The Behavior of Emerging Market Returns*

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ABSTRACT

The behavior of emerging market returns differs substantially from the behavior of developed equity market returns. We show that these differences have persisted in the period ending March 1996 but, at the same time, document how some salient characteristics of emerging markets vary through time. Finally, we offer some ideas on the forces that drive the cross-section of returns, volatility, skewness, kurtosis and correlation in emerging markets and detail the implications for asset allocation.

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1. Introduction

Currency devaluations, failed economic plans, regulatory changes, coups and other national financial "shocks" are notoriously difficult to predict and may have disastrous consequences for global portfolios. Indeed, these characteristics often define the difference between investment in the capital markets of developed versus emerging economies.

Research on emerging markets has suggested three market features: high average returns, high volatility and low correlations both across the emerging markets and with developed markets. Indeed, the lesson of volatility was learned the hard way by many investors in December 1994 when the Mexican stock market began a fall that would reduce equity value in U.S. dollars by 80% over the next three months.

But, we have learned far more about these fledgling markets. First, we need to be careful in interpreting the average performance of these markets. Errunza and Losq (1985) and Harvey (1995) points out that the International Finance Corporation (IFC) backfilled some of the index data resulting in a survivorship bias in the average returns. In addition, the countries that are currently chosen by the IFC are the ones that have a proven track record. This selection of winners induces another type of selection bias. Finally, Goetzmann and Jorion (1996) detail a re-emerging market bias. Some markets, like Argentina, have a long history beginning in the last half of the 19th century. At one point in the 1920's, Argentina's market capitalization exceeded that of the U.K. However, this market submerged. To sample returns from 1976 (as the IFC does), only measures the "re-emergence" period. A longer horizon mean, in this case, would be lower than the one calculated from 1976. This insight is consistent with the out-of-sample portfolio simulations carried out by Harvey (1993) indicating that the performance of the dynamic strategy was affected by the initial five years. It must also be realized that exposure as measured by the IFC is not necessarily attainable for world investor's [see Bekart and Urias (1996)].

Second, we have learned that the emerging market returns are more predictable than developed market returns. Harvey (1995) details much higher explanatory power for emerging equity markets than developed market returns. The sources of this predictability could be time-varying risk exposures and/or time-varying risk premiums, such as in Ferson and Harvey's (1991, 1993) study of U.S. and international markets. The predictability could also be induced by fundamental inefficiencies.

In many countries, the predictability is of a remarkably simple form: autocorrelation. For example, Harvey (1995) details 0.25 autocorrelation coefficient for Mexico in a sample that ends in June 1992. An investor who followed a strategy based on autocorrelation in this country would have lost 35% like everyone else in December 1994. However, the investor would have been completely out of the market in the next three months (or short if possible). Momentum appears to be important for many of these markets.

Third, we have learned that the structure of the returns distribution is potentially unstable. Ghysels and Garcia (1994) reject the structural stability of the prediction regressions presented in Harvey (1995). These regressions allow for the influence of both local and world information. Bekaert and Harvey (1995, 1996a) present a model which explains the results of Ghysels and Garcia. The Bekaert and Harvey model allows for the relative influence of local and world information to change through time. They hypothesize that as a market becomes more "integrated" into world capital markets, the world information becomes relatively more important. Bekaert and Harvey (1996a) find that the changing relative importance of world information also influences volatility.

Fourth, the Bekaert and Harvey (1996a) framework suggests that the increasing influence of world factors on emerging expected returns may manifest itself in increased correlation with developed market benchmarks.

The goal of this paper is to explore three aspects of the emerging markets data. First, we examine the behavioral characteristics beyond the volatility - the skewness and kurtosis. Second, the paper explores the relation between risk variables and expected returns. Harvey (1995) and Bekaert (1995) find that higher betas (from a capital asset pricing framework) are associated with lower expected returns. This is the opposite from what we would expect from theory, however, it is consistent with these markets being segmented. That is, the countries with the higher betas are the ones that are more likely integrated, hence have lower expected returns relative to the segmented countries. Third, we examine the time-varying correlation of these markets with developed markets. Solnik and Longin (1994) and Erb, Harvey and Viskanta (1994) detail how correlations change through time in developed markets. Harvey (1993, 1995), Errunza (1994) and Bekaert and Harvey (1996a) show some evidence that correlations are changing in emerging markets. Finally, we examine what is important for explaining both the cross-section of expected returns and volatility in emerging markets. Following Erb, Harvey and Viskanta (1996b), we try to link political, economic, and financial risk, as well as a number of fundamental attributes to explain the cross-sectional behavior of emerging market returns.

2. Distribution of Emerging Market Returns

2.1 Which emerging market benchmarks should be used?

The two main sources of emerging market benchmarks are the International Finance Corporation (IFC) and Morgan Stanley Capital International (MSCI).[1] Both provide country benchmark indices which are based on a value weighted portfolio of a subset of stocks which account for a substantial amount of the market capitalization within each emerging market.

[1] Barings also provides the Barings Emerging Market Indices (BEMI). However, we choose to focus on the IFC and MSCI indices.

The IFC produces two types of indices: Global (IFCG) and Investable (IFCI). For nine countries, data exists back to 1976. Currently, the IFC provides data on 27 countries.[2] MSCI also produces both Emerging Markets Global (EMG) and Emerging Markets Free indices (EMF) which resembles the IFCI. Our paper focuses on the global indices. Part of the interest in studying emerging markets is the impact capital market liberalizations have on the returns. Hence, we study markets before and after they are accessible by international investors.[3]

IFC and MSCI use a different hierarchical process in the company selection for the country indices. MSCI follows the same technique that it uses in its popular developed country indices. First, the market is analyzed from the perspective of capitalization and industry categories. Next, a target of 60% coverage of the total capitalization of each market, with industry weightings approximating the total market's weightings is established. Finally, companies are selected based on liquidity, float, and cross-ownership to fulfill these goals.

In contrast, the IFC's order of preference is: size, liquidity and industry. The IFC primarily targets the largest and most actively traded stocks in each market, with a goal of 60% of total market capitalization at the end of each year. As a second objective, the index targets 60% of the trading volume during the year. Industry is of tertiary priority.

Although there is some hierarchical differences in the structure of construction, there is little difference in the behavior of the IFCG and the EMG. Table 1 details the difference between the IFCG and the EMG returns over identical samples for each

[2] The IFC announced June 20, 1996 that 17 new emerging markets will be added September 30, 1996.
[3] Over the January 1989-March 1996 period, the correlation between the IFCI and the MSCI EMF indices is 91.8%. Over the April 1991-March 1996 period, the correlation between the IFCI and the MSCI EMF is 97.2%. The correlation between the EMG (EMF) and the MSCI World-All Countries is 41% (49%).

index. Of the 22 countries where there is MSCI and IFC data, the returns indices have greater than 94% correlation. The volatility differences are quite small - as is the tracking error of the two indices.[4]

The only country where substantial deviations occur is Argentina. The IFC index produced a 10.6% lower average return and an 21.1% lower volatility. For this country, the correlation between the IFC index and the MSCI index is only 76%. However, much of the tracking error is due to 1988-1989 data. When we redo the comparison for Argentina beginning in January 1990, the tracking error drops from 61.9% to 10.6%. The correlation increases from 76% to 99%. There is no difference in the mean returns and little difference in the volatilities. Hence, even for Argentina, there is does not appear to be a substantive difference between the MSCI and IFC indices.

The IFC family of indices presents the longest history and, as a result, we choose to focus on the IFC. In addition, we study total market returns measured in U.S. dollars. The local currency returns are not, in general, available to international investors. Furthermore, hedged returns are not available either. Table 2 presents the total sample of emerging markets followed by the IFC and some summary measures of capitalization (in U.S. dollars) along with the number of countries in each index and the weight in the IFC Composite.

2.2 Time-varying mean performance

Some summary statistics for the emerging market returns are presented in Table 3 for the sample of 27 countries followed by the IFC Global indices. We report summary statistics for the common period of April 1991 to March 1996. We concentrate our analysis on those countries with at least five years of data.

[4] Tracking error, in this case, is the standard deviation of the difference between the index returns.

The summary performance measures detailed by Harvey (1995) with data through mid-1992 are largely replicated in the last five years, with some exceptions. For example, Harvey (1995) found that some of the largest average returns across the emerging markets were found in Argentina and Brazil. This is also the case over the last five years with arithmetic average annual returns of 35.5% and 44.3%. Interestingly, these are two of the "re-emerged" markets studied by Goetzmann and Jorion. Both of these markets began in the late 19th century and effectively disappeared. They are among the original members of the IFC database which begins in 1976. It is not clear what the role of the re-emergence bias is in these markets.

One other difference in performance is Nigeria. The overall average return is 37.5% over the past five years. However, this return should be contrasted to the geometric average (which better represents a buy and hold strategy) of 12.7%. This market suffered a 70% drop in value in March 1995 as a result of the substantial devaluation of the Nigerian naira (from $0.045 to $0.015 per naira).

Of course, the major difference in performance comes from Mexico and Venezuela. The average return in Mexico over the period is only 15.7% which is sharply lower than the average returns detailed in Harvey (1995) reflecting the 80% drop in the Mexican market over the period December 1994-February 1995. Over the past five years, the average return in Venezuela was negative.

Over this period, the average return of the IFC Composite was similar to the MSCI World and the MSCI World-All Countries. The difference between the emerging markets is in the volatility. The IFC Composite had a volatility of 16.4% compared to the MSCI World-AC volatility of 10.5%. Hence, over the past five years, the contribution of a diversified emerging markets investment to a diversified global portfolio must have come from the correlation properties.

Figure 1 presents rolling five year average returns for the 20 emerging markets and the 3 benchmark indices. The "re-emergence" effect of Goetzmann and Jorion (1996) appears evident for six countries in particular: Argentina, Chile, the Philippines, Portugal, Taiwan and Turkey. For these countries, the average returns in the five years after emergence in the IFC database are much higher than the subsequent five years. However, there are a number of exceptions. There is no such pattern in Brazil, Greece, Colombia, Mexico, Nigeria, Pakistan, South Korea, Thailand, Venezuela, and Zimbabwe. Overall, the evidence for the re-emergence effect is mixed.

These figures suggest that the mean returns are time-varying. The evidence presented in Harvey (1993, 1995), Bekaert (1995) and Bekaert and Harvey (1995) suggest that emerging market returns are more predictable than developed market returns. While rolling five year mean returns are useful descriptors of the data, the evidence on predictability suggests that time-varying means are best captured by regression models.

Bekaert and Harvey (1995, 1996a) suggest that care must be taken in specifying the prediction model. In particular, if a market experiences increased (or decreased) integration into world capital markets, it is likely that the parameters of the prediction model change through time. Bekaert and Harvey propose models where the influence of world versus local information changes with the degree of integration. That is, as a market become more integrated into world capital markets, it is more likely that world information will have a greater impact on the time-varying mean returns.

The final panel of figure 1 shows mean returns in the 1980s and 1990s. Most of the capital market liberalizations took place before 1992. The graph shows that the mean returns in many countries are much lower in the 1990s compared to the 1980s. For example, the four countries who had greater than 65% returns in the 1980s all had less than 25% returns in the 1990s.

2.3 Changing volatility

Figure 2 presents five-year unconditional volatilities for the 20 emerging markets and the 3 benchmark indices. We will focus on the patterns in the last five years. For many countries, there has been a sharp decrease in volatility. Most notably, the volatility levels in Argentina and Brazil have been cut in half over the past five years. Other countries which have experienced large decreases in volatility are: Greece, Jordan, Portugal, Taiwan, and Turkey. While there are a number of countries that have seen increased volatility, the overall pattern in emerging market volatility is downward. This is especially evident in the final panel of figure 2. The IFC composite volatility was 28% in 1991 and only 16% in the five years ending March 1996. This decreased volatility mirrors the decreased volatility in the MSCI World index - which dropped from 18% in 1991 to 10.7% in the five years ending March 1996.

There are a number of hurdles that one faces when trying to understand volatility in emerging equity markets. First, given the evidence of nonnormalities in the market returns [see Harvey (1995) and Bekaert and Harvey (1996a)], it is unlikely that the standard implementation of autoregressive conditional heteroskedasticity (ARCH) models is fruitful. As a result, only models which explicitly account for leptokurtosis and skewness are likely to be useful. Second, given the existing evidence on return predictablity [see Bekaert and Harvey (1995)], variance specifications allow for time-varying conditional means.

Importantly, the volatility process should allow the relative importance of local and world information shift through time as emerging equity markets become more or less integrated into world capital markets. As with the mean process, the increasing impact of world factors on volatility may be consistent with increased market integration.

2.4 Changing skewness and kurtosis

It is well known that emerging market returns depart from the normality. Tests presented in Harvey (1995) and Bekaert and Harvey (1996a) show substantial

deviations from normality. Part of the goal of this paper is to examine which countries show large deviations from normality - and how those deviations change through time.

There are a number of reasons why we observe non-normality in the equity market returns. First, the presence of limited liability in all equity investments may induce option-like asymmetries in returns [see Black (1976), Christie (1982) and Nelson (1991)]. Second, the agency problem may induce asymmetries in index returns [see Brennan (1993)]. That is, a manager has a call option with respect to the outcome of the firm's investment decisions. Managers may prefer high positive skewness. Third, conditional heteroskedasticity may induce fat tails. Fourth, regime shifts, such as those detailed in Bekaert and Harvey (1995) may induce both skewness and kurtosis. Finally, thinly traded securities' returns may appear nonnormal. The behavior of conditional skewness is studied in Harvey and Siddique (1995) for a sample of developed countries.

Emerging market returns have more positive skewness than developed market returns. The coefficient of skewness is greater than zero in 16 of 20 emerging equity markets. The highest skewness is found in Argentina and Taiwan's equity returns. Similarly, emerging markets present more excess kurtosis than the world benchmark. There are only two countries, Chile and Jordan, where the excess kurtosis is lower than the world benchmark.

We present three tests of normality: one based on Hansen's (1982) generalized method of moments (GMM), Bera-Jarque (1982) test and Kolomogorov-Smirnov. Normality is generally rejected. Based on the empirical distribution, the GMM test rejects normality in 4 countries, the Bera-Jarque in 13 countries and the Kolomogorov-Smirnov in 11 of the 20 countries. All tests are based on the last five years of data. These results are consistent with those in Harvey (1995) and Bekaert and Harvey (1996a). Bekaert and Harvey (1996a) calculate empirical distributions based on larger samples are reject the hypothesis of normality.

Figures 3 and 4 presents the rolling five-year skewness and excess kurtosis measures for the 20 emerging markets and the benchmark returns. If the data are normally distributed, then both of these measures should be zero. Over the past five years, skewness has shown large increases (become more positive) in Argentina, Brazil, Colombia, Nigeria, Philippines, South Korea, and Taiwan. In Mexico, skewness sharply increased in 1992 and 1993. However, much of that increase was reversed with the returns in December 1994-February 1995. In the IFC composite index, five-year trailing skewness increased from 1991 through mid-1995. Since then, the skewness has dropped back close to zero.

There are two countries with huge excess kurtosis: Argentina and Taiwan. In both of these countries, there is a progressive increase in kurtosis in the last five years. In addition to these two countries, eight other countries experienced increases in excess kurtosis. Seven countries experienced decreased kurtosis. In the remaining three countries, there was little change in kurtosis. Overall, the IFC composite showed a sharp increase in the excess kurtosis from 0.8 in 1991 to 3.5 in March 1996. In the MSCI World-AC index the excess kurtosis was only 0.4 in March 1996.

The departures from normality are important to portfolio managers in a number of respects. First, the usual mean-variance framework is no longer adequate to characterize investment decisions. It is reasonable to assume that investors have a preference for skewness (prefer more positive skewness). It is also reasonable to expect that there are preferences for kurtosis. The second implication is that these higher moments are evolving through time. Consistent with the evidence on the means and volatilities, dynamic models of these higher moments are necessary.

2.5 Conditional correlations

Figure 5 presents rolling five-year correlations with the MSCI World-AC for the 20 emerging markets and the IFC Composite index return. As detailed by Harvey (1995), these correlations are generally small. By March of 1996, the five-year trailing

correlation with the world is less than 40% in all countries except for Portugal. Interestingly, there has been no clear trend in the correlations across the emerging markets over the past five years.

Bekaert and Harvey (1996a) present a model of conditional correlation where the means, volatilities and covariances are influenced by both local and world information. Their model predicts that as a market becomes more integrated with world capital markets, the relative influence of world and local information changes. This change will affect the conditional correlation between the emerging market and the world benchmark. Bekaert and Harvey offer evidence that conditional correlations increase after capital market liberalizations.

Many of the major liberalizations occurred before 1992 [see Bekaert (1995)]. It is also clear in the data that correlations generally have increased over the longer horizon (see final panel of figure 5). For example, the correlation of Argentina and Brazil with the world was zero or slightly negative in the five years ending in 1981. By March 1996, the correlations were above 30%. Long horizon increases are also evident in South Korea and Thailand. However, in the last five years, there has been little overall change. In the five years ending in 1991, the correlation of the IFC Composite and the MSCI World was 30%. In March 1996, the correlation was 35%. Slightly higher correlations are found comparing the IFC Composite to the MSCI World-AC, which has a higher emerging market composition.[5]

[5] The MSCI World-AC begins in 1988. Before 1988, we splice the MSCI World index to the AC index.

3. Measuring Risk in Emerging Market Returns

3.1 Asset pricing theory and emerging market returns

Risk is notoriously difficult to measure in emerging market returns. A simple implementation of the Capital Asset Pricing Model (CAPM) of Sharpe (1964) and Lintner (1965) is problematic. In these markets, there is no relation between the risk measured by the CAPM and expected returns.

Consider Figure 6 which plots the average returns over the past five years and the beta against the World-AC index. These betas are also presented in Table 3. While there is a positive relation between beta and average returns, the t-statistic on the beta coefficient is 1.1 which is not significant at conventional levels.

The failure of the CAPM to explain emerging market returns could be interpreted in a number of ways. First, following Roll and Ross (1994) and Kandel and Stambaugh (1995), the benchmark world portfolio may not be mean-variance efficient. Second, perhaps a multifactor representation, following Merton (1973), Ross (1976) and Chen, Roll and Ross (1986) is more appropriate for emerging markets. Third, following Ferson and Harvey (1991), an examination of average returns and average risk could be misleading if the risk and expected returns change through time. Finally, the CAPM is not the appropriate framework if these markets are not integrated into world capital markets. In integrated capital markets, the projects of identical risk command identical expected returns, irrespective of domicile [see Stulz (1981a,b), Solnik (1983), Campbell and Hamao (1992), Chan, Karolyi, and Stulz (1994), Heston, Rouwenhorst and Wessels (1995), Bekaert (1995), Harvey (1991, 1995), and Bekaert and Harvey (1995).]

It is likely that many of these markets are not fully integrated into world capital markets. As a result, the beta suggested by the CAPM may not be that useful in explaining the cross-section of average returns. Indeed, in completely segmented capital markets, the volatility is the correct measure of risk. The relation between average

returns and volatility is detailed in Figure 7. Similar to the beta graph, there is a positive relation which is now significant at conventional levels of confidence (R-square is 21%). However, even among the segmented markets, there might only be a weak relation between volatility and expected returns because the premium accorded to volatility could vary across countries [see Bekaert and Harvey (1995)].

3.2 Alternative risk attributes

Following Ferson and Harvey (1994), Erb, Harvey and Viskanta (1995a, 1996b) and others, we examine the relation between some country-specific risk attributes and the distribution of returns. We group these attributes into the following categories:

3.2.1 Survey-based measures

The first of these measures is *Institutional Investor's* Country Credit Rating (IICCR). *Institutional Investor* country credit ratings are based on a survey of leading international banks who are asked to rate each country on a scale from zero to 100 (where 100 represents the maximum creditworthiness). *Institutional Investor* averages these ratings, providing greater weights to respondents with higher worldwide exposure and more sophisticated country analysis systems. These ratings have appeared in the March and September issues of *Institutional Investor* since 1979 and now covers over 135 countries, for additional details see Erb, Harvey and Viskanta (1996a).

Whenever a survey or expert panel is used to subjectively rate creditworthiness, it is hard to exactly define the parameters taken into account. At any given point in time an expert's recommendation will be based upon those factors the expert feels are relevant. In a recent survey of participants, the most important factors for assessing emerging markets' credit rating were (I) debt service, (ii) political outlook, (iii) economic outlook, (iv) financial reserves/current account and (v) trade balance/foreign direct investment.

The next four measures are from Political Risk Services' *International Country Risk Guide*. They include the Political Risk index (ICRGP), Economic Risk index (ICRGE), Financial Risk index (ICRGF) and the Composite Risk index (ICRGC). The political index is studied in Harlow (1993) and Diamonte, Liew and Stevens (1996). Erb, Harvey and Viskanta (1996b) examine the information in all four of the ICRG risk indices.

On a monthly basis, *ICRG* uses a blend of quantitative and qualitative measures to calculate risk indices for political, financial and economic risk, as well as a composite index. Five financial factors, thirteen political and six economic factors are used. Each factor is assigned a numerical rating within a specified range. A higher score represents lower risk, for additional details see Erb, Harvey and Viskanta (1996b).

The composite index is simply a linear combination of the three subindices. The political risk is weighted twice that of either financial or economic risk. *ICRG*, as well as many of the other providers, think of country risk as being composed of two primary components: ability to pay and willingness to pay. Political risk is associated with a willingness to pay, while financial and economic risk are associated with an ability to pay.

We also include *Euromoney*'s Country Credit Risk (EMCCR). *Euromoney*'s rating system is based on both qualitative and quantitative methods. The political component is a qualitative survey of experts. The economic component is quantitative and based on *Euromoney*'s global economic projections. The financial component is also quantitative and based on (i) debt indicators, (ii) debt in default or rescheduled, (iii) credit rating (Moody's or Standard and Poors), (iv) access to bank finance, (v) access to short-term financing and (vi) access to international bond and syndicated loan markets.

3.2.2 Macroeconomy

The survey based measures indirectly gauge the future macroeconomic conditions in each country. One of the primary economic measures that influences these ratings is the inflationary environment. Ferson and Harvey (1993, 1994) argue that asset exposure versus world inflation helps explain both the cross-section and time-series of expected returns in 18 developed markets. Erb, Harvey and Viskanta (1995b) examine the interaction of inflation and asset returns in emerging markets. We use a trailing 6 month measure of inflation represented by the consumer price index reported in the International Financial Statistics database of the International Monetary Fund. In the case of Taiwan, whom is not a member of the IMF, we use inflation reported in their national accounts.

3.2.3 Demographics

Bakshi and Chen (1994) propose a life-cycle investment hypothesis. Younger investors have a higher demand for housing than for equities. As age increases, more investment is allocated to the stock market. As a result, a rise in average age should be accompanied by a rise in the stock market. Bakshi and Chen (1994) find support for this hypothesis using U.S. data. Erb, Harvey and Viskanta (1996c) find that average age growth explains the risk premiums in a number of developed countries. We examine three variables: population growth, average age and average age growth. All of these data are based on annual statistics compiled by the United Nations.

3.2.4 Market integration

Bekaert and Harvey (1996a) argue that the size of the trade sector to the total economy is a reasonable proxy for the openness of both the economy and the investment sector. They use exports plus imports divided by GDP as an instrument for market integration. This variable, along with other proxies for market integration, is used in a function which assigns time-varying weights to world versus local information. Bekaert and Harvey find that increases in this ratio are associated with the increased

importance of world relative to local information for both the mean and the volatility of the country's stock returns.

3.2.5 Persistence

A number of researchers have pointed to momentum as an important firm specific attribute [see Jegadeesh and Titman (1993), Conrad and Kaul (1996), Asness, Liew and Stevens (1996), Ferson and Harvey (1996)]. We examine two measures of momentum: the lagged monthly return and the lagged quarterly return from four months ago to one month ago, i.e. the quarterly return lagged by an extra month

3.2.6 Size

We follow a number of papers beginning with Banz (1981) that document a relation between firm size and expected returns. Recently, Berk (1996a,b) has argued that size measured by market capitalization should proxy for risk. This attribute has recently been studied on a country level basis by Keppler and Traub (1995) and Asness, Liew and Stevens (1996) who find that size helps explain the cross-section of expected returns in a sample of developed markets.

3.2.7 Fundamental valuation measures

Following a number of papers that link "fundamental attributes" to asset valuation [see, for example Chan, Hamao and Lakonishok (1991), Keppler (1991), Fama and French (1992) and Ferson and Harvey (1994)], we use three valuation ratios: price to book value, price to earnings and price to dividend. Value-weighted indices of company level data are produced by the IFC. Ferson and Harvey (1996) show that some of these ratios, most notably price to book, appear to capture information regarding changing risk in a sample of 21 developed countries. In addition, sudden changes in these ratios may also reflect changes in the degree of market integration [see Bekaert and Harvey (1996b). A change in the marginal investor from domestic to international could lead to a change in the fundamental valuation ratios and a change in the riskiness.

3.2.8 Summary statistics

Some summary measures for many of these attributes are included in Table 4. The March 1996 value of the attribute is reported. In the lower panel, the rank-order correlation of all of the attributes is reported. Most of the correlations follow from intuition. Consider the ICRG indices. These indices are highly correlated with the *Euromoney* and *Institutional Investor* Country Credit Risk measures. All of the survey measure are negatively correlated with inflation (high inflation means low rating). The most negative correlation with inflation is found for the ICRG Economic risk index. Average age is positively correlated with the survey risk indices, indicating that low average age is associated with a low rating. Size is positively related to the ICRG ratings (smaller markets appear more risky). There is also a positive relation between the size of the trade sector and the ICRG ratings. The lowest correlations are found for the ICRG indices and the fundamental attributes.

4. What matters in choosing an emerging market for portfolio investment?

4.1 Portfolio approach

A commonly used technique in examining the cross-sectional importance of a fundamental variable is to form unique portfolios based on their ranking. We will examine the country risk variables by forming portfolios based on the risk level itself. These portfolios are investible with respect to the attribute. That is, lagged attribute information is used to determine which countries are in the portfolios and the analysis is conducted out of sample. Given the small number of emerging markets, we examine only two portfolios: high attribute and low attribute. In each case, we track the returns to portfolios that are equally weighted by country, and those that are weighted by each country's equity market capitalization. To reduce potential transactions costs, we only consider quarterly rebalancing.

Table 5 presents the results of the portfolio strategies. Of the ICRG indices, the Composite index (ICRGC) produces the greatest separation of expected returns. With the equally weighted investment scheme, the high attribute portfolio (low risk) presents 29.7% average return with a 25.7% volatility. The low attribute portfolio (high risk) delivers a 36.6% average annual return with a slightly lower volatility, 23.5%. Interestingly, the beta against the World-AC is much lower for the low attribute portfolio. Hence, the alpha of this strategy is quite large.

Of the family of ICRG indices, the financial and economic risk appear to be the most important and in the equally weighted portfolio strategies. The political risk measure is only important in the capitalization weighted investment strategies. These results are consistent with those presented in Erb, Harvey and Viskanta (1996b). This implies that pure political risk is diversifiable and not priced.

Both the *Institutional Investor* and the *Euromoney* credit ratings also are able to significantly discriminate between high and low expected return securities. As with the ICRG Composite, the low attribute portfolios have higher means and lower volatilities than the high attribute portfolios.

Inflation also appears to be an important instrument in portfolio selection. In this case, the high attribute portfolio has much higher expected returns than the low attribute portfolio. However, in contrast to the ICRG, EMCCR and IICCR, the high attribute portfolio has much higher volatility than the low attribute portfolio.

Trade to GDP has only marginal ability to distinguish between high and low expected returns. The low attribute portfolio has higher expected returns than the high attribute portfolio. However, the volatility of the low attribute portfolio is greater. Nevertheless, the beta of the low attribute portfolio is close to zero leading to a very high "alpha". But caution needs to be exercised here. The beta of the low attribute portfolio may be low because the market is not intregrated. The idea of Bekaert and

Harvey (1996a) is that trade to GDP is a proxy for integration. Indeed, the low beta of the low trade to GDP portfolio is consistent with their results.

The three demographic variables: population growth, average age growth and average age offer no ability to discriminate between high and low expected return countries. The demographic asset pricing theory presented in Chen and Bakshi (1994) is most appropriate for time-series analysis of developed countries. That is, holding other factors constant, an increasing average age will be associated with higher demand for equities. It is difficult, if not impossible, to hold other factors constant in emerging markets. For example, a changing degree of market integration could confound the relation between demographics and returns. In addition, given that the age dynamics are predictable, the demographic analysis is best directed at explaining long-horizon expected returns [see Erb, Harvey and Viskanta (1996c).]

Size appears to be an important instrument in discriminating between high and low expected returns. This is consistent with the analysis of developed markets presented in Asness, Liew and Stevens (1996). For example, the low market capitalization portfolio produces an average annual return of 41.0% with a volatility of 25.9%. The high capitalization portfolio delivers 24.8% average annual return with a 26.9% volatility. The beta of the low capitalization portfolio is much lower than the high capitalization portfolio. As with the trade to GDP measure, the beta to be interpreted with caution. Bekaert and Harvey (1996a) consider market capitalization to GDP as another proxy for market integration. It is likely that low market capitalization is indicative of market segmentation.

The evidence for the momentum variables is mixed. The high momentum portfolio (high lagged returns) has a 38.9% average annual return whereas the low momentum (low lagged return) has a 26.8% average annual return. While this appears impressive, there is also a large difference in volatility. The high momentum portfolio has 26.8% volatility compared to 21.8% volatility for the low momentum portfolio. Interestingly,

there is little difference between the momentum specifications. In addition, the beta of the low momentum portfolio is 50% smaller than the high attribute portfolio, effectively eliminating the "alpha".

The final set of attributes involves the traditional accounting ratios. While dividend yields (DP) are available on all the indices one year after the market enters the IFC data, the price to book (PB) and price to earnings (PE) ratios are only available from January 1986. Hence, the evaluation of the PB and PE ratios is over a different sample than all of the other portfolio simulations.

There are sharp differences between the high and low attribute portfolios for these attributes. For example, the high PB portfolio earns 20.8% average return with a 27.7% annual volatility. The low PB portfolio delivers 42.3% average return and a 20.7% volatility. The beta of the high PB portfolio is 0.82 compared to 0.26 for the low PB portfolio. Similar, but less dramatic results, are found for the PE ratio.

The dividend yield also discriminates between high and low expected returns over a longer sample than PB and PE. The high DP portfolio has 29.4% average annual return with 29.2% volatility compared to the low DP portfolio which has 39.6% average return and 22.2% volatility.

These results suggest that there are a number of useful attributes in discriminating between those countries which will experience high and low expected returns. It is likely, as argued in Ferson and Harvey (1994, 1996), that these attributes are related to risk. Unfortunately, determining the appropriate measure of risk is difficult in emerging markets.

4.2 Trading emerging market portfolios

The cost of trading is high in emerging markets. Table 6 presents estimates of transactions costs from Barings Securities. The percent spread calculation is the

difference between the offer and bid price divided by the average of the offer and bid price. Barings uses the midpoint in the divisor in order to avoid the problems caused by large fluctuations in the current price.

The percent spreads in Table 6 are based on snapshots of individual stocks during the weeks of July 17 and July 24, 1995. The country spreads are calculated by capitalization weighting the percentage spreads of the individual firms within each country.

The percentage spreads are, in many countries, much larger than one would expect in developed markets. The spread in Chile is close to 400bp. In both Argentina and Turkey, the percentage spread is more than 150bp. These high transactions costs reinforce the need to minimize trading. Indeed, many investment managers do not practice active stock selection strategies in emerging markets because of the massive transactions costs. "Active" management in emerging markets is often interpreted in the context of country selection rather than stock selection.

While the portfolio analysis in Table 4 does not explicitly account for transactions costs, we do include a measure of average turnover. The highest turnover is found with the momentum strategies. The turnover is so high that it is unlikely that these strategies could be successfully implemented in the form specified here. The lowest turnover is found with the demographic variables. This is not unexpected given that the data is only available annually and there is little variation over the years.

The most impressive ratios of low-high portfolio returns to turnover are found for the survey risk attributes - in particular the ICRGC, EMCCR and IICCR. For example, in the low attribute of EMCCR portfolio, the turnover is 46%. With 10 countries in that portfolio, 4 or 5 would change over the entire year (four rebalancing opportunities).

Another important constraint is investibility. The portfolio analysis is initiated in 1985 and includes all the countries in the IFC - Global database. However, for much of this period, many of the returns were not attainable due to investment restrictions [see Bekaert and Urias (1996)].

4.3 Risk attributes and the behavior of emerging market returns

The portfolio exercise suggests that many of these risk attributes can discriminate between high an low expected returns environments. What about the other moments? Erb, Harvey and Viskanta (1996a), and Bekaert and Harvey (1996a) argue that attributes like trade to GDP and credit rating impact conditional volatility. Ferson and Harvey (1994, 1996) establish a link between country attributes and time-varying risk exposures. It makes sense to examine the relation between these some of these attributes and the other moments of returns.

Figure 8 focuses on three attributes: ICRGC, trade to GDP, and PB. The average values of these attributes over the past five years is plotted against the moments of the country returns: mean, standard deviation, skewness, excess kurtosis and correlation with the World-AC.

For each of the attributes, there is a negative relation between the value of the attribute and the average returns which is consistent with the portfolio exercise. For the ICRGC and the Trade/GDP, there is a sharp negative relation between the rating and volatility. There is no significant association between PB and volatility. None of these three measure does well in explaining the cross-section of skewness. There is a negative relation between the Trade/GDP variable and skewness - but it is not significant at conventional levels. All three measures show a negative association with kurtosis. Low composite rating, low Trade/GDP and low PB are associated with higher kurtosis. PB has considerable success in explaining the cross-section of betas which is consistent with Ferson and Harvey's (1996) evidence that PB is an instrument for time-varying risk exposure. Low PB is associated with higher risk. Finally, there is a positive

relation between the ICRG composite risk and correlation with the world market. Consistent with Bekaert and Harvey (1996a), there is a positive relation between Trade/GDP and correlation with the world.

5. Conclusions

This paper has further explored the behavior of emerging market returns. The first goal of the paper was to go beyond the mean and variance and investigate skewness and kurtosis. Indeed, there is considerable research interest in asymmetric variances, semi-moment analysis and down-side optimization. These advances make a lot of sense in emerging markets where the returns distributions depart from the usual normal assumption. We show that the deviations from normality are persistent in the emerging market returns, show no evidence of disappearing in the near future, and are time-varying in nature.

The next contribution is to explore what matters for emerging market investment. The traditional beta-risk paradigm is problematic in emerging markets because a number of the markets are unlikely fully integrated into world capital markets. Indeed, in a completely segmented market, country variance (which is usually considered idiosyncratic) is the appropriate measure of risk. We explore a group of risk attributes that have been successfully applied in developed markets. We find that a number of these attributes such as the *International Country Risk Guide's* Composite Risk, trade to GDP and price to book value are useful in identifying high and low expected return environments.

Finally, we try to link our attribute analysis to the behavior of the emerging market returns. The risk attributes, not only discriminate among the mean returns, they also offer information about other moments. For example, we find that low ICRG Composite ratings are strongly associated with high volatility, high excess kurtosis and

low correlations with the world benchmark. This analysis suggests that models of formal asset allocation in emerging markets need to go beyond both the attribute sorting portfolio approach and the simple mean-variance analysis. In these markets, the attributes contain information about volatility, correlation, skewness and kurtosis as well as expected returns.

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Table 1

Comparison of IFC and MSCI Emerging Market Global Indices

Country	Start Date	Mean Difference IFC-MSCI	Volatility Difference IFC-MSCI	Tracking Error IFC-MSCI	Correlation IFC vs. MSCI	Correlation IFC vs. AC World	Correlation MSCI vs. AC World	Correlation IFC vs. Composite	Correlation MSCI vs. Composite
Argentina	Jan-88	-10.6%	-21.1%	61.9%	0.76	0.01	-0.06	0.19	0.04
Brazil	Jan-88	1.4%	2.3%	19.4%	0.96	0.22	0.23	0.28	0.34
Chile	Jan-88	1.7%	-0.8%	7.6%	0.96	0.08	0.05	0.32	0.36
Colombia	Jan-93	-4.5%	-2.0%	7.8%	0.96	-0.04	0.04	0.16	0.05
Greece	Jan-88	7.0%	0.8%	11.9%	0.96	0.18	0.13	0.05	-0.01
India	Jan-93	5.0%	-1.5%	6.6%	0.98	0.02	-0.13	0.38	0.16
Indonesia	Jan-90	-1.4%	2.2%	9.1%	0.96	0.11	0.15	0.37	0.45
Jordan	Jan-88	-4.2%	-0.1%	11.9%	0.75	0.09	0.22	0.16	0.14
Malaysia	Jan-88	0.6%	0.1%	4.8%	0.98	0.49	0.46	0.48	0.48
Mexico	Jan-88	1.4%	-1.3%	10.9%	0.96	0.28	0.26	0.45	0.48
Pakistan	Jan-93	0.1%	2.5%	4.5%	0.99	0.01	0.02	0.51	0.16
Peru	Jan-93	-0.1%	2.6%	7.0%	0.99	0.45	0.44	0.46	0.46
Philippines	Jan-88	2.3%	0.0%	9.7%	0.95	0.37	0.36	0.50	0.47
Poland	Jan-93	-7.3%	3.3%	15.1%	0.99	0.38	0.46	0.35	0.41
Portugal	Jan-88	-0.5%	0.4%	6.4%	0.96	0.48	0.49	0.12	0.14
South Africa	Jan-93	-1.4%	-0.2%	3.2%	0.99	0.35	0.35	0.48	0.53
South Korea	Jan-88	-0.2%	0.3%	6.7%	0.97	0.37	0.35	0.38	0.38
Sri Lanka	Jan-93	2.5%	-0.8%	5.1%	0.99	0.00	0.00	0.36	0.35
Taiwan	Jan-88	1.0%	-1.1%	7.2%	0.99	0.21	0.22	0.82	0.81
Thailand	Jan-88	0.4%	0.6%	5.3%	0.99	0.36	0.33	0.48	0.47
Turkey	Jan-88	2.8%	-2.5%	22.1%	0.94	0.02	0.01	0.20	0.24
Venezuela	Jan-93	-4.0%	-2.0%	9.1%	0.98	-0.03	-0.12	0.19	-0.15
Average		-0.4%	-0.8%	11.5%	0.95	0.20	0.19	0.35	0.31

-Composite: IFC Global Composite; AC World: MSCI All Country World Index.

-Source: IFC Global Indices, MSCI EM Indices. Monthly returns in US Dollars.

Table 2

Market Weights in the IFC Indices - March 1996

Market	*IFC Global Indices* No. of Stocks	Market Capitalization (US$ Mil)	Weight in IFC Composite	*IFC Investable Indices* No. of Stocks	Market Capitalization (US$ Mil)	Weight in IFC Composite
Latin America						
Argentina	35	22307.8	2.0	31	22161.1	3.5
Brazil	86	93939.6	8.5	68	63813.7	10.2
Chile	47	39421.3	3.5	43	39019.3	6.2
Colombia	28	6658.9	0.6	15	5334.2	0.9
Mexico	81	65162.4	5.9	65	58686.5	9.3
Peru	36	7421.7	0.7	20	6910.0	1.1
Venezuela	16	2652.3	0.2	5	1930.8	0.3
East Asia						
China	171	29494.8	2.7	23	3005.5	0.5
Korea	151	125037.1	11.2	145	17314.7	2.8
Philippines	46	39729.2	3.6	35	19314.9	3.1
Taiwan, China	83	114474.5	10.3	83	17504.9	2.8
South Asia						
India	131	71141.3	6.4	76	14792.2	2.4
Indonesia	45	54570.7	4.9	44	27724.6	4.4
Malaysia	123	162134.5	14.6	123	135326.0	21.5
Pakistan	68	6646.6	0.6	25	4951.0	0.8
Sri Lanka	44	1314.9	0.1	5	456.5	0.1
Thailand	73	95035.9	8.5	72	30821.1	4.9
EMEA						
Czech Republic	69	12346.3	1.1	5	5206.7	0.8
Greece	53	11199.7	1.0	47	10623.8	1.7
Hungary	16	2957.4	0.3	8	2544.8	0.4
Jordan	51	3276.3	0.3	8	1107.4	0.2
Nigeria	35	1712.4	0.2	0	0.0	0.0
Poland	23	3892.8	0.4	22	3874.5	0.6
Portugal	30	11404.5	1.0	26	9012.0	1.4
South Africa	63	105981.4	9.5	63	105981.4	16.9
Turkey	54	20641.3	1.9	54	20641.3	3.3
Zimbabwe	24	1677.0	0.2	5	370.4	0.1
Regions						
Composite	1682	1112232.6	100.0	1116	628429.1	100.0
Latin America	329	237564.0	21.4	247	197855.5	31.5
Asia	935	699579.5	62.9	631	271211.4	43.2
EMEA	394	175089.1	15.7	238	159362.2	25.4

Table 3

Summary Statistics - April 1991-March 1996

Country	Start Date	Arithmetic Return	Geometric Return	Standard Deviation	Skewness	Kurtosis	GMM Normality Test p-value	Bera-Jarque Test p-value	Kolomorogov-Smirnov Statistic	First Order Autocorrel	Beta MSCI World	Beta MSCI AC World	Beta IFCG Composite
Argentina	Apr-91	35.5%	25.6%	56.7%	3.09	16.92	<0.01 *	<0.01 *	1.17 *	0.06	1.53	1.69	0.91
Brazil	Apr-91	44.3%	37.1%	52.2%	0.89	1.51	<0.01	<0.01 *	1.06 *	0.09	1.19	1.43	1.38
Chile	Apr-91	24.7%	23.6%	26.6%	0.35	-0.43	0.02	0.41	0.73	0.23	0.09	0.20	0.64
China	Jan-93												
Colombia	Apr-91	40.5%	39.0%	40.1%	1.33	2.02	<0.01 *	<0.01 *	0.95 *	0.54	-0.05	-0.01	0.25
Czech Republic	Jan-95												
Greece	Apr-91	-2.7%	-5.5%	24.1%	-0.34	0.06	0.41	0.57	0.64	0.16	0.52	0.54	0.28
Hungary	Jan-93												
India	Apr-91	12.6%	6.3%	36.8%	0.67	1.47	0.07	0.02 *	0.91 *	0.25	-0.60	-0.49	0.69
Indonesia	Apr-91	9.5%	5.5%	29.2%	0.15	0.09	0.84	0.89	0.49	0.18	0.58	0.72	1.04
Jordan	Apr-91	10.0%	9.4%	14.3%	0.34	-0.80	<0.01 *	0.24	0.95 *	0.07	0.11	0.13	0.11
Malaysia	Apr-91	20.4%	19.1%	23.9%	-0.06	1.03	0.31	0.40	0.48	-0.16	0.57	0.67	0.87
Mexico	Apr-91	15.7%	8.5%	37.5%	-1.01	2.04	<0.01	<0.01 *	0.54	0.33	0.83	1.08	1.40
Nigeria	Apr-91	37.5%	12.7%	69.5%	1.19	11.92	0.07	<0.01 *	2.02 *	-0.04	1.15	1.14	-0.05
Pakistan	Apr-91	22.4%	18.1%	35.3%	1.03	1.92	<0.01	<0.01 *	0.88 *	0.30	0.06	0.15	0.57
Peru	Jan-93												
Philippines	Apr-91	24.1%	22.4%	28.7%	1.37	4.47	0.08	<0.01 *	0.94 *	0.02	0.54	0.69	1.10
Poland	Jan-93												
Portugal	Apr-91	8.3%	6.6%	19.6%	0.41	1.55	0.25	0.05 *	0.51	0.01	0.98	1.01	0.25
South Africa	Jan-93												
South Korea	Apr-91	7.8%	4.7%	26.0%	1.07	1.75	<0.01	<0.01 *	0.95 *	0.04	0.41	0.51	0.68
Sri Lanka	Jan-93												
Taiwan	Apr-91	7.3%	1.4%	37.1%	2.24	7.65	<0.01 *	<0.01 *	1.12 *	0.08	0.69	0.88	1.42
Thailand	Apr-91	20.1%	17.2%	30.0%	1.08	1.85	<0.01	<0.01 *	0.87 *	0.03	0.20	0.35	1.14
Turkey	Apr-91	13.6%	-3.9%	61.2%	0.64	0.42	<0.01	0.13	0.68	0.08	-0.12	-0.01	0.87
Venezuela	Apr-91	-7.0%	-16.8%	45.8%	-0.45	1.91	0.15	0.01 *	0.65	-0.25	0.45	0.54	0.57
Zimbabwe	Apr-91	4.8%	-1.1%	34.9%	0.38	0.87	0.39	0.27	0.65	0.32	0.84	0.90	0.55
MSCI World	Apr-91	11.2%	11.1%	10.7%	-0.32	-0.34	0.01	0.50	0.48	-0.25	1.00	1.01	0.20
MSCI AC World	Apr-91	11.0%	11.0%	10.5%	-0.23	-0.39	0.03	0.59	0.44	-0.22	0.98	1.00	0.25
IFCG Composite	Apr-91	11.4%	10.6%	16.4%	0.93	3.47	0.03	<0.01 *	0.71	0.40	0.47	0.62	1.00

-Composite: IFC Global Composite; AC World: MSCI All Country World Index.

-Source: IFC Global Indices, MSCI EM Indices. Monthly returns in US Dollars.

*Significant at .05 level based on empirical distributions. Kolomogorov-Smirnov empirical critical value: .835.

Table 4

Country Attributes - March 1996

Country	ICRGC	ICRGP	ICRGF	ICRGE	IICCR	EMCRR	INFLATE	TRDGDP	POPGR	AAGEGR	AVEAGE	MKTCAP	P/E	P/B	P/D
Argentina	72.5	76.0	35.0	34.0	38.4	57.2	0.7%	12.8%	1.2%	0.3%	30.9	22308	16.7	1.4	29.2
Brazil	65.5	64.0	34.0	33.0	35.8	55.4	29.2%	13.6%	1.7%	0.8%	27.1	93940	40.3	0.5	28.9
Chile	80.5	76.0	43.0	41.5	59.2	79.8	7.6%	42.1%	1.6%	0.6%	29.0	39421	15.9	1.9	26.1
China	72.0	68.0	38.0	38.0	56.4	70.8			1.0%	0.9%	29.6	29495	31.8	2.0	37.6
Colombia	66.0	58.0	39.0	35.0	46.7	62.6	19.1%	61.4%	1.6%	0.9%	26.2	6659	12.0	1.0	36.8
Czech Republic	82.5	82.0	42.0	40.5	60.1	74.6	8.6%					12346	13.4	1.0	87.7
Greece	75.0	76.0	38.0	36.0	49.8	73.3	8.5%	60.2%	0.3%	0.6%	38.9	11200	10.8	2.1	24.6
Hungary	76.0	79.0	40.0	32.5	43.6	67.7	29.6%	49.7%	-0.5%	0.2%	37.3	2957	21.4	1.1	125.0
India	67.0	62.0	36.0	36.0	45.8	66.7	9.7%	17.2%	1.9%	0.5%	26.0	71141	14.3	2.3	65.8
Indonesia	70.5	65.0	39.0	37.0	51.8	73.2	10.5%	43.9%	1.5%	0.8%	26.2	54571	26.6	3.5	112.4
Jordan	74.5	73.0	38.0	38.0	30.5	54.3	7.0%	130.1%	4.6%	0.3%	21.4	3276	15.6	1.7	50.0
Malaysia	79.5	75.0	43.0	41.0	68.4	84.5	3.3%	166.4%	2.3%	0.6%	24.8	162134	28.4	3.7	83.3
Mexico	69.5	66.0	40.0	33.0	41.2	58.8	43.8%	37.2%	2.0%	0.9%	24.8	65162	18.6	1.7	117.6
Nigeria	50.5	54.0	23.0	24.0	14.8	32.3	69.9%	40.7%	3.0%	0.0%	21.5	1712	12.2	3.3	23.3
Pakistan	60.0	54.0	34.0	31.5	29.5	50.7	9.8%	35.4%	2.8%	0.3%	21.9	6647	16.4	2.1	45.7
Peru	64.0	59.0	34.0	34.5	27.2	47.5	11.6%	20.2%				7422	13.8	2.7	90.1
Philippines	68.5	63.0	37.0	36.5	38.1	63.5	12.3%	54.3%	2.1%	0.6%	24.0	39729	21.2	3.8	153.8
Poland	77.5	77.0	41.0	37.0	40.2	56.5	20.4%	38.3%	0.1%	0.6%	34.3	3893	8.5	1.8	84.7
Portugal	83.5	83.0	43.0	41.0	68.8	81.9	2.5%	56.1%	-0.1%	0.6%	36.6	11405	14.8	1.5	35.1
South Africa	76.0	75.0	41.0	35.5	46.3	64.9	6.8%	38.5%	2.2%	0.2%	25.0	105981	19.2	2.7	49.0
South Korea	82.0	77.0	46.0	41.0	72.0	85.0	4.5%	53.7%	1.0%	1.0%	30.5	125037	21.0	1.3	54.3
Sri Lanka	66.5	61.0	36.0	35.5	32.5	50.6	11.8%	80.7%	1.3%	0.9%	28.2	1315	8.9	1.5	39.8
Taiwan	83.0	75.0	48.0	43.0	78.9	91.5	3.0%	86.7%				114475	21.6	2.8	85.5
Thailand	76.5	69.0	43.0	41.0	63.4	82.1	5.4%	64.9%	1.0%	1.2%	27.9	95036	20.5	3.1	55.9
Turkey	60.5	55.0	36.0	30.0	40.4	58.4	78.9%	31.6%	1.9%	0.6%	26.5	20641	12.2	3.7	40.2
Venezuela	64.5	65.0	33.0	31.0	30.1	44.7	78.1%	40.1%	2.2%	0.8%	25.1	2652	16.3	2.6	63.3
Zimbabwe	63.5	66.0	28.0	32.5	32.2	50.5	25.8%	74.8%	2.4%	0.2%	21.4	1677	8.2	1.4	21.1

Rank Correlations

	ICRGC	ICRGP	ICRGF	ICRGE	IICCR	EMCRR	INFLATE	TRDGDP	POPGR	AAGEGR	AVEAGE	MKTCAP	P/E	P/B	P/D
ICRGC	1.00	0.89	0.90	0.84	0.82	0.82	-0.70	0.40	-0.59	0.25	0.57	0.47	0.28	-0.17	0.23
ICRGP		1.00	0.68	0.59	0.61	0.61	-0.55	0.24	-0.59	0.04	0.61	0.23	0.15	-0.36	0.09
ICRGF			1.00	0.83	0.88	0.88	-0.59	0.43	-0.50	0.42	0.44	0.58	0.31	-0.03	0.30
ICRGE				1.00	0.79	0.81	-0.76	0.52	-0.39	0.43	0.33	0.54	0.29	0.03	0.17
IICCR					1.00	0.97	-0.61	0.39	-0.58	0.54	0.53	0.66	0.36	-0.02	0.13
EMCRR						1.00	-0.65	0.38	-0.54	0.44	0.48	0.71	0.45	0.06	0.21
INFLATE							1.00	-0.31	0.24	-0.10	-0.27	-0.50	-0.28	0.02	0.06
TRDGDP								1.00	0.02	0.18	-0.11	-0.06	-0.02	0.06	-0.01
POPGR									1.00	-0.47	-0.95	-0.09	-0.05	0.35	-0.07
AAGEGR										1.00	0.39	0.36	0.26	-0.12	0.11
AVEAGE											1.00	0.07	0.02	-0.36	-0.09
MKTCAP												1.00	0.68	0.26	0.27
P/E													1.00	0.16	0.37
P/B														1.00	0.27
P/D															1.00

Legend:

ICRGC	Political Risk Services: International Country Risk Guide - Composite
ICRGP	Political Risk Services: International Country Risk Guide - Political
ICRGF	Political Risk Services: International Country Risk Guide - Financial
ICRGE	Political Risk Services: International Country Risk Guide - Economic
IICCR	Institutional Investor Country Credit Ratings
EMCRR	Euromoney Country Risk Ratings
INFLATE	Annual Consumer Inflation: IFS Database
TRDGDP	Trade Openness (Exports+Imports)/GDP
POPGR	Annual Growth in Total Population - UN Data
AAGEGR	Annual Growth in Average Age of Population - UN Data
AVEAGE	Average Age of Population - UN Data
MKTCAP	IFC Global Market Capitalization (Millions of US$)
P/E	IFC Global Price/Earnings Ratio
P/B	IFC Global Price/Book Ratio
P/D	IFC Global Price/Dividend Ratio

Table 5
Country Risk Level Portfolio Strategy
January 1985-March 1996

	High Attribute					*Low Attribute*					*Low-High Attribute*			
Risk Attribute	Portfolio Return	Standard Deviation	IFC Comp Beta	MSCI AC World Beta	Average Annual Turnover	Portfolio Return	Standard Deviation	IFC Comp Beta	MSCI AC World Beta	Average Annual Turnover	Portfolio Return	Standard Deviation	IFC Comp Alpha	MSCI AC World Alpha
Equal Weighted														
ICRGC	29.7%	25.7%	0.65	0.69	50%	36.6%	23.5%	0.32	0.24	57%	5.3%	26.6%	14.5% *	17.3% **
ICRGP	35.3%	27.4%	0.67	0.76	55%	30.4%	21.4%	0.29	0.16	53%	-3.6%	23.9%	5.6%	8.8%
ICRGF	31.8%	27.4%	0.65	0.69	58%	35.9%	25.2%	0.29	0.19	68%	3.1%	29.7%	13.4%	16.5% *
ICRGE	27.8%	21.7%	0.51	0.45	59%	40.4%	27.3%	0.50	0.52	72%	9.9% *	23.4%	11.8%	10.9%
IICCR	26.5%	26.1%	0.60	0.69	41%	39.9%	24.2%	0.39	0.25	46%	10.5% *	25.0%	16.1% **	19.9% **
EMCRR	27.1%	24.8%	0.59	0.70	40%	39.8%	23.5%	0.41	0.26	46%	10.0% *	21.5%	14.9% **	19.0% ***
INFLATE	41.9%	25.7%	0.46	0.44	62%	26.2%	20.9%	0.53	0.52	54%	-11.1% *	18.0%	-11.2% **	-11.5% *
TRADEGDP	32.6%	23.7%	0.55	0.76	35%	35.0%	24.3%	0.43	0.17	46%	1.8%	21.9%	5.7%	13.9% **
POPGR	30.2%	19.9%	0.26	0.26	30%	36.1%	25.8%	0.58	0.63	38%	4.5%	19.9%	0.7%	0.7%
AAGEGR	33.3%	26.1%	0.53	0.74	37%	31.7%	22.9%	0.31	0.14	36%	-1.2%	24.3%	5.0%	11.3%
AVEAGE	37.2%	29.0%	0.64	0.62	39%	28.5%	19.2%	0.19	0.25	26%	-6.3%	24.4%	3.8%	2.8%
MKTCAP	24.8%	26.9%	0.81	0.66	49%	41.0%	25.9%	0.16	0.28	55%	13.0% *	32.5%	29.8% ***	26.3% **
MOM-1	38.9%	26.8%	0.52	0.66	203%	26.8%	21.8%	0.46	0.30	220%	-8.8%	23.1%	-4.7%	-0.7%
MOM-2-4	37.0%	28.3%	0.57	0.68	205%	28.8%	21.5%	0.40	0.28	215%	-6.0%	25.2%	-0.3%	3.6%
P/E*	22.8%	27.7%	0.65	0.79	77%	39.6%	21.8%	0.31	0.30	88%	13.7% *	26.8%	22.6% ***	24.7% ***
P/B*	20.8%	27.2%	0.66	0.82	72%	42.3%	20.7%	0.30	0.26	80%	17.7% **	24.3%	25.9% ***	27.6% ***
P/D	29.4%	29.2%	0.70	0.51	88%	39.6%	22.2%	0.25	0.43	86%	7.9%	25.2%	18.7% ***	12.4%
Capitalization Weighted														
ICRGC	12.0%	33.0%	1.06	0.61	30%	29.8%	28.6%	0.47	0.38	58%	15.9% *	40.1%	35.4% ***	30.9% **
ICRGP	13.7%	34.3%	1.12	0.72	22%	20.3%	23.4%	0.39	-0.04	38%	5.7%	35.9%	26.6% ***	27.3% **
ICRGF	15.7%	33.6%	1.05	0.74	23%	22.2%	31.5%	0.49	0.03	49%	5.6%	44.0%	27.1% **	29.6% **
ICRGE	16.8%	31.8%	0.96	0.60	25%	18.0%	38.5%	0.91	0.73	45%	1.0%	42.0%	10.2%	5.9%
IICCR	16.4%	32.0%	0.99	0.64	22%	24.7%	35.9%	0.82	0.60	34%	7.2%	37.0%	16.5%	13.3%
EMCRR	17.1%	31.9%	0.99	0.64	23%	19.4%	36.9%	0.84	0.59	46%	2.0%	37.2%	11.2%	8.8%
INFLATE	19.6%	34.0%	0.82	0.67	43%	17.0%	31.8%	0.98	0.61	23%	-2.2%	34.2%	1.7%	4.2%
TRADEGDP	20.1%	35.0%	1.06	0.72	19%	15.3%	31.1%	0.71	0.44	30%	-4.0%	38.8%	9.1%	7.8%
POPGR	16.7%	27.1%	0.60	0.50	21%	14.3%	27.1%	0.63	0.65	20%	-2.1%	30.3%	3.1%	0.6%
AAGEGR	15.8%	31.8%	0.82	0.91	17%	15.7%	20.9%	0.37	0.07	17%	-0.1%	29.0%	12.6%	18.0% **
AVEAGE	16.2%	27.7%	0.63	0.57	20%	18.5%	26.6%	0.62	0.59	15%	2.0%	30.7%	5.8%	3.8%
MKTCAP	15.1%	32.5%	1.07	0.63	22%	27.7%	26.3%	0.14	0.43	50%	11.0%	44.7%	38.3% ***	25.6% *
MOM-1	23.8%	29.7%	0.72	0.67	237%	19.3%	34.3%	0.99	0.58	232%	-3.6%	38.0%	1.9%	7.3%
MOM-2-4	15.2%	36.7%	1.01	0.72	130%	19.4%	30.7%	0.73	0.41	139%	3.7%	39.7%	17.4%	17.1%
P/E*	14.5%	35.5%	1.09	0.98	33%	21.9%	32.4%	0.59	0.29	69%	6.4%	43.0%	25.1% *	26.2% *
P/B*	10.5%	38.1%	1.18	0.92	40%	24.6%	26.1%	0.48	0.57	64%	12.7%	42.3%	33.9% ***	25.7% *
P/D	17.8%	36.4%	1.12	0.68	42%	32.9%	26.3%	0.41	0.39	85%	12.8%	41.0%	34.6% ***	25.0% *

IFC Composite	15.7%	22.5%	1.00	0.58
MSCI AC World	16.1%	14.5%	0.24	1.00

-Significance level: * 10%, ** 5%, *** 1%.
-IFC Global and MSCI World Indices in US dollars: Unhedged.
-Countries enter portfolios when they emerge in IFC indices.
-From January 1985-December 1987 the MSCI World Index was substituted for the MSCI All Country (AC) World Index.
-Price/Earnings and Price/Book ratios are unavailable until January 1986.
-Portfolios were formed by sorting the countries into two halves based on the level of the attribute.
-Portfolios were reformed quarterly.

Legend

ICRGC	Political Risk Services: International Country Risk Guide - Composite
ICRGP	Political Risk Services: International Country Risk Guide - Political
ICRGF	Political Risk Services: International Country Risk Guide - Financial
ICRGE	Political Risk Services: International Country Risk Guide - Economic
IICCR	Institutional Investor Country Credit Ratings
EMCRR	Euromoney Country Risk Ratings
INFLATE	Annual Consumer Inflation: IFS Database (six month lag)
TRADEGDP	Trade Openness: (Exports+Imports)/GDP (six month lag)
POPGR	Annual Growth in Total Population - UN Data
AAGEGR	Annual Growth in Average Age of Population - UN Data
AVEAGE	Average Age of Population - UN Data
MKTCAP	IFC Global Market Capitalization
MOM-1	Trailing US$ Total Return - Last Month
MOM-2-4	Trailing US$ Total Return - Months -4 to -2
P/E*	IFC Global Price/Earnings Ratio
P/B*	IFC Global Price/Book Ratio
P/D	IFC Global Price/Dividend Ratio

Table 6

Estimated Transaction Costs in the Emerging Markets
Baring Securities Emerging Market Index Spread Analysis

Country	Spread in Basis Points	Weight BEMI	Weight BEMI +Standalones
Argentina	155	5.94%	5.46%
Brazil	85	15.69%	14.42%
Chile	393	6.46%	5.94%
China	134	0.00%	1.66%
Colombia*	100	0.00%	1.13%
Greece	48	1.80%	1.65%
India*	150	0.00%	4.39%
Indonesia	112	3.11%	2.86%
Jordan	58	0.00%	0.25%
Malaysia	69	14.25%	13.09%
Mexico	93	11.68%	10.74%
Pakistan	38	0.56%	0.52%
Peru	111	2.31%	2.12%
Philippines	94	4.47%	4.11%
Poland*	150	0.00%	0.69%
Portugal	93	1.91%	1.75%
South Africa	112	12.23%	11.23%
South Korea	41	4.56%	4.19%
Taiwan	47	5.23%	4.81%
Thailand	70	8.19%	7.52%
Turkey	160	1.61%	1.48%

*Spread numbers are approximate

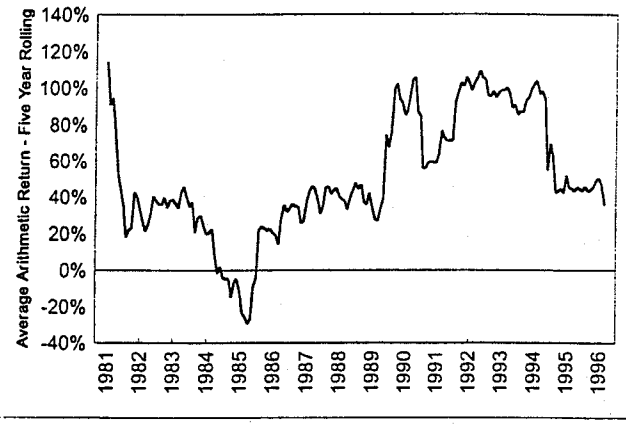
Global Spread (Basis Points)

Index	Cap Weight	Cap Weight +Standalones	Equal Weight	Equal Weight +Standalones
Global	108	110	108	110
Asia	69	80	67	84
Europe+Africa	108	109	103	104
Latin America	146	145	167	156

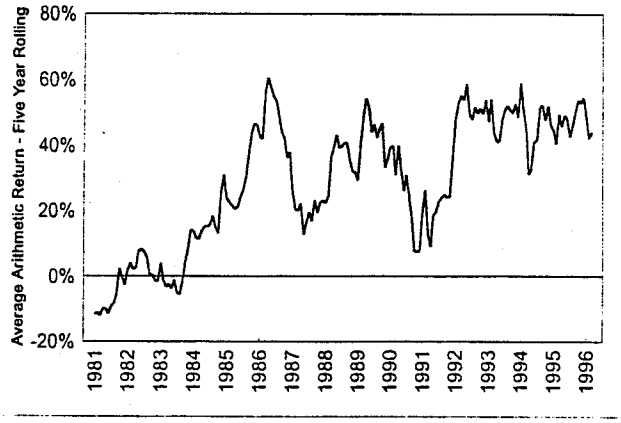
Source: Baring Securities (July 1995)

-Please note that these figures represent spreads only, and do not include either commissions or various taxes.
-Countries and weights differ from both IFC and MSCI.

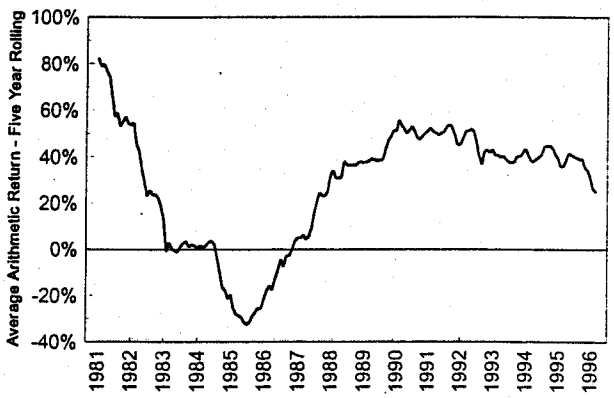
Argentina
Total Return



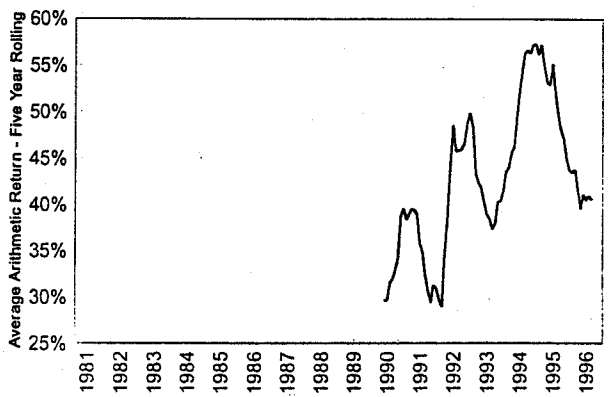
Brazil
Total Return



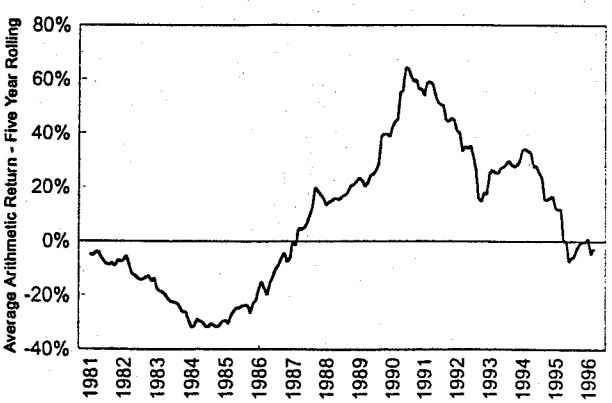
Chile
Total Return



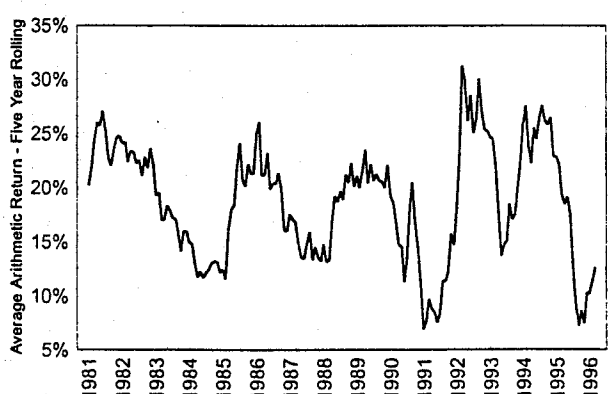
Colombia
Total Return



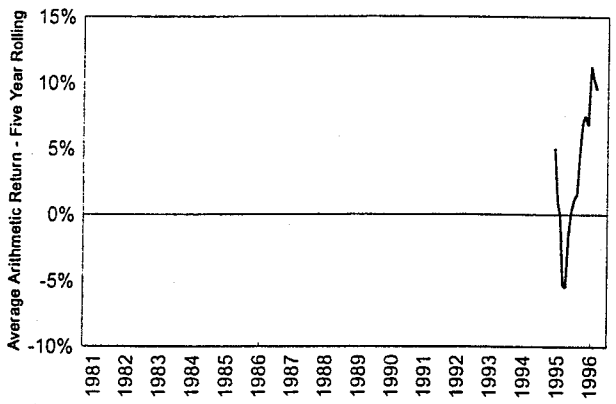
Greece
Total Return



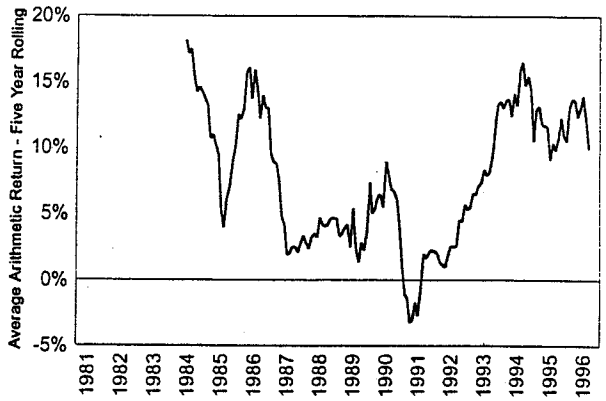
India
Total Return



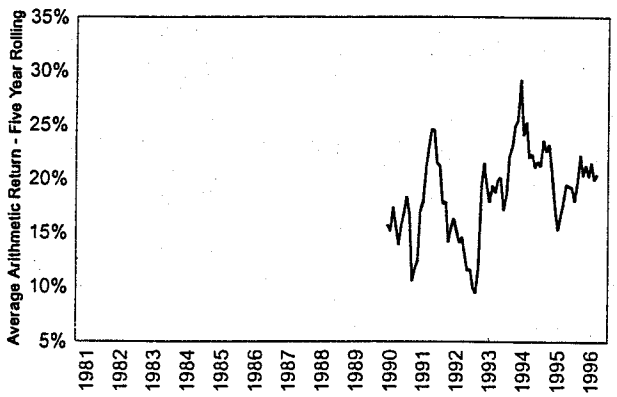
Indonesia
Total Return



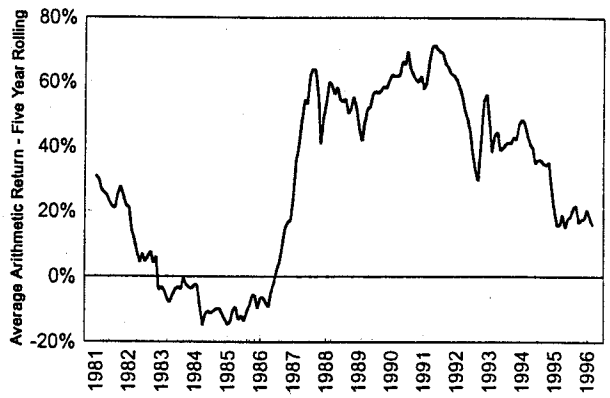
Jordan
Total Return



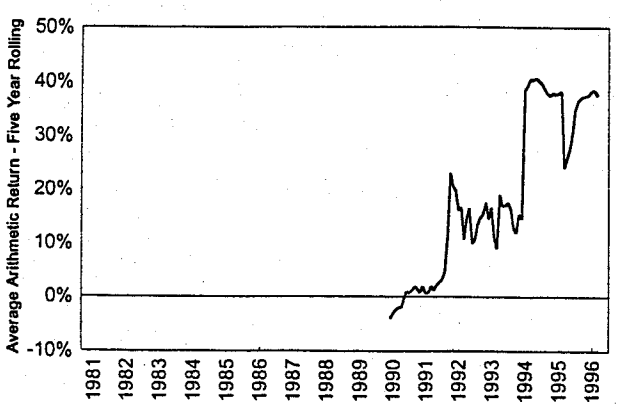
Malaysia
Total Return



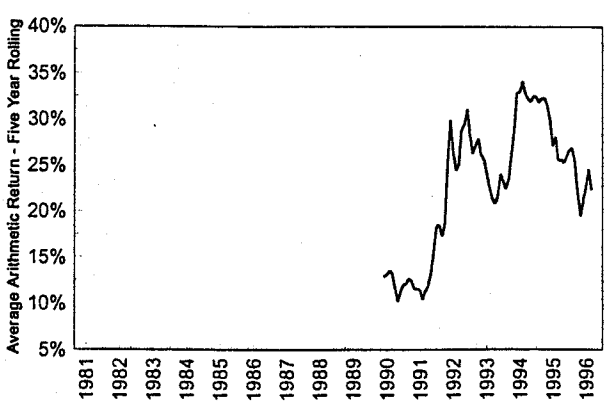
Mexico
Total Return



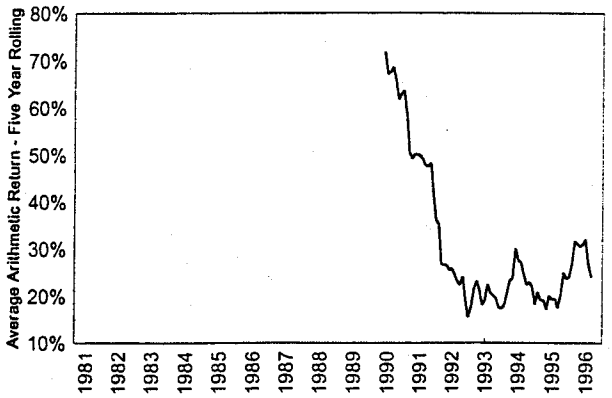
Nigeria
Total Return



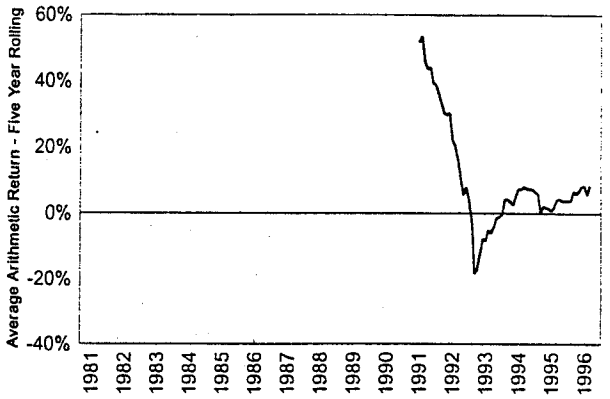
Pakistan
Total Return



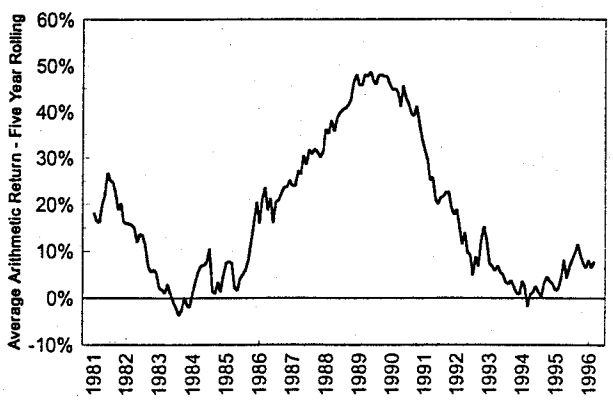
Philippines
Total Return



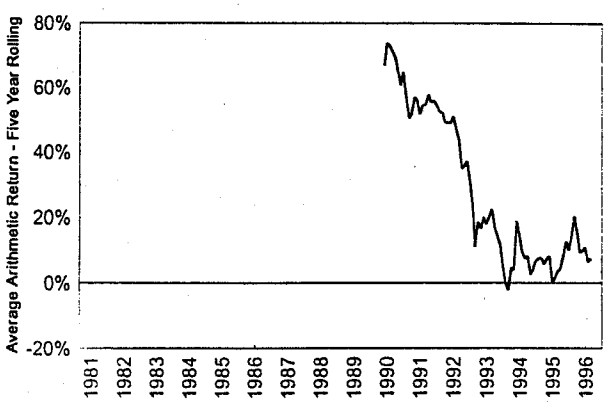
Portugal
Total Return



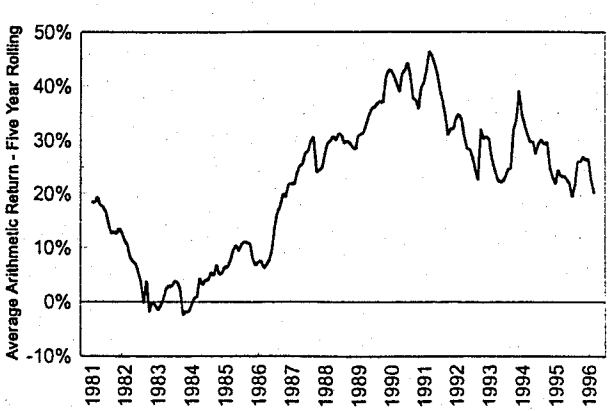
South Korea
Total Return



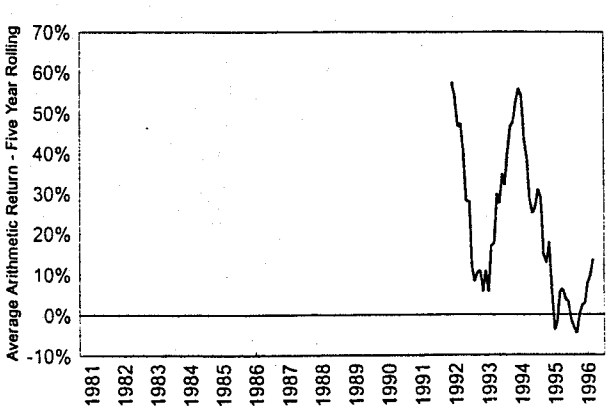
Taiwan
Total Return



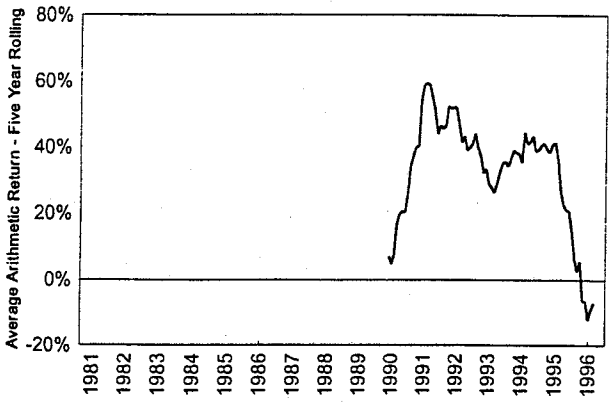
Thailand
Total Return



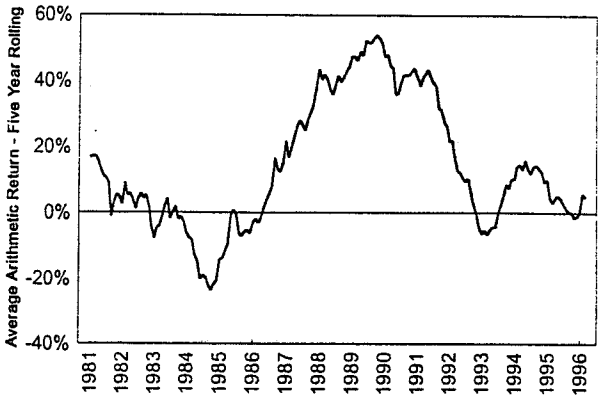
Turkey
Total Return



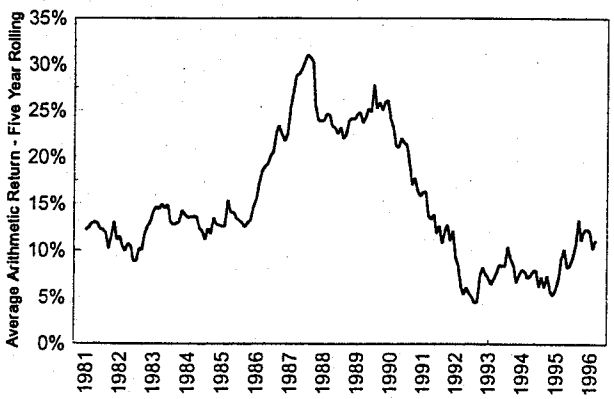
Venezuela
Total Return



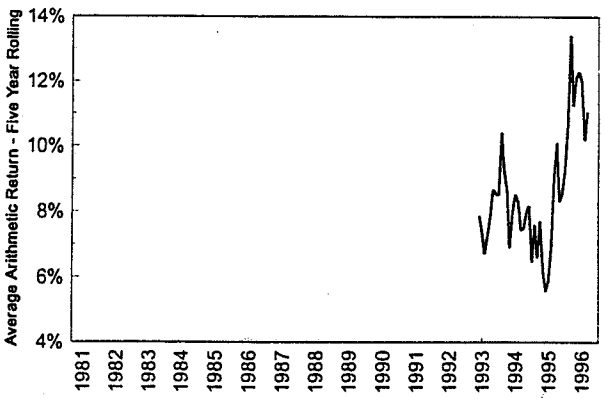
Zimbabwe
Total Return



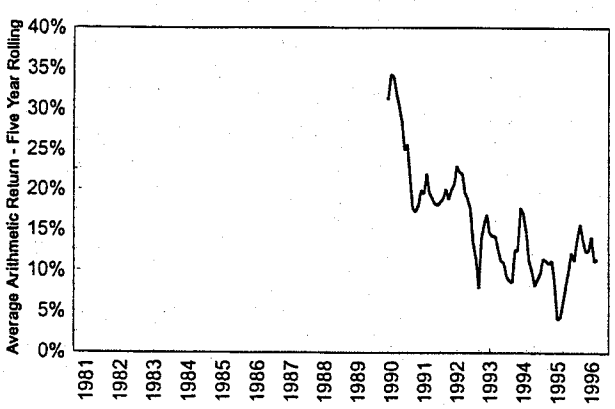
MSCI World
Total Return



MSCI All Country World
Total Return

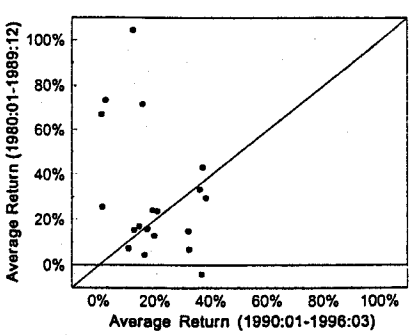


IFC Global Composite
Total Return



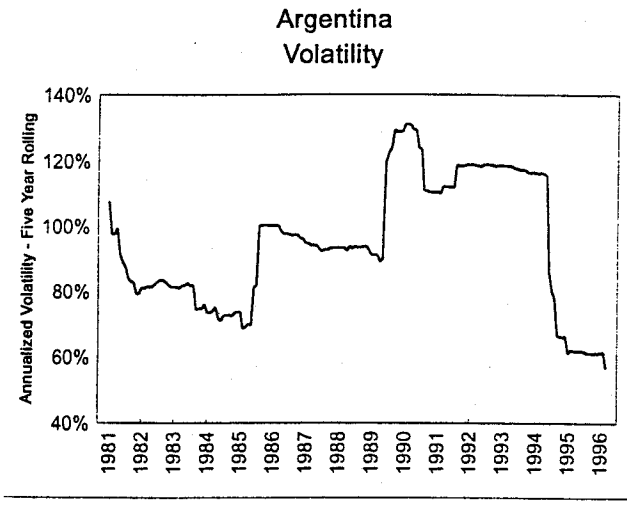
Emerging Market Returns
1980s vs. 1990s

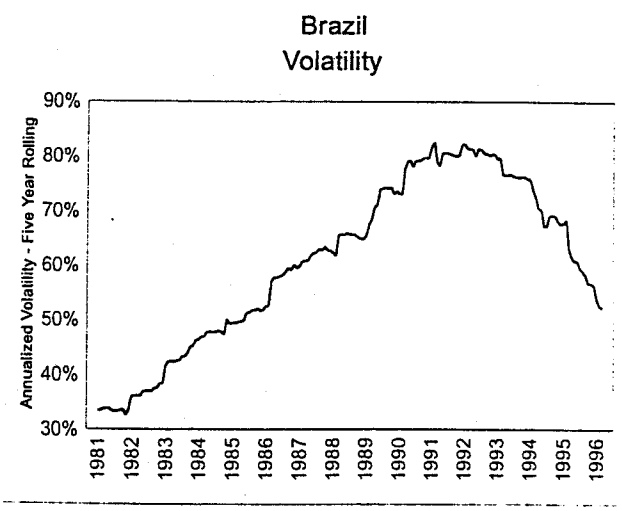
IFC Global Indices - Total Returns US$

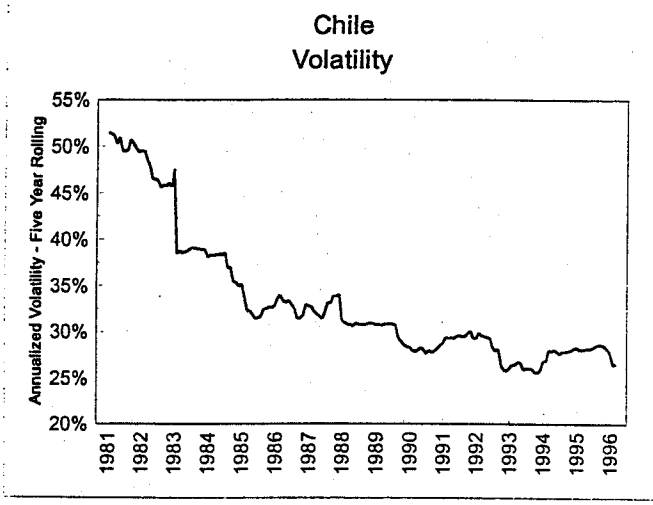


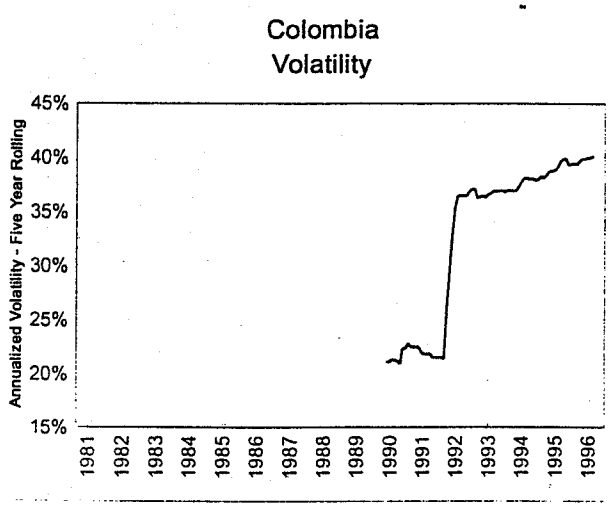
*Or inception, if later.

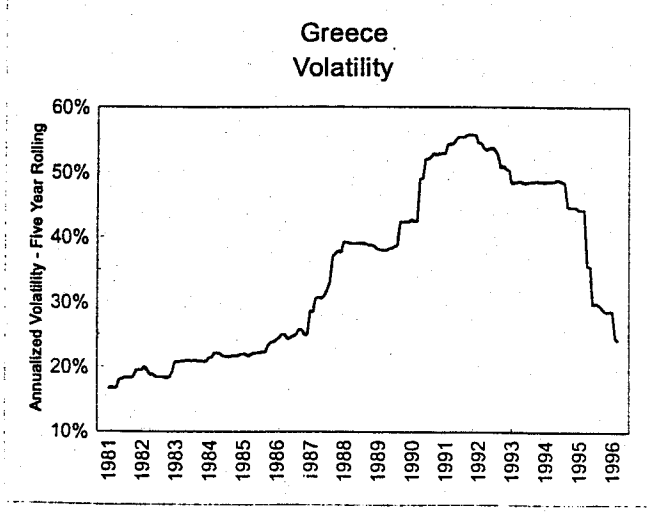
Figure 2

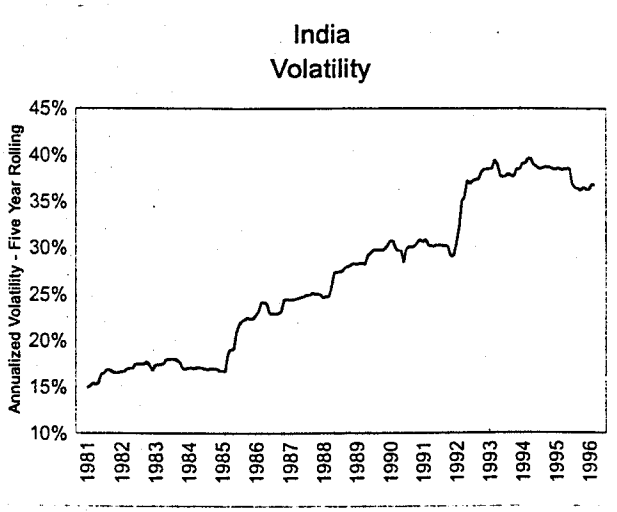

Argentina
Volatility
Annualized Volatility - Five Year Rolling
140%
120%
100%
80%
60%
40%
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996


Brazil
Volatility
Annualized Volatility - Five Year Rolling
90%
80%
70%
60%
50%
40%
30%
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996

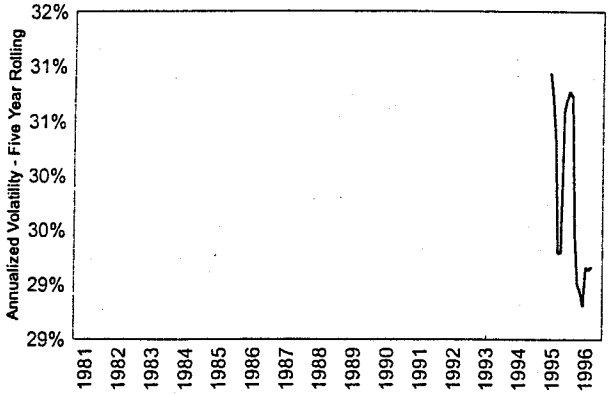

Chile
Volatility
Annualized Volatility - Five Year Rolling
55%
50%
45%
40%
35%
30%
25%
20%
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996


Colombia
Volatility
Annualized Volatility - Five Year Rolling
45%
40%
35%
30%
25%
20%
15%
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996

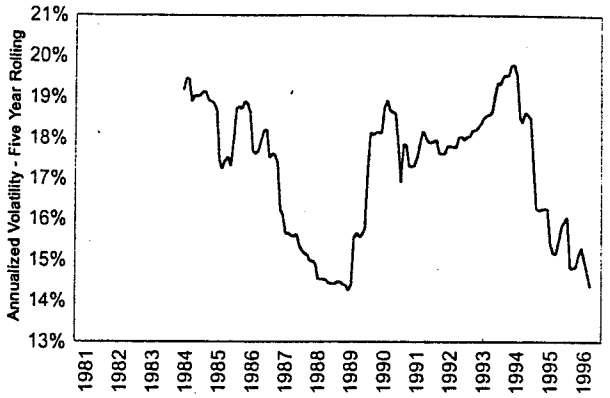

Greece
Volatility
Annualized Volatility - Five Year Rolling
60%
50%
40%
30%
20%
10%
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996


India
Volatility
Annualized Volatility - Five Year Rolling
45%
40%
35%
30%
25%
20%
15%
10%
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996

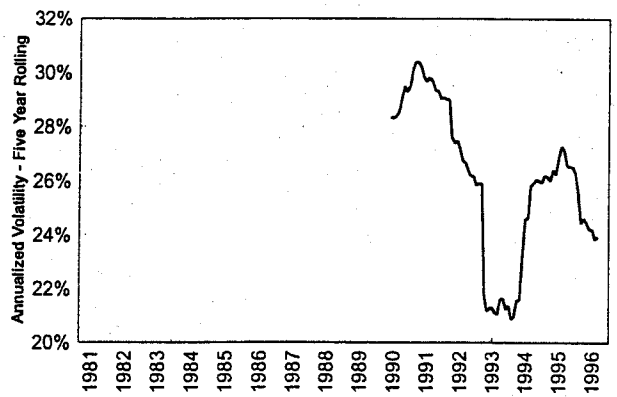
Indonesia Volatility



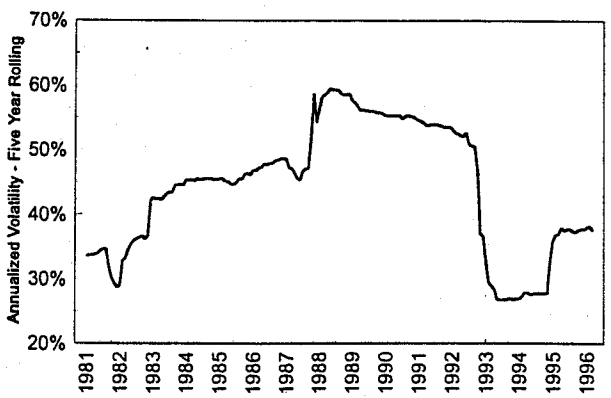
Jordan Volatility



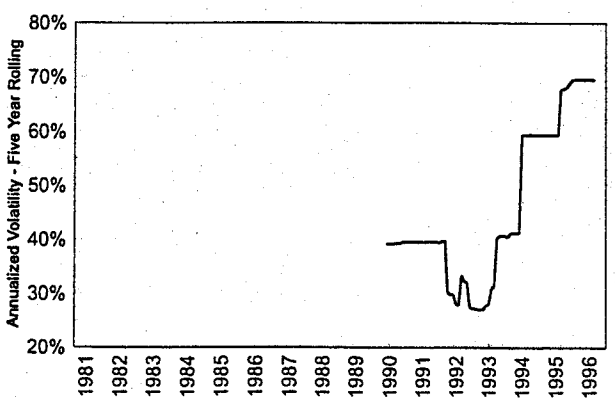
Malaysia Volatility



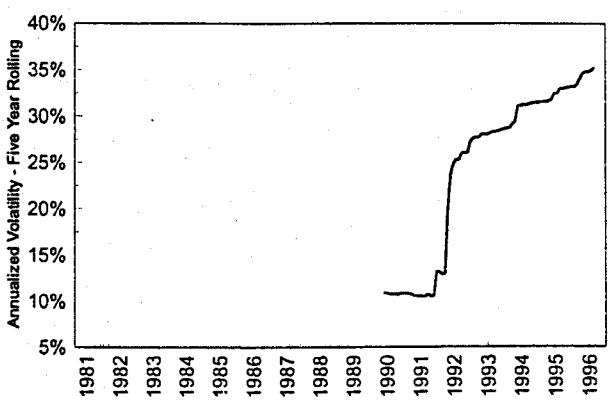
Mexico Volatility



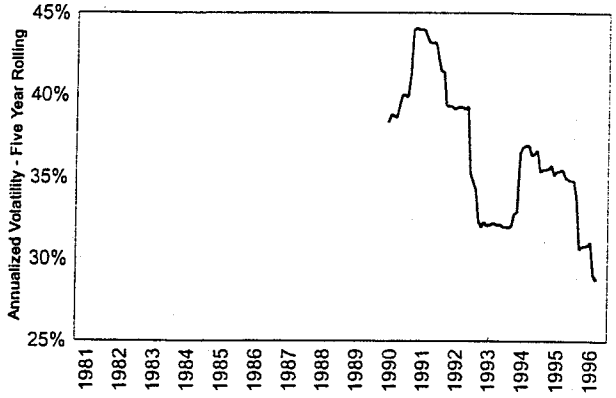
Nigeria Volatility



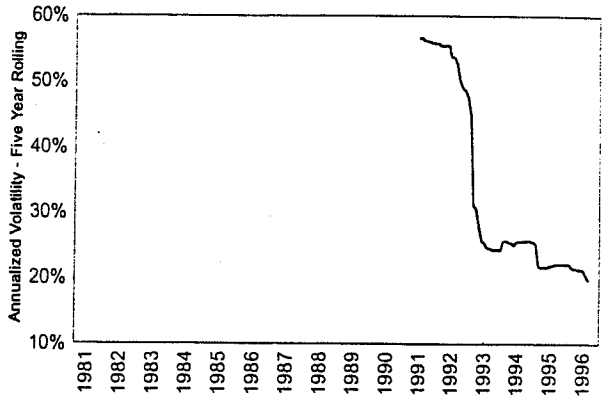
Pakistan Volatility



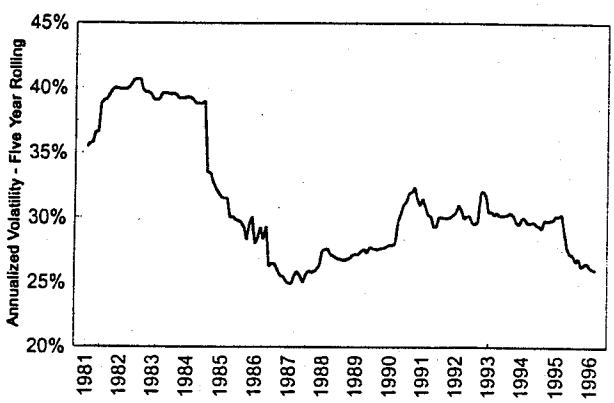
Philippines Volatility



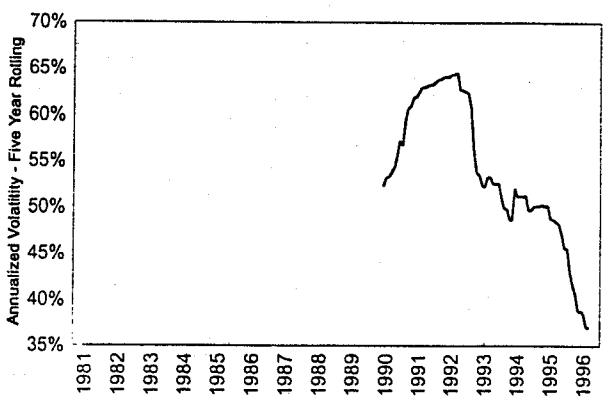
Portugal Volatility



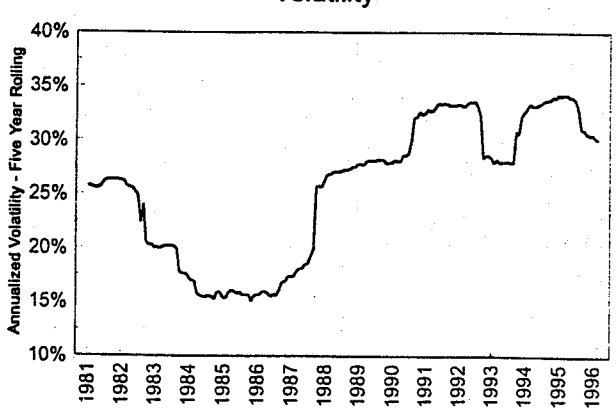
South Korea Volatility



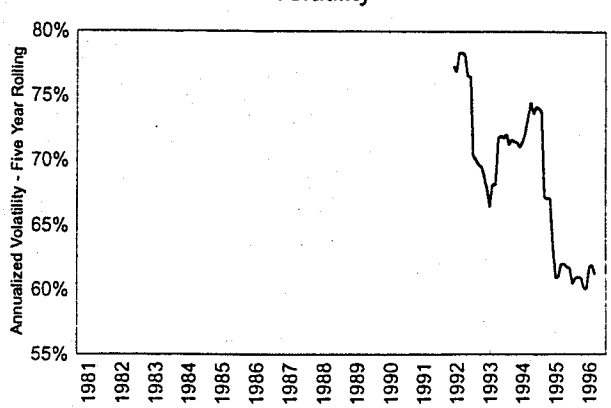
Taiwan Volatility



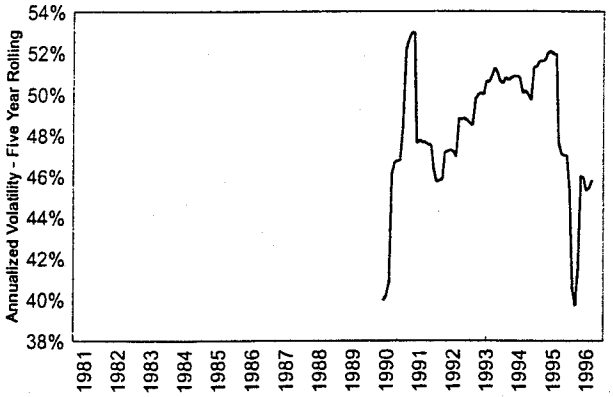
Thailand Volatility



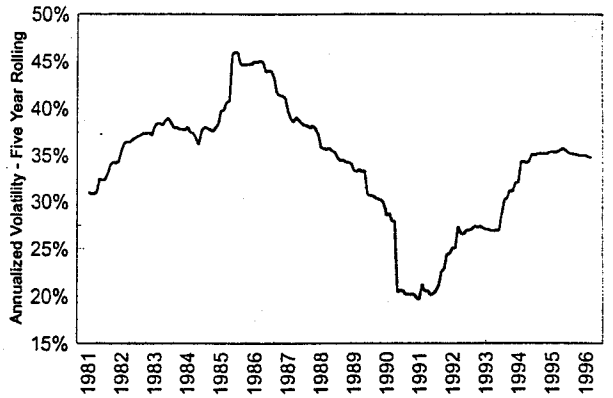
Turkey Volatility



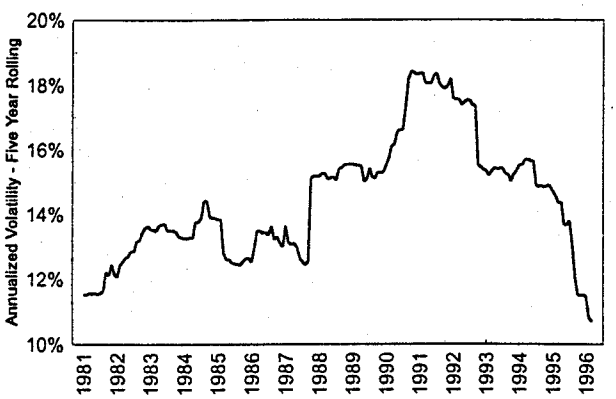
Venezuela Volatility



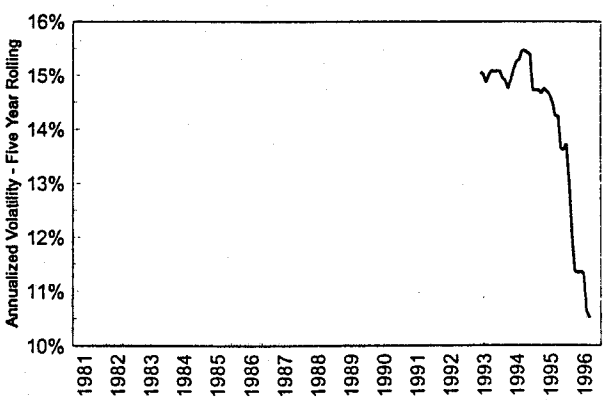
Zimbabwe Volatility



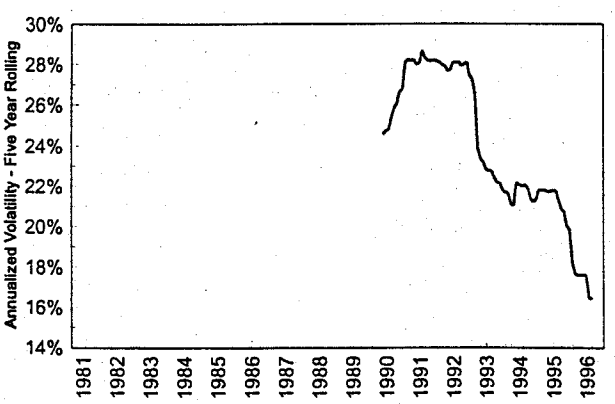
MSCI World Volatility



MSCI All Country World Volatility

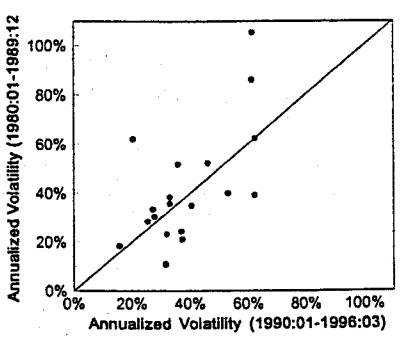


IFC Global Composite Volatility



Emerging Market Volatility 1980s vs. 1990s

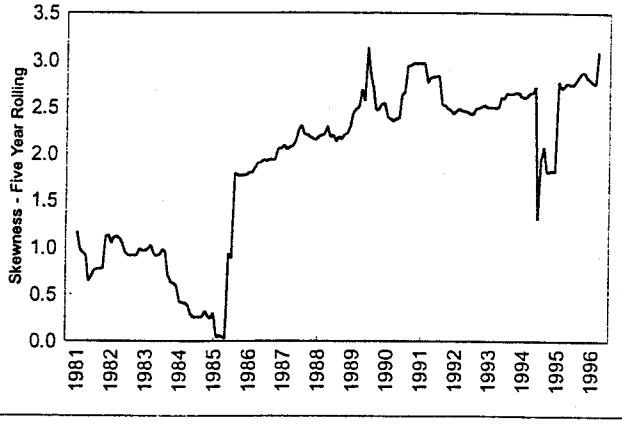
IFC Global Indices - Total Returns US$



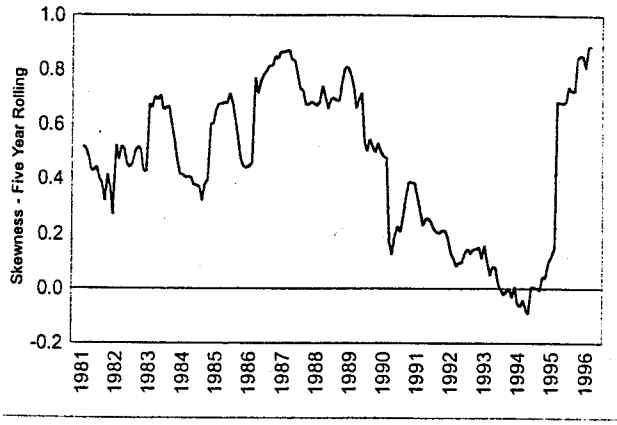
*Or inception, if later.

Figure 3

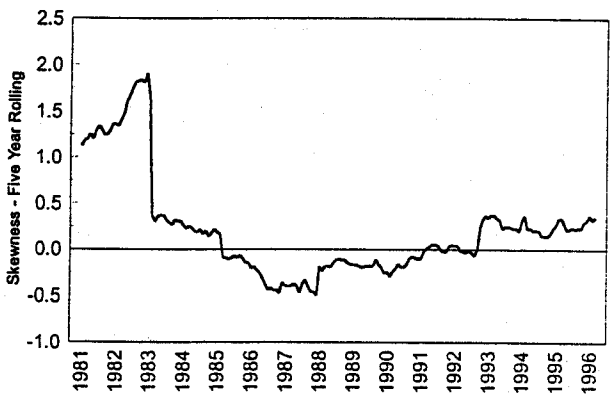
Argentina
Skewness



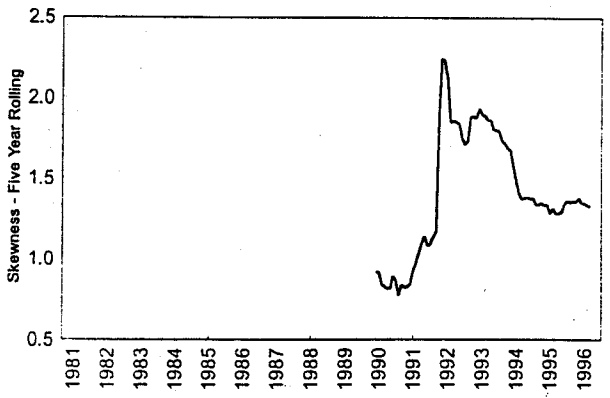
Brazil
Skewness



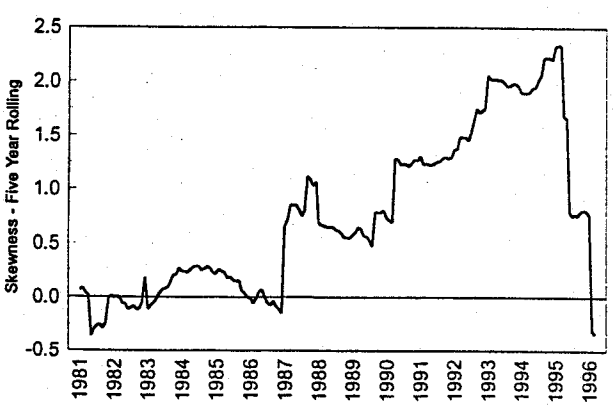
Chile
Skewness



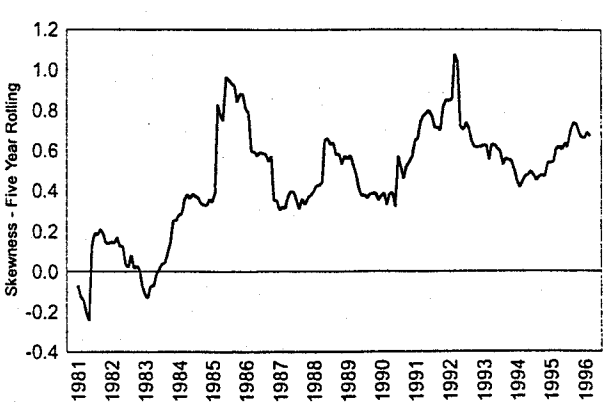
Colombia
Skewness



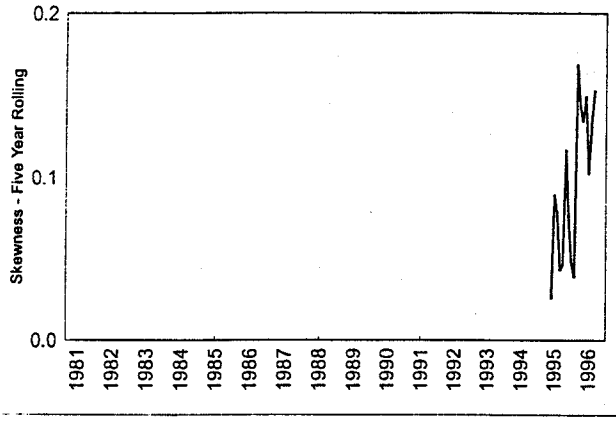
Greece
Skewness



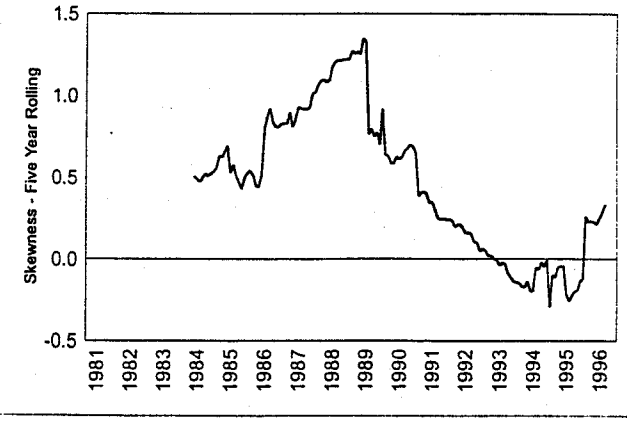
India
Skewness



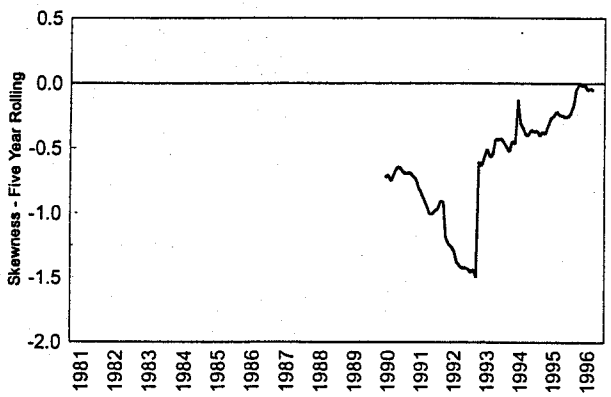
Indonesia
Skewness



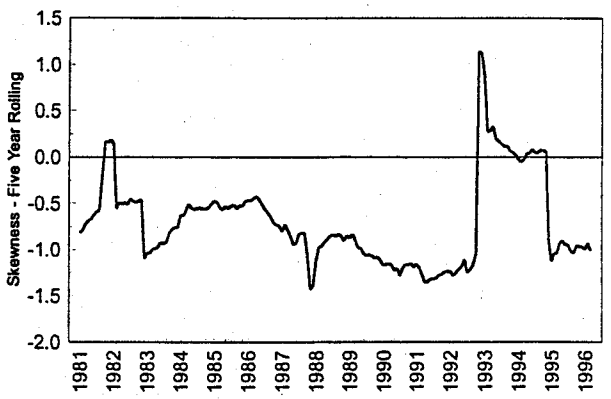
Jordan
Skewness



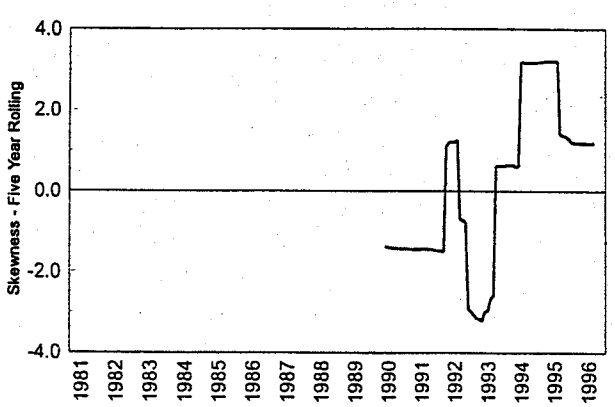
Malaysia
Skewness



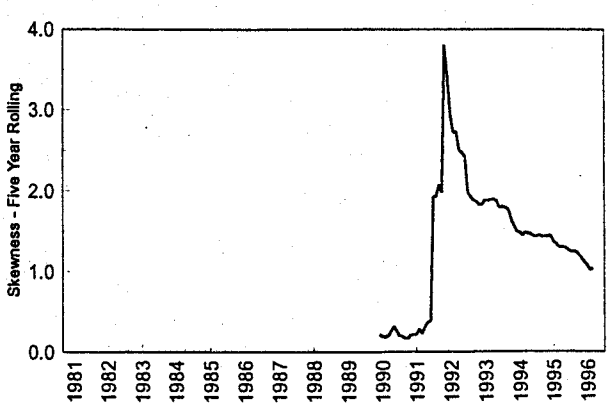
Mexico
Skewness



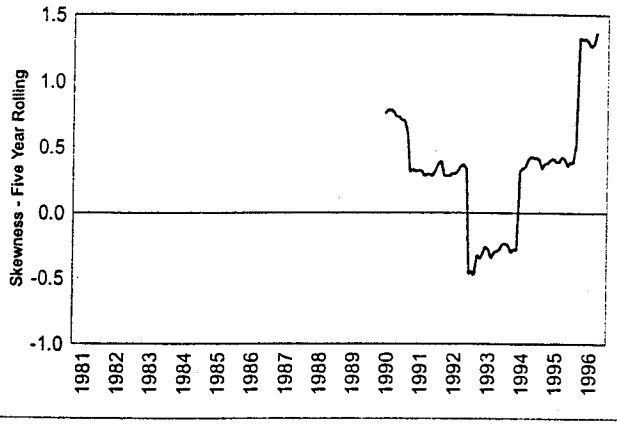
Nigeria
Skewness



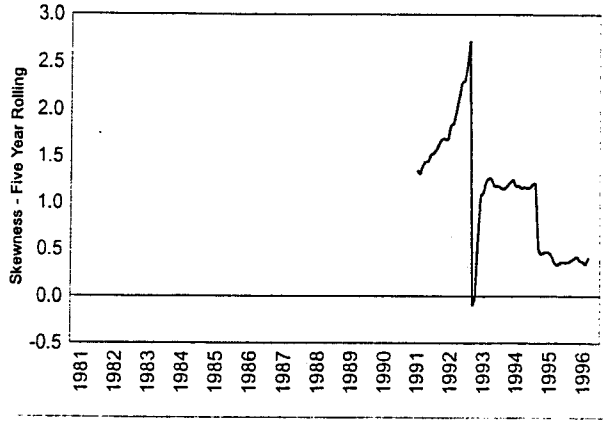
Pakistan
Skewness



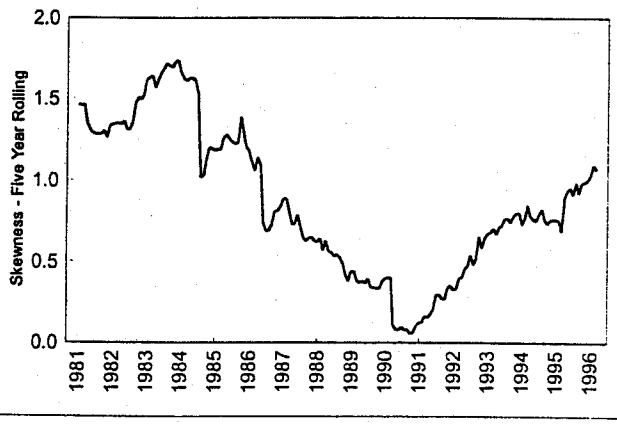
Philippines
Skewness



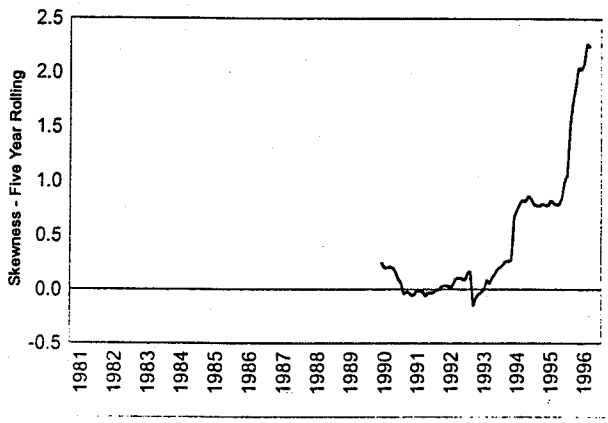
Portugal
Skewness



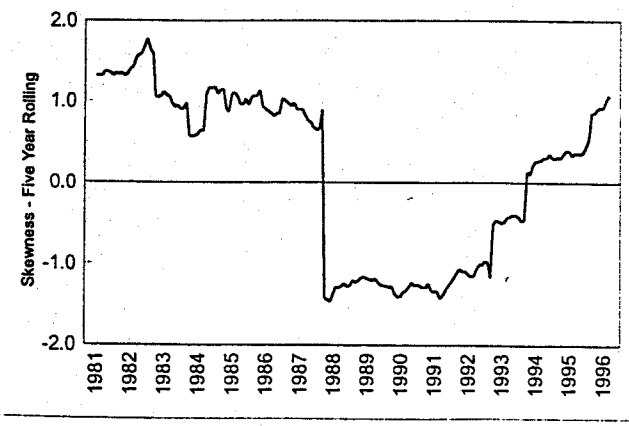
South Korea
Skewness



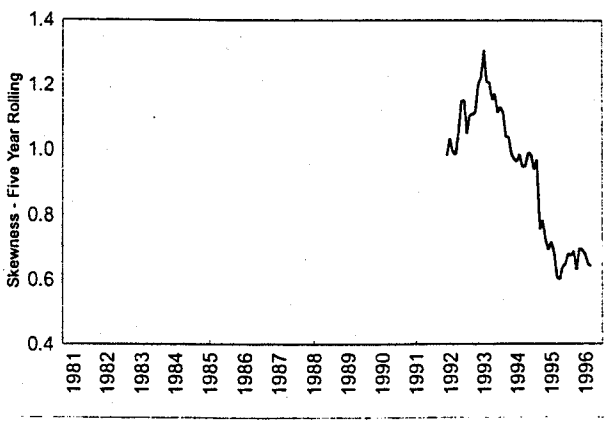
Taiwan
Skewness



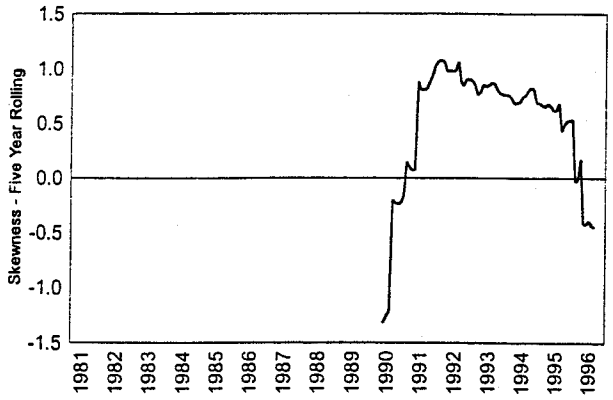
Thailand
Skewness



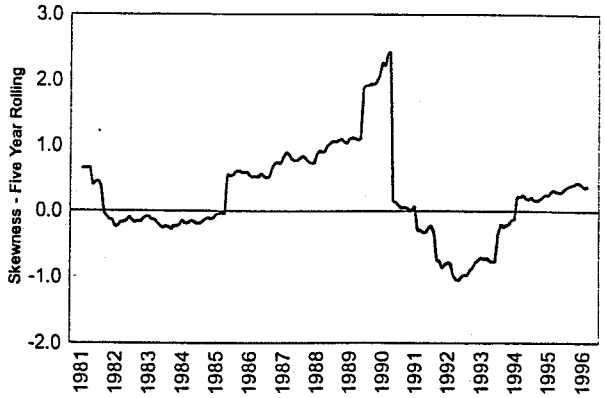
Turkey
Skewness



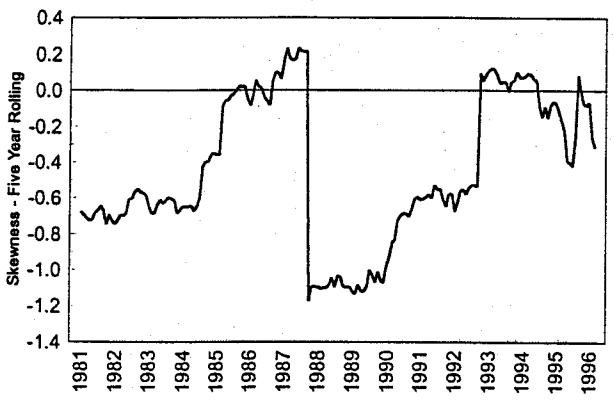
Venezuela Skewness



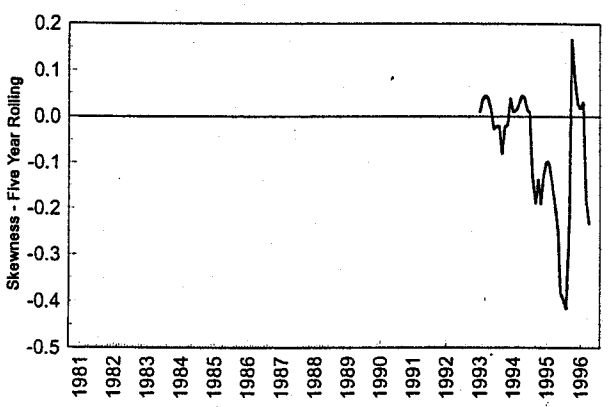
Zimbabwe Skewness



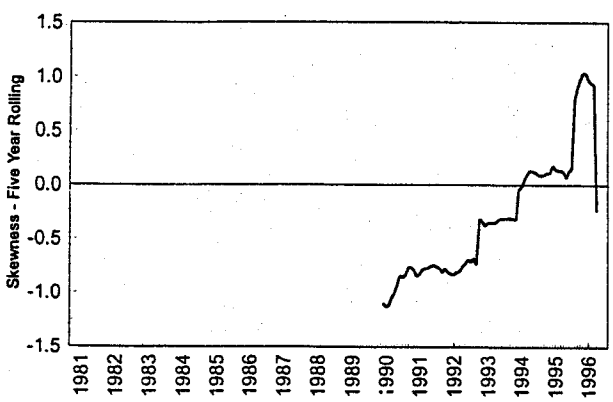
MSCI World Skewness



MSCI All Country World Skewness

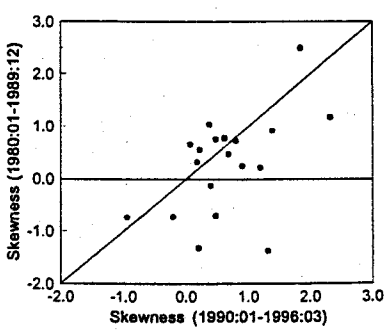


IFC Global Composite Skewness



Emerging Market Skewness 1980s vs. 1990s

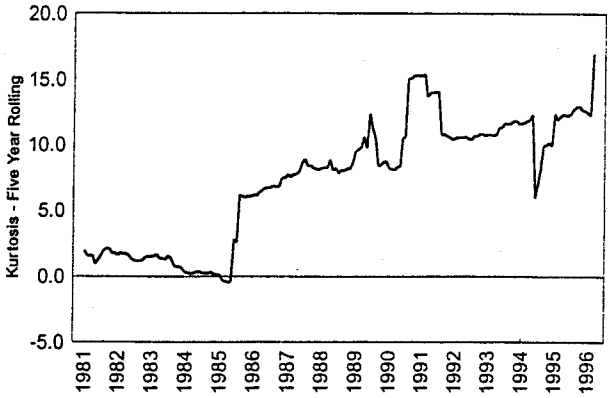
IFC Global Indices - Total Returns US$



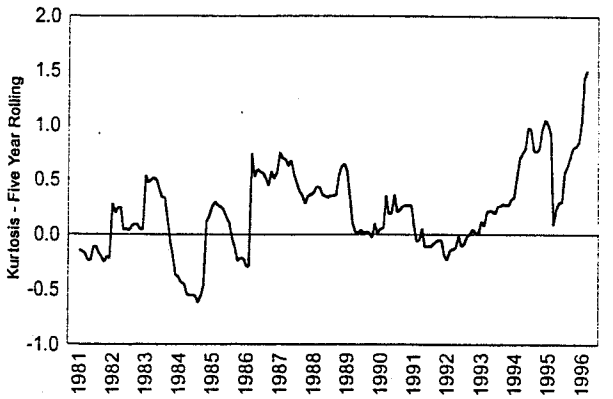
*Or inception, if later.

Figure 4

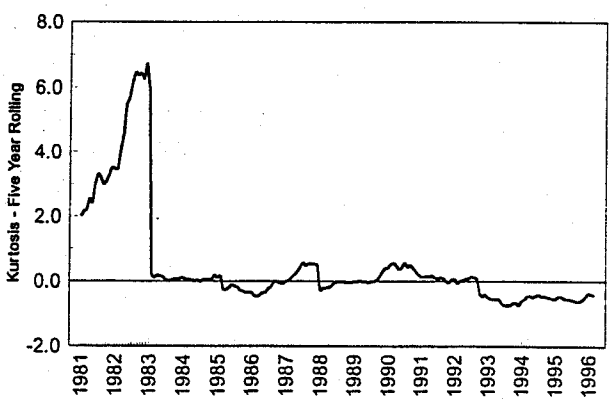
Argentina
Kurtosis



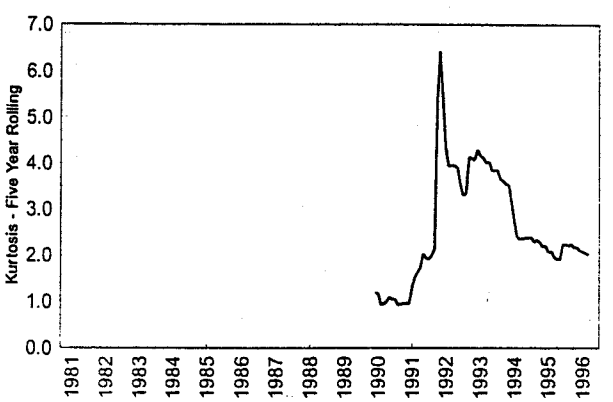
Brazil
Kurtosis



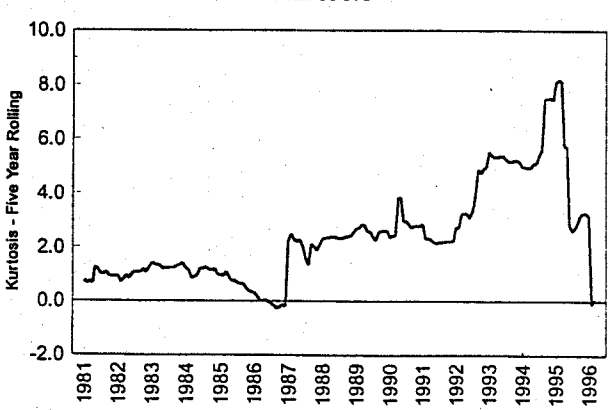
Chile
Kurtosis



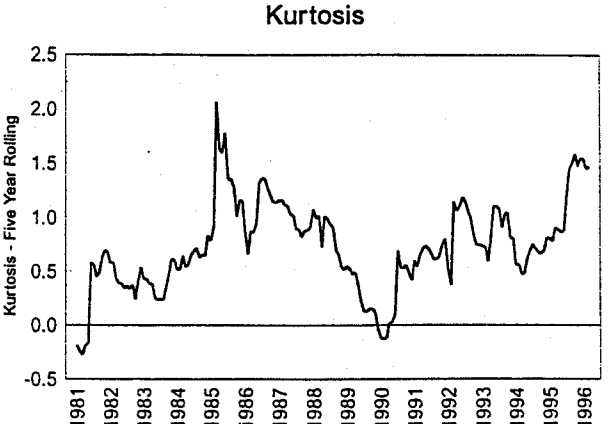
Colombia
Kurtosis



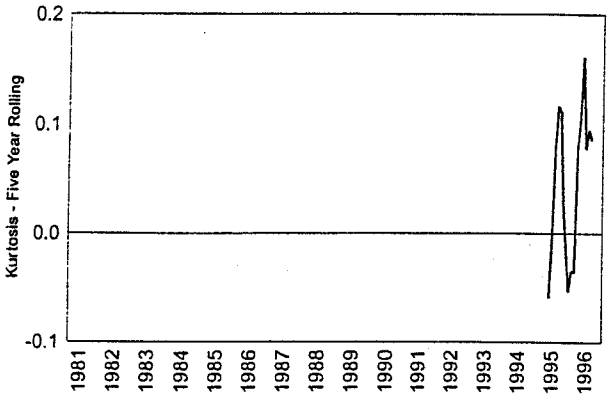
Greece
Kurtosis



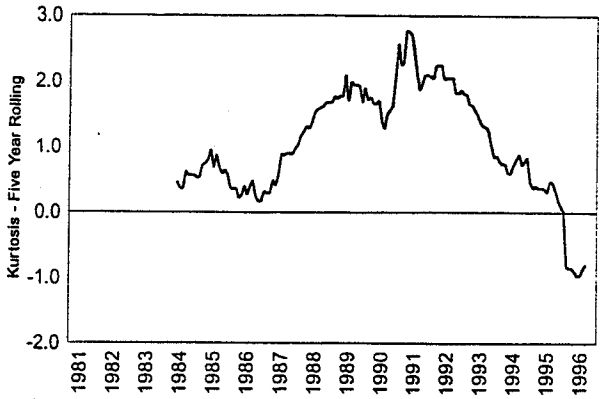
India
Kurtosis



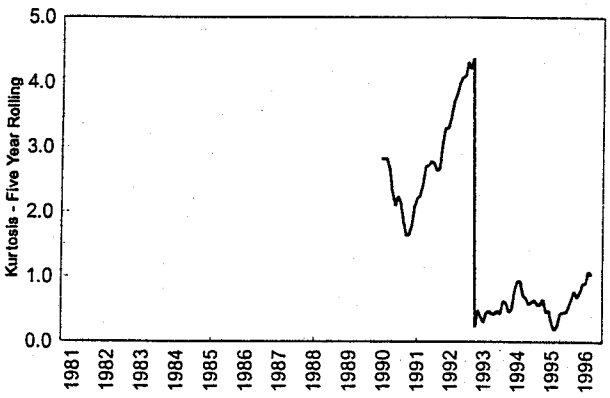
Indonesia
Kurtosis



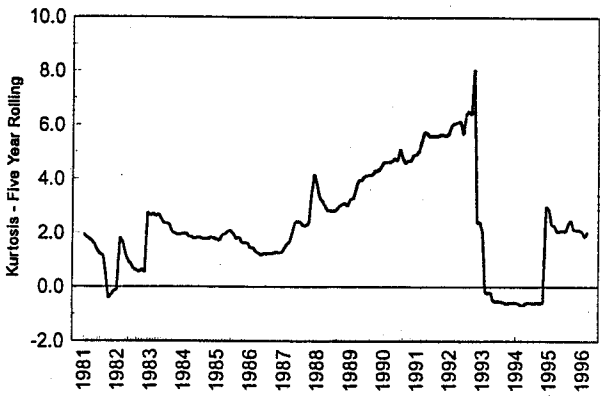
Jordan
Kurtosis



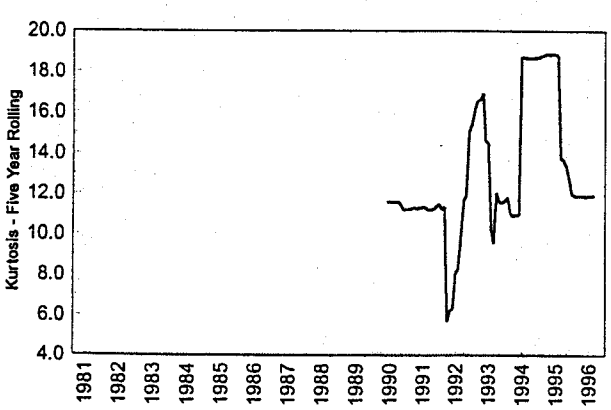
Malaysia
Kurtosis



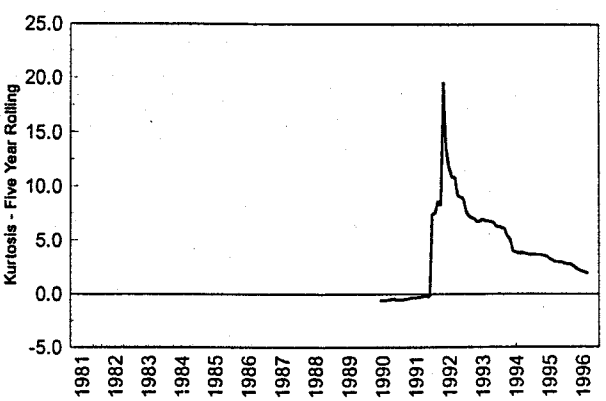
Mexico
Kurtosis



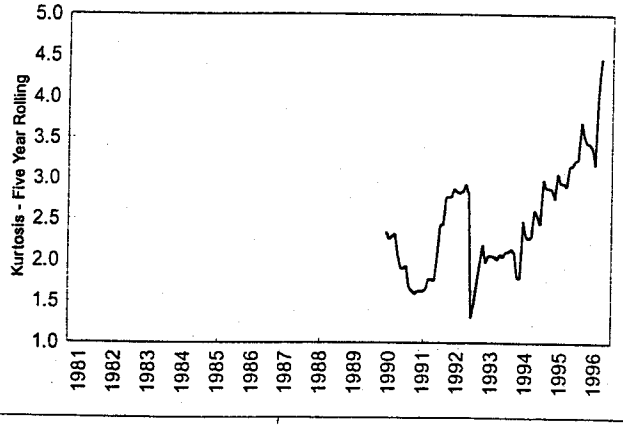
Nigeria
Kurtosis



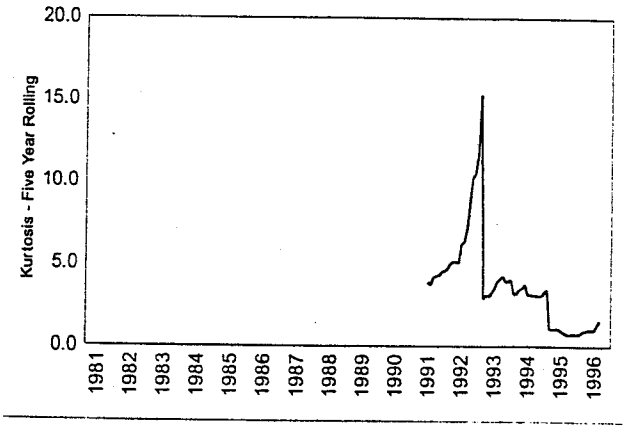
Pakistan
Kurtosis



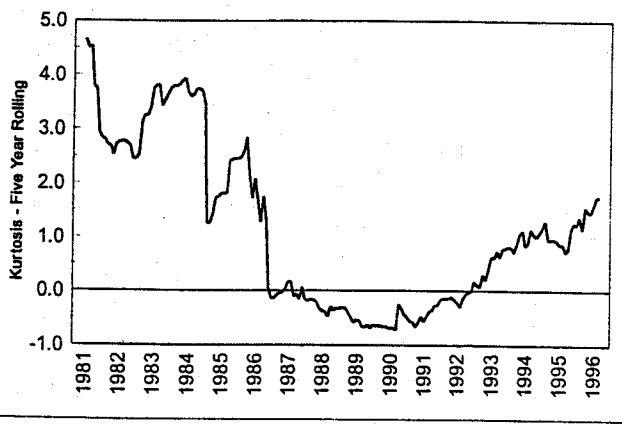
Philippines
Kurtosis



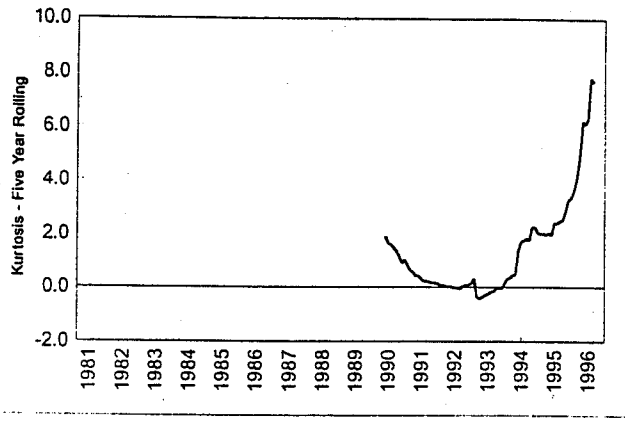
Portugal
Kurtosis



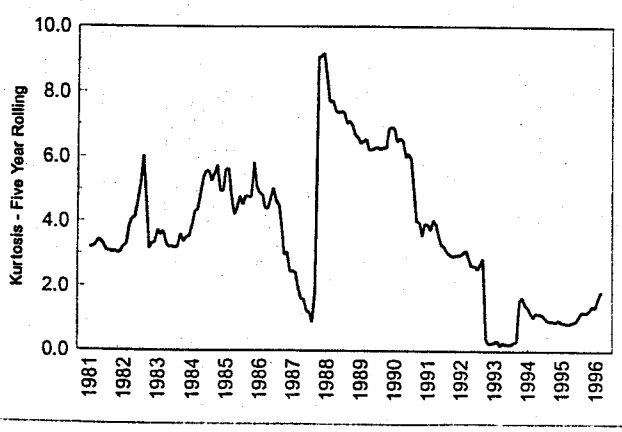
South Korea
Kurtosis



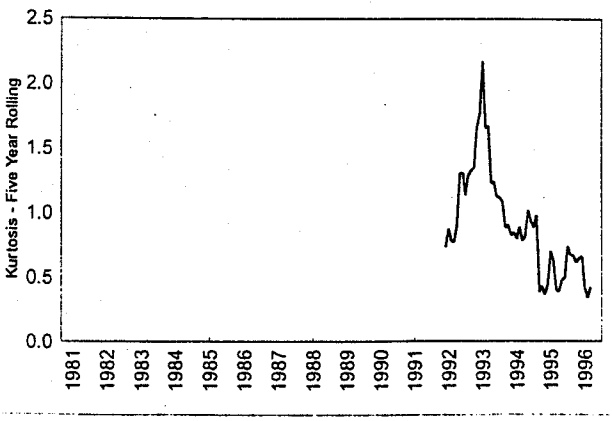
Taiwan
Kurtosis



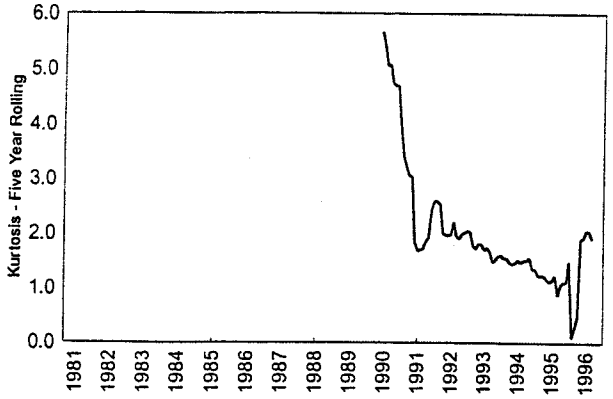
Thailand
Kurtosis



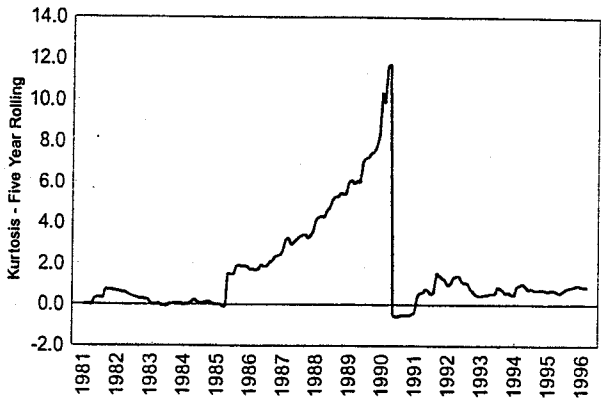
Turkey
Kurtosis



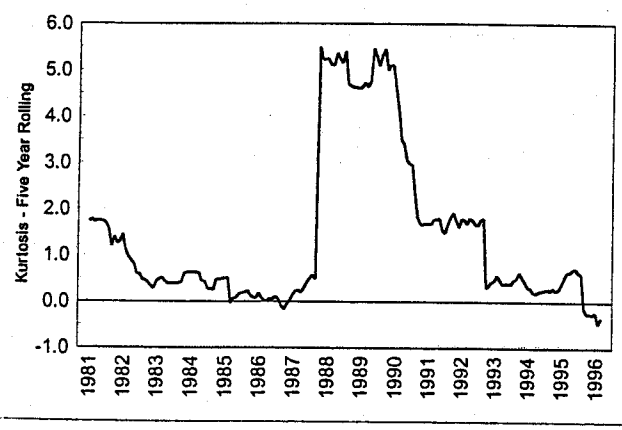
Venezuela Kurtosis



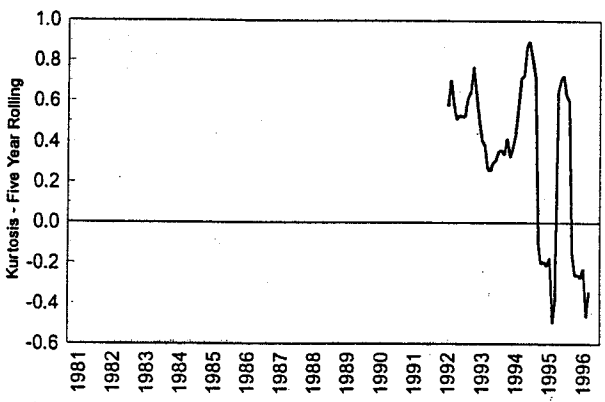
Zimbabwe Kurtosis



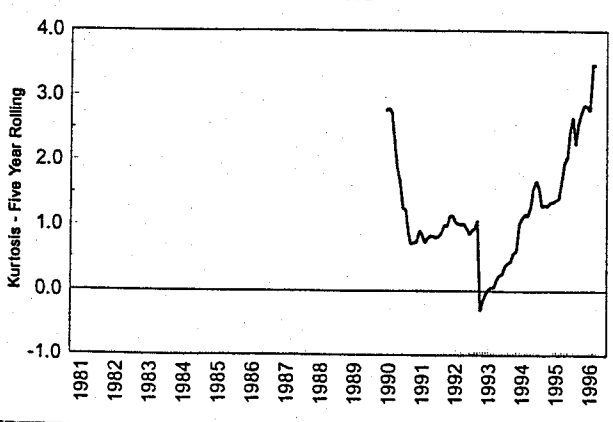
MSCI World Kurtosis



MSCI All Country World Kurtosis

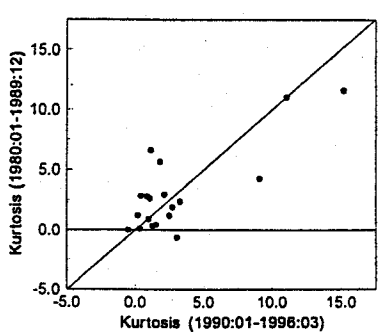


IFC Global Composite Kurtosis



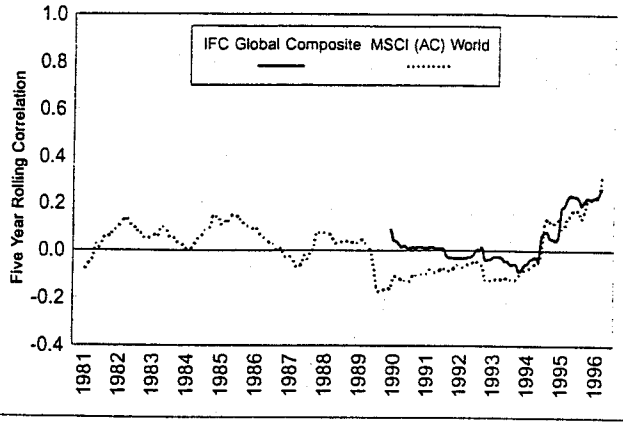
Emerging Market Kurtosis 1980s vs. 1990s

IFC Global Indices - Total Returns US$

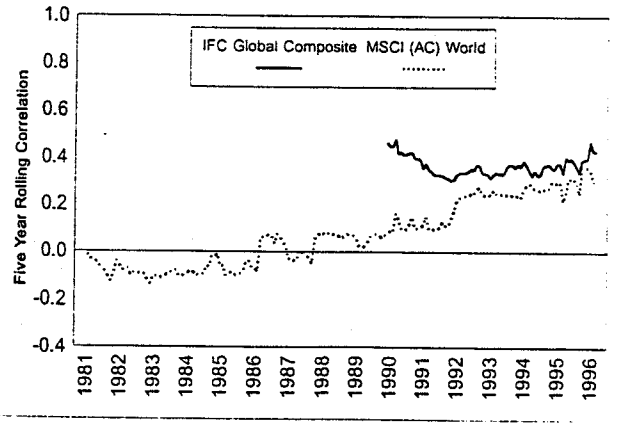


*Or inception, if later.

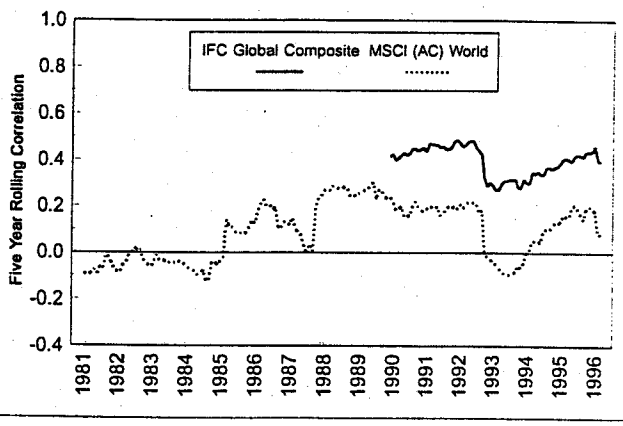
Argentina Correlation



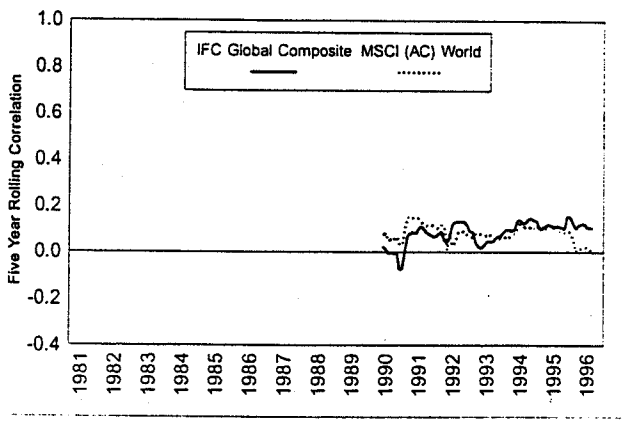
Brazil Correlation



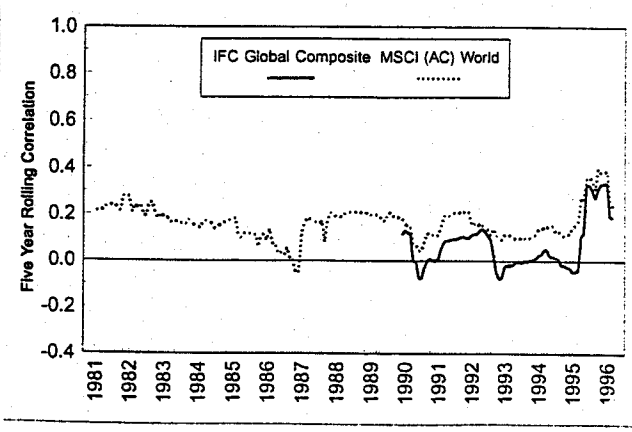
Chile Correlation



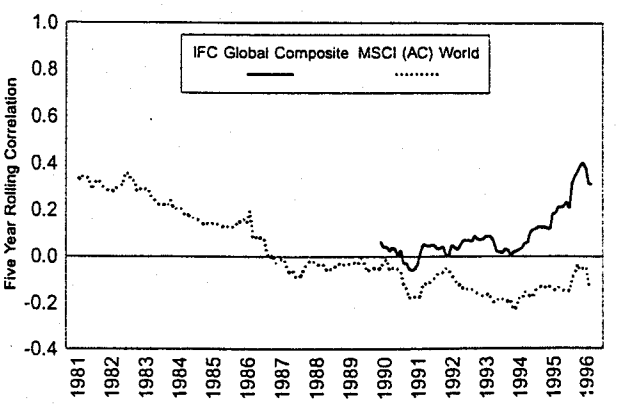
Colombia Correlation



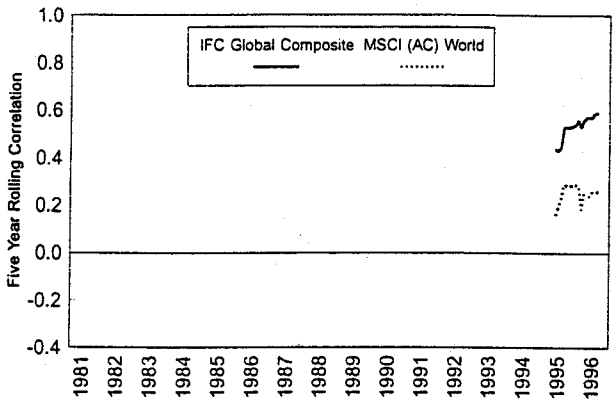
Greece Correlation



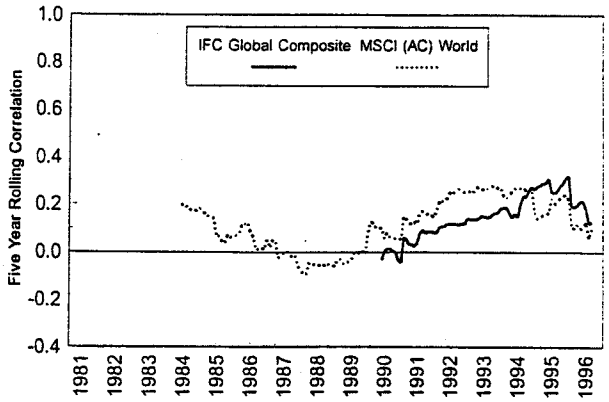
India Correlation



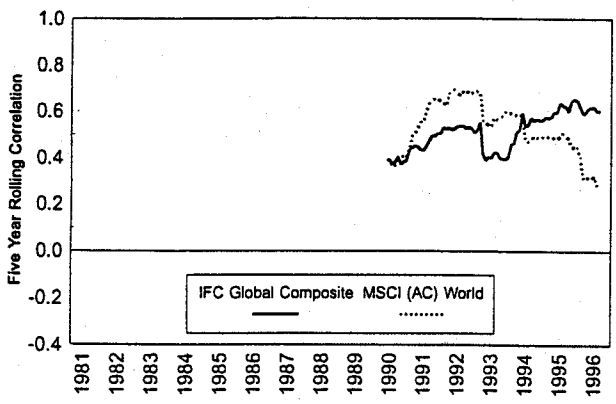
Indonesia Correlation



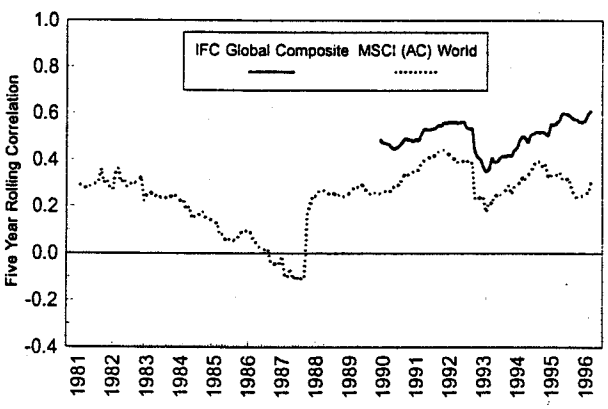
Jordan Correlation



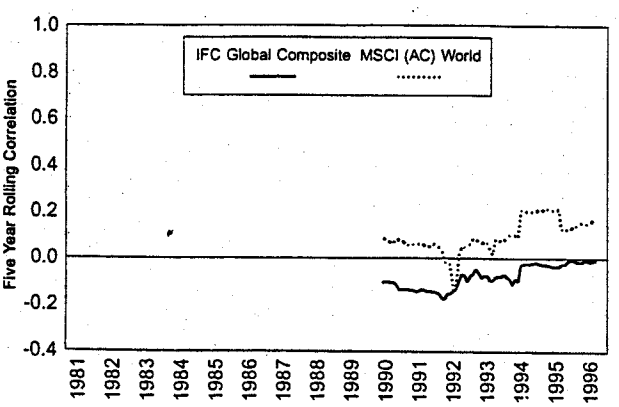
Malaysia Correlation



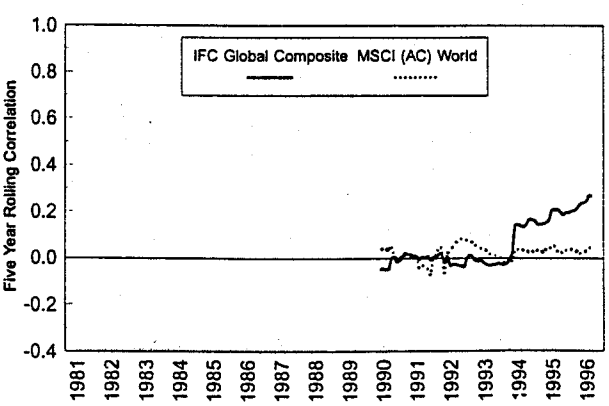
Mexico Correlation



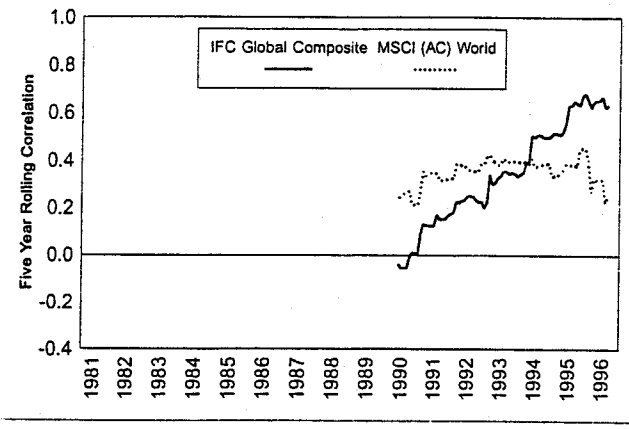
Nigeria Correlation



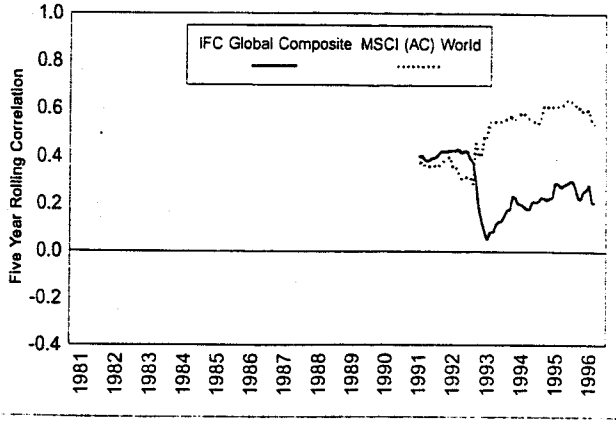
Pakistan Correlation



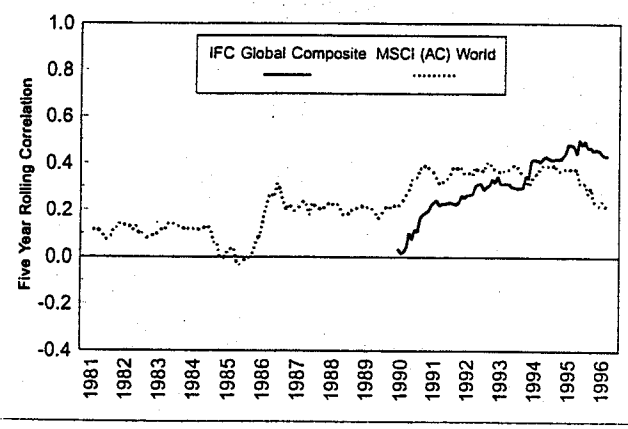
Philippines Correlation



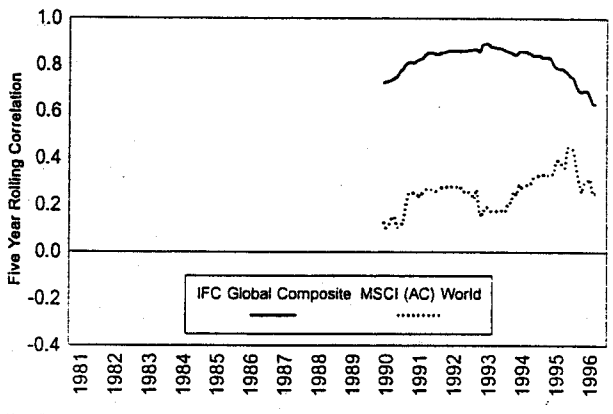
Portugal Correlation



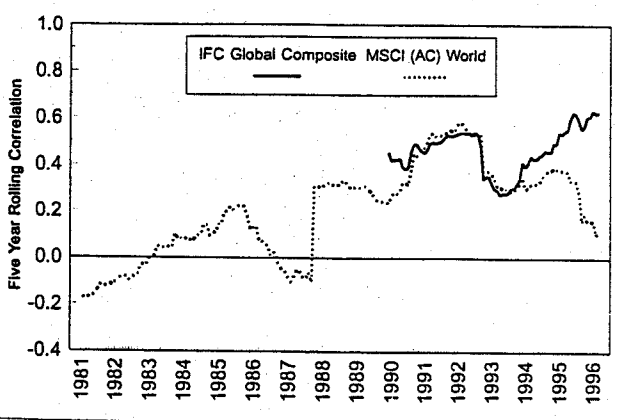
South Korea Correlation



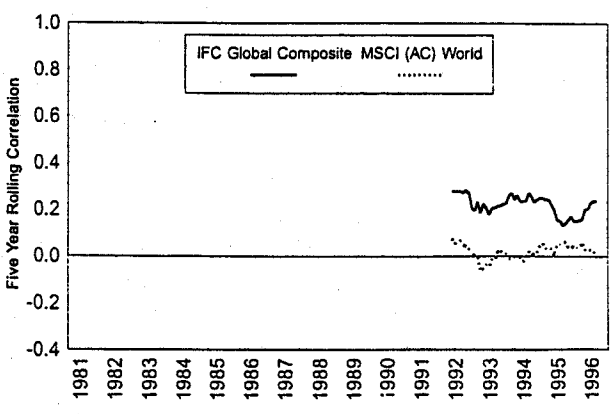
Taiwan Correlation



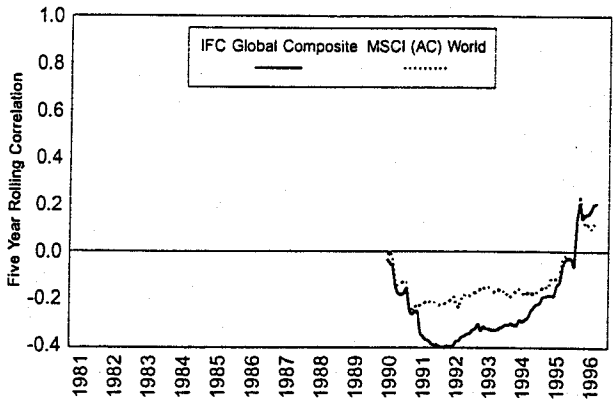
Thailand Correlation



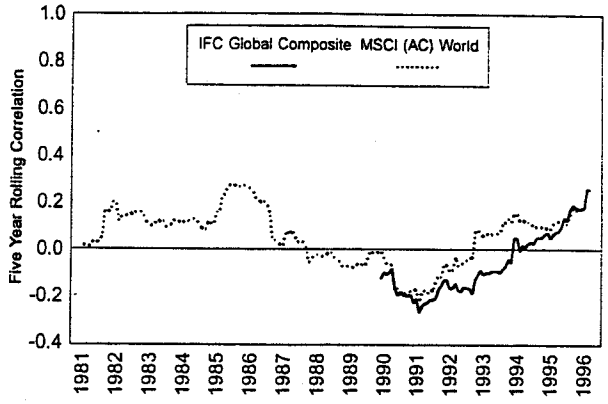
Turkey Correlation



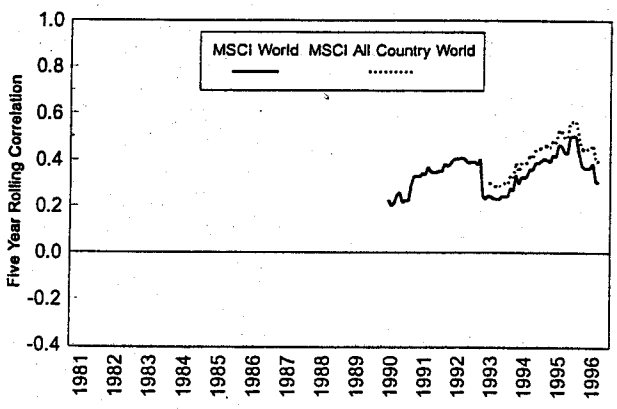
Venezuela Correlation



Zimbabwe Correlation

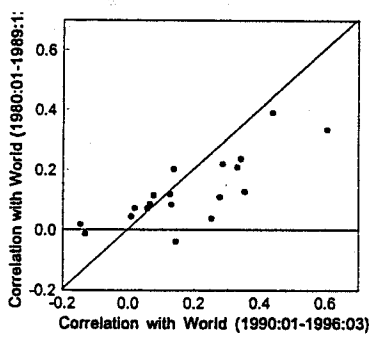


IFC Global Composite Correlation



Emerging Market Correlations 1980s vs. 1990s

IFC Global Indices - Total Returns US$



*Or inception, if later.

Figure 6

Risk and Return

IFCG Indices

Sample: April 1991-March 1996

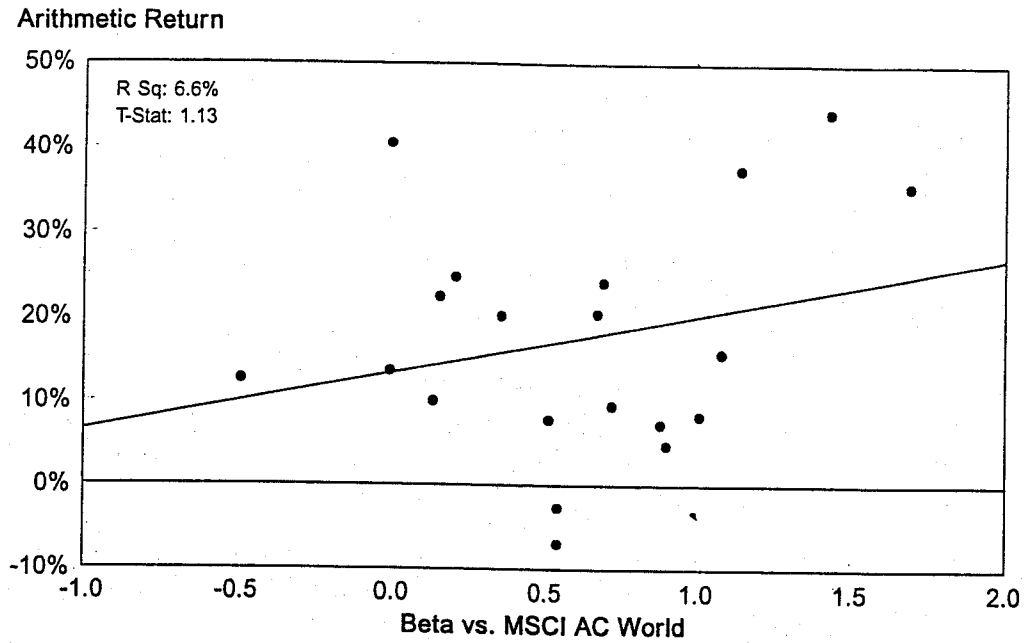


Figure 7

Risk and Return

IFCG Indices

Sample: April 1991-March 1996

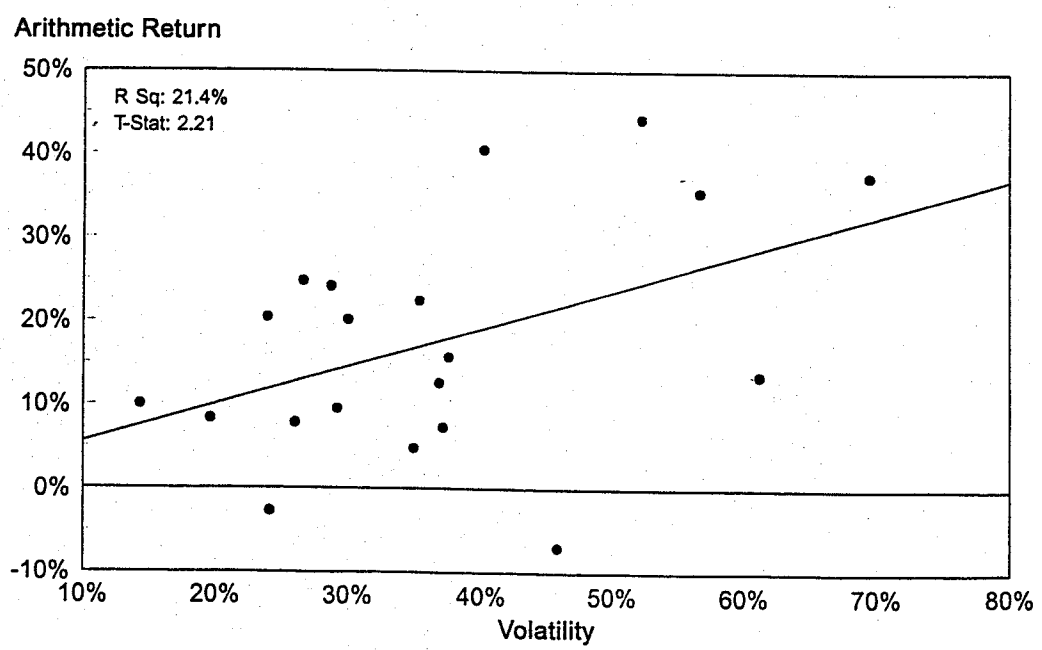


Figure 8
Explaining Returns
IFCG Indices
Sample: April 1991-March 1996

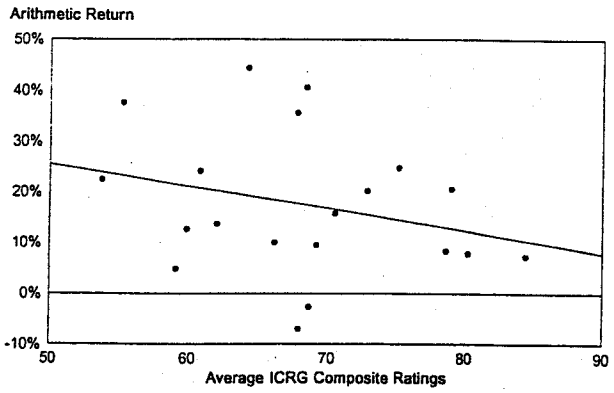


Figure 8
Explaining Volatility
IFCG Indices
Sample: April 1991-March 1996

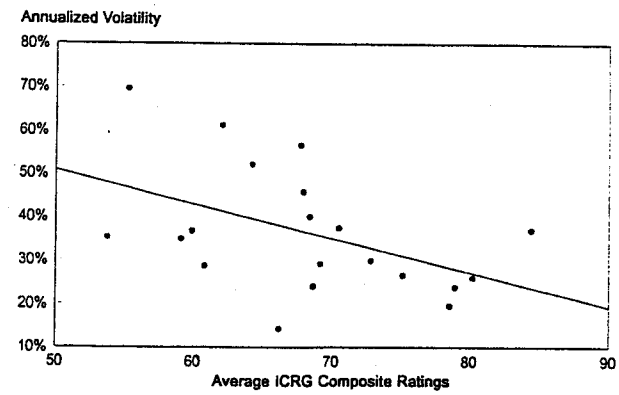


Figure 8
Explaining Skewness
IFCG Indices
Sample: April 1991-March 1996

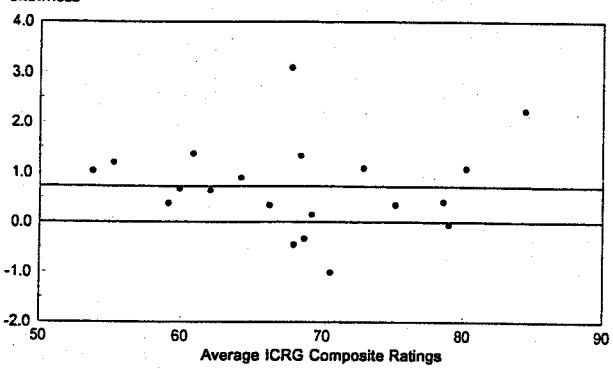


Figure 8
Explaining Kurtosis
IFCG Indices
Sample: April 1991-March 1996

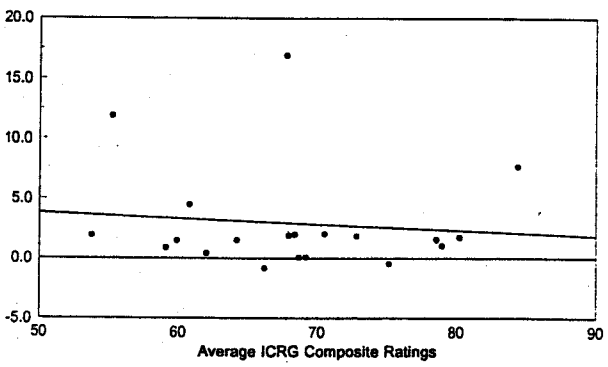


Figure 8
Explaining Beta
IFCG Indices
Sample: April 1991-March 1996

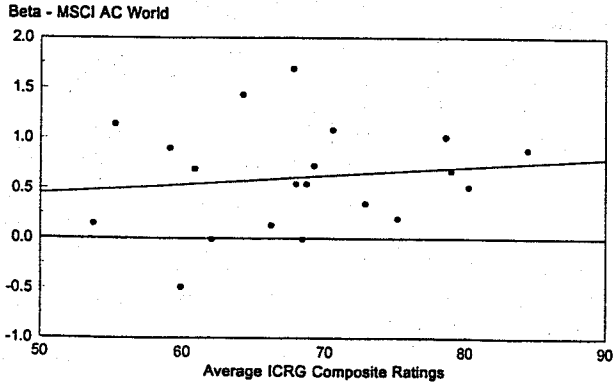


Figure 8
Explaining Correlation
IFCG Indices
Sample: April 1991-March 1996

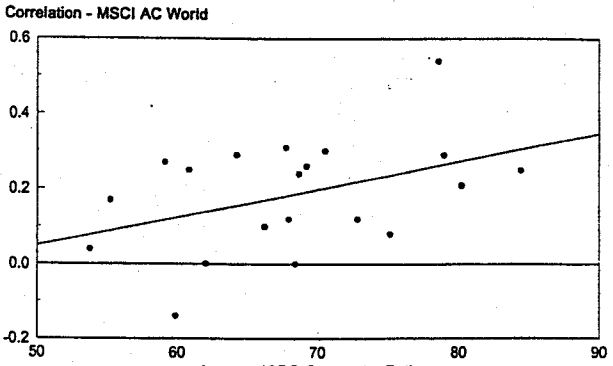


Figure 8
Explaining Returns
IFCG Indices
Sample: April 1991-March 1996

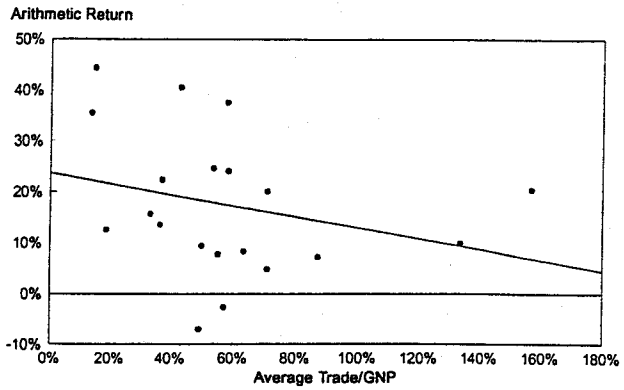


Figure 8
Explaining Volatility
IFCG Indices
Sample: April 1991-March 1996

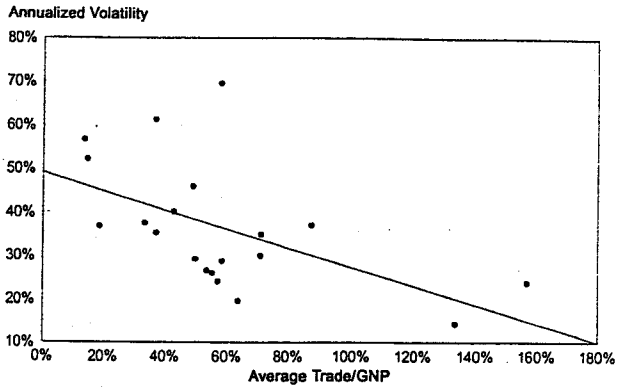


Figure 8
Explaining Skewness
IFCG Indices
Sample: April 1991-March 1996

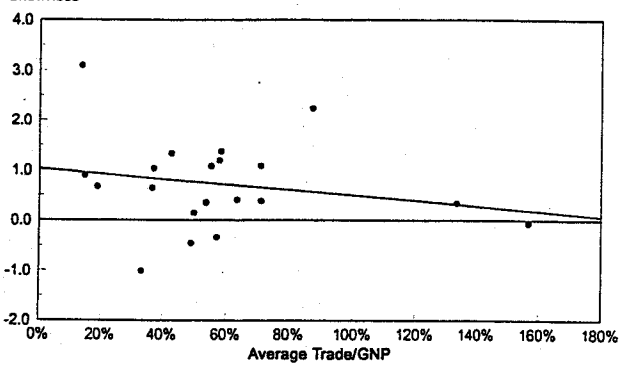


Figure 8
Explaining Kurtosis
IFCG Indices
Sample: April 1991-March 1996

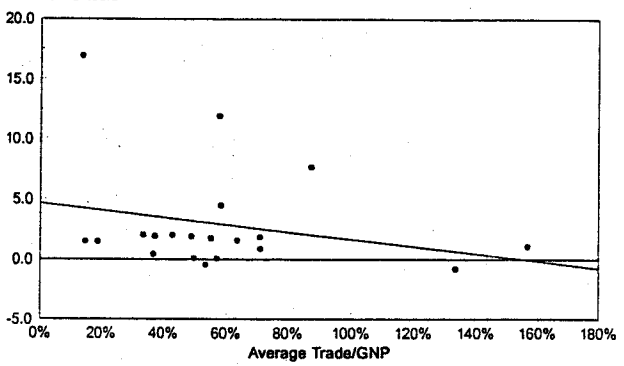


Figure 8
Explaining Beta
IFCG Indices
Sample: April 1991-March 1996

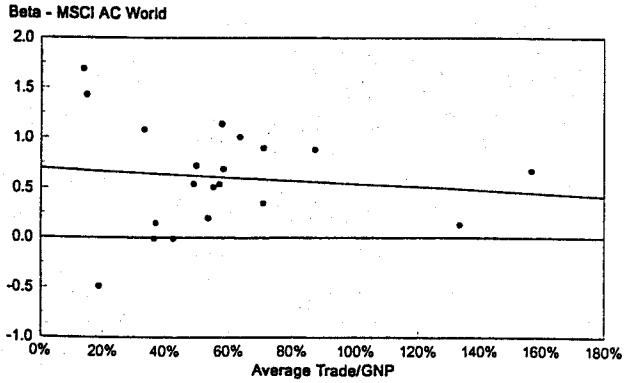


Figure 8
Explaining Correlation
IFCG Indices
Sample: April 1991-March 1996

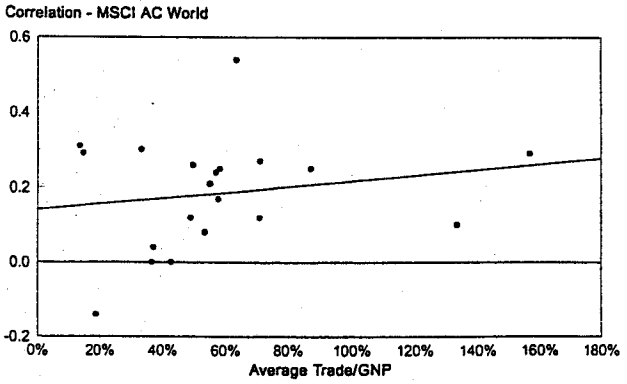


Figure 8
Explaining Returns
IFCG Indices
Sample: April 1991-March 1996

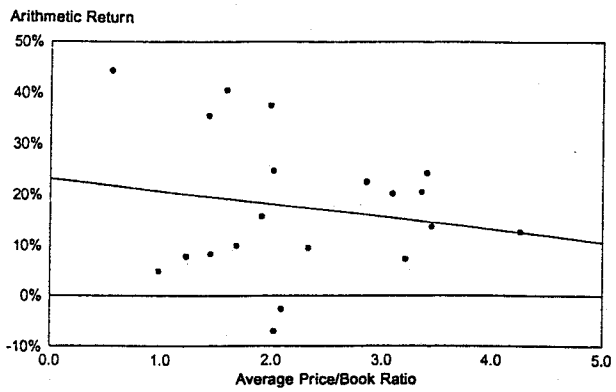


Figure 8
Explaining Volatility
IFCG Indices
Sample: April 1991-March 1996

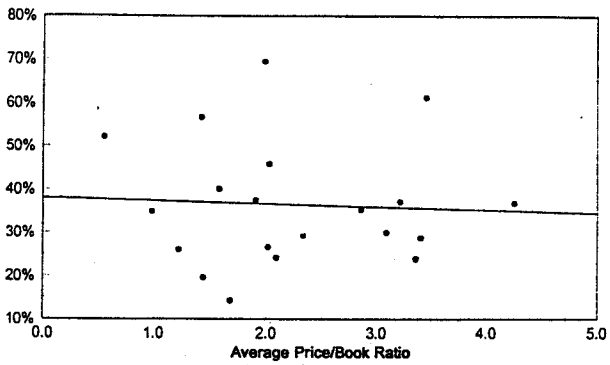


Figure 8
Explaining Skewness
IFCG Indices
Sample: April 1991-March 1996

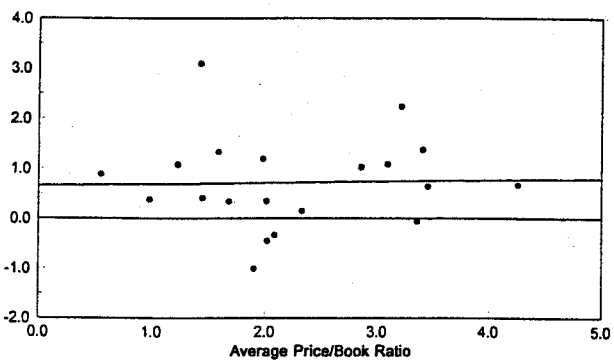


Figure 8
Explaining Kurtosis
IFCG Indices
Sample: April 1991-March 1996

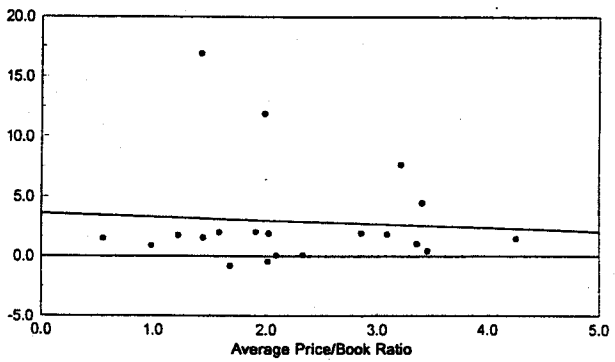


Figure 8
Explaining Beta
IFCG Indices
Sample: April 1991-March 1996

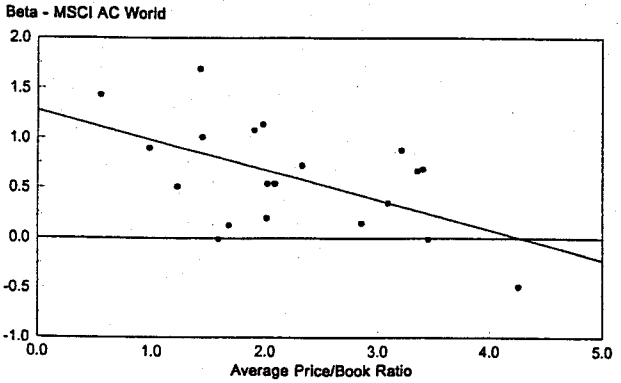


Figure 8
Explaining Correlation
IFCG Indices
Sample: April 1991-March 1996