Are the investable indices priced globally or locally?

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ABSTRACT

Academics and practitioners implicitly assume that investable emerging market securities are priced in the global context. However the removal of explicit barriers deos not necessarily result in increased market integration if implicit barriers are also important. To test this proposition, we use the conditional version of the Chaieb and Errunza (2006) model that allows for segmentation and purchasing power parity deviations, to estimate pricing of IFC investable indices from eight emerging markets. Our results suggests that reduction in explicit barriers in conjunction with market liberalization does not lead to global pricing of investable indices. Indeed, local factors are important and the return dynamics of investable securities are similar to those of market-wide indices. Initial evidence suggests that the limits to globalization are related to the twin agency problems as suggested by Stulz (2005).

ABSTRACT

- *Key words*: International asset pricing, segmentation, currency risk, emerging markets, liberalization.

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1. Introduction

International asset pricing models (IAPMs) suggests that in the absence of investment barriers, stocks that can be held by all investors will command only global risk premia. They will be (effectively) fully integrated [see for example, Stulz (1981), Errunza and Losq (1985), Eun and Janakiraman (1986) and Chaieb and Errunza (2006)]. However, empirical evidence indicates that countries that are open to foreign portfolio investments are not necessarily integrated, for example, Colombia as reported by Bekaert and Harvey (1995). Indeed, foreign investors do not always invest in markets that do not impose (or remove) explicit barriers. Further, despite significant liberalizations through official decrees, introductions of country funds and cross-listings, most emerging markets are not very integrated with the world market as suggested by Bekaert and Harvey (1995) and Carrieri, Errunza and Hogan (2006).[1]

The mere existence of barriers does not necessarily imply market segmentation just as their removal does not necessarily result in increased market integration. What also matters are the implicit barriers as suggested by Stulz (2005). Given their impact on policy making and investor welfare, we need to understand the extent of such barriers and what drives them.

The S&P/IFC investable (IFCI) indices provide a unique opportunity to study this phenomenon in a real setting.[2] Since the IFCI accounts for foreign investment restrictions and is fully investable, we would expect it to be fully integrated in the absence of implicit barriers. Arguments in favor of global pricing include the investable nature of IFCI, the ongoing financial liberalizations of emerging markets, the increase in investor base associated with availability of country's equity to foreigners [see, Forester and Karolyi (1999) and Kaniel, Li and Starks(2003)] and the substantial changes in informational environment attracting foreign investors to local markets [see Bae, Bailey and Mao (2005)]. However it has also been argued that the investa-

[1] The reduction in the cost of capital on market liberalizations is also not what would be predicted by theoretical models, see for example, Bekaert and Harvey (2000) and Henry (2000).

[2] The S&P/IFC provides an index designed to measure returns foreign investors would receive from investing in domestic stocks that are considered investable (the IFC investable, or IFCI). This index is a subset of the market-wide index (the IFC global or IFCG) and takes into account access, size and liquidity.

bility measure is not a good indicator of the percentage of foreign ownership [see, Bae, Chan and Ng (2004), Bae, Bailey and Mao (2005) and Edison and Warnock (2003)]. Indeed the liberalization programs may not be comprehensive enough to induce foreign investors to invest in the country as they might still care about implicit barriers.

Hence, this paper poses three key questions. First, is IFCI fully integrated with the world market, i.e. are the IFCI indices globally or locally priced. Second, if local factors are important, what is the extent of departure from full integration. And third, can we relate this departure to measures of implicit barriers.

We first examine whether investable securities are priced globally or locally and assess the importance of their relative risks. We estimate a conditional version of the C-E model for a portfolio of investable securities of eight emerging markets. If these securities are effectively integrated into the global market, then the only priced risk factors should be the world market and the global real currency risks as in Adler and Dumas (1983, henceforth A-D). However, if the investable indices are not fully integrated, two additional local sources of risk should be priced, as shown by Chaieb and Errunza (2006, henceforth C-E).[3] We find evidence that exposure to country-specific risk factors is rewarded. The prices of the local risk factors are also statistically time-varying for many investable indices. In spite of the variation across countries and over time in the relative importance of the different risk premiums, we find that the local premium, which comprises the conditional market premium and the segflation premium, is an important component of the total premium. Given the evidence on the local pricing of the IFCI, we next estimate the ratio of global to total premium as a proxy that measures the extent of departure from full integration. Since removing explicit barriers in conjunction with market liberalization does not lead to global pricing of investable indices, then, as suggested by Stulz (2005), the limits to globalizations are likely due to the twin agency problems. Hence, we investigate the role of state and corporate insider expropriation risk after controlling for factors that have been reported in the literature as significant drivers of market integration. We find that ownership concentration is significantly negatively related to the ratio of global

[3] Chaieb and Errunza (2006) identify two extra risk premia. The first extra premium is the conditional market premium in the vein of Errunza and Losq (1985, henceforth E-L). The second extra premium is the segflation premium from bearing purchasing power risk in the presence of barriers.

to total premium. Thus, we offer preliminary evidence on the relevance of implicit barriers in pricing emerging markets and their impact on globalization.

The rest of the paper is organized as follows. Section 2 presents the model. Section 3 describes the empirical methodology and the data. Section 4 presents empirical results regarding global versus local risk premia. Section 5 investigates the impact of implicit barriers on globalization. Conclusion follows.

2. The Model

We implement the IAPM of Chaieb and Errunza (2006) which jointly accounts for barriers to international investment and differences in purchasing power risks across countries. The model assumes a two-country world and two sets of securities. All securities traded in the domestic market (e.g. the U.S.) are eligible for investment by all investors. Securities traded in the foreign market (e.g. the emerging market) are ineligible and can be held only by foreign investors. Thus, domestic investors can invest only in domestic eligible stocks, while foreign investors can invest in their local ineligible stocks as well as domestic stocks, i.e. the mild segmentation model.

The authors show that the eligible securities are priced as if the market were fully integrated and command a world market and an inflation risk premium. The ineligible securities command two extra premiums: the conditional market risk premium induced by a mildly segmented market structure and a segflation risk premium from bearing inflation risk in the presence of barriers. These two premiums are country-specific. However, if a subset of the EM securities (such as the IFCI index) is eligible in the sense of being fully investable with no explicit barriers, the country-specific premiums should disappear. That is, these securities would also command only a world market and an inflation premium, similarly to US securities.

The expected excess return on a security i that can only be held by foreign investors is given by:

$$\begin{aligned} E[r_{i,t}] &= \delta_W cov[r_{i,t}, r_{Wt}] + \sum_{l=1}^{2} \delta_l cov[r_{DP_i,t}, \pi^{\$}_{lt}] \\ &\quad + \lambda_I cov[r_{i,t}, r_{I,t} | \underline{r_{e,t}}] + \lambda_e cov[r_{HP_i,t}, \pi^{\$}_{It}] \end{aligned} \tag{1}$$

where $r_{i,t}$ is the excess return on the ith security that belongs to the Ith market that is accessible only to its nationals; r_{Wt} is the excess return on the world index; $r_{I,t}$ is the excess return on the market-wide index, $\underline{r_{e,t}}$ is the vector of excess returns on the eligible securities; $r_{DP_i,t}$ is the excess return on the diversification portfolio (DP) of the ith security, which is the portfolio of eligible assets traded abroad that is most highly correlated with the ineligible security i; $r_{HP_i,t}$ is the excess return on the hedge portfolio (HP) of the ith security, which is the portfolio long in the ineligible security i and short in the diversification portfolio DP_i; δ_W and λ_I are prices of world market and conditional market risk respectively; δ_l, $l = 1, 2$ are the prices of inflation risk and λ_e is the price of segflation risk; $\pi_l^{\$}$ is the rate of inflation of country l expressed in the reference currency (the USD). Note that changes in $\pi_l^{\$}$ stem from changes in local inflation of country l and changes in the foreign exchange rate.

Since we examine the pricing of the IFCI indices, we express equation (1) in terms of the IFCI index by aggregating over the investable securities traded locally in the emerging market:

$$\begin{aligned} E[r_{IFCI,t}] &= \delta_W cov[r_{IFCI,t}, r_{Wt}] + \sum_{l=1}^{2} \delta_l cov[r_{DP,t}, \pi_{lt}^{\$}] \\ &\quad + \lambda_I cov[r_{IFCI,t}, r_{I,t}|\underline{r_{e,t}}] + \lambda_e cov[r_{HP,t}, \pi_{It}^{\$}] \end{aligned} \tag{2}$$

where $r_{IFCI,t}$ is the excess return on the IFCI index; $r_{DP,t}$ is the excess return on the diversification portfolio of the IFCI index, i.e. the portfolio of eligible securities that is most highly correlated with the IFCI index; $r_{HP,t}$ is the excess return on the hedge portfolio of the IFCI index.

Assuming that the return on the market-wide index is proxied by the IFCG index return, we can write $M_{IFCG}R_{IFCG,t} = M_{IFCI}R_{IFCI,t} + M_{IFCNI}R_{IFCNI,t}$ where $IFCNI$ is the IFC non-investable index, the capital letter R stands for a rate of return and M a market capitalization. Hence $cov[r_{IFCI,t}, r_{I,t}|\underline{r_{e,t}}] = var[r_{IFCI,t}|\underline{r_{e,t}}] + cov[r_{IFCI,t}, r_{IFCNI,t}|\underline{r_{e,t}}]$, where r stands for an excess return. Note that we do not include the second term $cov[r_{IFCI,t}, r_{IFCNI,t}|\underline{r_{e,t}}]$ in the estimation that follows since it would add two more equations and thus further complicate the estimation while contributing marginally to the pricing of IFCI. The expected excess return

on the IFCI index is then given by:

$$\begin{aligned} E[r_{IFCI,t}] &= \delta_W cov[r_{IFCI,t}, r_{Wt}] + \sum_{l=1}^{2} \delta_l cov[r_{DP,t}, \pi^{\$}_{lt}] \\ &\quad + \lambda_I var[r_{IFCI,t}|r_{DP,t}] + \lambda_e cov[r_{HP,t}, \pi^{\$}_{It}] \end{aligned} \tag{3}$$

Based on the C-E model, only the global factors in equation (3) should be priced while the last two factors that account for local risk should not be priced.

3. Empirical Methods

3.1. *Estimation*

We estimate a conditional version of equation (3) where we allow prices and quantities of risk to change through time as suggested in recent literature [see among others Dumas and Solnik (1995), De Santis and Gerard (1997, 1998)]. The conditional version of equation (3) can be written as:[4]

$$\begin{aligned} E_{t-1}[r_{IFCI,t}] &= \delta_{W,t-1} cov_{t-1}[r_{IFCI,t}, r_{Wt}] + \sum_{l} \delta_{l,t-1} cov_{t-1}[r_{DP,t}, \pi^{\$}_{lt}] \\ &\quad + \lambda_{I,t-1} var_{t-1}[r_{IFCI,t}|r_{DP,t}] + \lambda_{e,t-1} cov_{t-1}[r_{HP,t}, \pi^{\$}_{It}] \end{aligned} \tag{4}$$

Since we test the model for EMs that experience high inflation rates, the restriction that EM local inflation rates are constant would be unrealistic. Hence, we follow Carrieri, Errunza and Majerbi (2006a, 2006b) and proxy the term $\pi^{\$}_{l}$ by the change in real exchange rate of currency l vis-à-vis the US dollar denoted by e^{r}_{l} under the assumption that the US inflation rate is non-stochastic. [5] Further, we measure the global real currency exposure of the IFC investable index by the covariances between the diversification portfolio return and two currency indices [see for example, Ferson and Harvey (1993), Harvey (1995) and Carrieri, Errunza and Majerbi (2006a, 2006b)]. The two currency indices are: the major currency index (termed the MJ index) and

[4] Notice that testing a conditional version of the C-E model would require additional risk premia for hedging the stochastic changes in investment opportunities. Hence, we caution the reader that the conditional model is indeed internally inconsistent as argued by Dumas and Solnik (1995).

[5] For a proof, see Carrieri, Errunza and Majerbi (2006a). Note that Dumas and Solnik (1995) and DeSantis and Gerard (1998) assume non-stochastic inflation for their sample of all developed markets.

the Other Important Trading Partner currency index (OITP, termed the EM index). These are the trade-weighted values of US dollar against a number of currencies where the trade-weights are allowed to vary over time. The major currency index includes sixteen currencies until the introduction of the euro in January 1999. After that, the index becomes a seven-currency index. The OITP index includes mainly emerging market currencies. We take the inverse of the real indices so that higher index values represent an appreciation of the foreign currency. Equation (4) can then be expressed as follows,

$$\begin{aligned} E_{t-1}[r_{IFCI,t}] &= \delta_{W,t-1} cov_{t-1}[r_{IFCI,t}, r_{Wt}] + \sum_{j=mj,em} \delta_{j,t-1} cov_{t-1}[r_{DP,t}, e^r_{jt}] \\ &\quad + \lambda_{I,t-1} var_{t-1}[r_{IFCI,t} | r_{DP,t}] + \lambda_{e,t-1} cov_{t-1}[r_{HP,t}, e^r_{It}] \end{aligned}$$

where $\delta_{mj,t-1}$ and $\delta_{em,t-1}$ are time-varying prices of MJ and EM real currency risk respectively.

Also, to keep the dimensionality of the model reasonable, we test the model using one country at a time. Though such an approach implies that power is lost since the procedure doe not impose the equality of global prices of market and currency risks across countries, it yields efficient estimates and permits analysis of the contribution of each premium to the total premium.[6] We further express $var_t[r_{IFCI,t} | r_{DP,t}] = var_t(r_{IFCI,t}) \left(1 - \rho^2_{IFCI,DP,t}\right)$, where $\rho_{IFCI,DP,t}$ is the correlation coefficient between the diversification portfolio and the IFCI index return. Hence, for each country, we estimate the following system of equations,

$$\begin{aligned} r_{IFCI,t} &= \delta_{W,t-1} h_{IFCI,W,t} + \delta_{mj,t-1} h_{DP,mj,t} + \delta_{em,t-1} h_{DP,em,t} \\ &\quad + \lambda_{I,t-1} h_{IFCI,t} (1 - \frac{h^2_{IFCI,DP,t}}{h_{IFCI,t} h_{DP,t}}) + \lambda_{e,t-1} h_{HP,e_I,t} + \epsilon_{I,t} \\ r_{DP,t} &= \delta_{W,t-1} h_{DP,W,t} + \delta_{mj,t-1} h_{DP,mj,t} + \delta_{em,t-1} h_{DP,em,t} + \epsilon_{DP,t} \\ r_{Wt} &= \delta_{W,t-1} h_{W,t} + \delta_{mj,t-1} h_{W,mj,t} + \delta_{em,t-1} h_{W,em,t} + \epsilon_{W,t} \\ e^r_{kt} &= \delta_{W,t-1} h_{k,W,t} + \delta_{mj,t-1} h_{k,mj,t} + \delta_{em,t-1} h_{k,em,t} + \epsilon_{k,t}, \quad k = mj, em, I \end{aligned} \tag{5}$$

[6] We also used an alternative approach that entails two steps estimation. In the first stage, the world market risk and global real currency risk prices are estimated. The second stage estimates the model country by country, conditioning on the estimates from the first stage. A similar approach was adopted by Bekaert and Harvey (1995, 1997). The two-steps approach imposes the equality of world prices of market and currency risks but yields inefficient estimates. Overall, we find that the results on the pricing of risk factors are qualitatively identical to the one-step approach. However, as the two-step procedure does not allow us to analyze the contribution of each premium to the total premium, in Section 4 we only report results of the one-step approach.

$h_{j,t}$ are the elements of H_t, the 6×6 conditional covariance matrix of the assets in the system. The first equation in the system is the pricing equation for the emerging market IFCI index return, where global and local factors are priced. The global factors include the world market and real exchange covariance risk and the local factors comprise the conditional market risk and segflation risk premiums. The other equations in the system price the diversification portfolio, the world index portfolio, the currency indices and bilateral exchange rate as in A-D with just the world market and currency premia.

As in De Santis and Gerard (1997, 1998), we specify the dynamics of H_t as

$$H_t = H_0 * \left(\iota\iota' - aa' - bb'\right) + aa' * \epsilon_{t-1}\epsilon_{t-1}^{'} + bb' * H_{t-1} \tag{6}$$

where $*$ denotes the Hadamard product, H_0 is a (6×6) unconditional covariance matrix of residuals, a and b are (6×1) parameter vectors. This implies that the variances in H_t depend only on past squared residuals and an autoregressive component, while the covariances depend on past cross-products of residuals and an autoregressive component.

We also use the full parametrization of the prices of risk factors as in De Santis and Gerard (1998). Given that the model implies the price of global and conditional market risk must be positive, we use an exponential function to model their dynamics as follows,

$$\delta_{W,t-1} = \exp(k_W^{'} Z_{G,t-1}) \tag{7}$$

$$\lambda_{I,t-1} = \exp(k_I^{'} Z_{I,t-1}) \tag{8}$$

where Z_G is the set of global information variables and Z_I is the set of local information variables for country I.

As the model does not restrict the prices of currency risk to be positive, we let the prices of global currency risk to be linear functions of a set of global information variables, and the price of segflation risk to be linear function of a set of local instrumental variables,

$$\delta_{j,t-1} = k_j^{'} Z_{G,t-1}, \;\; j = mj, em \tag{9}$$

$$\lambda_{e,t-1} = k_e^{'} Z_{I,t-1} \tag{10}$$

Assuming a normal conditional density, the log likelihood function is written as,

$$\ln L\left(\theta\right) = -\frac{T}{2}\ln 2\pi - \frac{1}{2}\sum_{t=1}^{T}\left[\ln\left|H_{t(\theta)}\right| + \epsilon_t\left(\theta\right)^{'} H_t\left(\theta\right)^{-1}\epsilon_t\left(\theta\right)\right] \tag{11}$$

where θ is the vector of unknown parameters in the model. Since the conditional normality assumption might be too restrictive, we use the quasi-maximum likelihood estimate (QMLE) of Bollerslev and Wooldridge (1992). The estimation is performed using the BFGS (Broyden, Fletcher, Glodfarb and Shanno (1985)) algorithm for updating the Hessian. In view of the complexity to optimize the likelihood function of such a large multivariate GARCH-M system (30 unknown parameters) with a small sample size (180 observations), we perform the optimization using different starting parameters.

3.2. *Data*

The analysis requires four groups of data: 1) the IFC indices return data; 2) Market return data on the world market index, changes in real bilateral exchange rates and the changes in MJ and EM real currency indices; 3) the eligible securities traded abroad for the diversification portfolios; and 4) the instrumental variables including global and local variables.

1. Monthly returns on IFC indices are obtained from the S&P/IFC database and are market value weighted. Depending on the country, the sample period is from January 1989 or later to December 2003. Before analyzing the statistics on the IFCI indices returns, it would be useful to briefly review how the stock's investability is determined and how the IFC investable indices are constructed. To construct the IFC investable index, the S&P/IFC first creates a variable called the *degree open factor* with values ranging from zero to one. Zero indicates that none of the stock is legally investable; 1 indicates that 100% of the security's market cap is available for foreign ownership. S&P/IFC determines stock's investability based on several criteria. It first determines whether the market is open to foreign institutions with regards to the extent to which foreign institutions can buy or sell shares on local exchanges and repatriate capital. S&P/IFC then investigates whether there are any corporate by-laws, corporate charters, or industry limitations on foreign ownership of the stock. S&P/IFC applies two further screening criteria: Size (at least $50 million in investable market cap) and liquidity (at least $20 million in annual trading).[7]

[7]For more complete description of the methodology to construct the degree open factor and the indices, please refer to S&P Emerging Markets - Methodology, Definitions, and Practices available at

Panel A of Table 1 provides some basic statistics on the composition of the investable (IFCI) and the market-wide indices (IFCG). As of June 2003, the number of stocks included in each IFCI index varies from 11 stocks in Argentina to 149 stocks for Korea. These numbers range from 21 for the Argentinean global index to 154 for the Korean global index. As of June 2003, at least 50% of the stocks in the IFC global indices are also included in the IFC investable indices. Over the same period, the market capitalization of the IFCI index as fraction of the capitalization of the IFCG index ranges from 56% in India to 97% in Mexico. To examine the evolution over time of the composition and market cap of the IFCI indices, we construct two measures: NUM% measures the number of stocks included in the IFC investable index as a percentage of all IFC global index constituent companies. MC% measures the market capitalization of the IFCI index as a percentage of the total market capitalization of the IFCG index. In Fig. 1, we plot the time series of NUM% and MC% for each EM of our sample. The measure NUM% is not informative enough as it could be the case that all the constituents of the IFC global index are also included in the IFC investable index, but only a small fraction is available to foreign investors. This is the case for Korea in the early 1990s. Over this period, almost all of the Korean stocks in the IFCG index are also included in the IFCI index, however only 10% or less of the market cap of the IFCG index is available to foreign investors. A more instructive statistic is the MC% that measures the availability of the country's equities to foreigners.[8] The ratio of the market capitalizations of an EM's IFCI and IFCG indices has also been used by Edison and Warnock (2003) and De Jong and De Roon (2005).

The evolution over time of MC% is depicted in Fig. 1. The graphs show different patterns across countries and regions. Indeed, the ownership restrictions are lower for the Latin American countries. Furthermore, the liberalization in Latin America occurred earlier

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[8]Since restrictions might vary across stocks or sectors, MC% is only an overall measure of the availability of the country's equities to foreign investors. Moreover, the degree of open factor that underlies the construction of the IFCI indices takes into account restrictions imposed on foreign investors at the aggregate level. However, foreign investors may also be limited on the amount of a company's capital they may hold individually.

than for the Asian markets. In Argentina, most of the market cap had been available to foreign investors since the official liberalization of the market in 1989. Brazil and then Mexico also removed all of their ownership restrictions by 1990 and 1991 respectively. Over a recent period, almost 100% of the MC of the Mexican market could have been fully traded by foreigners. As for Chile, the country instituted higher ownership restrictions in the early 1990s. By 1996, the MC% had increased dramatically from 25% to 100%.[9]

With the exception of Malaysia, the liberalization of the Asian markets was rather slow. For India, the fraction of market cap available to foreign investors remained low even after the official liberalization of the market in 1992. Although only a small fraction of the market cap of Korea and Thailand was available to foreign investors in the early 1990s, the two countries subsequently decreased their ownership restrictions. In fact, Korea substantially opened her market during the Asian crisis with the MC% jumping from 20% in 1998 to 85% in 1999. Malaysia has been open to foreign investors since its initial liberalization with MC% varying between 70% and 90%.[10]

Panel A of Table 1 also reports summary return statistics of the IFC investable indices. The returns are in U.S. dollar terms, dividend-inclusive and in excess of the one-month Eurodollar deposit rate. Notice that there is substantial cross-sectional variation in the average returns of the IFC investable indices. For some countries, the returns are negative due mainly to the financial crisis experienced over the sample period. The IFCI indices exhibit high volatility and substantial deviations from normality. The Bera-Jarque test of normality rejects the hypothesis of normality in all the countries, except India, at the 95% confidence level. The highest kurtosis is found in Argentina. In addition, there is no significant autocorrelation in the return series except for Malaysia and Thailand. How-

[9] Edison and Warnock (2003) argue that the jump should rather be registered in January 1992 when Chile implemented the DL 600 law that covers the foreign investments. Under DL 600, profits may be repatriated immediately, but none of the original capital may be repatriated for one year. However, the IFC included this law four years later.

[10] Notice that the Malaysian IFCI index doesn't incorporate the capital controls instituted by Malaysia in late 1998 following the Asian crisis, although the country was consequently dropped from the worldwide investable index.

ever, the squared return series exhibit high autocorrelation as indicated by the $Q(z)_{12}$. Note that this return behavior is similar to that of IFCG indices reported in past studies, e.g. Harvey (1995).

[Insert Table 1 here]

2. The MSCI value-weighted world index is from Morgan Stanley Capital International (MSCI). Real bilateral exchange rates with respect to the dollar are computed using CPI indices available from the International Finance Statistics (IFS) database. Data on the real exchange rate indices that include the MJ index and the EM index are from the Federal Reserve Board. Similar to the index return series, the exchange rate series display a high level of kurtosis and a significant departure from normality as depicted in Panel B of Table 1.

3. For the data on the eligible set needed to construct the diversification portfolios, we use 35 global industries and an extensive data set of CFs, ADRs/GDRs.[11] The data comprise 20 US and 8 UK-traded emerging market closed-end funds, 94 ADR programs and 14 non-US foreign listings. Panels A through C of Appendix A provide a detailed list of the eligible set. To build the diversification portfolios, we first regress the return of the IFCI index on the returns of the 35 global industries along with MSCI World index. Using a stepwise regression procedure with a forward and backward threshold criteria, we obtain the diversification portfolio of global securities, R_G. We then regress the return of the IFCI index on R_G, globally traded CFs and DRs in addition to those listed on US markets. We allow the weights assigned to previous securities to vary upon the availability of new country funds and overseas listings as in Carrieri, Errunza and Hogan (2005, henceforth CEH). The fitted value from this regression is the return on the diversification portfolio (R_{DP}) that we use in the estimation of system (5). Panel D of Appendix A provides the results on the composition of the diversification portfolios.

   Panel C of Table 1 contains pairwise correlations between each country's IFCI index and

[11] Data on the end of month total return on the 35 global industries are collected from Datastream that uses the FTSE industry classification. For a detailed description, see "FTSE Global Classification System", available at http://www.ftse.com.

diversification portfolio with the world index, and correlation between each country's IFCI index with the respective diversification portfolio. We observe that the correlations between the diversification portfolios and the world index are higher than the correlations between the country index and the world index. Also, as expected, the correlations between the IFCI index returns and their diversification portfolios are higher than the correlations between the IFCG index returns and their diversification portfolios. Indeed, the diversification portfolios for the IFC investable indices are constructed over a period where CFs, ADRs and other foreign listings were continuously available, while the diversification portfolios for the IFC global indices include a period when there were no CFs or ADRs, or other foreign listings.

4. For reasons of comparability, we follow previous research in selecting the data on the global and local instrumental variables [see Ferson and Harvey (1993), Bekaert and Harvey (1995, 1997), Dumas and Solnik (1995), De Santis and Gerard (1998) and Carrieri, Errunza and Majerbi (2005) among others]. The global instruments include the change in the US term premium, measured by the yield difference between the 10-year T-bond and the 3-month T-bill, and the US default premium measured by the yield difference between Moody's Baa and Aaa rated bonds. The local instruments include the lagged local equity market premium and the change in local inflation rates. Since these instrumental variables have been widely used in other studies, we omit a detailed description of their properties. Panels D and E of Table 1 show some basic statistics as well as the pairwise correlations among the instruments. Notice that the correlations among the information variables are small.

4. Global versus Local Risk Premia

We first analyze the predictability of the IFC investable indices returns. Harvey (1995) shows that emerging market returns, proxied by the IFC global indices, are influenced by local rather than global information variables. We follow his methodology and investigate predictability of the IFC investable indices returns. We do linear regressions of the IFC investable returns on three sets of information variables. The first set consists of global information variables. The

second set includes only local variables. The third set combines global and local information variables.

[Insert Table 2 here]

Table 2 presents an analysis of the predictable variation in the IFC investable returns. We report the adjusted R-squares from linear regressions on global and local information variables. Surprisingly, except for Chile and India, the expected IFCI returns are not affected in a statistically significant way by the world information variables. In 4 out of 8 regressions, local information is significant at the 10% level. Four regressions are significant at the 10% level when local and global information variables are combined. The adjusted R-squares do not exceed 10% suggesting that predictability represents a small fraction of the variance in IFCI index returns. The degree of explanatory power is thus lower than previously documented for the IFC global indices returns by Harvey (1995). Nonetheless, these preliminary results suggest that local factors have some explanatory power.

We now discuss the results based on the equilibrium asset pricing model and on the methodology described in Section 3.1. Panel A of Table 3 contains the results of the joint hypothesis tests from the country-by-country estimation of the multivariate system (5). For each country we report robust Wald tests for the significance and time-variation in the prices of world market risk, MJ and EM currency risks, conditional market risk and segflation risk. Though we are cautious in inferring strong results with only few observations, a number of interesting findings emerge from Panel A.

[Insert Table 3 here]

First, the local risk factors (conditional market risk and segflation risk) are priced and time-varying for many IFC investable indices. Specifically, the price of conditional market risk is time-varying in 6 out of 8 cases, whereas the price of segflation risk is significant and time-varying in 3 out of 8 cases. Second, there is strong evidence that the price of global currency risk (MJ and EM) is significant. The MJ currency risk is priced and is time-varying for all emerging market IFC investable indices of our sample, whereas the EM currency risk is conditionally priced at the 10% level in 5 out of 8 cases. However, in no case, is the price of

world market risk significantly time-varying. This result may be due to the fact that the test statistics lack power to detect significant pricing of the world market risk due to a short time series of data. Nevertheless, the average estimate across countries of the price of world market risk of 2.0 is economically significant and is consistent with previous studies.

Having established the empirical relevance of the local risk factors in the pricing of the IFC investable indices, we next examine the contribution of each source of risk to the total risk premium. We decompose the estimated total risk premium into four premiums:

1. World market risk premium: $\delta_{W,t-1} cov_{t-1}[r_{IFCI,t}, r_{Wt}]$
2. Conditional market risk premium: $\lambda_{I,t-1} var_{t-1}[r_{IFCI,t} \,|r_{DP,t}]$
3. Global currency risk premium: $\sum_{j=mj,em} \delta_{j,t-1} cov_{t-1}[r_{DP,t}, e^r_{jt}]$
4. Segflation risk premium: $\lambda_{e,t-1} cov_{t-1}[r_{HP,t}, e^r_{It}]$

We further define the global premium as the sum of the world market premium and the global currency premium. The local premium is defined as the sum of the conditional market premium and the segflation premium. In Fig. 2, we report the total, global and local risk premiums for the IFCI indices. Though the estimated premiums differ widely through time and across countries, the contribution of the local premium to the total premium is economically important over some time periods.

An interesting question to investigate is how the pricing of the IFC investable indices differs from that of the IFC global indices. Panel B of Table 3 reproduces the results of the joint hypothesis tests from the country-by-country estimation for the IFC global indices.[12] We also report in Fig. 2, the total, global and local risk premiums for the IFCG indices. Using Panels A and B of Table 3 and Panels A through H of Fig. 2, we examine for each country, the factors that are priced in the IFCG and IFCI indices as well as the contribution of the local and global premiums to the total premium for these indices.

For Argentina, the local risk factors along with the global real currency risk factors are significantly priced and significantly time varying for both the IFCG and IFCI indices. Furthermore, Panel A of Fig. 2 indicates that the contribution of the different premiums to the

[12] We use the same methodology and set of assets as for IFCI. However, the estimation is based on a longer sample that starts in 1976.

total premium of the IFCI index shows a very similar pattern to the one obtained for the IFCG index. In both cases, we observe that the total premium is essentially explained by the local component prior to 1992. However, the global premium becomes as important as the local premium after 1992, which corresponds to the inception of the Argentinean fund on the NYSE in November 1991 as well as ADRs listings starting in 1993. These results are in line with CEH that shows the Argentinean market to be essentially segmented prior to the 1990s with a sizeable jump in integration after 1992.

For the IFCG and IFCI indices of Brazil, the prices of local risk factors and global real currency risk are significantly time varying. In addition, we observe a strong similarity in the contribution of each premium to the total premium across the two indices. In both cases, we observe a significant decrease in the participation of the local premium to the total premium beginning in 1995. Interestingly this change coincides with the significant increase in ADR listings in the mid 1990s and is consistent with CEH which shows that the integration of Brazil steadily increased after 1995.

As for the IFCG and IFCI indices of Chile, the global real currency risks are significantly priced and significantly time varying, while the local risk factors do not seem to be priced. This result is confirmed with Panel C of Fig. 2 that indicates the prevalence of the global premium over the whole period for both indices. This result is also consistent with previous studies (see for example, CEH) that indicate a high degree of integration of the Chilean market since its official liberalization in 1989. Indeed, the liberalization of the market, the inception of the Chile fund on NYSE in September 1989 and the substantial growth in ADRs listings in the 1990s have highly integrated the Chilean market.

In India, the IFCI index seems to be priced globally unlike its global counterpart. Though this finding is consistent with our preliminary test on the relevance of global factors to predict the IFCI index return of India, the result could be driven by the limited number of observations for this country (132), which lessens the power of the tests. The analysis of the economic contribution of each premium to the total premium sheds further light on the importance of the local factors to the pricing of the Indian IFCI index. Panel D of Fig. 2 shows that over the entire period, the contribution of the local premium for both indices is non-trivial. This

finding is inline with the mildly segmented structure of the Indian market.[13] This result is also consistent with the significant barriers and capital controls in this country.

For both IFCG and IFCI indices of Korea, the global real currency risk and the local risk factors are significantly priced and time varying. Moreover, as shown in Panel E of Fig. 2, the local premium contributes significantly to the total premium, specifically during the Asian crisis. However, the global premium is an important driver of the total premium for the IFCI index, whereas it has been important for the IFCG index only in the last few years. The results for the IFCG index are conforming to the findings of CEH and Bae (1993) that both international and local factors are important in pricing the Korean equities and that the Korean market has become more integrated only recently. The IFCI index however seems to be more integrated than its global counterpart.

As for the Malaysian IFCI index, the local risk factors are priced though these are only significantly time varying at the 10% level. However, for the IFCG index of Malaysia, there is no evidence of significant pricing of the local risk factors. This result is consistent with the history of barriers to portfolio flows. Indeed, from the inception of the Malaysian IFCG index in 1985 until early 1990s, the country removed all barriers and witnessed a large inflow of capital. In 1998, following the Asian crisis, the country restored ownership restrictions. The time period 1990-2003 pertains to the period spanned by the IFCI index of Malaysia. Panel F of Fig. 2 provides further evidence to the relevance of the local premium for the IFCI index compared to the IFCG index. Nonetheless, for the two indices, the contribution of the local premium to the total premium is most pronounced during the period of the Asian crisis.

The Mexican IFCG and IFCI indices are similarly priced. The local risk factors as well as the global real currency risk are priced and significantly time varying in both cases. Panel G of Fig. 2 indicates that the local premium is the most significant at the Tequila crisis. However, overall the global and local premiums are important determinant of the total premium. Hence, although Mexico is highly integrated (see for example, CEH), the exposure of its IFCG and IFCI indices to local factors remains important.[14]

[13] Carrieri, Errunza and Hogan (2005) find India to be the most segmented country among the EMs of their sample that is identical to our sample of EMs.

[14] Bekaert and Harvey (1995) report Mexico as being segmented.

In the case of Thailand, the IFCG and IFCI indices are priced similarly. For the two indices, the global real currency risk and the conditional market risk are significantly time varying. Panel H of Fig. 2 shows that the contribution of the local premium is at its highest during the Asian crisis. However, in general, both the local and global premia contribute significantly to the total premiums of the two indices. These results are in line with CEH who find the Thai market to be mildly segmented with a modest recent upturn in integration.

Overall, the analysis provide clear evidence that local risks are relevant factors in explaining time-variation of the IFC global and investable returns indices and that the return dynamics of the IFCI indices are similar to that of the IFCG indices.

Panel C of Table 3 reports some diagnostics tests on the estimated residuals. There is evidence that GARCH effects have been removed and the non-normality in the data is reduced although not eliminated. Also, there is no more serial correlation in the squared standardized residuals. We also report the Engle-Ng test for asymmetry. The Engle-Ng tests indicate that, with the exception of Korea, there is no evidence of negative asymmetry in the residuals. Also, there is marginal evidence on the presence of positive asymmetry for the Argentinian investable index. Hence there is no consistent evidence of asymmetric response of the conditional second moments to past innovations. We also report the pseudo R-squares (R^2) computed from our model.[15] Of particular interest is a comparison between the pseudo R^2 obtained for the estimation involving the investable indices and the global indices. Diagnostic test results for IFC global indices are in Panel D of Table 3. For all EMs, except three, the explanatory power for the IFC global and investable indices are very similar. The pseudo-R^2 for Argentinean investable index is nonetheless very large (21%) and surpasses the one obtained for the IFCG index of Argentina (pseudo-R^2 = 10%).

5. Implicit Barriers and the investable indices

[15] For each asset, the pseudo R-squared is the ratio between the explained sum of squares and the total sum of squares. Due to the cross-equation restrictions, there is no guarantee that the pseudo R-squared are positive for all assets.

As reported in the previous section, reduction in explicit barriers in conjunction with market liberalization does not lead to global pricing of investable indices. Stulz (2005) suggests that the limits to financial globalization are likely due to twin agency problems related to expropriation by the state and corporate insiders at the expense of outside investors. Hence, this section offers some preliminary evidence in assessing the impact of implicit barriers on the globalization of emerging markets.

We use the information on the relative importance of global and local risks to capture the extent of financial globalization. We obtain the ratio of global to total premia for the investable indices based on our equilibrium asset pricing model and the methodology described in Section 3.1. Specifically, the total premium is constructed as the sum of the global and the local premia. Local premium comprises the local market and the segflation premium, while global premium comprises the world market risk premium and the currency premia. The sums are computed from the absolute values and thus by definition this ratio lies between 0 and 1. A low value indicates that the contribution of global risk is not very large. We take this as indirect evidence that the country is not very integrated with the rest of the world. On the other hand, a value closer to one is indication that global risk is relatively more important, suggesting a higher level of market integration. We use this ratio as our dependent variable. Table 4 reports summary statistics on the global to total premia. Based on our sample of countries, there is evidence that the extent of globalization is not uniform. For countries like Korea or Chile the relative importance of global risk is much larger than in countries like Brazil and Mexico. This is consistent with the evidence we have presented on the pricing of IFCI.

As Stulz (2005, p.1598) states, " As the twin agency problems worsen, greater ownership concentration becomes more efficient and corporate insiders must co-invest more with other investors. The risk sharing benefit of financial globalization is inversely related to how much co-investment occurs in equilibrium". He shows that both agency problems, corporate insider discretion and state ruler discretion, help explain ownership concentration across the world. Hence, we use the time series of the "closely held shares" reported by Worldscope as a proxy for the role of corporate insiders. This variable measures the equally weighted average fraction of shares held by insiders.[16] The average fraction of closely held shares over the period for our

[16]Stulz (2005) reports evidence using the equally weighted index and states that results are not changed with

eight countries is 50.23 %. As a comparison, this fraction is 15.68 % for the U.S. in 2002 (Stulz, 2005). To investigate the role of the state, we use the antidirector rights index of La Porta et al. (1998). The index varies between 0 and 6, with a higher score for those countries that show better protection of minority shareholders.[17] As in Stulz (2005), we interpret this variable as an indicator of the weakness of the legal institutions of a country. To capture the importance of explicit barriers we use a measure of intensity of capital controls, similar to Edison and Warnock (2003). This measure is equal to one minus the fraction of market capitalization of our investable indices over the total market capitalization.[18] When the measure is zero, the market capitalization of the investable indices is equal to that of the market-wide indices, indicating the lack of institutional barriers to foreign investment.[19] We also control for factors that have been linked to market integration in the literature (see for example, CEH (2005)). We use the ratio of stock market capitalization to GDP as a measure of financial development and the ratio of trade to GDP as a measure of economic openness.

Given the annual frequency of some of our variables, we annualize the premia and pool our cross-section and time series. Table 5 contains the results of five regressions. In all cases, we include the control variables to capture some country and time-related characteristics. Thus we estimate our pooled regressions with only a constant and no fixed effects.[20] In all regressions, the closely held shares have negative and significant coefficients, which means that countries with concentrated insider ownership are more exposed to local factors and less integrated with the world market. Thus when insider control is low, global risk is relatively higher, suggesting that the impact of globalization is partly explained by the extent of implicit barriers. The coefficient for the antidirector rights index that proxies for the state agency problem is small and has the right sign only in specification (3). Indeed, we would expect

a value weighted index.

[17] The index covers six areas, indicating if proxy by mail is allowed, shares are not blocked before a shareholder meeting, cumulative voting for directors is allowed, oppressed minorities are protected, preemptive rights at new equity issuances, and the right to call a special sharelholder meeting.

[18] This fraction is shown in Figure 1.

[19] An alternative measure of explicit barriers can be found in the indicator variable of Bekaert and Harvey (2002). However this indicator is equal to one for all our countries across the whole sample period.

[20] Given the number of datapoints in our sample, we are also concerned to preserve the parsimony of our specification.

the level of globalization to be positively related to better protection of minority shareholders. However this coefficient is never significant. Hence, although countries have liberalized their markets and removed foreign ownership restrictions, the investable securities are still largely affected by the local factors as a consequence of the severe twin agency problems.

In regression (5) we estimate a model where we include the intensity of capital controls together with measures of implicit barriers to separate the role of explicit barriers. Also in this regression, the variable that proxies for insiders ownership is negative and significant. The weakness of the law proxied by the antidirector index is negative and not significant. The variable measuring explicit barriers is of the wrong sign, but not significant.[21] In regression (4) we omit the two variables proxying for the implicit barriers. The intensity of capital control variable is still of the wrong sign and not significant. A possible explanation is that this variable does not accurately measure some important events in this time period, such as the reversals in globalization following the Asian crises.[22]

The measures of financial and economic development deliver mixed results. The ratio of market capitalization to GDP is positive and significant in all specifications but trade to GDP is negative, though insignificant. These results are consistent with CEH.

In summary, we take this as initial evidence that the level of globalization across our sample of emerging markets is related to the extent of the twin agency problems. A larger dataset will help shed further light on these issues.

6. Conclusion

S&P/IFC provides two EM indices: the IFC market-wide index (IFCG) and the IFC investable index (IFCI), a subset that takes into account foreign investment restrictions. Since the IFCI is fully investable, both the academics and practitioners implicitly assume that this subset of

[21] A regression that only includes explicit and implicit barrier without control variables confirms the negative and significant coefficient for the insider ownership variable. The intensity of capital controls and the antidirector index have positive and insignificant coefficients.

[22] As figure 1 shows, the impact of the Asian currency crises is not similar across the two measures. Around those events, we observe a decrease in the number of stocks included in the investable indices that does not coincide with a decrease in the other measure. When we use one minus the percentage of the number of stocks rather their capitalization as a proxy for explicit barriers, the estimated parameter is indeed of the correct sign.

emerging markets is priced in the global context. This is a critical assumption for corporate finance decisions and portfolio management.

We investigate the pricing behavior of investable portfolios represented by the IFCI using the Chaieb and Errunza (2006) model that allows for segmentation and purchasing power parity deviations. We estimate a conditional version of this model for the IFCI indices of eight emerging markets over a period characterized by increasing financial liberalization. Our results can be summarized as follows. In spite of decreasing restrictions on foreign investment at the institutional level, there is strong evidence that local factors - the conditional market risk and segflation risk - are relevant in explaining the returns of the IFC investable indices. We also find that the global currency risk is significantly priced. Hence the returns on investable indices are determined by a combination of domestic and global factors. Furthermore, the local risk premium contributes significantly in economic terms to the total premium. Overall, the dynamics of the investable index returns are similar to those of the market-wide indices. Conditional on the asset pricing model, the importance of local factors to the pricing of investable indices suggests that a major source of segmentation of the emerging markets could be related to implicit barriers.

Preliminary results on the role of implicit barriers in the pricing of the investable indices shows that in addition to the level of financial market development, the intensity of the twin agency problems plays a significant role in the integration of emerging markets. This is because in equilibrium, the twin agency problems impact ownership concentration and hinder international risk sharing. This result has important policy implications as it indicates removal of explicit barriers without improving governance can not further integrate the local market.

Appendix A: The Set of Eligible Securities

This appendix contains the eligible set of securities used to compute the diversification portfolios for the IFCI index of each country. The set consists of 35 global industry porfolios, overseas listed country funds and Depository Receipts and the MSCI world index.

Panel A: Global Industry Indices

Panel A provides data on the end of month total return on the 35 global industries collected from Datastream that uses the FTSE industry classification.

I1	AEROSPACE
I2	AUTOS
I3	BANKS
I4	BEVERAGES
I5	CHEMICALS
I6	CONSTRUCTION AND BUILDING MATERIALS
I7	DIVERSIFIED INDUSTRIALS
I8	ELECTRICITY
I9	ELECTRONIC ELECTRICAL EQUIPMENT
I10	ENGINEERING AND MACHINERY
I11	FOOD AND DRUG RETAILERS
I12	FOOD AND PRODUCERS AND PROCESSORS
I13	FORESTRY AND PAPER
I14	HEALTH
I15	HOUSEHOLD GOODS AND TEXTILES
I16	INFORMATION TECH HARDWARE
I17	INSURANCE
I18	INVESTMENT COMPANIES
I19	LEISURE AND HOTELS
I20	LIFE ASS.
I21	MEDIA AND ENTERTAINMENT
I22	MINING
I23	OIL AND GAS
I24	PERSONAL CARE AND HOUSEHOLD PRODUCTS
I25	PHARMACEUTICALS AND BIOTECH
I26	REAL ESTATE
I27	RETAILERS
I28	SOFTWARE AND COMPUTER SERVICES
I29	SPECIALITY AND OTHER FINANCE
I30	STEEL AND OTHER MATERIALS
I31	SUPPORT SERVICES
I32	TELECOM SERVICES
I33	TOBACCO
I34	TRANSPORTATION
I35	UTILITIES

Panel B: Country Funds

Panel B provides information on all the closed-end country funds (CFs) traded in the US and the UK in our sample. Data on CFs that trade on other exchanges is not available in Datastream. Monthly data on each US fund's return (including dividends) is collected from CRSP, while monthly data on UK fund's price index is collected from Datastream. During the period analyzed, several funds announced that they were either open-ending or liquidating. Start date is the IPO date except for Korea Liberalization Fund and Five Arrows Chile Fund, where the start date is when data is available (the IPO date for these funds are respectively June 1990 and February 1992).

Country	**Fund Name**	**Exchange**	**Start Date**	**Change of Structure or Investment Objective**	
				Nature of Change	**Announcement date**
Argentina	1-Argentina Fund Inc.	NYSE1	Oct-91	open-ended	Jun-01
Brazil	1-Brazil Fund Inc.	NYSE	Mar-88		
	2-Brazilian Equity Fund	NYSE	Apr-92		
	3-Brazilian Investment trust plc	LSE2	May-92	delisted	Jun-00
Chile	1-Chile Fund Inc.	NYSE	Sep-89		
	2-Five Arrows Chile Fund Ltd	LSE	May-94	suspended	Apr-00
India	1-India Growth Fund Inc.	NYSE	Aug-88	suspended	May-03
	2-India Fund Inc.	NYSE	Feb-94		
	3-Morgan Stanley India Investment Fund Inc.	NYSE	Feb-94		
Korea	1-Korea Fund Inc.	NYSE	Aug-84		
	2-Korea Europe Fund ltd	LSE	Jun-89	suspended	Feb-03
	3-Schroder Korea Fund plc	LSE	Dec-91	suspended	Aug-99
	4-Korea Liberlization Fund	LSE	Dec-92	suspended	Jun-00
	5-Korea Investment Fund Inc.	NYSE	Feb-92	open-ended	Sep-01
	6-Korea Equity Fund Inc.	NYSE	Nov-93		
	7-Fidelity Adv Korea	NYSE	Oct-94		
Malaysia	1-Malaysia Fund Inc.	NYSE	Jun-87		
Mexico	1-Mexico Fund Inc.	NYSE	Jun-81		
	2-Mexico Equity & Income Fund Inc.	NYSE	Aug-90		
	3-Emerging Mexico Fund Inc.	NYSE	Oct-90	Liquidated	Oct-98
Thailand	1-Thai Fund, Inc.	NYSE	Feb-88		
	2-Aberdeen New Thai Investment Trust	LSE	Dec-89		
	3-Siam Selective Growth Trust plc	LSE	Mar-90	delisted	Jul-01
	4-Thai Capital Fund, Inc.	NYSE	May-90		

[1]NYSE - New York Stock Exchange (USA) [2] LSE - London Stock Exchange (UK)

Source: Campbell Harvey's web page, Jain, Xia, and Wu (2004) and other sources; see e.g. http://www.closedendfundforum.com/statistics/sec_focus.html?char=m

PANEL C: ADRs and GDRs

Panel C provides information on all the direct listings and depository receipts traded in the US (ADRs) and outside the US (GDRs) in our sample. Monthly data on each ADR's return (including dividends) is collected from CRSP and GDR's return (including dividends) is collected from Datastream. The table contains only data on total return ADRs and GDRs that are available in CRSP and Datastream. Start date is when data is available and might deviate from the listing date.

Home	Company Name	Host	Start Date
Argentina			
A1	YPF S.A.	USA	Jul-93
A2	BBVA Banco Frances S.A.	USA	Nov-93
A3	TELEFONICA DE ARGENTINA S.A.	USA	Mar-94
A4	TRANSPORTADORA DE GAS DEL SUR, S.A.	USA	Nov-94
A5	METROGAS S.A.	USA	Nov-94
A6	IRSA COMMON SHARES	USA	Dec-94
A7	TELECOM ARGENTINA STET-FRANCE TELECOM SA	USA	Dec-94
A8	CRESUD COMMON SHARES	USA	Mar-97
A9	PETROBRAS ENERGIA PARTICIPACOES S.A.	USA	Jan-00
A10	GRUPO FINANCIERO GALICIA S.A.	USA	Jul-00
Brazil			
A1	ARACRUZ CELULOSE	USA	May-92
A2	USIMINAS S.A.	USA	Feb-95
A3	UNIBANCO S.A.	USA	May-97
A4	COMPANHIA BRASILEIRA DE DISTRIBUICAO	USA	Jul-97
A5	AMBEV COMMON	USA	Jul-97
A6	COMP. PARANAENSE DE ENERGIA	USA	Aug-97
A7	COMPANHIA SIDERURGICA NACIONAL	USA	Nov-97
A8	EMBRATEL PARTICIPACOES S.A.	USA	Nov-98
A9	TELE CELULAR SUL PARTICIPACOES S.A.	USA	Nov-98
A10	TELESP PARTICIPACOES S.A.	USA	Nov-98
A11	TELE SUDESTE CELULAR PARTICIPACOES	USA	Nov-98
A12	TELE LESTE CELULAR PARTICIPACOES S.A.	USA	Nov-98
A13	TELE CENTRO OESTE CELULAR PART S.A.	USA	Nov-98
A14	TELEMIG CELULAR PARTICIPACOES S.A.	USA	Nov-98
A15	TELE NORDESTE CELULAR PARTICIPACOES S.A.	USA	Nov-98
A16	TELE NORTE CELULAR PARTICIPACOES S.A.	USA	Nov-98
A17	TELESP CELULAR PARTICIPACOES S.A.	USA	Nov-98
A18	BELGO MINEIRA	USA	Sep-99
A19	PETROLEO BRASILEIRO S.A.- COMMON	USA	Aug-00
A20	PERDIGAO S.A.	USA	Oct-00
A21	PETROLEO BRASILEIRO S.A. - PREFERRED	USA	Feb-01
A22	SADIA S.A.	USA	Apr-01
A23	CEMIG	USA	Sep-01

Chile			
A1	COMPANIA DE TELECOMUNICACIONES DE CHILE	USA	Aug-90
A2	COMPANIA CERVECERIAS UNIDAS S.A.	USA	Oct-92
A3	MADECO COMMON SHARES	USA	May-93
A4	MASISA S.A.	USA	Jun-93
A5	SOC. QUIMICA Y MINERA DE CHILE, S.A. - 'B' SHARES	USA	Sep-93
A6	ENERSIS S.A.	USA	Oct-93
A7	CRISTALERIAS DE CHILE S.A.	USA	Jan-94
A8	ENDESA-EMPRESA NACIONAL DE ELECTRICIDAD	USA	Jul-94
A9	AFP PROVIDA S.A.	USA	Nov-94
A10	CHILESAT CORP S A	USA	Oct-94
A11	VINA CONCHA Y TORO S.A.	USA	Oct-94
A12	EMBOTELLADORA ANDINA S.A. - 'A' SHARES	USA	Apr-97
A13	EMBOTELLADORA ANDINA S.A. - 'B' SHARES	USA	Apr-97
A14	QUINENCO S.A.	USA	Jun-97
A15	DISTRIBUCION Y SERVICIO D & S S.A.	USA	Oct-97
A16	LAN AIRLINES S.A.	USA	Nov-97
A17	BANCO SANTANDER CHILE	USA	Jan-97
A18	SOC. QUIMICA Y MINERA DE CHILE, S.A. - 'A' SHARES	USA	Apr-99
India			
G1	CESC (DIRECT LISTING)	UK	Jul-96
G2	STATE BANK OF INDIA	BERLIN	Jan-97
G3	MAHANAGAR TELEPHONE NIGAM	UK	Dec-97
G4	LARSEN & TOUBRO	UK	Sep-98
G5	MAHINDRA	UK	Sep-98
A1	INFOSYS TECHNOLOGIES LIMITED	USA	Mar-99
A2	SIFY LTD.	USA	Oct-99
A3	ICICI BANK LTD.	USA	Mar-00
A4	SILVERLINE TECHNOLOGIES	USA	Jun-00
A5	REDIFF.COM INDIA LTD	USA	Jun-00
A6	VIDESH SANCHAR NIGAM LIMITED	USA	Aug-00
A7	WIPRO LTD.	USA	Sep-00
G6	VIDESH	FRANKFURT	Oct-00
A8	DR. REDDY'S LABORATORIES LTD.	USA	Apr-01
A9	SATYAM COMPUTER SERVICES LIMITE	USA	May-01
A10	HDFC BANK LTD.	USA	Jun-01
A11	MAHANAGAR TELEPHONE NIGAM LIMITED	USA	Oct-01
Korea			
A1	KOREA ELECTRIC POWER CORPORATION	USA	Feb-94
A2	POSCO	USA	Nov-94
A3	SK TELECOM CO., LTD.	USA	Jun-96
G1	SK TELECOM	FRANKFURT	May-97
G2	SK TELECOM	UK	May-98
A4	KT CORPORATION	USA	Mar-99
A5	MIRAE CORPORATION	USA	Nov-99
A6	HANARO TELECOM INC.	USA	Mar-00
G3	SK TELECOM	UK	Jun-00
A7	KOOKMIN BANK	USA	Nov-01

Malaysia			
G1	PETALING TIN BERHAD (DIRECT LISTING)	UK	Jan-76
G2	HIGHLANDS & LOWLANDS BERHAD (DIRECT LISTING)	UK	Jan-76
G3	KUALA LUMPUR KEPONG BERHAD (DIRECT LISTING)	UK	Feb-76
Mexico			
A1	TUBOS DE ACERO DE MEXICO, S.A.	USA	Jan-76
A2	TELEFONOS DE MEXICO S.A. DE CV - SERIES A	USA	Jan-76
A3	TELEFONOS DE MEXICO S.A. DE C.V.-SERIES 'L'	USA	Jun-91
A4	VITRO S.A.	USA	Nov-91
A5	EMPRESAS ICA S.A	USA	May-92
A6	GRUPO RADIO CENTRO, S.A. DE C.V.	USA	Jul-93
A7	GRUPO SIMEC 'B' SHARES	USA	Jul-93
A8	COCA-COLA FEMSA 'L' SHARES	USA	Oct-93
A9	GRUPO CASA SABA	USA	Dec-93
A10	GRUPO TELEVISA, S.A.	USA	Dec-93
A11	SAVIA, S.A. de C.V.	USA	Feb-94
A12	CORPORACION DURANGO, S.A. DE C.V.	USA	Jul-94
A13	DESC, S.A. DE C.V. SERIES C	USA	Jul-94
A14	GRUPO ELEKTRA	USA	Dec-94
A15	INTERNACIONAL DE CERAMICA	USA	Dec-94
A16	CONTROLADORA COMERCIAL MEXICANA	USA	Oct-96
A17	GRUPO IMSA	USA	Dec-96
A18	TV AZTECA, S.A. DE C.V.	USA	Aug-97
A19	GRUMA S.A. DE C.V. "B" SHARES	USA	Nov-98
A20	GRUPO IUSACELL	USA	Aug-99
A21	CEMEX S.A. DE CV	USA	Sep-99
A22	GRUPO AEROPORTUARIO DEL SURESTE	USA	Sep-00
A23	AMERICA MOVIL SA DE CV- SERIES 'L'	USA	Feb-01
A24	AMERICA MOVIL SA DE CV-SERIES 'A'	USA	Feb-01
A25	GRUPO TMM	USA	Dec-01
A5	ADVANCED SEMICONDUCTOR ENGINEERING INC.	USA	Oct-00
G2	ADVD.SEMICON	BERLIN	Dec-00
G3	COMPAL ELTN.MANFS.	FRANKFURT	Jan-01
Thailand			
G1	TT&T PUBLIC	FRANKFURT	Jan-98
G2	TT&T PUBLIC	UK	Oct-00

Source of ADRs listing

Data on ADRs list is collected from Bank of New York at http://www.adrbny.com and cross-checked with http://wwss.citissb.com/adr/www/adr_info/index.htm. Listing dates cross-checked with NYSE, NASDAQ, OTCBB, pink sheets. OTCBB denotes 'Over-the-counter Bulletin Board.' See www.otcbb.com/static/symbol.htm. For a full description on the procedure to obtain the ADRs listing please see Karolyi (2003a).

Source of GDRs listing

Overseas listing are kindly provided by Sergei Sarkissian. The data is updated using Datastream and major world exchanges.

Panel D: Composition of Diversification Portfolios for the IFC investable indices of the Emerging Markets

Columns 1 and 2 report the composition of portfolio R_G obtained by stepwise regression procedure over the world market index return (R_m) and the 35 global industry portolios returns. Columns 3 to 5 report the composition of the diversification portfolio (DP) in addition to R_G obtained by stepwise regression over R_G, all CFs and overseas listings for which data is available from CRSP and Datastream. The numbers in each column correspond to the identification in Appendix A, Panels A through C.

Country	Rm[a]	Global Industry Portfolios	CFs	ADRs	GDRs[b]
Argentina					
	no	I19, I22, I30	1	A2	na
Brazil					
	no	I13, I28	1	no	na
Chile					
	no	I7, I19, I23, I33, I35	no	A1, A8	na
India					
	no	I3, I9, I17, I18, I30, I33	2	no	no
Korea					
	no	I5, I6, I9, I13, I14, I30, I34, I35	1, 2, 6	no	no
Malaysia					
	no	I1, I17, I19, I26, I29	1	na	no
Mexico					
	no	I11, I14, I15, I21, I22, I27, I30	1	A1, A2, A4, A5, A10, A13, A15, A19, A24	na
Thailand					
	no	I8, I13, I19, I22, I24, I26, I28, I29, I30, I31, I34, I35	1, 2	na	G1

[a] yes (no) means that the asset is (not) included by the stepwise procedure

[b] na means that there are no such securities for a given country

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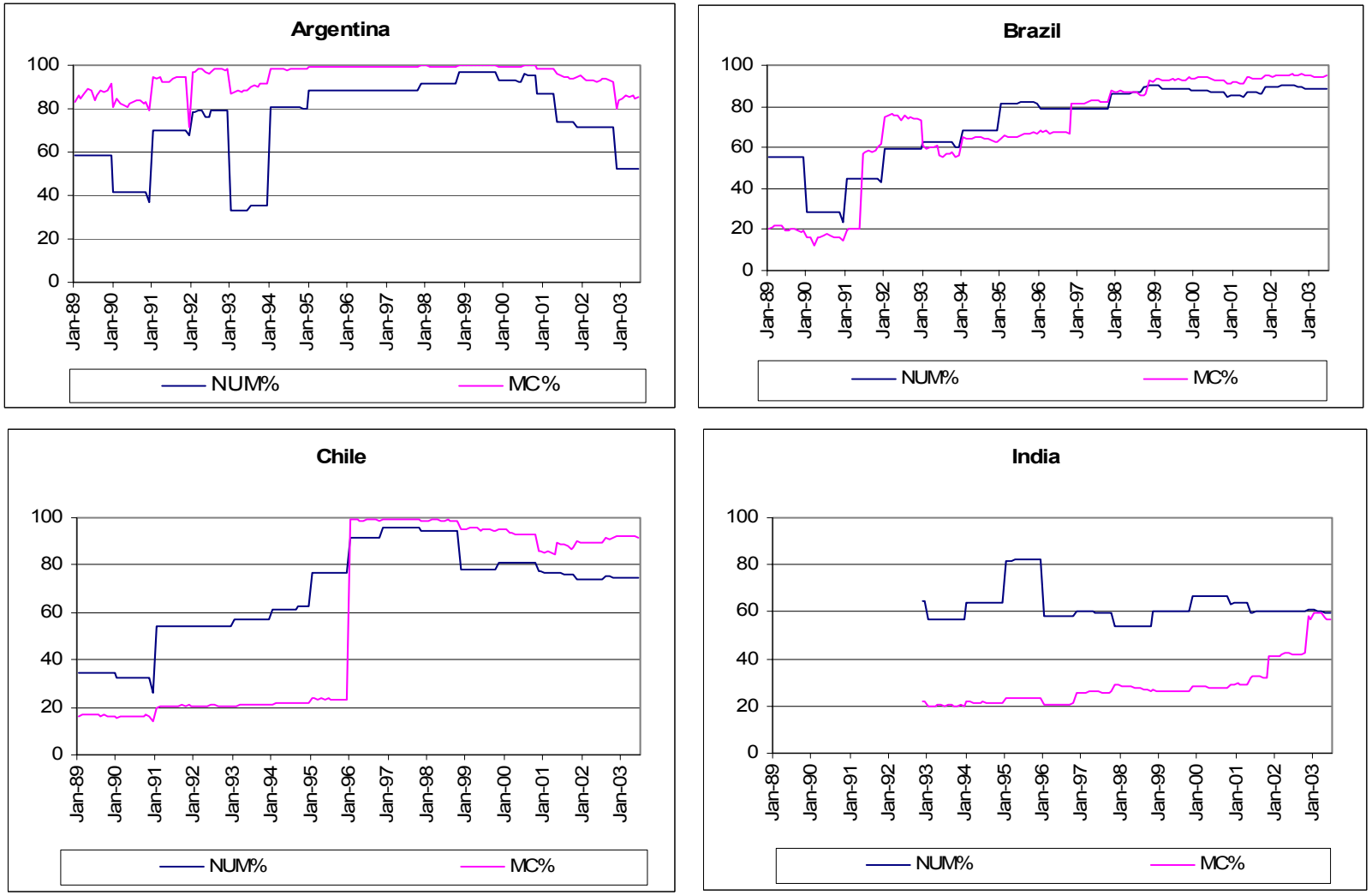


Fig. 1. Statistics. For each emerging market,the line labeled "NUM%" represents the number of stocks included in the IFCI index as percentage of the total number of stocks in the IFCG index. The line labeled "MC%" represents the market capitalization of the IFCI index as percentage of the market capitalization of the IFCG index.

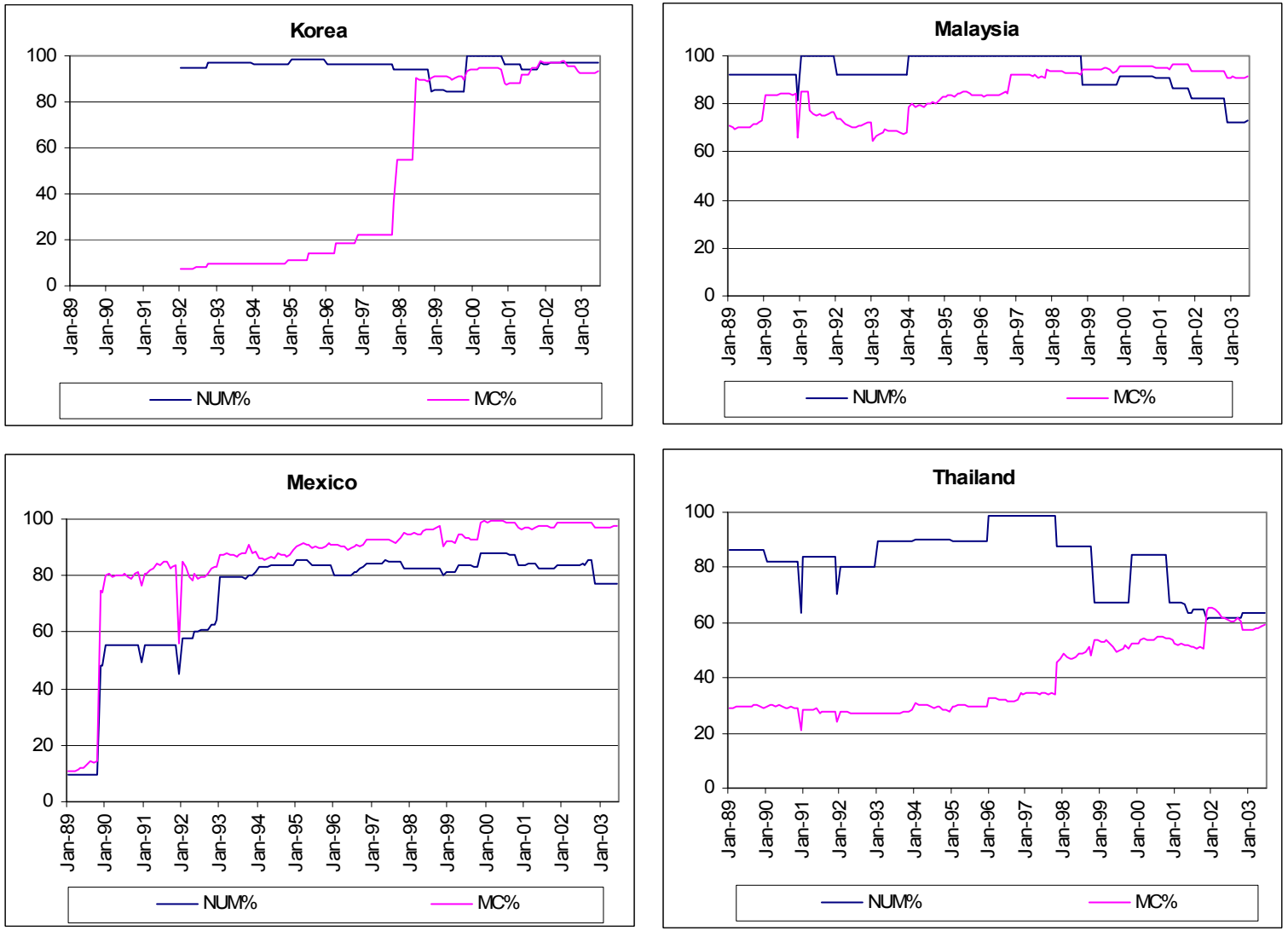
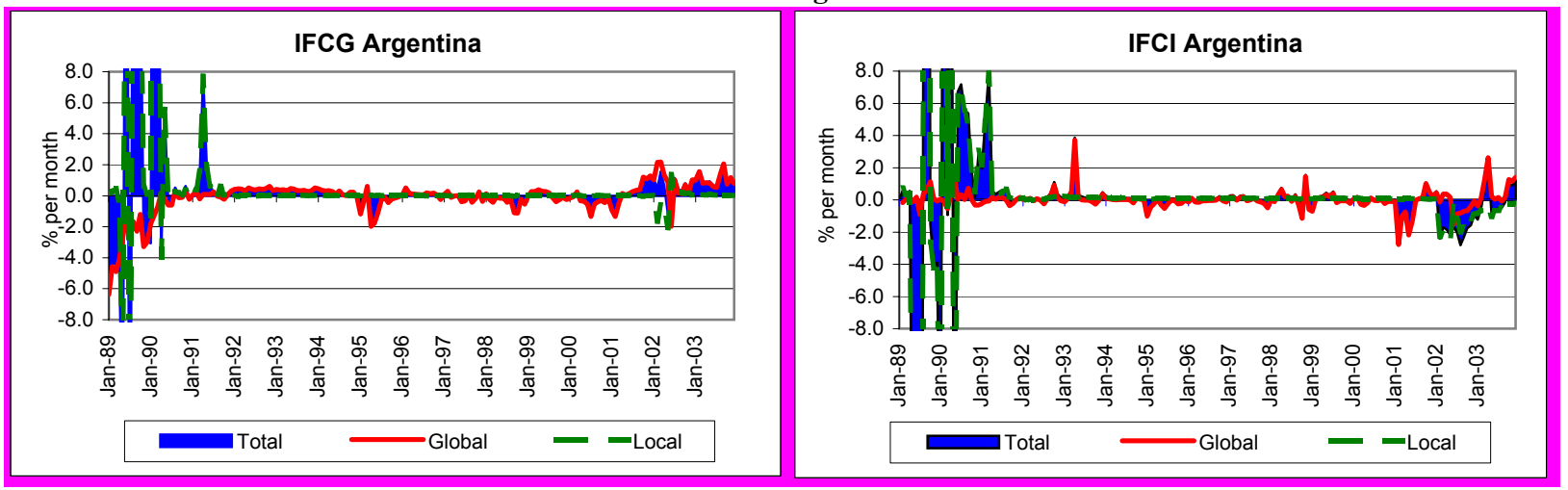


Fig. 1. Continue

Panel A: Argentina



Panel B: Brazil

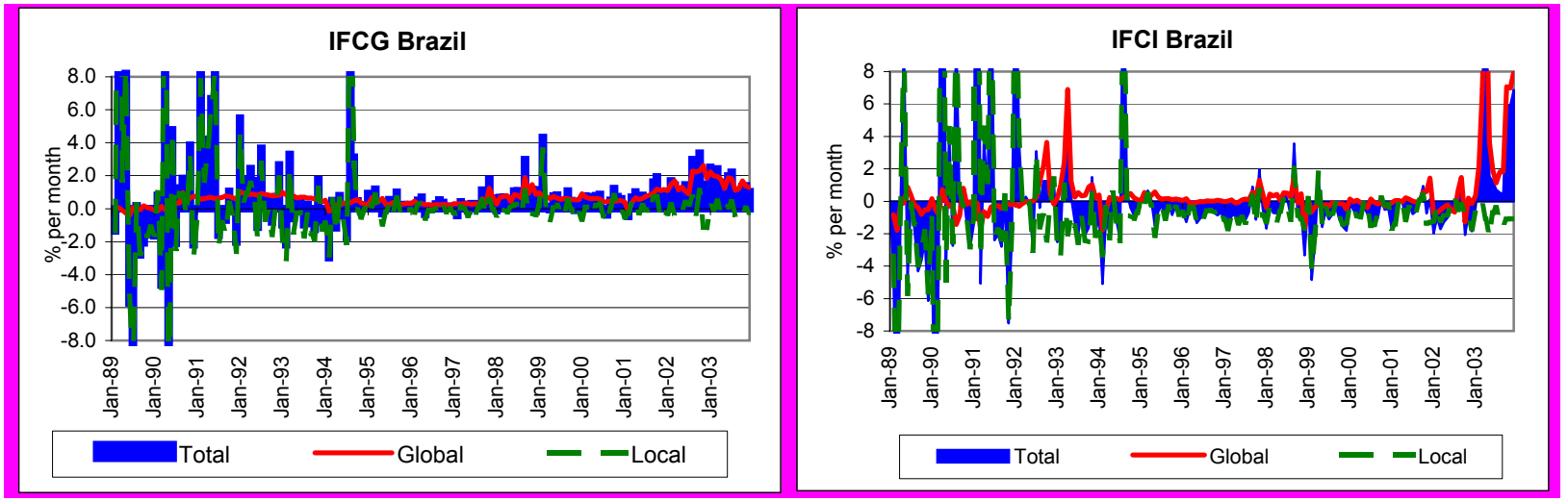
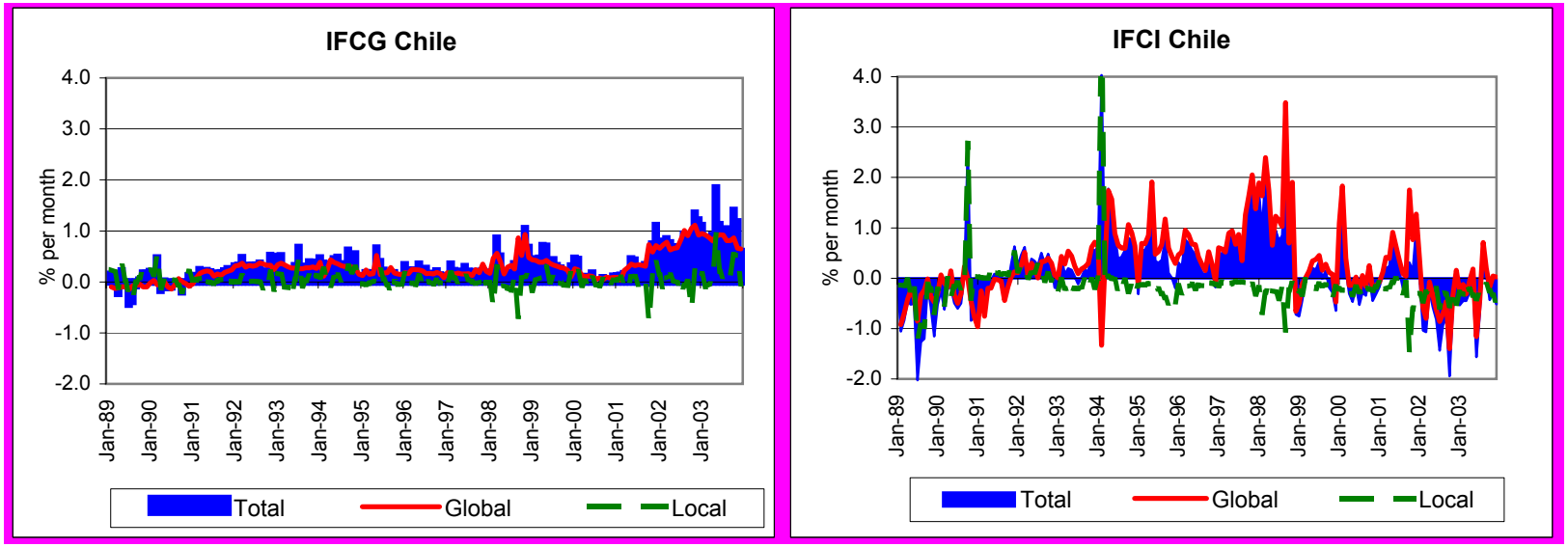


Fig. 2. Estimated Risk premiums. For each IFC global and investable index return, the area labeled "Total" represents the sum of the estimated world market, conditional market, global currency (MJ and EM), and segflation premiums. The line labeled "Global" represents the portion of the total premium associated with world market and global currency exposure. The line labeled "Local" represents the portion of the total premium associated with conditional market and segflation risk exposures.

Panel C: Chile



Panel D: India

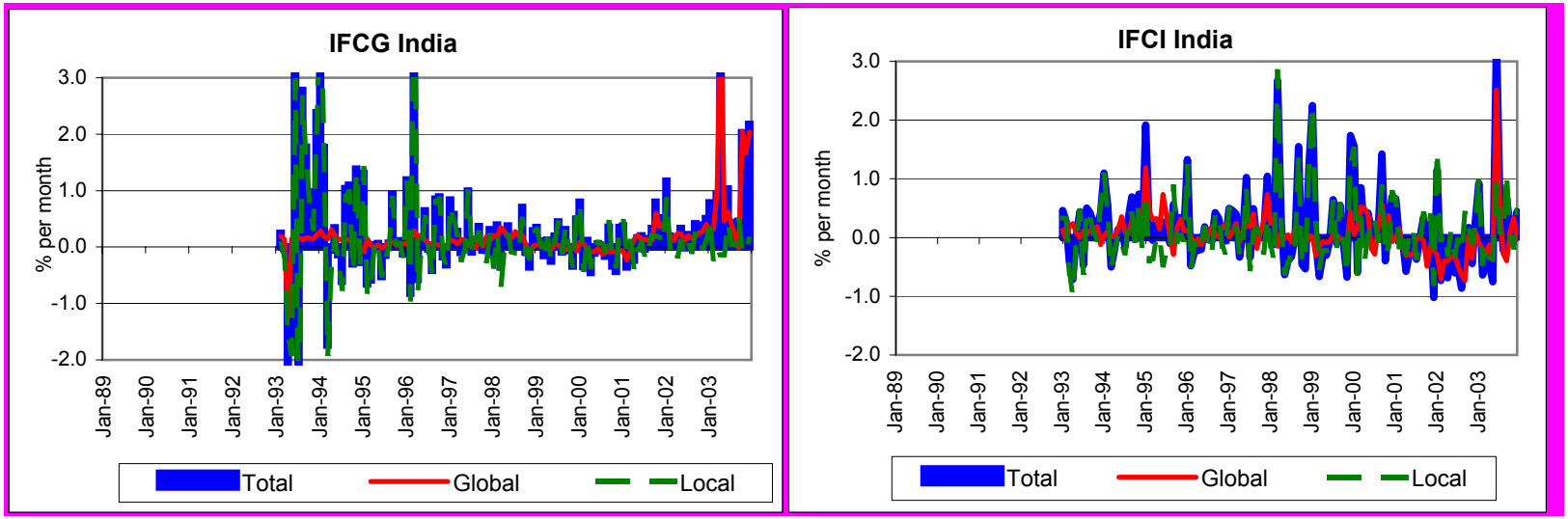
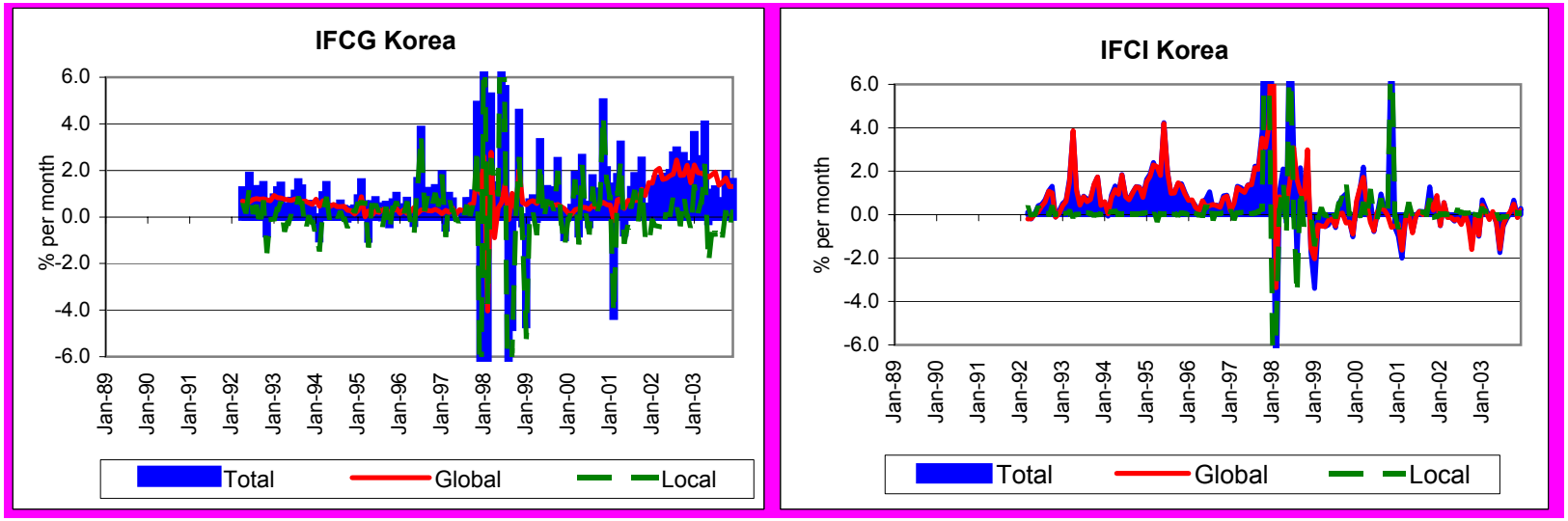


Fig.1. Continued

Panel E: Korea



Panel F: Malaysia

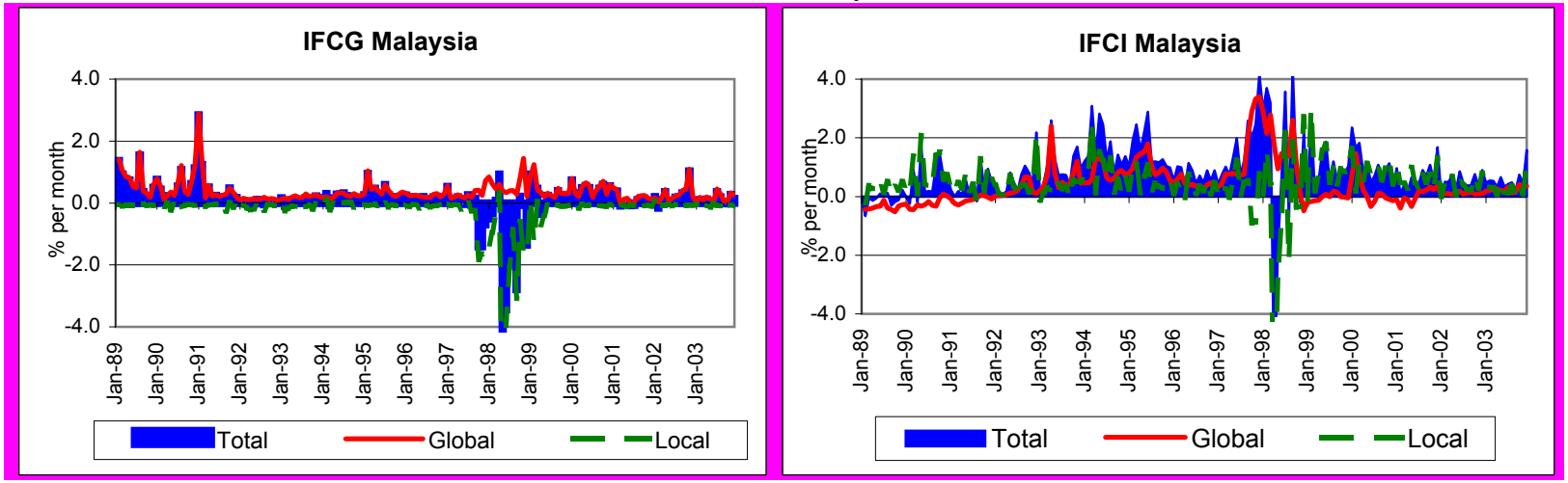
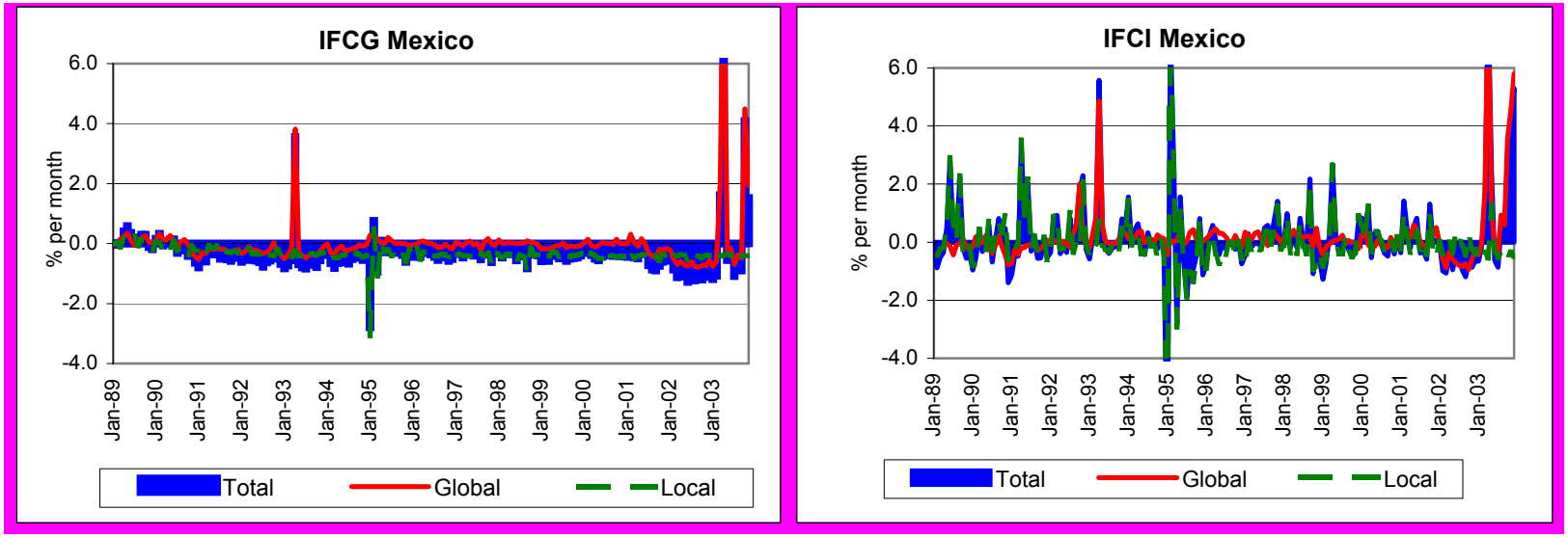


Fig.1. Continued

Panel G: Mexico



Panel H: Thailand

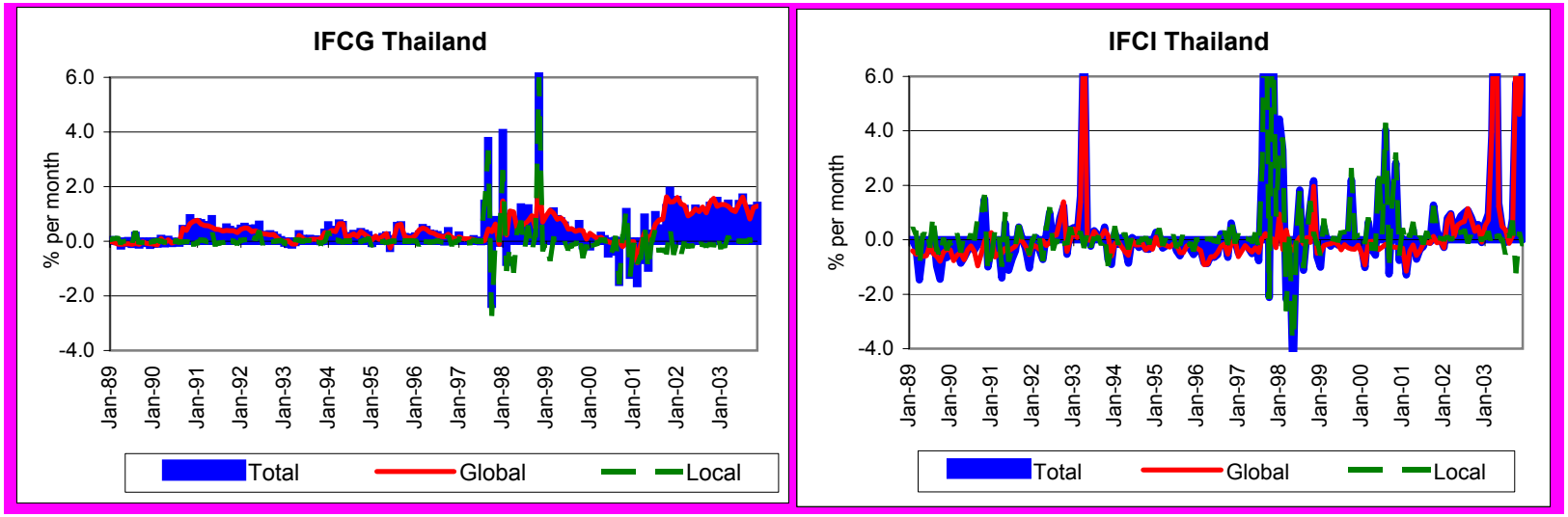


Fig.1. Continued

Table 1: Summary Statistics for Assets Excess Returns

Panel A: Distributional Statistics of the IFC investable indices

The IFCI emerging markets equity indices are from the S&P/IFC Emerging Markets Database. The world market return is the U.S. dollar return on the MSCI value-weighted world market portfolio. Returns are monthly percentage, denominated in USD and in excess of the one-month Eurodollar deposit rate. The period is from January 1989 or later to December 2003. For each country, the table presents the starting dates for the return data, the number of firms in the IFCI and IFCG indices as of June 2003, the market values of the IFCI and IFCG indices in billions of U.S. dollars as of June 2003, the mean, volatility, skewness and kurtosis. The test for the kurtosis coefficient has been normalized to zero, B-J is the Bera-Jarque test for normality based on excess skewness and kurtosis, Q is the Ljung-Box test for autocorrelation of order 12 for the returns and for the returns squared.

	Start date	Firms in IFCI index	Firms in IFCG index	Market Cap. Of IFCI	Market Cap. Of IFCG	Mean	Std. Dev.	Skewness	Kurtosis	B-J	$Q(z)_{12}$	$Q(z^2)_{12}$
Argentina	1989.01	11	21	3.9	4.6	0.87	19.41	-0.41	12.14**	1080.56**	18.15	60.89**
Brazil	1989.01	62	70	55.6	58.7	0.75	19.06	-1.32	7.88**	503.32**	20.07	31.44**
Chile	1989.01	29	39	21.1	23.1	1.06	7.50	-0.33	1.32**	15.34**	16.70	12.40
India	1992.12	71	119	31.3	55.2	0.00	8.39	-0.02	-0.39	1.02	15.63	8.18
Korea	1992.02	149	154	157.4	168.6	-0.22	12.76	0.36*	2.46**	36.84**	6.02	66.76**
Malaysia	1989.01	75	103	35.1	38.3	-0.08	10.09	-0.06	3.30**	78.57**	39.50**	141.52**
Mexico	1989.01	40	52	54.1	55.6	0.92	9.94	-1.22	3.38**	126.05**	22.77*	18.93
Thailand	1989.01	38	60	12.9	21.9	-0.09	12.19	-0.26	1.16**	11.20**	34.44**	84.92**
MSCI World index	1989.01	-	-	-	-	0.17	4.32	-0.49	0.49	8.62**	6.87	11.17
MJ currency index	1989.01	-	-	-	-	-0.05	1.65	0.20	0.17	1.36	36.78**	12.78
EM currency index	1989.01	-	-	-	-	-0.06	1.23	-1.26	5.17**	240.31**	18.79	44.36**

* significant at the 5% level ** significant at the 1% level

Panel B: Distributional Statistics of change in real exchange rate (ΔRXR)

Statistics for change in real exchange rates. The period is from January 1989 to December 2003 for all countries . The test for the kurtosis coefficient has been normalized to zero, B-J is the Bera-Jarque test for normality based on excess skewness and kurtosis, Q is the Ljung-Box test for autocorrelation of order 12 for the returns and for the returns squared.

	Mean	Std. Dev.	Skewness	Kurtosis	B-J	$Q(z)_{12}$	$Q(z^2)_{12}$
Argentina	-0.15	16.51	-2.50	28.62**	6176.7**	32.36**	59.20**
Brazil	-0.06	6.54	-2.06	19.57**	2926.1**	8.75	3.61
Chile	0.00	2.14	0.01	0.69*	3.14	26.41*	29.39**
India	-0.25	2.36	-4.42	29.38**	6891.4**	5.20	0.52
Korea	-0.14	3.95	-3.80	36.81**	10347**	19.41	34.35**
Malaysia	-0.18	2.85	1.68**	30.30**	6802.4**	9.29	57.01**
Mexico	0.10	4.38	-4.47	53.01**	21177**	28.77**	14.20
Thailand	-0.16	3.56	0.11	23.11**	3907.1**	20.21	81.42**

* significant at the 5% level ** significant at the 1% level

Panel C: Pairwise Correlations for Assets Returns

	Argentina	Brazil	Chile	India	Korea	Malaysia	Mexico	Thailand	Average
IFCI and world	0.13	0.40	0.37	0.26	0.46	0.41	0.47	0.44	0.366
IFCI and its diversification portfolio	0.52	0.75	0.86	0.76	0.93	0.71	0.96	0.93	0.803
Diversification portfolio and world	0.32	0.51	0.53	0.39	0.43	0.65	0.47	0.56	0.481
IFCG and its diversification portfolio*	0.37	0.65	0.52	0.61	0.78	0.73	0.79	0.83	0.662

* Results on the correlation between the IFCG index and its diversification portfolio for each country are reproduced from Chaieb and Errunza (2005)

Panel D: Global Information Variables

Statistics for global instruments. The global instruments include a constant, the world dividend yield in excess of the one-month Euro-dollar interest rate (XWDY), the change in US term premium (ΔUSTP) and the US default premium (USDP). All variables are in percent per month, lagged one month.

	Mean	Std. Dev.	Pairwise Correlations		
XWDY	-0.25	0.18	1.00	0.10	0.30
ΔUSTP	0.01	0.23		1.00	0.20
USDP	0.84	0.22			1.00

Panel E: Local Information Variables

The local instruments include a constant, the lagged emerging market excess returns (LagRet), the change in local inflation rate (ΔLCinf). All variables are in percent per month, lagged one month.

	ΔLCinf		
	Mean	Std. Dev.	Correlations with LagRet
Argentina	-0.037	16.47	-0.29
Brazil	-0.157	6.68	-0.33
Chile	-0.012	0.72	-0.17
India	0.005	0.94	-0.10
Korea	-0.002	0.57	-0.13
Malaysia	-0.003	0.41	0.07
Mexico	-0.009	0.65	-0.09
Thailand	0.002	0.59	-0.06

Table 2: Analysis of predictability in IFC investable indices returns

The table reports the adjusted R squared (R^2) from linear regressions of the IFC investable returns on global and local information variables. The period is from January 1989 or later to December 2003. The world information variables are the MSCI world return, the world dividend yield in excess of the one-month eurodollar deposit rate, the U.S. 10-year treasury bill return minus the 3-month return, the spread between Baa rated bonds and Aaa bonds. The local information variables include the local U.S. dollar return, the change in the foreign currency rate versus the U.S. dollar and the change in the local inflation rate. Hetroskedasticity consistent p-values are reported in brackets.

	Start date	adjusted R^2		
		World information	Local information	Combined information
Argentina	1989.02	-0.013	0.048	0.039
		[0.77]	[0.01]	[0.06]
Brazil	1989.02	-0.011	-0.000	0.016
		[0.71]	[0.41]	[0.23]
Chile	1989.02	0.058	0.028	0.059
		[0.00]	[0.05]	[0.02]
India	1993.01	0.068	0.010	0.086
		[0.01]	[0.24]	[0.01]
Korea	1992.03	0.029	0.080	0.094
		[0.10]	[0.00]	[0.00]
Malaysia	1989.02	-0.002	0.006	0.002
		[0.46]	[0.25]	[0.40]
Mexico	1989.02	0.007	0.026	0.023
		[0.28]	[0.07]	[0.16]
Thailand	1989.02	0.009	-0.010	-0.004
		[0.21]	[0.71]	[0.51]
world	1989.02	-0.009		
		[0.66]		

Table 3: Hypothesis testing of the model

The estimated model is:

$$r_{IFCI,t} = \delta_{W,t-1}\ cov\ (r_{IFCIt}, r_{Wt}) + \lambda_{It-1}\ var\ (r_{IFCIt} | r_{DPt}) + \delta_{mj,t-1}\ cov\ (r_{DP,t}, e^{r}_{mj,t}) + \delta_{em,t-1}\ cov\ (r_{DP,t}, e^{r}_{em,t}) + \lambda_{et-1}\ cov\ (r_{HP,t}, e^{r}_{I,t}) + \varepsilon_{It}$$

$$r_{DP,t} = \delta_{W,t-1}\ cov\ (r_{DP,t}, r_{Wt}) + \delta_{mj,t-1}\ cov\ (r_{DP,t}, e^{r}_{mj,t}) + \delta_{em,t-1}\ cov\ (r_{DP,t}, e^{r}_{em,t}) + \varepsilon_{DP,t}$$

$$r_{W,t} = \delta_{W,t-1}\ var\ (r_{W,t}) + \delta_{mj,t-1}\ cov\ (r_{W,t}, e^{r}_{mj,t}) + \delta_{em,t-1}\ cov\ (r_{W,t}, e^{r}_{em,t}) + \varepsilon_{W,t}$$

$$e^{r}_{j,t} = \delta_{W,t-1}\ cov\ (e^{r}_{j,t}, r_{Wt}) + \delta_{mj,t-1}\ cov\ (e^{r}_{j,t}, e^{r}_{mj,t}) + \delta_{em,t-1}\ cov\ (e^{r}_{j,t}, e^{r}_{em,t}) + \varepsilon_{j,t} \qquad j = mj,\ em,\ I$$

where $r_{IFCI,t}$ is the IFCI index excess return, $r_{DP,t}$ is the diversification portfolio excess return, $r_{HP,t}$ is the hedge portfolio excess return, $r_{W,t}$ is the world index excess return, δ_W is the price of world covariance risk, λ_I is the price of conditional market risk, δ_{mj}, δ_{em} are respectively the prices of Major and EM real currency risks, λ_e is the price of *segflation* risk and $\varepsilon_t | \vartheta_{t-1} \sim N(0, H_t)$. Price of risk specifications are given by:

$$\delta_{W,t-1} = exp\ (\kappa_W' \mathbf{Z_{G,t-1}})$$

$$\delta_{j,t-1} = \kappa_j' \mathbf{Z}_{G,t-1} \qquad j = mj,\ em$$

where $\mathbf{Z_G}$ is a set of global information variables which includes a constant, the U.S. default spread, the U.S. term structure spread and the world dividend yield in excess of the risk free rate,

$$\lambda_{I,t-1} = exp\ (\kappa_I' \mathbf{Z}_{I,t-1})$$

$$\lambda_{e,t-1} = \kappa_e' \mathbf{Z}_{I,t-1}$$

where $\mathbf{Z_I}$ is a set of local information variables which includes a constant, the change in the local inflation rate and the local market index excess return.

H_t is the time-varying conditional covariance parameterized as:

$$H_t = H_0 * (\iota\iota' - \mathbf{aa}' - \mathbf{bb}') + \mathbf{aa}' * \Sigma_{t-1} + \mathbf{bb}' * H_{t-1},$$

where * denotes the Hadamard product, **a** and **b** are (6 x 1) vector of constants, ι is (6 x 1) unit vector, and Σ_{t-1} is the matrix of cross error terms, $\varepsilon_{t-1}\varepsilon'_{t-1}$.

IFCI indices are from S&P/IFC and the world equity index is from MSCI. The risk free rate is the one-month Eurodollar rate from Datastream. All returns are denominated in USD. The model is estimated by Quasi-Maximum Likelihood. P-values for robust Wald test for the hypothesis are reported under each country.

Panel A: Specification tests

Null Hypothesis	Argentina (1989:02-2003:12)	Brazil (1989:02-2003:12)	Chile (1989:02-2003:12)	India (1993:01-2003:12)	Korea (1992:03-2003:12)	Malaysia (1989:02-2003:12)	Mexico (1989:02-2003:12)	Thailand (1989:02-2003:12)
for time-varying market risk								
$\kappa_{W,j} = 0$, for j>1	0.5307	0.2251	0.9441	0.4898	0.3418	0.169	0.0943	0.6407
for time-varying conditional market risk								
$\kappa_{i,j} = 0$, for j>1	0.0036	0.0011	0.7106	0.3811	0.0011	0.0332	0.0233	0
for significant MJ real currency risk								
$\kappa_{mj,j} = 0$, for j>0	0.0135	0.0075	0.0178	0.0006	0.0004	0.0096	0.0029	0.007
for time-varying MJ real currency risk								
$\kappa_{mj,j} = 0$, for j>1	0.0163	0.0112	0.021	0.0020	0.0014	0.0098	0.0057	0.008
for significant EM real currency risk								
$\kappa_{em,j} = 0$, for j>0	0.1267	0.0112	0.0678	0.0000	0.0000	0.1757	0.4718	0.3179
for time-varying EM real currency risk								
$\kappa_{em,j} = 0$, for j>1	0.0667	0.0085	0.1282	0.0006	0.0226	0.1856	0.3580	0.639
for significant global real currency risk								
$\kappa_{mj,j} = 0$ and $\kappa_{em,j} = 0$ for j>0	0.0085	0.0003	0.0046	0.0001	0.0008	0.01	0.0104	0.026
for significant *segflation* risk								
$\kappa_{e,j} = 0$, for j>0	0.0037	0.0479	0.6826	0.6565	0.1222	0.1994	0.0066	0.2754
for time-varying *segflation* risk								
$\kappa_{e,j} = 0$, for j>1	0.0075	0.1280	0.8896	0.6982	0.1857	0.8644	0.0165	0.1936
for time-varying local risk								
$\kappa_{e,j} = 0$ and $\kappa_{I,j} = 0$ for j>1	0.0001	0.0004	0.8359	0.3996	0.0057	0.0854	0.0000	0

Panel B: Specification tests for the IFC Global indices

Null Hypothesis	Argentina (1976:02-2003:12)	Brazil (1980:02-2003:12)	Chile (1976:02-2003:12)	India (1976:02-2003:12)	Korea (1976:02-2003:12)	Malaysia (1985:02-2003:12)	Mexico (1976:02-2003:12)	Thailand (1976:02-2003:12)
for time-varying market risk								
$\kappa_{W,j} = 0$, for j>1	0.0468	0.0155	0.1286	0.0082	0.0165	0.0530	0.1512	0.0440
for time-varying conditional market risk								
$\kappa_{i,j} = 0$, for j>1	0.0006	0.0269	0.7151	0.2843	0.0000	0.5922	0.1124	0.0005
for significant Major real currency risk								
$\kappa_{mj,j} = 0$, for j>0	0.0000	0.0105	0.0050	0.0009	0.0014	0.0007	0.0000	0.0039
for time-varying Major real currency risk								
$\kappa_{mj,j} = 0$, for j>1	0.0000	0.0105	0.0050	0.0011	0.0014	0.0008	0.0001	0.0044
for significant EM real currency risk								
$\kappa_{em,j} = 0$, for j>0	0.0000	0.0000	0.0082	0.0028	0.0002	0.1356	0.0006	0.0117
for time-varying EM real currency risk								
$\kappa_{em,j} = 0$, for j>1	0.0000	0.0000	0.0044	0.0010	0.0001	0.1931	0.0017	0.0048
for significant global real currency risk								
$\kappa_{mj,j} = 0$ and $\kappa_{em,j} = 0$ for j>0	0.0000	0.0000	0.0005	0.0055	0.0000	0.0015	0.0000	0.0003
for significant *segflation* risk								
$\kappa_{e,j} = 0$, for j>0	0.0000	0.0001	0.2519	0.1831	0.0001	0.3239	0.0063	0.7076
for time-varying *segflation* risk								
$\kappa_{e,j} = 0$, for j>1	0.0000	0.0000	0.1517	0.0948	0.0000	0.2660	0.0975	0.5438
for time-varying local risk								
$\kappa_{e,j} = 0$ and $\kappa_{I,j} = 0$ for j>1	0.0000	0.0000	0.4146	0.0682	0.0000	0.5139	0.1813	0.0014

Panel B is reproduced from Chaieb and Errunza (2005)

Panel C: Diagnostics for the residuals of the IFCI indices

B-J is the Bera-Jarque test for normality based on excess skewness and kurtosis, Q is the Ljung-Box test for autocorrelation of order 12 for the residuals and the residuals squared, EN-AN and EN-AP are respectively the Engle-Ng negative size bias and positive size bias test on the squared residuals. R^2 is pseudo-R squared.

	Argentina	Brazil	Chile	India	Korea	Malaysia	Mexico	Thailand
B-J	204.05**	137.94**	0.45	6.91*	0.96	7.26*	10.68**	6.48*
$Q(z)_{12}$	5.58	12.66	15.66	13.23	10.20	12.90	14.79	24.88*
$Q(z^2)_{12}$	8.56	6.49	4.65	13.49	18.95	20.20	24.55*	23.54*
EN-AN	0.88	-0.17	1.50	-0.96	-2.82**	-0.79	-1.58	1.64
EN-AP	1.92*	1.04	0.85	-0.80	-1.26	-1.21	1.47	-0.91
R^2(%)	20.95	7.43	-2.07	1.39	-10.16	2.25	2.60	3.88

* significant at the 5% level ** significant at the 1% level

Panel D: Diagnostics for the residuals of the IFCG indices

	Argentina	Brazil	Chile	India	Korea	Malaysia	Mexico	Thailand
B-J	88.05**	16.78**	5.01	24.26**	52.06**	10.17**	441.72**	100.44**
$Q(z)_{12}$	6.79	6.96	22.03*	6.22	11.73	10.40	20.22	32.11**
$Q(z^2)_{12}$	8.34	12.41	7.16	21.67*	3.68	40.30**	9.17	5.69
EN-AN	1.44	-0.37	1.24	-0.42	-1.57	-1.31	-3.39**	1.52
EN-AP	2.00*	-0.48	1.09	1.81*	-0.52	-1.36	-1.25	2.20*
R^2(%)	10.54	6.49	4.64	1.98	3.58	1.93	-1.16	2.1

* significant at the 5% level. ** significant at the 1% level.

Panel D is reproduced from Chaieb and Errunza (2005)

Table 4 - Summary Statistics for estimated global to total ratio of investable indices

For each IFCI index, the table presents summary statistics of the global to total ratio (GT). The global premium is the sum of the world market, MJ curreny and EM currency premiums estimated from the model in table 3. The global to total ratio is then computed as the absolute value of the global premium devided by the sum of absolute values of global and local premiums, where the local premium is the sum of conditional market and segflation premiums estimated from the model in table 3. Hence by construction the global to total ratio lies between 0 and 1. The estimated monthly GT ratios are then averaged to obtain yearly GT ratios. The mean, median and standard deviation are reported for GT ratios over the period 1993-2002.

	GT_ARG	GT_BRA	GT_CHI	GT_IND	GT_KOR	GT_MAL	GT_MEX	GT_THA
Mean	0.525	0.277	0.677	0.404	0.764	0.472	0.382	0.547
Median	0.549	0.286	0.662	0.380	0.802	0.518	0.390	0.571
Std. Dev.	0.171	0.110	0.133	0.137	0.147	0.213	0.162	0.165

Table 5 - Determinants of investable indices

The table presents results from a panel regression of the estimated GT ratios described in table 4 on a number of variables. The estimated GT ratios are for the IFCIs of Argentina, Brazil, Chile, India, Korea, Malaysia, Mexico and Thailand. MC/GDP is the market capitalization to GDP. TR/DGP is the size of the trade sector to GDP. ICC is the intensity of capital control of Edison and Warnock (2003) measured as one minus the ratio of market cap. of IFCI to market cap. of IFCG. A high ratio means high level of ownership restrictions. Close_ew is the equally weighted average fraction of firm stock market capitalization held by insiders obtained from Worldscope over the period 1993-2002. Antidir_98 is the LLSV index of minority protection from La Porta et al. (1997, 1998). The index covers six areas, indicating if proxy by mail is allowed, shares are not blocked before a shareholder meeting, cumulative voting for directors is allowed, oppressed minorities are protected, preemptive rights at new equity issuances, and the right to call a special sharelholder meeting. A high value of the Antidir index means better minority shareholders protection.
The table reports results from the multivariate regressions. Standard errors are reported in Italics. *, ** indicate significance at the 5- and 1- percent level, respectively.

	Constant	MC/GDP	TR/GDP	ICC	CLOSE_EW	ANTIDIR_98	Adj R^2
(1)	0.827**	0.226**	-0.116		-0.627**		0.146
	0.118	*0.079*	*0.059*		*0.203*		
(2)	*0.516***	0.222*	-0.082			-0.011	0.044
	0.07	*0.09*	*0.065*			*0.018*	
(3)	0.823**	0.222*	-0.114		-0.634**	0.002	0.135
	0.122	*0.086*	*0.062*		*0.211*	*0.017*	
(4)	0.427**	0.192*	-0.051	0.141			0.083
	0.044	*0.082*	*0.06*	*0.074*			
(5)	0.775**	0.221*	-0.106	0.046	-0.564*	-0.0001	0.127
	0.15	*0.086*	*0.064*	*0.084*	*0.248*	*0.018*	