a crisis, especially given the extreme volatility of many emerging equity markets. Consider the simple exercise in Table 5 that details the five most severe negative returns in 17 emerging markets. In 9 of 17 markets, August 1998 (Russian default) was among the one of the five poorest performing months. For the Asian Crisis of July 1997 to May 1998, Indonesia, Korea, Malaysia and Thailand each have four representatives in the five worst returns during these months. On the other hand, none of the Latin American countries have any of their five worst return months during the Asian Crisis. Finally, the Mexican crisis of December 1994, shows up in a large negative return for Mexico. Interestingly, this month does not appear in any of the other Latin American or Asian worst return months. It should also be noted that October 1987, which is the date of a sharp drop in the U.S. stock market, shows up in the list for Mexico, Portugal, Taiwan and Thailand.<sup>18</sup>

The analysis in Table 5 is related to the recent work of Bae, Karolyi and Stulz (2002), who, using daily returns data in a number of emerging markets, look for the coincidences of extreme movements. Interestingly, they attempt to characterize (predict) the degree of coincidence using fundamental economic variables, such as interest rates, exchange rate changes, and conditional volatility. [Also, see Karolyi and Stulz (1996) and Hartmann, Straetmans and de Vries (2001)]. The coincidence of extreme equity return movements may be one definition of contagion, but Forbes and Rigobon (2001) declare “there is no consensus on exactly what constitutes contagion or how it should be defined.” Rigobon (2001) states, “paradoxically, ... there is no accordance on what contagion means.”

Importantly, contagion is not simply increased correlation during a crisis period. From a completely statistical perspective, one would expect higher

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<sup>18</sup> There is also some evidence that equity markets anticipate some currency crises [see Harvey and Roper (1999), Becker, Gelos, and Richards (2000) and Glen (2002)].

correlations during periods of high volatility.<sup>19</sup> Forbes and Rigobon (2001) present a statistical correction for this conditioning bias and argue that there was no contagion during the three most recent crises.<sup>20</sup>

Bekaert, Harvey and Ng (2003) and Tang (2002) define contagion as excess correlation – correlation over and above what one would expect from economic fundamentals, and take an asset pricing perspective to studying contagion. For a given factor model, increased correlation is expected if the volatility of a factor increases. The size of the increased correlation will depend on the factor loadings. Contagion, therefore, is simply defined by the correlation of the model residuals. Tang restricts the underlying asset-pricing model to a world CAPM, whereas Bekaert, Harvey and Ng examine a more general factor model.

By defining the factor model, they effectively take a stand on the global, regional and country specific fundamentals, as well as the mechanism that transfers fundamentals into correlation. Concretely, they apply a two-factor model with time-varying loadings to “small” stock markets in three different regions: Europe, South-East Asia, and Latin America. The two factors are the U.S. equity market return and a regional equity portfolio return. Their framework nests three models: a world capital asset pricing model (CAPM), a world CAPM with the U.S. equity return as the benchmark asset, and a regional CAPM with a regional portfolio as the benchmark. They also add local factors to allow for the possibility of segmented markets. If the countries in a particular region are globally integrated for most of the sample period, but suddenly see their intra-regional correlations rise dramatically during a regional crisis, their contagion test would reject the null hypothesis of no contagion. On the other hand, if these countries’ expected returns are not well described by a global CAPM, but rather by a regional CAPM, the increased correlations may simply be a consequence of increased factor volatility.

Equity return volatilities in the Bekaert, Harvey and Ng (2003) model follow univariate generalized autoregressive conditional heteroskedasticity (GARCH) processes with asymmetry, as in Bekaert and Harvey (1997) and Ng (2000). Hence, negative news regarding the world or regional market may increase the volatility of the factor more than positive news, and hence lead to increased correlations between stock markets.<sup>21</sup> Moreover, their model incorporates time-varying betas, where the betas are influenced by trade patterns, as in Chen and

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<sup>19</sup> See Stambaugh (1995), Boyer, Gibson and Loretan (1999), Loretan and English (2000), Forbes and Rigobon (2001), and early work by Pindyck and Rotemberg (1990, 1993). Work linking news, volatility and correlation includes King and Wadhawani (1990), Hamao, Masulis and Ng (1990), and King, Sentana and Wadhawani (1994).

<sup>20</sup> As Forbes and Rigobon (2001) note, their methodology only works under a restrictive set of circumstances. An alternative is the test in Rigobon (2002a).

<sup>21</sup> Longin and Solnik (1995) report an increase in cross-country correlation during volatile periods. Other empirical studies [for example, Erb, Harvey, and Viskanta (1994) and De Santis and Gerard (1997)] find different correlations in up and down markets, while Longin and Solnik (2001), Ang and Bekaert (2002) and Das and Uppal (2001) document higher correlations in bear markets. Erb, Harvey and Viskanta (1995) document higher correlations during U.S. recessions.

Zhang (1997). The results in Bekaert, Harvey and Ng (2003) indicate the presence of contagion around the South-East Asian crisis, but not during the Mexican crisis. This contagion is not limited to South-East Asian, but extends to Latin America. These conclusions are broadly consistent with Rigobon (2002b) and Dungey and Martin (2001), who use a different methodology.

Finally, there are a number of recent papers that link contagion to liquidity and financial frictions [see Calvo (1999), Calvo and Mendoza (2000a,b), Kodres and Pritsker (2002), Rigobon (2002b), and Yuan (2002)]. Kyle and Xiong (2001) show how wealth effects can lead to contagion.

## **6. Other important issues**

### *6.1 Corporate finance*

Corporations in emerging markets provide an ideal testing ground for some important theories in corporate finance. For example, Lombardo and Pagano (2000) examine how legal institutions affect the return on equity. The cross-sectional variation in such institutions is particularly large for emerging markets. Similarly, it is often argued that the existence of a sufficient amount of debt helps mitigate the agency problems that arise as a result of the separation of ownership and control. In a number of emerging markets, the existence of multi-level ownership provides an environment where there is an acute separation of cash flow and voting rights. Given the possibility of severe agency problems, emerging markets provide an ideal venue to test these theories. That is, powerful tests of these theories can be conducted in samples that have large variation in agency problems.

In order to compete in world capital markets, a number of countries are grappling with setting rules or formal laws with respect to corporate governance. There is a growing realization that inadequate corporate governance mechanisms will increase the cost of equity capital for emerging market corporations, as they find it more difficult to obtain equity investors.

Overall, research has characterized the degree of external corporate governance in emerging markets as weak (Johnson et al. (2000b), Denis and McConnell (2002), Klapper and Love (2002)). Both shareholder rights and the legal enforcement of the rights that do exist are generally lacking in emerging markets (La Porta, Lopez-de-Silanes, and Shleifer, (LLSV) 1998), and the use of corporate takeovers as a disciplining mechanism is almost nonexistent. Further, as mentioned above, it is frequently the case that insiders possess control rights in excess of their proportional ownership. This is usually achieved through pyramid structures in which one firm is controlled by another firm, which may itself be controlled by some other entity, and so forth [Shleifer and Vishny (1997), LLSV (1998, 1999), Claessens, Djankov, and Lang (2000), and Lins (2003)]. Finally, irrespective of pyramid structures, managers of emerging market firms sometimes issue and own shares with superior voting rights to achieve control rights that exceed their cash flow rights in the firm [Nenova

(2003), Lins (2003)]. Taken together, the net result is that a great number of firms in emerging markets have managers who possess control rights that exceed their cash flow rights in the firm, which, fundamentally, gives rise to potentially extreme managerial agency problems.

When external country-level corporate governance is weak, it is possible that internal governance in the form of concentrated ownership will step in to fill the void (see Himmelberg, Hubbard and Love (2002)). Lins (2003) investigates whether management ownership structures and large non-management blockholders are related to firm value across a sample of 1433 firms from 18 emerging markets. He finds that firm values are lower when a management group's control rights exceed its cash flow rights. Lins also finds that large non-management control rights blockholdings are positively related to firm value. Both of these effects are significantly more pronounced in countries with low shareholder protection. One interpretation of these results is that, in emerging markets, large non-management blockholders can act as a partial substitute for missing institutional governance mechanisms.

Lemmon and Lins (2003) use a sample of 800 firms in eight East Asian emerging markets to study the effect of ownership structure on value during the region's financial crisis. The crisis negatively impacted firms' investment opportunities, raising the incentives of controlling shareholders to expropriate minority investors. Further, because the crisis was for the most part unanticipated, it provides a "natural experiment" for the study of ownership and shareholder value that is less subject to endogeneity concerns. During the crisis, cumulative stock returns of firms in which managers have high levels of control rights, but have separated their control and cash flow ownership, are 10 to 20 percentage points lower than those of other firms. The evidence is consistent with the view that ownership structure plays an important role in determining the incentives of insiders to expropriate minority shareholders.

A related issue is the relation between the ownership structure and local authority. Johnson and Mitton (2003) examine Malaysian firms before and after the imposition of capital controls and find that firms with stronger ties to Prime Minister Mahatir benefited from the imposition of the capital controls. They interpret this as evidence that the capital controls provided a screen behind which favorable firms could be supported, as evidence of crony capitalism.

Claessens, Djankov and Klapper (2002) examine the incidence of bankruptcy filings during the Asian crisis. They find after controlling for firm characteristics that bank-owned or group-affiliated firms were much less likely to file for bankruptcy. They also find that countries with stronger creditor rights and better judicial systems have increased likelihood of bankruptcy filings. Johnson, Boone, Breach, and Friedman (2000) show that countries with lower quality corporate governance were hit harder during the Asian crisis.

Gibson (2000) examines the relation between CEO turnover and firm performance in emerging markets. In general, he finds a high turnover after poor performance, which is consistent with good corporate governance. However,

when he isolates firms with a large domestic shareholder, such as a group affiliated firm, there is no relation between performance and CEO turnover. This suggests that these ownership structures impede good corporate governance in emerging markets.

Lins and Servaes (2002) use a sample of over 1,000 firms from seven emerging markets to study the effect of corporate diversification on firm value. They find that diversified firms trade at a discount of approximately 7% to single-segment firms. From a corporate governance perspective, Lins and Servaes find a discount only for those firms that are part of industrial groups, and for diversified firms with management ownership concentration between 10% and 30%. Further, the discount is most severe when management control rights substantially exceed management cash flow rights. Their results do not support internal capital market efficiency in economies with severe capital market imperfections.

Since management control and a separation of management ownership and control are associated with lower firm value in emerging markets, a question arises as to whether alternative external firm-level governance mechanisms exist that might improve the situation for minority shareholders. Several alternate governance mechanisms have the potential to lessen real or perceived agency problems between a firm's controlling shareholders and managers and its minority shareholders. Harvey, Lins, and Roper (2002) examine whether debt contracts can alleviate problems with potentially mis-aligned incentives that result when managers of emerging market firms have control rights in excess of their proportional ownership. Harvey et al. provide evidence that higher debt levels lessen the loss in value attributed to these managerial agency problems. When the authors investigate specific debt issues, they find that internationally-syndicated term loans, which arguably provide the highest degree of firm-level monitoring, enhance value the most when issued by firms with high levels of expected managerial agency problems.<sup>22</sup>

Another potential firm-level governance mechanism that has received considerable research attention is a firm's decision to issue a cross-listed security, such as an ADR. For firms in emerging markets and those with poor external governance environments, this allows the firm to "opt in" to a better external governance regime and to commit to a higher level of disclosure, both of which should increase shareholder value. Along this line of reasoning, Doidge, Karolyi, and Stulz (2002) present evidence that non-U.S. firms with exchange-listed ADRs have higher Tobin's Q values, and that this effect is most pronounced for firms from countries with the worst investor rights. Lang, Lins,

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<sup>22</sup> Booth, Aivazian, Demirgüç-Kunt, and Maksimovic (2002) find that the choice of debt ratios in emerging markets is more sensitive to country-specific factors than in developed markets. This is consistent with the existence of greater information asymmetries in developing markets. Demirgüç-Kunt and Maksimovic (1996) examine the link between firm financing and stock market development.

and Miller (2002a) find that firms from emerging markets or non-English legal origin countries that have listed ADRs show a greater improvement in their information environment (as measured by stock market analyst coverage and analyst forecast accuracy) than do developed markets firms with English legal origins that have exchange-listed ADRs. Lang et al. also show that improvements in the information environment for firms with listed ADRs are positively related to firm valuations.

Lins, Strickland, and Zenner (2002) test directly whether improved access to capital is an important motivation for emerging market firms to issue an ADR. They find that, following a U.S. listing, the sensitivity of investment to free cash flow decreases significantly for emerging market firms, but does not change for developed market firms. Also, emerging market firms explicitly mention a need for capital in their filing documentation and annual reports more frequently than do developed market firms, whereas, in the post-ADR period, emerging market firms tout their liquidity rather than a need for capital access. Further, Lins et al. find that the increase in access to external capital markets following a U.S. listing is more pronounced for firms from emerging markets. Overall, these findings suggest that greater access to external capital markets is an important benefit of a U.S. stock market listing, especially for emerging market firms.

Research analysts have the potential to increase the scrutiny of controlling management groups endowed with private benefits of control, which should improve firm values. Controlling managers have incentives to hide information from the investing public in order to facilitate consumption of these private control benefits. Lang, Lins, and Miller (2002b) find that analyst coverage positively impacts Tobin's Q values, and that there is an incremental valuation benefit to additional analyst coverage when the management/family group controls a firm. Further, these benefits of analyst coverage are significantly more pronounced for firms from countries with poor shareholder rights and with non-English origin legal systems.

The private benefits of control are also studied in Dyke and Zingales (2002a). They find that the private benefits of control are higher when the buyer comes from a country that protects investors less (and, thus, is more willing or able to extract private benefits). In countries where private benefits of control are larger, capital markets are less developed, ownership is more concentrated, and privatizations are less likely to take place as public offerings. Dyke and Zingales (2002a,b) show that one important mechanism to minimize the negative impact of the private benefit of control and to enforce good corporate governance is the local media (as represented by the ratio of newspaper circulation to total population).

## *6.2 Fixed income*

Emerging market equities have garnered a great deal more research attention than emerging market bonds. This is probably due to the availability of equity



data versus bond data.<sup>23</sup> Although much of the research on emerging market bonds applies only to the last 15 years, global bond investing has a long and storied history. Through the First World War, London was the center of global finance. Indeed, the U.S. was for much of the 19th century considered an emerging market. Not only was it emerging, but it went through periodic eras of default. According to Chernow (1990), “During the depression of the 1840s – a decade dubbed the Hungry Forties – state debt plunged to fifty cents on the dollar. The worst came when five American states – Pennsylvania, Mississippi, Indiana, Arkansas and Michigan – and the Florida Territory defaulted on their interest payments.” Latin American lending had already become quite widespread in the 19th century. Chernow states that “...as early as 1825 nearly every borrower in Latin America had defaulted on interest payments. In the nineteenth century, South America was already known for wild borrowing sprees, followed by waves of default.” By the 1920s, foreign lending in the U.S. had once again become widespread. In fact the sale of re-packaged foreign bonds to individual investors, and the subsequent losses, was an impetus to the passage of the Glass-Steagall Act in 1933 [see Chernow (1990)].

Erb, Harvey and Viskanta (2000) provide a historical analysis of emerging market bonds, using data from 1859 for Argentina, Brazil, and the U.S. They find a similar level of volatility in emerging market bond and equity returns. Indeed, their correlation analysis (using more recent data) suggests that the correlation between emerging market bond returns and emerging market equity returns is over 0.70. Perhaps this is not surprising. Emerging market bonds are high-risk bonds, and often these types of bonds act like equity.

Considerable theoretical and empirical research has focused on understanding sovereign yield spreads (the spread between foreign government bond yields denominated in U.S. dollars and a similar maturity U.S. Treasury bond). The first branch of research tries to capture the strategic aspects of when a country should borrow and default [see Eaton and Gersovitz (1981), Bulow and Rogoff (1989a,b), Chowdhry (1991)]. For example, the Bulow and Rogoff (1989b) model suggest that the threat of political and economic sanctions enforces the debt contracts between developing and developed nations. However, these models do not take a stand on what the sovereign credit spread should be. A second branch of research is cast in continuous-time, and focus on the likelihood of default and the determination of credit spreads in particular countries [see Kulatilaka and Marcus (1987), Claessens and Pennachi (1996), Gibson and Sundaresan (2001), and Duffie, Pedersen and Singleton (2003)]. Gibson and Sundaresan derive a relation between sovereign yield spreads and the cost of sanctions. They show that the ability to punish the sovereign borrower leads to a lower sovereign spread. Duffie, Pedersen and Singleton show how to incorporate default, restructuring as well as illiquidity into a model of sovereign yield spreads. The final branch of research examines the cross-

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<sup>23</sup> A historical analysis of the U.S. as an emerging market is found in Rousseau and Sylla (1999). Rousseau and Sylla (2001) examine the financial development of a number of countries.

sectional relationship between fundamental variables in the economy and the size of the sovereign spreads [see Eichengreen and Mody (2000), Cantor and Packer (2000), and Erb, Harvey and Viskanta (1997)]. For example, Erb, Harvey and Viskanta show that country risk ratings are positively associated with real per capita GDP, real per capita GDP growth, and the investment to GDP ratio. They find that ratings are negatively related to population growth. Given the strong negative correlation between ratings and sovereign spreads, these models provide a way to link the fundamental characteristics of an economy to the sovereign spread.

### *6.3. Market microstructure*

The particular trading arrangements in an equity market may directly affect two key functions of that country's secondary stock market: price discovery, and liquidity. First, the trading process should lead to "fair" and correct prices; in other words, no investor should be able to manipulate market prices in his or her favor. Second, trading should occur at a low transaction cost and high speed, and large quantities should trade without affecting the price. These issues are the topic of the field of market microstructure. It is clear that the large cross-sectional heterogeneity of emerging markets and the formidable changes they have undergone over time should make them an interesting laboratory for market microstructure research.

While a number of academics have looked at the issue of market segmentation, using detailed data from one country [see, for example, Domowitz, Glen and Madhavan (1997), Bailey and Chung (1995) for Mexico, and Bailey and Jagtiani (1994) for Thailand], there is surprisingly little genuine microstructure research on emerging markets, perhaps because accurate and detailed data are difficult to obtain. There are a few exceptions though, which we now discuss.

Domowitz, Glen and Madhavan (1998) use detailed data on Mexican stocks to investigate whether the cross-listing of securities, although beneficial from a market integration perspective, may lead to order flow migration to the more liquid international (often U.S.) market. Cho, Russell, Tiao and Tsay (2003) use the Taiwanese market, with its unique price limits, to test the well-known magnet effect. The magnet effect postulates that prices accelerate towards the limits when getting closer to them. Cho et al. find strong evidence of a magnet effect, especially for the ceiling price.

Eventually, microstructure research is especially interested in transaction costs and liquidity, which differ greatly across emerging markets [see Glen (2000) for an introduction to microstructure in emerging markets]. Ghysels and Cherkaoui (2003) provide a detailed study of the Casablanca Stock Exchange (CSE) in Morocco. The CSE is a typical emerging financial market, and has gone through momentous change in the last 10 years. In the 1980s, the CSE was, in many ways, a backwater. It was a state institution, on which very few

stocks were listed and with almost no participation of individual investors. Institutional investors would often trade on the large “upstairs” market. The upstairs market was a negotiated market, where trades were based on mutual agreements, and where transactions were established under circumstances that were neither transparent nor standardized. During this period, the number of Moroccan shareholders was probably less than 10,000. The exchange was extremely illiquid and most stocks did not trade for weeks. In 1989, Morocco announced an ambitious privatization and economic liberalization program, which also included financial market reforms that would greatly alter the operation of the CSE starting in 1993. The CSE was both privatized and reformed. The market reforms created a dealer/market maker structure, under which more disclosure was required from both listing companies and market makers. Whereas Morocco never prevented foreign investors from buying Moroccan stock, the CSE’s pre-reform archaic structure and low trading volume effectively kept foreigners from participating in the market. The new reforms changed this, and in 1996 the CSE was included in the IFC Emerging Market database. Even before then, the number of individual investors had increased considerably, reaching 300,000 in 1996. These reforms had a profound effect on the stock market. Trading volume and liquidity exploded. Finally, on December 17, 1996, the CSE adopted the screen-driven trading system used by the Bourse de Paris.

It is generally believed that such micro structural changes should greatly affect the quality of the market, which can best be approximated by the cost of trading. There is no doubt that reforms immediately increased turnover and liquidity in the Moroccan market, but did that also mean lower trading costs for the average trader on the market? Unfortunately, we do not have bid-ask spread data for the CSE. However, Ghysels and Cherkaoui (2003) obtained transactions data before and after the reforms for several stocks, and tried to infer the trading costs based on these data. Surprisingly, they find that, at least up until 1996, trading costs increased after the reforms. There are multiple interpretations of these results. First, on an absolute basis, although liquidity improved, the CSE remained a very thin, illiquid market with little trading. Second, foreign investors (especially new arrivals) may be among the least informed market participants. Possibly, CSE dealers possessed a tremendous amount of market power relative to foreign traders. This would imply that the high spreads were not a competitive equilibrium phenomenon, but rather indicated a fleecing opportunity, which disappeared as foreign investors became more informed and the market developed. A third possibility is that the model used by Ghysels and Cherkaoui mis-estimated true trading costs. On the other hand, if the results are accurate, a few important lessons may be drawn from this detailed study. First, jumps in turnover and trading need not necessarily be associated with lower trading costs (although they typically are). Second, microstructure reforms may be an important signal to foreign investors of the local stock exchange’s genuine integration into world financial markets. However, by themselves, such reforms do not seem to contribute to bringing

down the effective costs of trading. Only after screen-driven trading was introduced in late 1996, did transaction costs on the CSE fall [see Derrabi, de Bodt, and Cobbaut (2000)].

Obtaining estimates of liquidity and transaction costs is important because illiquid assets and assets with high transaction costs trade at low prices relative to their expected cash flows. It follows that liquidity and trading costs may contribute both to the average equity premium in stocks and to the time-variation in expected returns if there is systematic variation in liquidity. Some recent research, most notably Amihud (2002) and Jones (2001), attempts to quantify the role of liquidity in U.S. expected stock returns. Using 100 years of annual data, Jones finds that bid-ask spreads and turnover predict U.S. stock returns one period ahead, whereas the decline in transaction costs may have contributed to a fall of about 1% in the equity premium. Amihud (2002), using a 1964-1997 NYSE sample, finds that expected market illiquidity has a positive effect on the ex ante excess return, and unexpected illiquidity has a negative effect on the contemporaneous stock return.

Liquidity effects may be particularly acute in emerging markets. In a survey by Chohan (1992), poor liquidity was mentioned as one of the main reasons for foreign institutional investors not investing in emerging markets. If the liquidity premium is an important feature of the data, emerging markets should yield particularly powerful tests and useful independent evidence. Moreover, the recent equity market liberalizations provide an additional verification of the importance of liquidity for expected returns, since, all else equal (including the price of liquidity risk), the importance of liquidity for expected returns should decline post liberalization. This is important, since when focusing on the U.S. alone, the finding of expected return variation due to liquidity can always be ascribed to an omitted variable correlated with liquidity. Another important question is whether improved liquidity contributes to the decline in the cost of capital post-liberalization, which is documented by Bekaert and Harvey (2000a) and Henry (2000a).

Bekaert, Harvey and Lundblad (2002c) address these questions in a recent article using a measure that relies on the incidence of observed zero daily returns in these markets. Lesmond, Ogden and Trzcinka (1999) and Lesmond (2002) argue that if the value of an information signal is insufficient to outweigh associated transaction costs, market participants will elect not to trade, resulting in an observed zero return. They propose zero returns as evidence of transaction costs. Using a simple empirical pricing model and limited dependent variable estimation techniques, they infer estimates of transaction and price impact costs. Lesmond (2002) applies this indirect approach to estimate the costs of equity trading in emerging markets. The advantage of this measure is that it requires only a time-series of daily equity returns.

Bekaert, Harvey and Lundblad (2002c) use the zero return measure as a proxy for illiquidity. They find that higher illiquidity is, indeed, associated with higher expected returns. Whereas liberalization overall improves liquidity, its

effect on the relation between illiquidity and expected returns is somewhat inconsistent. However, it is invariably the case that the effect of illiquidity on expected returns is larger post-liberalization.

#### *6.4. Stock selection*

Most work on emerging market stock returns has focused on the IFC global index or IFC investible indices. However, there are a few papers that examine the characteristics of individual securities.

Stock selection is complicated by potentially extreme information asymmetry problems. Bhattacharya, Daouk, Jorgenson and Kehr (2002) provide evidence that Mexican stocks do not react contemporaneously to the usual types of news announcements. However, they find that the stocks react before such announcements, which is consistent with information leakage. In addition, they find that the price reaction of shares traded by foreigners lag those traded by nationals. This is consistent with information asymmetry.<sup>24</sup>

Fama and French (1998) collect information on size, book to market value, and price earnings ratios for 16 emerging markets. They find strong evidence of a value premium in these markets in both in-sample and out-of-sample tests. Rouwenhorst (1999) examines the characteristics of over 1,700 firms in 20 emerging markets and finds that the cross-section of stock returns in emerging markets is driven by factors that also drive the cross-section in developed markets: size, momentum, and value.

Achour, Harvey, Hopkins and Lang (1999) examine a comprehensive list of 27 firm-specific factors to try to explain the cross-section of returns in three representative emerging markets. In contrast to previous work, Achour et al. examine both ex post and expectational firm characteristics. They find that measures such as prospective earnings to price ratios and analyst revision ratios can differentiate between high and low expected return securities. While they document that some characteristics impact each market, there are considerable asymmetries across different markets. In addition, Achour et al. show that traditional measures of risk are unable to account for the differences in expected returns.

Van der Hart, Slagter and Van Dijk (2003) provide the most comprehensive analysis of individual stock returns in emerging markets by studying almost 3,000 securities in 32 countries. Similar to Achour et al. (1999), Van der Hart et al. look at both ex post and expectational characteristics. They confirm the profitability of strategies based on value and momentum, and show that the returns cannot be explained with traditional asset pricing models. In contrast to previous work, Van der Hart et al. examine the ability to implement these

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<sup>24</sup> Also, see Choe, Kho and Stulz (2002) and Frankel and Schmuckler (2000).

strategies. They show that the profitability of these strategies is robust to the assumed transactions cost of a large institutional investor.

### *6.5. Privatization*

In most emerging markets, privatization was intended to increase the productivity of state-owned economic enterprises (SOEs), and to help reduce government budget deficits. In some cases, governments actively sought to promote capital market development through privatization. Many governments intended to create a class of people with a stake in the new economy, thereby making it more difficult for political changes to be reversed. Regardless of the goal, privatization was not initiated in order to divest fully the government's interest in the real economy. Nevertheless, even the partial divestment under consideration was economically substantial.

Consider the evidence presented in Table 6. Between 1978 and 1991, SOEs in emerging markets controlled a significant proportion of GDP. In our sample of 16 emerging economies, SOEs contributed to 10.9% of GDP during this time period. SOEs in developed economies contributed significantly less, 7.8%. Individual countries displayed significant cross-sectional variation in terms of the size of each country's SOE economic activity as a percent of GDP. For example, in the Philippines this figure was quite low, averaging 1.9% over the 14 year period. At the other extreme, SOEs in Venezuela contributed to just over 23% of GDP during the same period. Regardless of the country in question, the transfer of resources considered under any privatization program amounts to a non-trivial proportion of the wealth of the economy. Despite its importance, we provide only a short summary of the vast research on the topic because there already exists an extensive and excellent survey [see Megginson and Netter (2001)].

Privatization programs impact emerging capital markets through various mechanisms. For instance, share issued privatizations (SIPs) increase the market capitalization and the value traded on local exchanges. Moreover, SIPs can change the investment opportunity set of portfolio investors. Public offers of SOEs whose cash flows are not perfectly correlated with pre-existing companies help investors to achieve gains through diversification. Under this scenario, SIPs may help to lower the risk premium investors require for holding the market portfolio of publicly traded equity.

Other methods of privatization, including the direct sale of former SOEs, the direct sale of an SOE assets, or concessions of public sector monopolies, alter the dynamics of local capital markets in less obvious ways. Consider the direct sale of an SOE to a private investor. This sale does not increase the market capitalization or value traded on the local exchange. However, the sale may alter the real investment opportunity set of the private investor.

As viewed from this perspective, all forms of privatization can impact local capital market dynamics. The common component of privatization that impacts capital markets is the transfer of productive resources from the public sector to the private sector. This transfer may allow investors to achieve benefits through diversification and may affect the cost of capital in emerging markets.

Even if private investors do not benefit from the transfer of resources, i.e., their investment opportunity set does not change, privatization programs may still influence capital markets. Privatization programs can help the government signal its commitment to free market policies [see also Perotti (1995) and Biais and Perotti (2002)]. For most emerging market governments, the implementation of a privatization program reverses decades of state-led economic development. Successful privatization of politically sensitive industries may convince investors to reduce the *ex ante* perceived risk of government interference in investment decisions and expropriation of productive assets. As a result of sustained privatization efforts, the sovereign risk premium inherent in the governments fixed income liabilities may be reduced. As this chain of events ripples through the economy, local market entrepreneurs eventually benefit in their ability to obtain debt financing at lower cost.

Bekaert, Harvey and Roper (2002) find that the privatization of SOEs has increased local stock market capitalization and the value traded on these exchanges. They also find that privatization leads to a reduction in the dividend yield, which likely indicates a reduction in the cost of capital.

## **7. Conclusion**

Most of our research on emerging equity markets has tried to draw inferences from a somewhat reluctant dataset. Emerging market returns are highly non-normal [see Bekaert, Erb, Harvey and Viskanta (1998) and Susmel (2001)] and highly volatile, and the samples are short. Moreover, a dominating characteristic of the data is a potentially gradual, structural break. Although it is generally difficult to make inferences in such a setting, a few robust findings emerge: the liberalization process has led to a very small increase in correlations with the world market and a small decrease in dividend yields. This decrease could represent a decrease in the cost of capital or an improvement in growth opportunities. Bekaert, Harvey and Lundblad (2001, 2002a) find that economic growth increases post liberalization by about 1% per year on average over a five year period. Bekaert and Harvey (2000a), Henry (2000a), and Bekaert, Harvey and Lundblad (2002a) all find that aggregate investment increases significantly after liberalizations, providing one channel for this increased growth. Das and Mohapatra (2003) not only confirm the growth effect, but also investigate whether and how the reforms shifted the income distribution. They find an upward shift in the income share accruing to the top quintile of the income distribution at the expense of the middle class. The lowest

income share remained unchanged. Such research counsels against drawing hasty inferences between economic growth and economic welfare.

Moreover, with a number of recent crises in emerging markets, the role of foreign capital in developing countries is again under intense scrutiny. Malaysia temporarily re-imposed capital controls, which were deemed successful by some [see Kaplan and Rodrik (2002)]. Thus, it is remarkable that we have so far failed to find negative effects of foreign investment on emerging markets. For example, although policy makers often complain about foreigners inducing excess volatility in local markets, our empirical tests never reveal a robust increase in volatility after liberalization. In other work, we cannot confirm the often-heard argument that foreign capital consistently drives up real exchange rates. We cannot even find increased real variability, that is, evidence of the variability of GDP and consumption growth rates increasing post liberalization [see Bekaert, Harvey and Lundblad (2002b)]. Despite very real problems in the financial and corporate sectors of the crisis countries in Southeast Asia, the current literature on the effects of capital flows on emerging markets reveals little reason for rich developed countries to discontinue their financing of emerging market country development. After all, one potential reason for the disappointingly small effect of the cost of capital that Bekaert and Harvey (2000a) find, may be a combination of “segmentation risk” – foreign investors anticipating future policy reversals of foreign investment restrictions – and “home bias.” Home bias refers to the fact that investors across the world have fairly small proportions of their assets allocated to foreign markets, and the proportion allocated to emerging markets is miniscule.<sup>25</sup> Portes and Rey (2002) find that the most important determinant of global equity transactions between two countries is geographical proximity.<sup>26</sup> We cannot help but wonder whether a world blessed with a vast pool of private, internationally active, speculative capital would have faced the kind of liquidity crises we have seen in recent years, and in the wake of these crises the many proposals to limit capital flows.

There remain a number of important caveats, however. Most of our research has focused on equity market liberalization. Few dispute the beneficial effects of foreign direct investment [see Borensztein, De Gregorio and Lee (1998)], and most of the work critical of foreign capital flows focuses on the banking sector and short-term bond flows [see, e.g. Kaminsky and Reinhart (1999, 2000)]. For example, liberalizing debt flows in a weak institutional environment, including a poorly developed and supervised banking sector, may have negative consequences. Portfolio equity flows are somewhere in between, and seem to have beneficial effects. Contrasting the real effects of equity market liberalizations and banking sector liberalizations appears to be an important topic for future research.<sup>27</sup> This, then, also naturally leads back to an old international economics and developmental economics question [see Edwards

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<sup>25</sup> See Lewis (1999) for a survey of the vast literature on this topic.

<sup>26</sup> Also see Ahearne, Grier, and Warnock (2002).

<sup>27</sup> Bekaert and Harvey (2003) provide a list of possible directions for future research in emerging markets finance.



(1987)]: what is the optimal sequencing of economic and financial liberalizations in developing countries?

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Table 1

## U.S. Share of MSCI Market Capitalization Around Liberalizations

Country	U.S. holdings in millions		U.S. share of market capitalization		U.S. share of market capitalization	
	5 years pre-liberalization	5 years post-liberalization	5 years pre-liberalization	5 years post-liberalization	1980s	1990s
Argentina	\$193.54	\$3,031.65	20.69%	22.54%	19.37%	28.35%
Brazil	\$243.94	\$6,856.70	1.78%	10.32%	0.78%	14.34%
Chile	\$491.00	\$3,261.76	7.57%	10.30%	7.07%	10.60%
Colombia	\$10.67	\$191.64	1.18%	3.00%	1.12%	4.10%
Greece	\$4.15	\$119.30	0.19%	2.38%	0.53%	6.19%
India	\$138.23	\$2,779.11	0.67%	5.42%	0.57%	5.41%
Indonesia	\$46.70	\$775.99	NA	9.34%	14.16%	14.46%
Jordan	NA	NA	NA	NA	NA	NA
Korea	\$753.95	\$6,200.57	2.09%	6.53%	1.96%	9.49%
Malaysia	\$225.67	\$2,128.75	1.45%	4.70%	1.70%	8.07%
Mexico	\$1,184.53	\$16,197.83	17.98%	25.97%	17.01%	29.92%
Nigeria	NA	NA	NA	NA	NA	NA
Pakistan	NA	NA	NA	NA	NA	NA
Philippines	\$456.96	\$2,219.06	16.80%	12.70%	18.83%	16.29%
Portugal	\$29.58	\$218.98	6.29%	5.89%	5.83%	14.22%
Taiwan	\$145.38	\$746.07	0.24%	0.81%	0.20%	1.77%
Thailand	\$107.32	\$1,000.07	5.45%	8.56%	6.27%	12.89%
Turkey	\$44.37	\$425.49	3.82%	6.31%	3.84%	13.65%
Venezuela	\$47.46	\$444.86	6.91%	15.24%	6.91%	16.55%
Zimbabwe	NA	NA	NA	NA	NA	NA
Total/Average	\$4,123.43	\$46,597.81	6.21%	9.38%	6.63%	12.89%

Table 2

## Equity Market Liberalization and Political Risk

**A. Political Risk**

	t-1	t	t+1	t+2
Argentina	56.0	61.0	64.0	66.0
Brazil	69.0	64.0	69.0	66.0
Chile	64.0	66.0	67.0	69.0
Colombia	54.0	59.0	61.0	58.0
Greece	58.0	63.0	62.0	61.0
India	43.0	51.0	62.0	65.0
Indonesia	39.0	41.0	51.0	57.0
Jordan	73.0	76.0	70.0	73.0
Korea	64.0	75.0	75.0	75.0
Malaysia	62.0	58.0	59.0	70.0
Mexico	69.0	68.0	70.0	71.0
Nigeria	53.0	53.0	53.0	45.0
Pakistan	33.0	27.0	34.0	40.0
Philippines	37.0	41.0	44.0	55.0
Portugal	70.0	71.0	67.0	76.0
Taiwan	75.0	71.0	76.0	77.0
Thailand	54.0	55.0	60.0	59.0
Turkey	48.0	45.0	45.0	52.0
Venezuela	69.0	65.0	74.0	75.0
Zimbabwe	63.0	66.0	66.0	67.0
Average	57.7	58.8	61.5	63.9
<i>Increase from t-1</i>		2.0%	6.6%	10.8%

**B. Financial Risk**

	t-1	t	t+1	t+2
Argentina	19.0	20.0	23.0	31.0
Brazil	28.0	33.0	37.0	35.0
Chile	40.0	42.0	42.0	43.0
Colombia	28.0	37.0	41.0	41.0
Greece	26.0	31.0	30.0	30.0
India	29.0	35.0	36.0	36.0
Indonesia	18.0	28.0	41.0	44.0
Jordan	35.0	37.0	38.0	38.0
Korea	47.0	47.0	47.0	47.0
Malaysia	26.0	31.0	38.0	45.0
Mexico	28.0	29.0	32.0	38.0
Nigeria	27.0	26.0	24.0	28.0
Pakistan	22.0	17.0	28.0	30.0
Philippines	24.0	22.0	27.0	34.0
Portugal	35.0	38.0	37.0	43.0
Taiwan	49.0	49.0	49.0	48.0
Thailand	29.0	29.0	36.0	40.0
Turkey	23.0	20.0	20.0	19.0
Venezuela	29.0	27.0	39.0	40.0
Zimbabwe	24.0	30.0	30.0	33.0
Average	29.3	31.4	34.8	37.2
<i>Increase from t-1</i>		7.2%	18.6%	26.8%

**C. Economic Risk**

	t-1	t	t+1	t+2
Argentina	18.0	14.0	25.5	24.5
Brazil	20.0	23.5	26.5	25.0
Chile	30.5	32.0	38.0	39.0
Colombia	29.5	34.0	35.0	38.0
Greece	28.5	31.0	29.5	32.5
India	26.0	28.5	31.5	35.5
Indonesia	33.5	34.5	35.0	36.0
Jordan	38.5	38.0	38.0	39.5
Korea	37.0	36.5	40.0	41.0
Malaysia	37.5	41.0	39.0	40.0
Mexico	27.5	27.5	25.5	29.0
Nigeria	26.0	26.0	23.0	29.0
Pakistan	31.5	32.0	31.5	31.5
Philippines	29.5	29.0	31.0	34.0
Portugal	34.0	34.5	36.0	38.0
Taiwan	42.5	43.0	43.0	44.5
Thailand	33.0	36.5	35.5	36.0
Turkey	26.0	28.0	28.0	27.5
Venezuela	25.0	27.0	32.5	35.5
Zimbabwe	22.5	25.0	29.0	32.5
Average	29.8	31.1	32.7	34.4
<i>Increase from t-1</i>		4.2%	9.5%	15.4%

**D. Composite Risk**

	t-1	t	t+1	t+2
Argentina	48.0	47.5	56.5	61.5
Brazil	58.5	60.0	66.5	63.0
Chile	67.5	70.0	73.5	75.5
Colombia	56.0	65.0	68.5	68.5
Greece	56.5	62.5	61.0	62.0
India	49.0	57.5	65.0	68.5
Indonesia	45.5	52.0	63.5	68.5
Jordan	73.5	75.5	73.0	75.3
Korea	74.0	79.5	81.0	81.5
Malaysia	63.0	65.0	68.0	77.5
Mexico	62.5	62.5	64.0	69.0
Nigeria	53.0	52.5	50.0	51.0
Pakistan	43.5	38.0	47.0	51.0
Philippines	45.5	46.0	51.0	61.5
Portugal	69.5	72.0	70.0	78.5
Taiwan	83.5	81.5	84.0	85.0
Thailand	58.0	60.5	66.0	67.5
Turkey	48.5	46.5	46.5	49.5
Venezuela	61.0	59.5	73.0	75.5
Zimbabwe	55.0	60.5	62.5	66.5
Average	58.6	60.7	64.5	67.8
<i>Increase from t-1</i>		3.6%	10.2%	15.8%

All ratings from International Country Risk Guide. 100=maximum; 0=minimum. t=Official Liberalization date from Bekaert and Harvey (2000). We also report the ratings one year before as well as one and two years after the Official Liberalization.

Table 3

## U.S. investment performance in emerging markets

	IFC composite	Value-weighted IFC 16 countries	Equally-weighted IFC 16 countries	U.S. country allocation performance
Mean from 1977		12.0%	9.1%	17.3%
<i>Std. dev. from 1977</i>		22.6%	19.2%	25.9%
Mean from 1981		11.2%	7.0%	14.2%
<i>Std. dev. from 1981</i>		23.8%	20.1%	27.0%
Mean from 1985	8.3%	14.2%	11.6%	21.8%
<i>Std. dev. from 1985</i>	23.9%	25.2%	21.1%	28.0%
Mean from 1990	0.1%	4.4%	2.6%	11.4%
<i>Std. dev. from 1990</i>	23.1%	24.6%	22.1%	26.0%

Data through December 2001. Mean is the average annualized compound return in percent. Std. dev. is the annualized standard deviation in percent. The 16 country portfolios exclude: Jordan, Nigeria, Pakistan and Zimbabwe where holdings estimates are not available.



Table 4

## U.S. investment performance in developed and emerging equity markets

	EM/Developed holdings weights times market cap weighted country indices	EM/Developed holdings weights times equally weighted country indices	EM/Developed market cap weights times market cap weighted country indices	EM/Developed market cap weights times equally weighted country indices	EM/Developed holdings weights times holdings weighted country indices	MSCI world composite	10% EM 90% Developed
Mean from 1977	13.0%	12.1%	13.1%	12.1%	14.4%	12.2%	12.9%
<i>Std. dev. from 1977</i>	16.0%	14.7%	16.1%	14.9%	15.4%	14.1%	15.8%
Mean from 1981	11.7%	11.5%	11.9%	11.6%	12.5%	11.9%	11.7%
<i>Std. dev. from 1981</i>	16.7%	15.3%	16.7%	15.2%	15.7%	14.5%	16.5%
Mean from 1985	12.8%	13.6%	12.8%	13.7%	14.3%	12.7%	12.8%
<i>Std. dev. from 1985</i>	17.1%	15.8%	17.0%	15.7%	15.8%	14.9%	16.9%
Mean from 1990	4.4%	6.7%	4.4%	6.8%	7.6%	7.5%	4.3%
<i>Std. dev. from 1990</i>	16.5%	15.0%	16.4%	14.9%	15.1%	14.5%	16.5%

Data through December 2001. Mean is the average annualized compound return in percent. Std. dev. is the annualized standard deviation in percent.

Table 5  
The Five Largest Negative Log Returns

	Largest	2nd largest	3rd largest	4th largest	5th largest
Argentina	Jul-89 -104.8%	Jan-90 -77.6%	Apr-81 -59.8%	Apr-84 -52.7%	Jan-82 -46.2%
Brazil	Mar-90 -84.2%	Jun-89 -56.3%	<b>Aug-98</b> <b>-46.7%</b>	Jun-92 -36.7%	Jan-99 -34.5%
Chile	Jan-83 -32.9%	<b>Aug-98</b> <b>-30.9%</b>	Sep-81 -21.2%	Oct-87 -21.2%	Sep-84 -18.6%
Colombia	<b>Aug-98</b> <b>-22.2%</b>	Jan-99 -20.5%	Feb-92 -19.2%	Jun-99 -19.0%	May-00 -15.2%
Greece	Jan-88 -36.8%	<b>Aug-98</b> <b>-27.6%</b>	Jan-83 -20.5%	Oct-92 -18.9%	Oct-85 -18.5%
India	May-92 -27.9%	Mar-93 -19.6%	Mar-01 -19.0%	Nov-86 -17.6%	Sep-01 -16.6%
Indonesia	<b>Aug-97</b> <b>-51.2%</b>	<b>May-98</b> <b>-49.0%</b>	<b>Dec-97</b> <b>-44.8%</b>	<b>Jan-98</b> <b>-43.0%</b>	Sep-98 -27.6%
Korea	<b>Dec-97</b> <b>-40.9%</b>	<b>Oct-97</b> <b>-35.3%</b>	<b>Nov-97</b> <b>-32.7%</b>	<b>May-98</b> <b>-26.4%</b>	Oct-00 -23.3%
Malaysia	<b>Aug-97</b> <b>-37.4%</b>	Oct-87 -36.5%	<b>Aug-98</b> <b>-30.9%</b>	<b>Nov-97</b> <b>-27.2%</b>	<b>Jun-98</b> <b>-24.4%</b>
Mexico	Nov-87 -89.9%	Dec-82 -62.8%	Oct-87 -55.3%	<b>Dec-94</b> <b>-43.1%</b>	<b>Aug-98</b> <b>-41.0%</b>
Pakistan	May-98 -43.3%	Oct-98 -30.8%	Jun-98 -29.1%	May-00 -24.3%	Jul-96 -17.5%
Philippines	Sep-90 -34.7%	<b>Aug-98</b> <b>-31.9%</b>	<b>Aug-97</b> <b>-28.2%</b>	Sep-87 -27.5%	Oct-00 -22.1%
Portugal	Nov-87 -34.7%	Dec-87 -27.8%	Oct-87 -23.2%	Feb-88 -16.0%	Oct-92 -15.3%
Taiwan	Oct-87 -43.9%	Aug-90 -41.8%	Jun-90 -30.7%	Oct-88 -28.8%	Dec-88 -28.7%
Thailand	Oct-87 -41.3%	<b>Aug-97</b> <b>-39.3%</b>	<b>Oct-97</b> <b>-38.1%</b>	<b>May-98</b> <b>-33.1%</b>	<b>Dec-97</b> <b>-29.1%</b>
Turkey	<b>Aug-98</b> <b>-52.2%</b>	Feb-01 -52.0%	Nov-00 -43.2%	Sep-01 -40.6%	Nov-90 -37.8%
Venezuela	Dec-85 -68.9%	Nov-95 -62.0%	<b>Aug-98</b> <b>-50.5%</b>	Mar-92 -30.3%	Jun-94 -29.2%
Composite	<b>Aug-98</b> <b>-29.3%</b>	Oct-87 -28.9%	Aug-90 -19.0%	Sep-01 -16.8%	<b>Oct-97</b> <b>-16.5%</b>

Bolded dates and log returns represent crisis periods.

Table 6

## The role of state-owned enterprises in emerging economies (1978-1991)

Country	SOE Economic Activity as % of GDP (1978-1991) <sup>a</sup>	Trade as % of GDP (1978-1991) <sup>b</sup>	Stock Market Capitalization as % of GDP (1978-1991) <sup>c</sup>
Argentina	4.7%	15.4%	1.8%
Brazil	6.5%	15.7%	3.0%
Chile	13.3%	42.6%	15.6%
China	n.a.	n.a.	n.a.
Colombia	6.8%	24.7%	2.5%
India	12.1%	12.6%	2.3%
Indonesia	14.8%	38.9%	5.0%
Jordan	n.a.	72.9%	25.5%
Malaysia	17.0%	129.1%	51.0%
Mexico	11.6%	21.5%	4.3%
Pakistan	10.3%	29.4%	2.5%
Philippines	1.9%	39.9%	7.7%
Portugal	18.2%	53.0%	8.4%
Thailand	5.4%	49.6%	6.3%
Turkey	7.5%	22.2%	3.5%
Venezuela	23.1%	40.9%	4.0%
Latin American Average	11.0%	26.8%	5.2%
Asian Average	9.9%	46.0%	11.2%
Average	10.9%	40.6%	9.6%
United States <sup>a</sup>	1.2%		

<sup>a</sup> *Bureaucrats in Business: The Economics and Politics of Government Ownership* (1995)

<sup>b</sup> Time series average of data available from World Development Indicators 1999 CDROM.

<sup>c</sup> Time series average of data available from IFC Emerging Markets Database. Sample size dependent upon data availability.

Figure 1  
**Asset Prices and Market Integration**

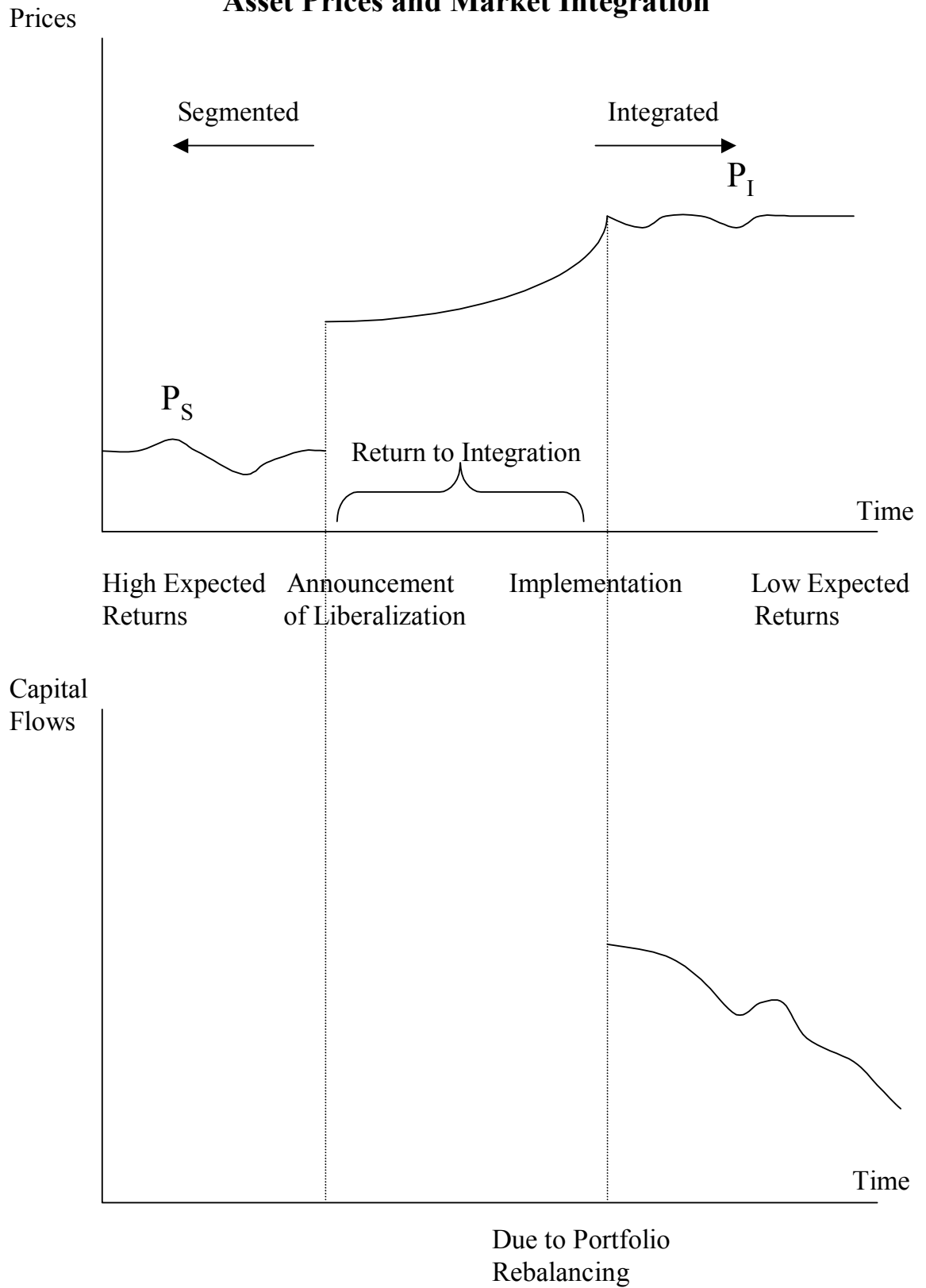
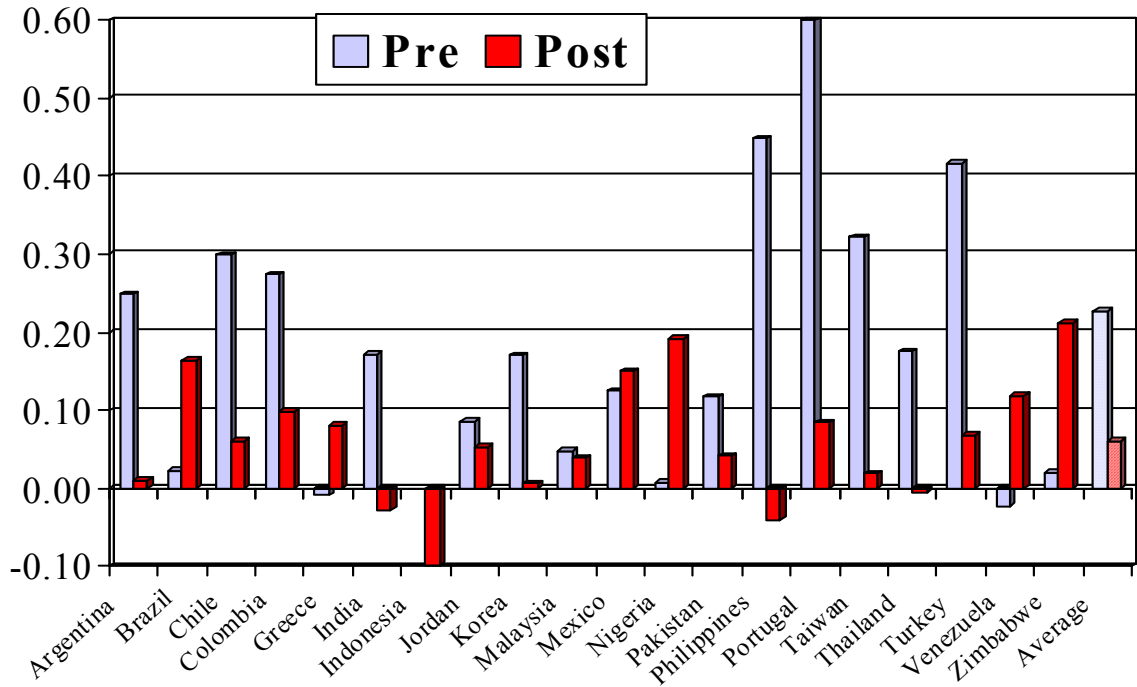
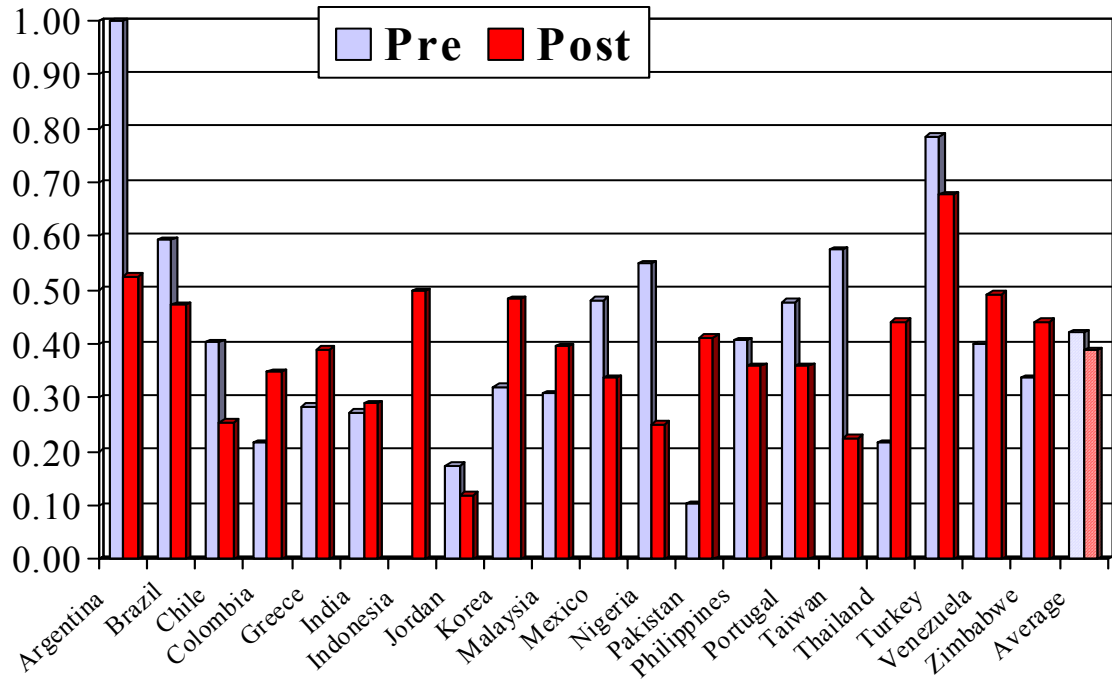


Figure 2  
**Average Annual Geometric Returns**  
 Pre and Post Bekaert-Harvey Official Liberalization Dates



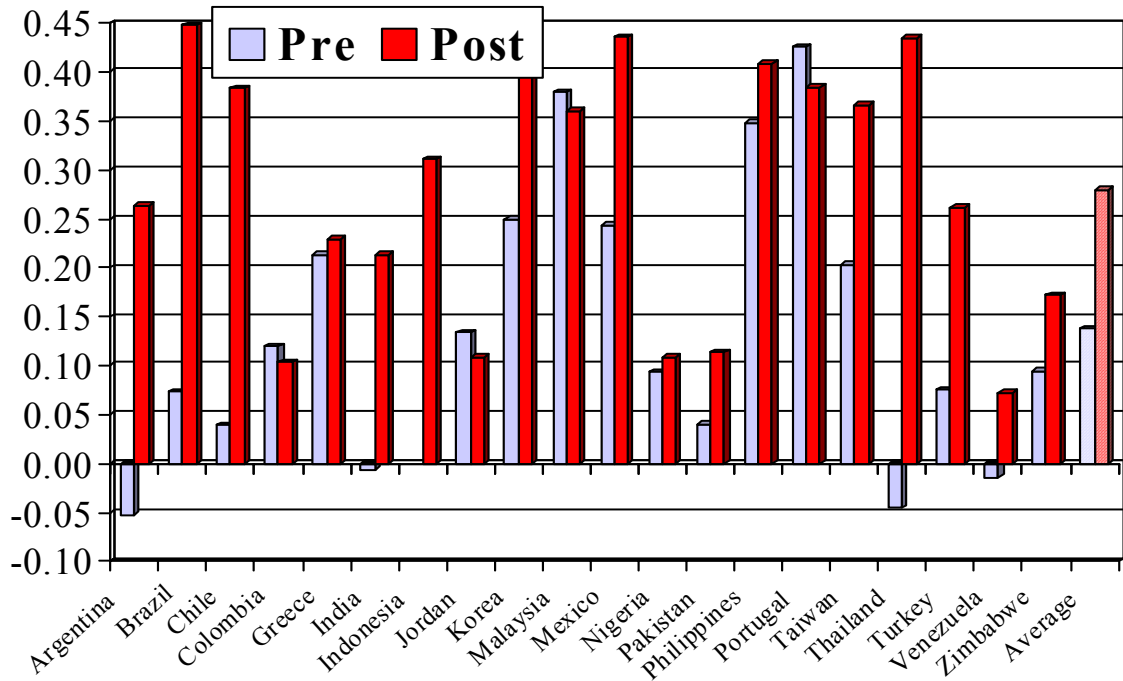
Data through April 2002. There are no pre-liberalization data for Indonesia.

Figure 3  
**Average Annualized Standard Deviation**  
**Pre and Post Bekaert-Harvey Official Liberalization Dates**



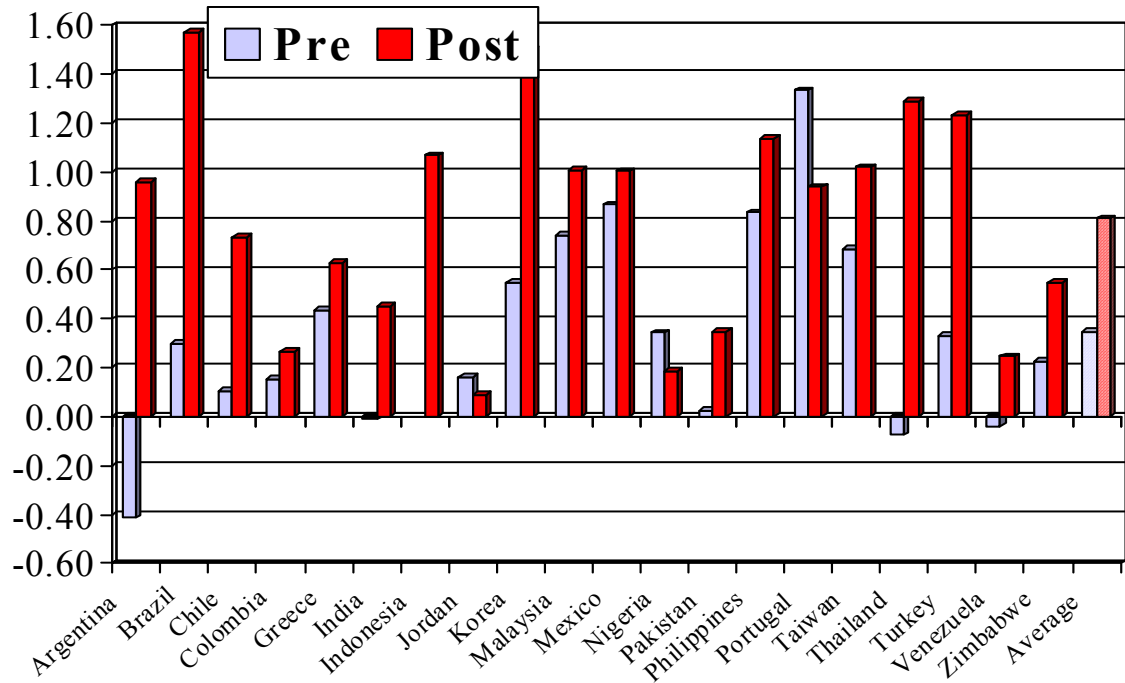
Data through April 2002. There are no pre-liberalization data for Indonesia.

Figure 4  
**Correlation with World**  
 Pre and Post Bekaert-Harvey Official Liberalization Dates



Data through April 2002. There are no pre-liberalization data for Indonesia.

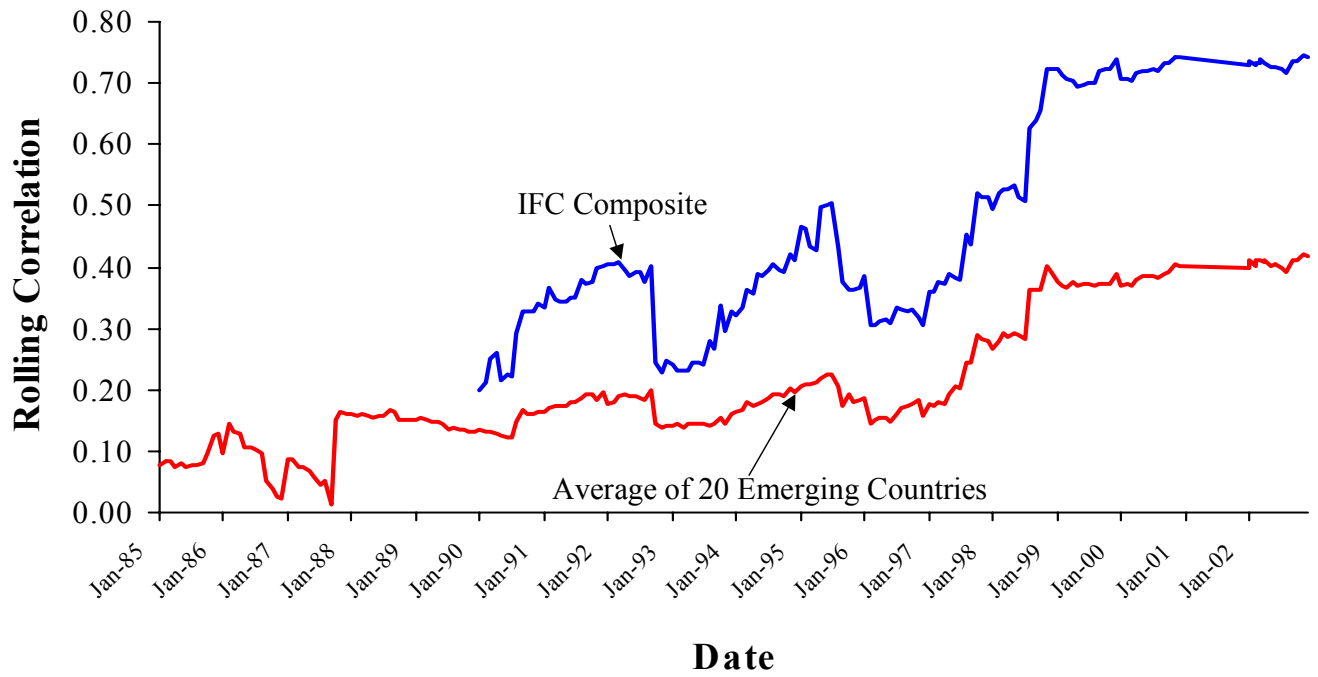
Figure 5  
**Beta with World**  
 Pre and Post Bekaert-Harvey Official Liberalization Dates



Data through April 2002. There are no pre-liberalization data for Indonesia.

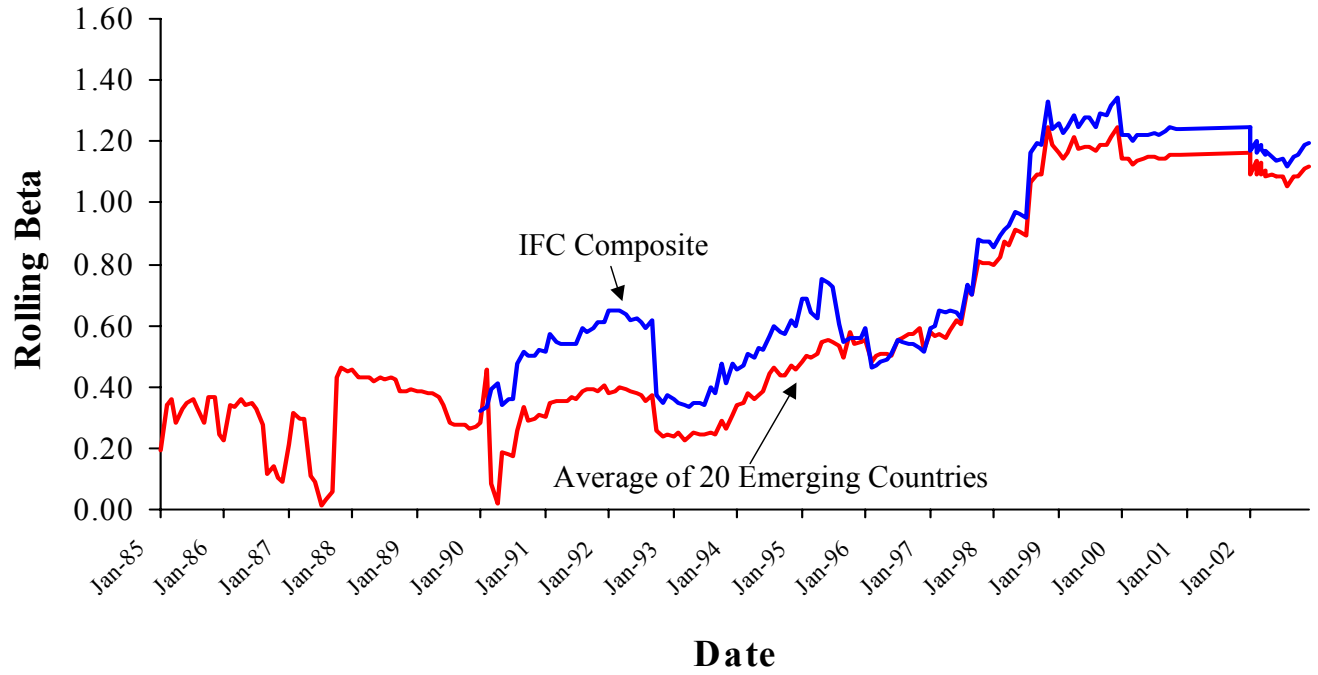


Figure 6  
Evolution of World Correlation  
Five-Year Rolling Window: 20 Countries



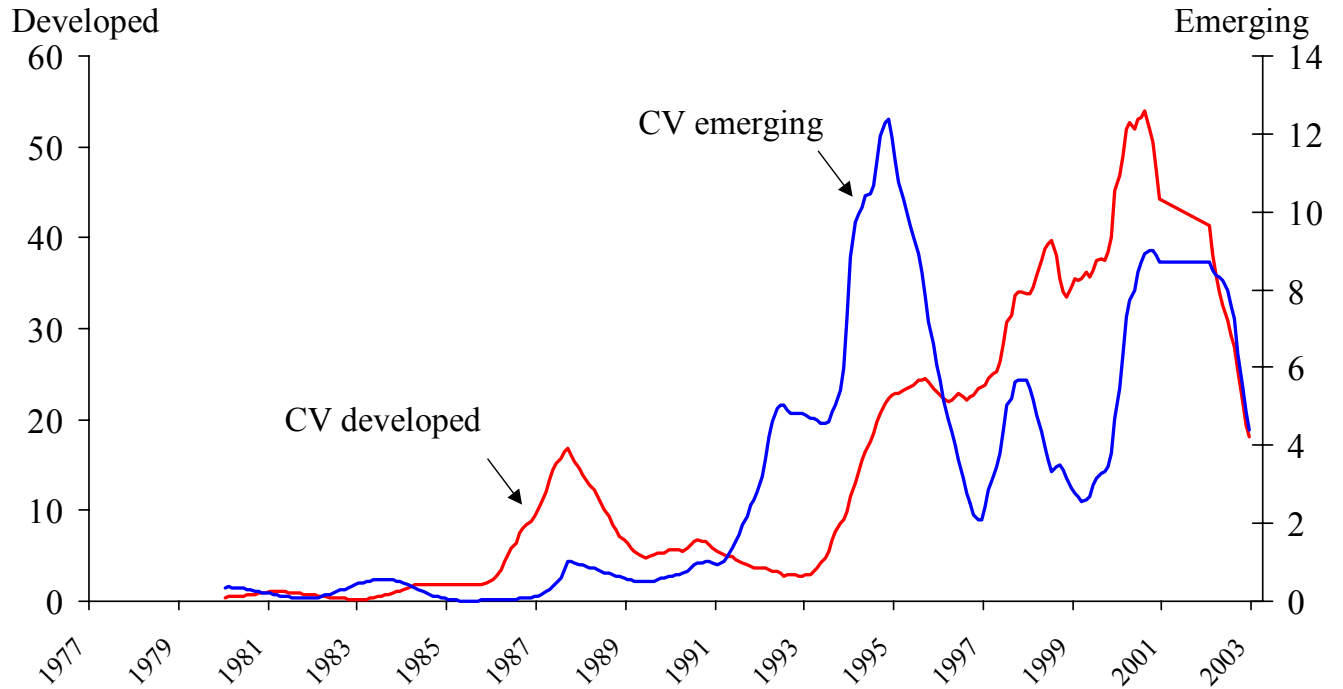
Data through April 2002.

Figure 7  
**Evolution of World Beta Risk**  
Five-Year Rolling Window: 20 Countries



Data through April 2002.

Fig. 8  
3-Year Rolling Coefficient of Variation of  
U.S. Emerging and Developed Market Equity Holdings



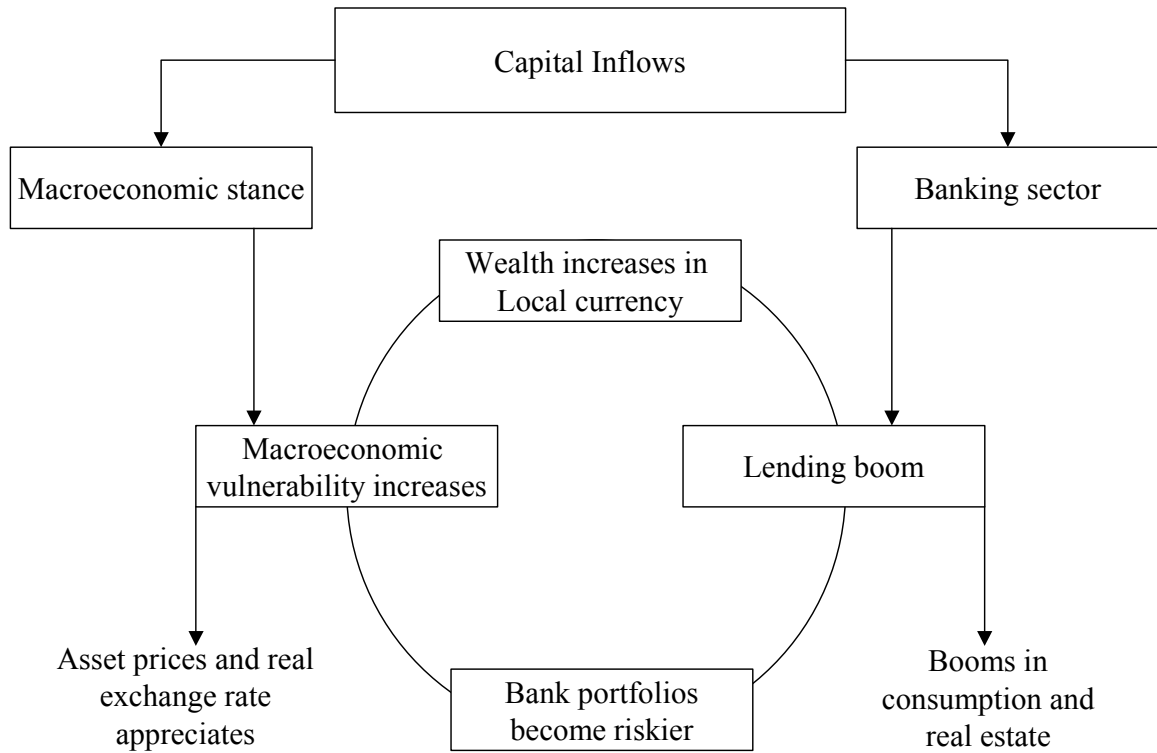


Figure 9  
**Capital Inflows can lead to a vicious circle that increases economic vulnerabilities**  
Source: World Bank, 2001