

Contagion and Risk

Claude B. Erb

Managing Director, *First Chicago NBD Investment Management Company, Chicago IL USA*

Campbell R. Harvey

J. Paul Sticht Professor of International Business, *Duke University, Durham, NC USA*

Research Associate, *National Bureau of Economic Research, Cambridge, MA USA*

Tadas E. Viskanta

Vice President, *First Chicago NBD Investment Management Company, Chicago IL USA*

Abstract

We examine the phenomenon known as contagion where regional markets respond to information in one country. Given that emerging market returns characteristics are much different than developed market returns, we argue that changing correlations are more likely in these markets. We examine two regional crises: Latin America in late 1994 and Asia in late 1997. We argue that these markets' intra-regional correlation have been growing through time. This potentially caused observers to underestimate the crisis correlations if they were estimating correlations from historical data. We examine the time-path of country correlations and relate the regional crises to a variety of country risk measures.

Introduction

Emerging market investments are not for the faint of heart. Investment managers in the early 1990s were touting the extraordinary average performance. As a result, these markets came under close research scrutiny.

Over the past five years, much has been learned about investing in emerging markets. In the early 1990's, research indicated that, on average, emerging markets offered seemingly high returns compared to their developed markets. However, there were some problems with these views. Harvey (1995) pointed out that it is a mistake to look at average arithmetic returns. In his sample, Brazil had an average arithmetic return of 21.7% per annum. Yet a buy and hold strategy returned a meager 3.7%.¹ The high volatility in these markets increases the differences.

The focus on returns was redirected in the mid-1990s to examine emerging markets' role in diversifying global portfolio risk. For example, Harvey (1993, 1995) argued that the main benefit to investing in emerging markets was the low correlation with developed market returns. This low correlation plays the role of creating a natural 'hedge' for the global investor.

Low or negative correlation of emerging market returns with developed market returns means that, on average when the developed market returns are low, the emerging market returns are higher or neutral. Including emerging markets in your portfolio thus has the effect of reducing the overall volatility. This diversification idea is explored in detail in Erb, Harvey and Viskanta [hereafter EHV] (1995).

The correlation argument is reminiscent of the arguments that formed the basis for the growth in global investing in developed markets, see Lessard (1973) and Solnik (1974). The concept was that investment outside your home country would reduce the overall volatility of a global portfolio.

We have learned much about correlation and its impact on global portfolios. In particular, EHV (1994, 1995), show that correlation varies depending on both the state of economy and the state of the equity markets in each country. Specifically, when the U.S. economy is in recession, correlations between developed equity markets and the U.S. are higher. In so much as the recessionary periods are associated with low U.S. equity returns, the higher correlation hurts the U.S. investor. The high correlation means that other developed equity markets are behaving more like the U.S. when the U.S. based investors would prefer them to be different.

The asymmetry in correlations also holds in the other scenario – good times in the U.S. economy. That is, when the U.S. economy is expanding, EHV (1994, 1995) show that correlations are smaller than average. U.S. investors, in good U.S. economic climates,

¹ Suppose the market index rose from 100 to 200 and then fell back to 100. The average arithmetic return is $(100\% - 50\%)/2 = 25\%$. The buy and hold return is 0%.

would hope that their international investments ride the wave of favorable returns. In reality, the returns are lower than expected.

The EHV (1994, 1995) correlation analysis shows the dangers of putting too much weight on the average correlation – the figure most usually cited to describe diversification benefits. EHV show that correlation is higher in recessions and lower in recoveries than the average. In both economic states, investors who had expected the average will be disappointed. EHV (1995) also extend this analysis to bull and bear markets. The same asymmetry of correlation again shows up. In bear markets, correlations are higher; in bull markets the correlations are lower.

What about emerging markets? EHV (1995) find that emerging markets behave differently through time. While the correlations are very low both among the emerging markets and with developed markets, the pattern of asymmetric correlations is only found in a few of the countries – those that are most likely integrated with world capital markets.

Correlation and market integration is studied in detail in Harvey (1995) and Bekaert and Harvey (1997, 1998a). In particular, Bekaert and Harvey (1997) show that an economy that is financially integrated with world capital markets is more likely impacted by “world events”. As a result, correlation increases. Bekaert and Harvey (1998a) provide a likely date for the market integration process in a number of countries and measure the increase in correlation.

However, there are two other aspects of emerging markets that complicate the diversification argument. The first is the non-normality of equity returns distributions. The second is a different aspect of co-movement – contagion (regional markets responding to regional crises). In our sample, we have two substantial crises: the Mexican crisis in late 1994 and the Thailand crisis in 1997. This paper will explore the implications of the non-normality of the returns and the contagion phenomenon.

Returns Characteristics

Table 1 provides the setting for our analysis. We provide summary statistics for all emerging markets followed by the International Finance Corporation (IFC), the regional indices, as well as a number of developed market benchmarks such as the Morgan Stanley Capital International (MSCI) all countries world index, the MSCI Europe, the MSCI EAFE, MSCI Pacific (without Japan), MSCI Japan and the MSCI US index. All returns are in US dollars, unhedged. We provide summary statistics over the entire period as well as specializing our analysis to the last five years. We choose to report the IFC's "Investibles" index. These data are available from January 1989 and represent stocks that foreigners can purchase.

Table 1 provides both arithmetic as well as geometric (taking compounding into account) average returns. We report a variety of risk measures: standard deviation, skewness (the

chance of an unexpected large positive or negative movement in returns), kurtosis (the likelihood of big returns – positive or negative), as well as the correlation with the world. Our sample ends in March 1998. We also report the most recent (March 1998) Institutional Investor country credit rating, see Shapiro (1998).

First, consider the broad aggregates: the MSCI world and the IFC composite index. Over the entire sample from January 1989, the emerging markets composite index for investibles outperformed the world market return, 7.7% emerging vs. 5.1% world. However, the risk profile is much different. The standard deviation of the world portfolio is 13.3% per annum compared to 20.6% for the emerging markets composite.

The most notable contrast is in the correlations. The correlation between EAFE and the world is 94% and the correlation between the U.S. portfolio and the world is 72% (note that the MSCI world is heavily weighted towards the U.S. and EAFE). The correlation between the world and the IFC emerging markets composite for investibles is a more modest 53%.

Notice the substantial diversity when examining the individual markets. Over the entire sample, there is only one country with a lower standard deviation than the emerging markets composite (Jordan).² There were nine countries that had more than double the volatility of the IFC composite. This is a demonstration of the low correlation of the intra-emerging market returns.

The last five years provides an interesting contrast. Notice that the correlation of the IFC composite with the world index is much higher, 62%. While the standard deviation of the returns is lower, the average returns are much lower, reflecting the impact of the two regional crises.

Table 1 also provides some information on credit ratings of individual countries. The most recent ratings for the U.S. and Japan are 92.6 and 90.8, respectively. The highest possible rating is 100. The ratings of the emerging markets range from 15.2 (Nigeria) to 75.5 (Taiwan). This analysis suggests that the average level of country risk is sharply higher in emerging markets.

Bekaert, Erb, Harvey and Viskanta (1998) show that low credit ratings are often associated with non-normalities in returns. This is indeed the case in these data. Consider the range of estimates for skewness and kurtosis over the past five years for the emerging markets. These estimates sharply contrast with those obtained with the developed markets. Next, we will examine these non-normalities in more detail.

The Distribution of Emerging Market Returns

In quantitative portfolio management, we usually think of achieving the highest possible expected return for some level of risk. Risk is usually measured by the standard deviation

² Egypt has a lower volatility also, however, we only have 14 monthly observations for this country.

or volatility of the portfolio returns, as well as the covariance of the portfolio with a benchmark. This analysis is appropriate when portfolio returns can be completely characterized by the mean and standard deviation. However, we know that emerging market returns cannot be so simply described.

It is reasonable to assume that investors have preferences over skewness and kurtosis. Consider skewness. A negative skewness implies that there is a larger than usual (normal) chance of a big negative returns realization. Investors do not like negative skewness. On the other hand, investors like positive skewness (greater than normal chance of a large positive realization). It makes sense that investors take skewness into account when making portfolio decisions.

Figure 1 provides a graphical analysis of non-normalities in a sample of the emerging markets that we examine. Overlaid on each graph is the frequency of return realizations that one would expect if the logarithmic returns followed a normal distribution.

In Figure 1a, the distribution of Mexican returns is presented. These returns appear highly non-normal. There are too many small returns (relative to a normal) and a large number of big negative returns. Using the data from 1981, there are six months where returns of greater than -35% were realized (February 1982, October 1982, October 1987, November 1987, December 1994 and January 1995.) . If the Mexican returns were generated from a normal distribution, we would expect perhaps one negative return of this magnitude.

The next three panels examine three Asian countries: Thailand, Malaysia, and Korea. Thailand is similar to Mexico with some extreme negative observations. There are five observations which have a return of -25% or less (two of which are August and October 1997). On the positive side there are three months that delivered more than 28% return (including February 1998). All of these months deviate from what would be expected if these returns were described by a normal distribution. The graphical analysis for Korea and Malaysia reveal similar patterns. There are persistent deviations from what is expected with a normal distribution. In both countries, there are extreme negative and extreme positive observations. Consistent with the other emerging markets, there are more extreme negative returns than positive returns.

For comparison, we also include on the same scale the MSCI U.S. return distribution. In this analysis, there is a single observation, October 1987, which lies outside what we would expect from a normal distribution at the tails. This graph is also useful in demonstrating the difference in standard deviations in emerging and developed markets. For the U.S. and assuming a normal distribution, one standard deviation below the mean to one standard deviation above the mean [0.7% to 25.1%] covers 66% of all realizations [standard deviation is 12.2% from the sample beginning in January 1989]. For Mexico and assuming a normal distribution, one standard deviation below the mean to one standard deviation above the mean [-16.4% to 52.2%] also covers 66% of all realizations [standard deviation is 34.3%]. Even though the normal distribution does not completely characterize the returns in Mexico, it is useful in giving a sense of the greater volatility risk that one assumes by investing in this market.

The Diversification Benefit

We explore in greater detail the diversification effect of emerging markets investments in Table 2. EHV (1995) calculates portfolio statistics based on all the periods when U.S. returns are negative. Table 2 presents a different method. We classify markets as “bull” or “bear” markets based on the MSCI U.S. index. Examining cumulative returns, we identify periods of at least a 10% drawdown. The minimum length must be at least three months.

Unfortunately for our analysis (but fortunately for most investors), the U.S. market has experience a long bull run. We are able to classify only 10 months, January 1990-September 1990 as a bear market. There are 101 months that we classify as bull markets.

During the bull period, the average annual return on the U.S. index is 16.3% with a standard deviation of 11.3%. During the bear market period, the average return on the US index is -21.1% with a standard deviation of 17.5% (note that this period excludes the October 1987 market crash). Notice that all of the developed markets are highly correlated with the world index. Also, the phenomena that EHV (1994, 1995) document with asymmetric correlations also holds. The correlations with the world returns are higher in the bear markets. International diversification does not work as well when markets are declining. For example, EAFE and the world have a 98% correlation in U.S. bear markets and a 93% correlation in bull markets.

Now consider the emerging markets. First, focus attention on the markets that have data back to 1989. In bear markets, Argentina, Brazil, Malaysia, the Philippines, Portugal and Turkey had returns worse than the U.S. index return. Chile, Greece, Mexico, Turkey and had more favorable returns.

This analysis suggests that an investor should not expect that investments in emerging markets should payoff when the U.S. markets are declining. Emerging markets are an unreliable hedge for declining world markets.

Two Crises

Table 3 and Figure 2 presents an analysis of both the Latin American crisis and the Asian crisis. The key to this analysis is the implications for the regional markets. This is the so-call 'contagion effect'. Here, we present the returns from the IFC global indices in order to maximize the number of countries covered and to show the impact on both the local and international investors.

The Latin American crisis originated with Mexico in December 1994. In particular, the peso suffered a surprise 34% devaluation in December.³ Figure 2a shows that \$100 invested in Mexico at the beginning of December 1994 declined to about \$37 dollars by March 1995. All but one of the Latin American markets, Colombia, was dragged down with Mexico. Figure 2b shows that much of the decline in Mexico's equity value was attributed to the depreciation of the peso. Interestingly, it is also evident that the currencies of many Latin American countries.

Similar to the Latin American crisis, the Asian crisis was led by the devaluation of one country's currency, the Thai Baht. However, in contrast to the Latin American crisis, some countries fared more poorly than Thailand. This is evident in Figure 2c. Notice that \$100 invested in June of 1997 in Indonesia declines to a mere \$10 by January 1998. In contrast, the same investment fell to \$30 in Thailand. The only country that is relatively immune to the regional problems is China.

The Asian crisis had more widespread impacts on currency valuation. Figure 2d shows that many more countries' currencies severely declined in value. This is consistent with the Asian crisis being a truly regional crisis (many countries with similar problems). In contrast, the main problem country in Latin America was Mexico.

Table 3a presents a quantitative analysis of the Latin American returns. Contrast the intra-country correlations before the crisis period with during the crisis period. One might think that the regional correlations are much higher during the crisis than before. For example, the average correlation of Mexico with its neighbors was 28.8% three years before the crisis. This correlation is basically unchanged at 25.9 % during the crisis. Interestingly, in the post crisis period, the correlations are much higher. The average correlation of Mexico with its neighbors is 41.1% in the six months following the crisis period.

Table 3b presents a similar analysis of the Asian countries. Unfortunately we do not have a post crisis period in our data. However, consider the contrast between the pre-crisis correlations and the during crisis correlations. For example, in the three years prior to the crisis, the average correlation between Thailand and its neighbors was 24.1%. During the crisis the correlation rises to 43.1%. If we exclude China from the analysis, the average correlation is 53.0% during the crisis.

Time-Varying Correlations

Figure 4 presents 3-year rolling correlations of the IFC Latin America regional index return with the U.S. index return. We also present the correlations between the U.S. and the IFC Asia regional. At the beginning of the sample, the correlations hover around 0.40.

³ Bekaert and Harvey (1998b) provide a chronology of important economic and political events in 20 emerging markets.

Notice that the correlation drop sharply in October 1990. This coincides with the date that the October 1987 observation is excluded in the three-year rolling correlation. The exclusion of this single observation reduces correlation from 0.40 to about 0.15.

The correlations for the Latin American index bottom out (near zero) in late 1993. Beginning in 1994, the correlations steadily increase through time. Remarkably, the correlations appear impervious to the Latin American crisis in December 1994. The most recent correlation is around 0.55.

The correlations for the Asian index follow broadly similar patterns to the Latin American index. One difference is that in the 1992-94 period, the Asian indices had much higher correlation with the U.S. Similar to the Latin American index, the Asian correlation has increased in recent years. The Asian crisis had some impact on the correlation (reducing the correlation from 0.48 to 0.42). However, the current correlation is back at the 0.47 level.

Figure 5a examines the cross-correlations of Mexico with its Latin American neighbors: Argentina, Chile, Peru, Brazil, Colombia and Venezuela. We also present the Latin American index, as the U.S. index returns correlations.

Similar to Figure 4, we can observe a shift in the correlations between October 1987 and September 1990 which is due to a single observation. Controlling for this shift, the broad patterns in Figure 5a suggests that correlations have been increasing, at least since 1988. There are some dramatic examples. The correlation between Mexico and Brazil in mid-1987 is only -0.40. By the end of the sample, the correlation increases to 0.75. Similarly, the correlation of Mexico and Argentina was 0.10 in mid-1987 and has increased to 0.62. There is a steady increase in correlation with Chile. There are no particular patterns for Colombia or Venezuela. The very top curve is the correlation with the Latin America index (which has a substantial weighting for Mexico).

For our analysis, the most interesting item is that the pattern of increased correlation among Mexico and its neighbors is not simply a result of a crisis. There has been a steady pattern since the mid-1980s of increasing correlations. Indeed, if there is anything remarkable during the crisis period, it is that the correlations for two of the countries: Venezuela and Colombia drop. The unconditional three-year rolling correlation analysis does not support the idea of contagion. Correlations were increasing well before the crisis and continued to increase after the crisis.

Figure 5b presents a similar analysis for Thailand. Correlations are presented for Thailand versus China, Indonesia, the Philippines, South Korea, Hong Kong, Malaysia, Singapore and Taiwan.

There are a number of broad similarities between the Mexican correlations and the Thai correlations. First, the unconditional rolling correlations can be significantly influenced by a single observation. We see the same sensitivity to the October 1987 observation. However, in this figure, there are some additional influential observations.

The main similarity is the pattern of increased correlation through time. The correlation between Thailand and Korea has increased from -0.42 in mid-1986 to 0.30 at the beginning of 1997. The correlation sharply increases in October 1997 reflecting the onset of the crisis and attains a level of 0.55 by March 1998.

While there is a clear indication here that the Thai and Korean correlation increased as a result of the crisis, this is not the case with some other countries. For example, Malaysia correlation with Thailand was 0.46 in late 1987 and rose steadily to 0.71 in December 1996. The correlation showed a small decline in the 15 months to a level of 0.63 in March 1998. The impact of the crisis on the correlations is unremarkable. Similarly, the correlation with the Philippines was 0.09 in December 1987 and rose to 0.79 by December 1996. The correlation declines to a 0.58 by March 1998. Indonesia follows a similar pattern. With a shorter sample, the correlation in December 1992 is 0.40. The correlation rises to 0.72 in December 1996. It then falls to 0.42 by March 1998. Hong Kong look very similar to Indonesia.

The correlation between Thailand and Singapore is fairly steady during the sample. In December 1987, the correlation is 0.58 and by December 1996 the correlation was 0.69. The correlation has declined during the crisis year to 0.43. The decline in correlation is even more dramatic for some other countries. For example, the correlation with Taiwan is 0.57 in December 1987 and 0.55 in November 1996. Negative performance in the Taiwan market in December 1996 drives the correlation much lower. While there is some impact of the crisis on the correlations, the correlation on March 1998 is on 0.31.

The shortest sample we have is for China. The correlations are very low for China. Given that China was relatively immune to the crisis, the correlations between Thailand and China became more negative during the crisis period.

We investigate one additional measure of cross-sectional correlation. In any particular month we look at the country returns in either Latin America or Asia. We report the ratio of the maximum of the number of countries who experienced a positive return and the number of countries that experienced a negative return divided by the number of countries. If all countries move in the same direction (either positive or negative), this measure equals one. If there is equal dispersion up and down, the ratio equals .5. A higher ratio suggests that the cross-sectional correlation is increasing. The advantage of this measure is that it is a point-wise estimate of cross-sectional correlation, i.e. you need only a single month of data to calculate - not three years of data.

Figure 6a suggests that there is a trend to higher cross-sectional correlations in Latin America. The cross-correlation index is about 0.65 in the early 1980s and rises to the 0.80 level by the mid-1990s. The crisis in Latin America has minimal impact on this index. Figure 6b shows some similar analysis of the Asian countries. Here, it is less obvious that the correlations have increased through time. Perhaps the most remarkable insight from this graph is the absence of a spike in this measure during the Asian crisis.

The following is the message of this analysis. Intra-regional correlations in both Latin America and Asia have been increasing through time. Likely explanations for the increased correlations are the economic and trade linkages of these economies and their growing common exposure to the world economy as they open up their economies and rely more heavily on the trade sector.

Given the trend in correlations through time, a historical estimate of correlation is likely to underestimate the true correlation. As a result, part of the increase in correlation during the crises reflected the historical trends. Furthermore, in many countries, the correlations did not increase during the crises - indeed, some experienced sharp decreases.

Country Risk Measures During the Crises

Table 4 and Figure 7 provides an analysis of country risk during the crisis period. We examine six measures of country risk: Institutional Investor's semi-annual country credit rating, Euromoney's semi-annual country credit rating, and the International Country Risk Guide's (ICRG) monthly Political, Economic, Financial and Composite ratings.

Table 4a presents the country risk analysis for Latin American countries. Focus on the ICRG Composite rating panel. The rating for Mexico drops sharply from 73.5 in December 1994 to 67.0 in January. Interestingly, only one other Latin American country, Venezuela experienced a decline in January 1995, and it was a minor decline. By March 1995, Mexico's rating had dropped to 66.0. The perceptions of increased risk had spread to four other Latin American countries by then. Figure 7a shows the time series of risk measures for the Latin American countries. While there is a clear decline in Mexico, the other countries seem resilient.

Table 4b examines the Asian countries. Again, consider the ICRG Composite index. The rating for Thailand in August 1997 is 81.0. This sharply drops to 71.3 in September 1997. By January 1998, the rating had plummeted to 60.8. In contrast to the Latin American crisis, six other countries experienced declining ratings in September 1997 (only China and Singapore's ratings did not change). This also holds for January 1998. All countries, except China and Singapore experienced declining ratings.

The patterns in the country risk ratings are much different in the Asian crisis than the Latin American crisis. Figure 7b shows that the perceptions of risk fundamentally changed in a number of Asian countries after the start of the crisis. The question is how does this translate into perceptions of risk and return?

Crises and Expected Risk Premia

Table 5 presents the analysis of what the crises meant in terms of increased risk premia that investors demand for investing in Latin American and Asian countries. The expected

premium is derived from regressing the average country returns in U.S. dollars in excess of a U.S. Treasury bill return on the natural logarithm of the Institutional Investor country credit rating and the contemporaneous change in the Institutional Investor country credit rating. The change in the rating provides information about the change in the expected excess returns (or the risk premium). We also provide an analysis of the expected volatility and correlation with world market returns.

For the Latin American crisis, there is a sharp increase in the risk premium for Mexico, 130 basis points. However, there is little evidence of a major change in the risk premium for the other Latin American countries. It is also the case that expected volatility increases and correlations versus the world decrease.

In contrast, the Asian crisis had a much more widespread impact on expected premiums. The risk premium for investing in Thailand increases by 230 basis points. Six other countries also experience increased premiums. In addition, their expected volatility increases and correlations versus the world decrease.

The model used is a simple one, but does capture the essential facts of country risk. As perceptions of country risk increase, that is ratings decrease, expected returns and volatility increase, and expected correlations with the world decrease. One could explain this by noting that idiosyncratic risk for these countries has increased.

Conclusions

We have explored three unique aspects of risk in emerging markets. First, returns are non-normal. As a result, the standard tools of portfolio and risk management are not appropriate. For example, if a value at risk (VAR) analysis was calibrated assuming a normal distribution for an emerging equity return, it would miss important scenarios (large negative returns) because of the assumption of a normal distribution.

The second aspect is the hedging ability of emerging markets for developed market investors. We argue that there does not appear to be a free lunch. Investors should not count on these markets to outperform developed markets when developed markets are in bear phases.

Finally, we explored the idea of contagion - bad news in one country that spreads to an entire region. Our results suggest that we should be careful in drawing generalizations about one regional crisis and applying it to the next. We argue that the Mexican crisis was more a one-country crisis and the Asian crisis involved multiple countries with similar problems. Caution needs to be exercised in concluding that the crisis led to higher intra-regional correlations. We argue that there is a trend of increasing integration within these regions and subsequent increased correlations. Backward looking historical estimates are likely to underestimate the true correlation. While the crisis period led to increases in intra-regional correlations in both regions, some countries were more

impacted than others. The increased intra-regional movements is most clear in Asia. However, it is somewhat problematic to call this contagion. While the crisis started in Thailand, the countries impacted had similar fundamental problems to Thailand.

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Table 1

Historical Summary Statistics:

Investables

Index	Data Start	Inst. Investor Ctry Cr Rating	Entire Period						Last Five Years					
			Aithmetic Return	Geometric Return	Standard Deviation	Skewness	Kurtosis	Correlation AC World	Aithmetic Return	Geometric Return	Standard Deviation	Skewness	Kurtosis	Correlation AC World
			Return	Return	Deviation	Skewness	Kurtosis	AC World	Return	Return	Deviation	Skewness	Kurtosis	AC World
MSCI AC World	Jan-89		6.0%	5.1%	13.3%	-0.25	0.60	1.00	11.1%	10.5%	11.0%	-0.56	-0.04	1.00
MSCI EAFE	Jan-89		1.9%	0.4%	17.2%	0.02	0.54	0.94	7.9%	7.0%	13.5%	-0.23	-0.01	0.91
MSCI Europe	Jan-89		11.0%	9.8%	14.8%	-0.31	0.52	0.84	16.6%	15.8%	11.8%	-0.04	-0.10	0.83
MSCI Pacific X-Japan	Jan-89		6.2%	4.3%	19.7%	-0.08	2.91	0.63	5.2%	2.6%	22.8%	-0.06	2.82	0.72
MSCI Japan	Jan-89	90.8	-8.0%	-11.3%	25.6%	0.45	0.83	0.77	-5.2%	-7.6%	22.1%	0.36	0.62	0.65
MSCI USA	Jan-89	92.6	13.7%	12.9%	12.2%	-0.17	0.46	0.72	16.9%	16.2%	11.0%	-0.37	-0.23	0.77
IFCG Composite	Jan-89		3.5%	1.5%	20.3%	-0.11	1.24	0.47	3.4%	1.6%	19.1%	0.08	2.33	0.61
IFCI Composite	Jan-89		9.8%	7.7%	20.6%	-0.13	1.15	0.53	3.9%	1.7%	20.9%	-0.38	1.33	0.62
IFCI Latin America	Jan-89		23.5%	18.1%	32.5%	0.00	0.72	0.30	10.3%	6.5%	27.1%	-0.64	0.47	0.52
IFCI Asia	Jan-89		2.7%	-0.5%	25.2%	-0.12	1.95	0.52	-2.6%	-6.6%	28.5%	0.15	1.82	0.54
IFCI Europe/Mideast	Jan-89		8.3%	3.6%	31.4%	0.86	2.08	0.22	11.3%	8.3%	24.7%	0.42	1.47	0.32
IFCI Argentina	Jan-89	41.6	55.9%	24.9%	89.0%	3.25	19.47	0.00	15.8%	11.0%	30.9%	-0.29	0.38	0.58
IFCI Brazil	Jan-89	38.7	42.0%	16.1%	71.2%	0.50	3.15	0.26	29.7%	22.9%	37.4%	0.57	2.77	0.38
IFCI Chile	Jan-89	63.2	23.1%	19.7%	26.0%	0.32	-0.24	0.16	10.3%	7.4%	24.5%	0.25	-0.07	0.39
IFCI Czech Republic	* Jan-94	60.7	-25.6%	-29.6%	26.4%	-0.47	-0.61	0.19	-25.6%	-29.6%	26.4%	-0.47	-0.61	0.19
IFCI China	Jan-93	57.6	-5.7%	-15.1%	43.1%	0.14	0.56	0.18	-11.0%	-19.9%	41.8%	0.14	0.95	0.22
IFCI Colombia	Feb-91	46.9	28.8%	23.0%	35.2%	1.37	2.85	0.01	12.3%	9.1%	25.6%	0.27	-0.46	-0.01
IFCI Egypt	* Feb-97	41.3	-17.5%	-19.0%	16.8%	-0.05	-0.99	-0.04	-17.5%	-19.0%	16.8%	-0.05	-0.99	-0.04
IFCI Greece	Jan-89	53.7	22.9%	15.1%	42.2%	2.01	6.31	0.16	15.1%	12.0%	25.2%	1.07	2.97	0.41
IFGC Hungary	Feb-93	52.2	31.1%	21.2%	47.5%	1.81	5.79	0.40	35.4%	25.2%	48.2%	1.76	5.53	0.42
IFCI India	Feb-93	46.5	-0.3%	-4.5%	29.6%	0.48	0.26	0.19	4.3%	0.3%	29.0%	0.57	0.21	0.26
IFCI Indonesia	Oct-90	49.9	-10.0%	-19.0%	40.3%	-0.76	1.91	0.37	-8.9%	-19.1%	42.2%	-1.15	2.39	0.47
IFCI Jordan	Jan-89	35.5	7.0%	5.4%	17.8%	0.39	1.99	0.28	9.1%	8.1%	14.5%	0.83	0.78	0.24
IFCI Malaysia	Jan-89	64.5	4.6%	-1.0%	33.7%	0.86	7.90	0.44	-1.5%	-9.7%	41.5%	1.02	6.18	0.46
IFCI Mexico	Jan-89	45.2	24.1%	17.9%	34.3%	-0.79	1.55	0.34	5.3%	-1.9%	36.6%	-1.11	1.77	0.46
IFCI Morocco	* Feb-97	41.5	23.3%	21.5%	18.9%	0.38	2.73	-0.35	23.3%	21.5%	18.9%	0.38	2.73	-0.35
IFCI Pakistan	Apr-91	27.5	15.9%	8.7%	38.8%	0.52	1.09	0.13	6.2%	0.4%	34.8%	0.61	0.20	0.18
IFCI Peru	Jan-93	33.5	16.4%	11.4%	32.6%	0.75	1.81	0.32	18.0%	13.0%	32.4%	0.84	1.95	0.31
IFCI Philippines	Jan-89	43.3	6.6%	-0.1%	36.9%	0.18	1.47	0.33	1.4%	-4.8%	36.3%	0.83	2.63	0.43
IFCI Poland	Jan-93	51.9	55.5%	35.1%	70.1%	1.95	7.52	0.36	54.5%	33.3%	71.5%	1.94	7.27	0.35
IFCI Portugal	Jan-89	72.7	11.7%	9.2%	23.1%	0.88	2.62	0.56	24.8%	22.6%	20.3%	0.66	1.39	0.57
IFCI Russia	* Feb-97	31.2	13.7%	-1.5%	55.3%	-0.70	-0.44	0.50	13.7%	-1.5%	55.3%	-0.70	-0.44	0.50
IFCI Slovakia	* Feb-97	43.1	-31.6%	-34.8%	23.6%	-0.70	-0.62	-0.35	-31.6%	-34.8%	23.6%	-0.70	-0.62	-0.35
IFCI South Africa	Jan-93	46.5	15.0%	12.5%	22.3%	0.30	1.97	0.40	12.5%	9.9%	22.6%	0.38	2.03	0.40
IFCI South Korea	Feb-92	64.4	-10.4%	-18.7%	42.4%	2.17	14.70	0.19	-12.4%	-21.4%	44.4%	2.28	15.37	0.23
IFCI Sri Lanka	Jan-93	33.6	5.2%	0.7%	30.0%	-0.06	-0.47	0.29	6.7%	2.2%	30.2%	-0.06	-0.48	0.29
IFCI Taiwan	Jan-91	75.5	8.8%	2.6%	37.0%	1.69	5.04	0.36	10.4%	4.5%	36.4%	1.88	7.11	0.40
IFCI Thailand	Jan-89	52.3	2.0%	-5.5%	38.4%	0.12	1.83	0.37	-14.3%	-24.3%	44.3%	0.44	1.91	0.49
IFCI Turkey	Sep-89	37.8	26.5%	7.7%	64.9%	1.11	1.82	0.06	34.9%	19.0%	58.8%	0.82	1.62	0.09
IFCI Venezuela	Feb-90	36.1	42.4%	24.1%	61.3%	0.48	1.82	-0.07	26.1%	13.0%	50.0%	-0.39	1.56	0.16
IFCI Zimbabwe	* Aug-93	33.6	26.8%	19.0%	38.4%	-0.66	3.09	0.13	26.8%	19.0%	38.4%	-0.66	3.09	0.13

US\$ returns in excess of one month US Treasury bill

Returns and volatility are annualized.

*Countries have less than five years of data.

Table 2

US Bull & Bear Markets

Index	Data Start	US Bull Markets					US Bear Markets				
		Arithmetic Return	Geometric Return	Standard Deviation	Correlation with World	Months in Sample	Arithmetic Return	Geometric Return	Standard Deviation	Correlation with World	Months in Sample
MSCI AC World	Jan-89	9.3%	8.6%	11.5%	1.00	101	-28.1%	-31.0%	23.9%	1.00	10
MSCI EAFE	Jan-89	5.0%	3.9%	14.9%	0.93	101	-28.9%	-34.0%	32.4%	0.98	10
MSCI Europe	Jan-89	12.9%	11.9%	13.7%	0.83	101	-8.7%	-11.3%	23.4%	0.90	10
MSCI Pacific X-Japan	Jan-89	8.6%	6.6%	19.6%	0.64	101	-17.5%	-19.4%	19.7%	0.74	10
MSCI Japan	Jan-89	-4.7%	-7.3%	22.8%	0.72	101	-41.0%	-51.4%	46.1%	0.92	10
MSCI USA	Jan-89	17.0%	16.3%	11.3%	0.72	101	-19.5%	-21.1%	17.5%	0.68	10
IFCG Composite	Jan-89	9.1%	7.5%	18.2%	0.45	101	-53.1%	-59.3%	32.0%	0.43	10
IFCI Composite	Jan-89	11.2%	9.2%	20.1%	0.50	101	-4.2%	-7.4%	26.2%	0.72	10
IFCG Latin America	Jan-89	25.6%	20.2%	32.6%	0.22	101	1.8%	-3.2%	33.0%	0.72	10
IFCG Asia	Jan-89	6.2%	3.2%	24.2%	0.45	101	-32.1%	-37.9%	33.1%	0.76	10
IFCI Europe/Mideast	Jan-89	5.2%	0.8%	30.4%	0.28	101	39.2%	31.5%	41.2%	0.16	10
IFCI Argentina	Jan-88	64.1%	34.5%	89.9%	-0.02	101	-27.2%	-71.9%	79.9%	-0.06	10
IFCI Brazil	Jan-88	50.3%	32.2%	61.0%	0.31	101	-42.7%	-146.7%	141.1%	0.10	10
IFCI Chile	Jan-88	24.3%	20.8%	26.5%	0.19	101	10.9%	9.0%	21.1%	-0.05	10
IFCI Czech Republic	Jan-94	-25.6%	-29.6%	26.4%	0.19	50					
IFCI China	Jan-93	-5.7%	-15.1%	43.1%	0.18	63					
IFCI Colombia	Feb-91	28.8%	23.0%	35.2%	0.01	85					
IFCI Egypt	Feb-97	-17.5%	-19.0%	16.8%	-0.04	13					
IFCI Greece	Jan-88	13.8%	8.2%	34.9%	0.31	101	115.0%	84.9%	85.5%	0.04	10
IFCG Hungary	Feb-93	31.1%	21.2%	47.5%	0.40	63					
IFCI India	Feb-93	-0.3%	-4.5%	29.6%	0.19	63					
IFCI Indonesia	Oct-90	-8.6%	-17.6%	40.3%	0.41	89					
IFCI Jordan	Jan-88	7.9%	6.5%	17.1%	0.31	101	-2.3%	-4.9%	24.4%	0.20	10
IFCI South Korea	Jan-88	-10.4%	-18.7%	42.4%	0.19	74					
IFCI Malaysia	Jan-88	6.7%	1.3%	33.7%	0.40	101	-17.4%	-23.5%	35.6%	0.77	10
IFCI Mexico	Feb-97	24.4%	18.0%	34.6%	0.27	101	21.2%	16.3%	32.6%	0.91	10
IFCI Morocco	Apr-91	23.3%	21.5%	18.9%	-0.35	13					
IFCI Pakistan	Jan-93	15.9%	8.7%	38.8%	0.13	84					
IFCI Peru	Jan-88	16.4%	11.4%	32.6%	0.32	63					
IFCI Philippines	Jan-93	18.9%	13.0%	34.7%	0.31	101	-117.3%	-133.2%	40.8%	0.19	10
IFCI Poland	Jan-88	55.5%	35.1%	70.1%	0.36	63					
IFCI Portugal	Feb-97	16.7%	14.1%	23.2%	0.55	101	-38.8%	-40.9%	17.2%	0.71	10
IFCI Russia	Feb-97	13.7%	-1.5%	55.3%	0.50	13					
IFCI Slovakia	Jan-93	-31.6%	-34.8%	23.6%	-0.35	13					
IFCI South Africa	Feb-92	15.0%	12.5%	22.3%	0.40	63					
IFCI Sri Lanka	Jan-93	5.2%	0.7%	30.0%	0.29	63					
IFCI Taiwan	Jan-91	8.8%	2.6%	37.0%	0.36	87					
IFCI Thailand	Jan-88	5.2%	-2.2%	38.4%	0.30	101	-30.3%	-38.1%	39.0%	0.76	10
IFCI Turkey	Sep-88	21.8%	2.8%	65.1%	0.07	93	70.4%	52.9%	64.9%	0.10	10
IFCI Venezuela	Feb-90	15.8%	0.7%	54.3%	0.15	89	305.8%	256.0%	77.2%	-0.47	9
IFCI Zimbabwe	Aug-93	26.8%	19.0%	38.4%	0.13	56					

Data through 1998.03.

US\$ returns in excess of one month US Treasury bill.

Returns and volatility are annualized.

US Bear market: Jan 90-Sep 90

Table 3a

Latin American Contagion

Contagion Effects

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	AC World
Crisis Returns	-17.3%	-27.5%	16.1%	2.8%	-47.8%	0.4%	-13.3%	8.4%
Next Six Months	19.1%	0.2%	-15.2%	-20.7%	1.9%	3.3%	-15.5%	9.3%

Crisis Period: December 16, 1994-June 30, 1995

Next Six Months: July 1, 1995-December 30, 1995

US\$ IFC Global Total Returns

Correlations: Crisis Period

	Argentina	Brazil	Chile	Colombia	Mexico	Peru*	Venezuela	AC World
Argentina	1							
Brazil	0.50	1						
Chile	0.43	0.14	1					
Colombia	0.18	0.28	-0.12	1				
Mexico	0.58	0.28	0.44	-0.05	1			
Peru*	0.53	0.26	0.34	0.29	0.41	1		
Venezuela	0.21	0.38	0.00	0.43	0.10	0.36	1	
AC World	0.50	0.25	0.08	0.20	0.26	0.40	0.26	1

Monthly Returns: December 1991-November, 1994

*Peru starts January 1993

Correlations: Crisis Period

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	AC World
Argentina	1							
Brazil	0.57	1						
Chile	0.62	0.76	1					
Colombia	-0.19	-0.03	0.09	1				
Mexico	0.53	0.51	0.38	-0.32	1			
Peru	0.41	0.52	0.58	-0.19	0.31	1		
Venezuela	-0.02	0.17	0.12	-0.07	0.19	0.07	1	
AC World	0.24	0.12	0.08	-0.39	0.21	0.11	0.18	1

Correlations: Next Six Months

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela	AC World
Argentina	1							
Brazil	0.54	1						
Chile	0.46	0.14	1					
Colombia	0.20	0.03	0.18	1				
Mexico	0.81	0.65	0.29	0.34	1			
Peru	0.55	0.53	0.37	0.24	0.60	1		
Venezuela	-0.14	-0.36	-0.12	-0.13	-0.33	-0.09	1	
AC World	0.56	0.58	0.20	0.25	0.52	0.51	-0.18	1

Table 3b

Asian Contagion

Contagion Effects

	China	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	South Korea	Taiwan	Thailand	AC World
Crisis Returns	-12.7%	-39.5%	-83.9%	-70.4%	-58.1%	-36.9%	-51.4%	-28.7%	-53.1%	0.1%

Crisis Period: June 27, 1997-January 30, 1998

US\$ IFC Global and MSCI (HK, Singapore) Total Returns

Correlations: Three Years Prior

	China	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	South Korea	Taiwan	Thailand	AC World
China	1									
Hong Kong	0.04	1								
Indonesia	0.21	0.47	1							
Malaysia	0.21	0.55	0.56	1						
Philippines	0.01	0.47	0.60	0.52	1					
Singapore	0.07	0.53	0.53	0.51	0.52	1				
South Korea	0.02	0.14	0.01	0.02	-0.03	0.08	1			
Taiwan	0.09	0.15	0.00	0.08	0.14	0.16	-0.01	1		
Thailand	0.05	0.32	0.36	0.38	0.35	0.42	-0.03	0.08	1	
AC World	-0.05	0.43	0.21	0.31	0.19	0.37	0.21	0.07	0.12	1

Weekly Returns: July 1, 1994-June 27, 1997

Correlations: Crisis Period

	China	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	South Korea	Taiwan	Thailand	AC World
China	1									
Hong Kong	-0.26	1								
Indonesia	-0.09	0.34	1							
Malaysia	-0.18	0.37	0.70	1						
Philippines	-0.02	0.53	0.69	0.76	1					
Singapore	-0.39	0.66	0.58	0.71	0.77	1				
South Korea	-0.10	0.13	0.53	0.39	0.43	0.24	1			
Taiwan	-0.15	0.37	0.12	0.38	0.38	0.49	0.08	1		
Thailand	-0.26	0.31	0.57	0.62	0.67	0.57	0.62	0.35	1	
AC World	-0.36	0.70	0.42	0.38	0.54	0.53	0.37	0.48	0.51	1

Table 4a

Country Risk and Crises: Latin America

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela
<i>Institutional Investor Country Credit Rating</i>							
December-94	37.3	30.3	54.9	44.4	46.1	21.0	36.0
January-95	37.3	30.3	54.9	44.4	46.1	21.0	36.0
February-95	37.3	30.3	54.9	44.4	46.1	21.0	36.0
March-95	38.9	33.4	55.6	45.7	46.9	23.7	33.1
April-95	38.9	33.4	55.6	45.7	46.9	23.7	33.1
May-95	38.9	33.4	55.6	45.7	46.9	23.7	33.1
June-95	38.9	33.4	55.6	45.7	46.9	23.7	33.1
July-95	38.9	33.4	55.6	45.7	46.9	23.7	33.1
August-95	38.9	33.4	55.6	45.7	46.9	23.7	33.1
September-95	38.8	34.9	57.4	46.5	41.8	25.8	31.4
October-95	38.8	34.9	57.4	46.5	41.8	25.8	31.4
November-95	38.8	34.9	57.4	46.5	41.8	25.8	31.4
December-95	38.8	34.9	57.4	46.5	41.8	25.8	31.4
<i>Euromoney Country Risk Rating</i>							
December-94	56.2	49.0	70.4	61.0	62.0	41.1	46.6
January-95	56.2	49.0	70.4	61.0	62.0	41.1	46.6
February-95	56.2	49.0	70.4	61.0	62.0	41.1	46.6
March-95	55.5	54.6	75.9	60.9	58.2	40.2	49.4
April-95	55.5	54.6	75.9	60.9	58.2	40.2	49.4
May-95	55.5	54.6	75.9	60.9	58.2	40.2	49.4
June-95	55.5	54.6	75.9	60.9	58.2	40.2	49.4
July-95	55.5	54.6	75.9	60.9	58.2	40.2	49.4
August-95	55.5	54.6	75.9	60.9	58.2	40.2	49.4
September-95	52.1	53.8	75.3	60.9	57.1	41.1	45.2
October-95	52.1	53.8	75.3	60.9	57.1	41.1	45.2
November-95	52.1	53.8	75.3	60.9	57.1	41.1	45.2
December-95	52.1	53.8	75.3	60.9	57.1	41.1	45.2
<i>International Country Risk Guide Composite Rating</i>							
December-94	72.5	67.5	77.5	67.5	73.5	60.5	66.0
January-95	72.5	67.5	78.0	69.0	67.0	60.5	65.5
February-95	72.5	67.5	78.0	69.0	67.0	60.5	65.5
March-95	71.5	66.0	78.5	70.0	66.0	58.0	65.5
April-95	71.0	65.0	79.0	69.5	65.5	57.5	65.5
May-95	70.5	63.5	79.0	69.5	63.5	60.0	66.0
June-95	71.0	63.0	79.5	69.5	64.5	61.0	66.0
July-95	71.5	62.5	79.5	69.5	64.5	61.5	66.0
August-95	71.5	62.5	80.0	69.0	67.0	60.5	66.0
September-95	68.5	62.5	79.5	69.0	67.0	60.0	66.5
October-95	70.0	62.5	79.5	68.0	66.0	60.0	66.5
November-95	71.0	63.5	79.5	68.0	67.0	60.0	66.5
December-95	71.5	63.5	79.5	67.0	68.5	64.5	65.5

Table 4a (cont.)

Country Risk and Crises: Latin America

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela
<i>International Country Risk Guide Political Rating</i>							
December-94	74.0	67.0	73.0	62.0	73.0	57.0	66.0
January-95	74.0	67.0	73.0	63.0	68.0	57.0	66.0
February-95	74.0	67.0	73.0	63.0	68.0	57.0	66.0
March-95	74.0	64.0	74.0	63.0	65.0	52.0	66.0
April-95	74.0	64.0	74.0	63.0	64.0	52.0	66.0
May-95	74.0	63.0	74.0	63.0	64.0	57.0	66.0
June-95	74.0	63.0	75.0	63.0	66.0	57.0	65.0
July-95	75.0	63.0	75.0	63.0	66.0	57.0	65.0
August-95	75.0	63.0	75.0	62.0	67.0	57.0	65.0
September-95	73.0	63.0	75.0	62.0	67.0	56.0	65.0
October-95	74.0	64.0	74.0	60.0	65.0	56.0	65.0
November-95	74.0	64.0	74.0	60.0	65.0	56.0	65.0
December-95	76.0	64.0	74.0	59.0	66.0	60.0	65.0
<i>International Country Risk Guide Financial Rating</i>							
December-94	38.0	37.0	43.0	39.0	41.0	32.0	34.0
January-95	38.0	37.0	43.0	40.0	36.0	32.0	33.0
February-95	38.0	37.0	43.0	40.0	36.0	32.0	33.0
March-95	38.0	37.0	43.0	40.0	36.0	32.0	33.0
April-95	36.0	36.0	43.0	40.0	36.0	31.0	33.0
May-95	36.0	34.0	43.0	40.0	36.0	31.0	33.0
June-95	36.0	34.0	43.0	40.0	36.0	31.0	33.0
July-95	36.0	34.0	43.0	40.0	36.0	31.0	33.0
August-95	35.0	34.0	43.0	40.0	37.0	31.0	33.0
September-95	33.0	34.0	43.0	40.0	37.0	31.0	34.0
October-95	34.0	33.0	43.0	40.0	37.0	31.0	34.0
November-95	35.0	34.0	43.0	40.0	38.0	31.0	34.0
December-95	35.0	34.0	43.0	40.0	39.0	35.0	33.0
<i>International Country Risk Guide Economic Rating</i>							
December-94	32.5	31.0	39.0	33.5	32.5	31.5	32.0
January-95	32.5	31.0	40.0	34.5	30.0	31.5	31.5
February-95	32.5	31.0	40.0	34.5	30.0	31.5	31.5
March-95	31.0	30.5	40.0	36.5	30.5	32.0	31.5
April-95	31.5	30.0	40.5	36.0	30.5	32.0	31.5
May-95	30.5	30.0	41.0	36.0	27.0	32.0	32.5
June-95	31.5	28.5	40.5	35.5	26.5	33.5	33.5
July-95	31.5	27.5	41.0	36.0	26.5	35.0	34.0
August-95	32.5	28.0	41.5	35.5	30.0	33.0	34.0
September-95	30.5	28.0	40.5	36.0	30.0	33.0	34.0
October-95	31.5	28.0	42.0	35.5	30.0	33.0	34.0
November-95	32.5	28.5	42.0	35.5	31.0	33.0	34.0
December-95	32.0	28.5	41.5	35.0	32.0	34.0	32.5

Table 4b

Country Risk and Crises: Asia

	China	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	South Korea	Taiwan	Thailand
<i>Institutional Investor Country Credit Rating</i>									
June-97	58.0	64.9	51.6	67.5	42.3	83.9	71.4	77.1	61.1
July-97	58.0	64.9	51.6	67.5	42.3	83.9	71.4	77.1	61.1
August-97	58.0	64.9	51.6	67.5	42.3	83.9	71.4	77.1	61.1
September-97	57.8	63.9	51.8	66.7	44.3	84.2	69.7	76.7	59.9
October-97	57.8	63.9	51.8	66.7	44.3	84.2	69.7	76.7	59.9
November-97	57.8	63.9	51.8	66.7	44.3	84.2	69.7	76.7	59.9
December-97	57.8	63.9	51.8	66.7	44.3	84.2	69.7	76.7	59.9
January-98	57.8	63.9	51.8	66.7	44.3	84.2	69.7	76.7	59.9
February-98	57.8	63.9	51.8	66.7	44.3	84.2	69.7	76.7	59.9
March-98	57.6	62.9	49.9	64.5	43.3	82.9	64.4	75.5	52.3
<i>Euromoney Country Risk Rating</i>									
June-97	70.5	84.6	71.0	83.3	63.1	96.2	87.0	90.4	77.1
July-97	70.5	84.6	71.0	83.3	63.1	96.2	87.0	90.4	77.1
August-97	70.5	84.6	71.0	83.3	63.1	96.2	87.0	90.4	77.1
September-97	70.5	84.6	71.0	83.3	63.1	96.2	87.0	90.4	77.1
October-97	71.3	85.5	68.9	79.4	64.4	93.7	80.3	88.3	66.8
November-97	71.3	85.5	68.9	79.4	64.4	93.7	80.3	88.3	66.8
December-97	72.8	85.2	65.5	76.4	63.1	92.7	78.3	88.2	65.1
January-98	72.8	85.2	65.5	76.4	63.1	92.7	78.3	88.2	65.1
February-98	72.8	85.2	65.5	76.4	63.1	92.7	78.3	88.2	65.1
March-98	72.8	85.2	65.5	76.4	63.1	92.7	78.3	88.2	65.1
<i>International Country Risk Guide Composite Rating*</i>									
June-97	74.5	82.0	71.0	82.0	74.0	90.0	84.0	86.5	80.5
July-97	74.5	83.0	71.3	82.3	74.3	90.0	84.3	85.8	79.0
August-97	73.8	84.0	71.0	83.3	76.5	91.8	84.5	87.3	81.0
September-97	75.0	82.5	66.3	76.3	72.8	92.5	79.5	85.0	71.3
October-97	75.0	82.5	66.3	74.5	72.5	92.5	78.8	84.5	69.5
November-97	75.0	82.5	63.0	73.8	71.8	91.8	78.5	84.0	68.3
December-97	75.0	81.3	60.3	72.5	70.8	91.3	75.8	83.3	65.3
January-98	74.5	81.3	51.5	72.5	69.0	90.3	72.0	82.3	60.8
February-98	74.5	80.8	50.5	72.0	67.3	90.0	72.0	81.8	61.0
March-98	74.0	81.0	49.3	72.5	68.8	90.8	71.5	82.3	61.8
<i>International Country Risk Guide Political Rating*</i>									
June-97	70.0	79.0	65.0	79.0	70.0	86.0	81.0	81.0	76.0
July-97	70.0	81.0	64.0	79.0	71.0	86.0	81.0	80.0	74.0
August-97	68.0	83.0	64.0	82.0	76.0	90.0	82.0	83.0	79.0
September-97	68.0	80.0	64.0	82.0	76.0	90.0	80.0	83.0	77.0
October-97	68.0	80.0	64.0	80.0	76.0	90.0	78.0	82.0	75.0
November-97	68.0	80.0	60.0	80.0	75.0	90.0	78.0	82.0	73.0
December-97	68.0	78.0	58.0	78.0	73.0	89.0	75.0	82.0	67.0
January-98	68.0	78.0	50.0	78.0	73.0	89.0	78.0	82.0	66.0
February-98	68.0	77.0	48.0	78.0	73.0	89.0	78.0	82.0	66.0
March-98	67.0	77.0	46.0	78.0	73.0	89.0	78.0	82.0	66.0
<i>International Country Risk Guide Financial Rating*</i>									
June-97	38.0	44.0	40.0	43.0	39.0	48.0	46.0	48.0	44.0
July-97	38.0	44.0	40.0	43.0	39.0	48.0	46.0	48.0	44.0
August-97	38.0	44.0	40.0	43.0	39.0	48.0	46.0	48.0	44.0
September-97	43.5	42.0	32.5	33.0	33.5	45.0	39.5	43.5	30.5
October-97	43.5	42.0	32.5	31.5	32.0	45.0	39.0	43.5	29.0
November-97	43.5	42.0	30.0	30.0	31.5	43.5	38.5	42.0	28.5
December-97	43.5	43.5	27.0	29.5	31.5	43.5	36.0	40.5	28.5
January-98	43.5	43.5	22.0	30.5	29.0	43.0	28.0	40.5	23.0
February-98	43.5	43.5	22.0	29.5	25.5	42.5	28.0	39.5	27.5
March-98	43.5	43.5	22.0	30.5	28.5	44.0	28.0	40.5	29.0
<i>International Country Risk Guide Economic Rating*</i>									
June-97	41.0	40.5	36.5	41.5	38.5	46.0	40.5	43.5	40.5
July-97	41.0	41.0	38.5	42.5	38.5	46.0	41.5	43.5	40.0
August-97	41.5	41.0	38.0	41.5	38.0	45.5	41.0	43.5	39.0
September-97	38.5	43.0	36.0	37.5	36.0	50.0	39.5	43.5	35.0
October-97	38.5	43.0	36.0	37.5	37.0	50.0	40.5	43.5	35.0
November-97	38.5	43.0	36.0	37.5	37.0	50.0	40.5	44.0	35.0
December-97	38.5	41.0	35.5	37.5	37.0	50.0	40.5	44.0	35.0
January-98	37.5	41.0	31.0	36.5	36.0	48.5	38.0	42.0	32.5
February-98	37.5	41.0	31.0	36.5	36.0	48.5	38.0	42.0	28.5
March-98	37.5	41.5	30.5	36.5	36.0	48.5	37.0	42.0	28.5

* Note methodological changes in International Country Risk Guide Ratings in September 1997.

Table 5a

Country Risk Model Implications: Latin America

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela
<i>Institutional Investor Country Credit Rating</i>							
Dec-94	37.3	30.3	54.9	44.4	46.1	21.0	36.0
Dec-95	38.8	34.9	57.4	46.5	41.8	25.8	31.4
<i>Expected Excess Returns</i>							
Dec-94	19.8%	23.0%	14.1%	17.2%	16.7%	28.4%	20.4%
Dec-95	19.3%	20.8%	13.4%	16.5%	18.1%	25.4%	22.4%
<i>Expected Volatility</i>							
Dec-94	35.7%	39.3%	29.0%	32.7%	32.0%	45.6%	36.3%
Dec-95	35.0%	36.8%	28.2%	31.9%	33.7%	42.0%	38.6%
<i>Expected Correlation with World</i>							
Dec-94	0.19	0.10	0.35	0.26	0.27	-0.05	0.17
Dec-95	0.20	0.16	0.36	0.28	0.23	0.03	0.11

Estimates derived from EHV Model: 1981:03-1998:03

	Intercept	Log(IICCR)	t-stat	Change Log(IICCR)	t-stat	Adj R-Sqd	Obs
Expected Excess Return	0.74	-0.15	-2.7	0.8	2.2	0.0	660
Expected Volatility	0.98	-0.17	-6.9	-0.6	-3.6	0.2	660
Expected Correlation	-1.31	0.41	15.0	0.7	4.0	0.3	660

Table 5b

Country Risk Model Implications: Asia

	China	Hong Kong	Indonesia	Malaysia	Philippines	Singapore	South Korea	Taiwan	Thailand
<i>Institutional Investor Country Credit Rating</i>									
Jun-97	58.0	64.9	51.6	67.5	42.3	83.9	71.4	77.1	61.1
Mar-98	57.6	62.9	49.9	64.5	43.3	82.9	64.4	75.5	52.3
<i>Expected Excess Returns</i>									
Jun-97	13.2%	11.6%	15.0%	11.0%	18.0%	7.7%	10.1%	9.0%	12.5%
Mar-98	13.3%	12.0%	15.5%	11.6%	17.6%	7.9%	11.7%	9.3%	14.8%
<i>Expected Volatility</i>									
Jun-97	28.1%	26.1%	30.1%	25.5%	33.5%	21.7%	24.5%	23.2%	27.2%
Mar-98	28.2%	26.7%	30.7%	26.2%	33.1%	21.9%	26.3%	23.5%	29.9%
<i>Expected Correlation with World</i>									
Jun-97	0.37	0.41	0.32	0.43	0.24	0.52	0.45	0.49	0.39
Mar-98	0.37	0.40	0.31	0.41	0.25	0.52	0.41	0.48	0.33

Estimates derived from EHV Model: 1981:03-1998:03

	Intercept	Log(IICCR)	t-stat	Change Log(IICCR)	t-stat	Adj R-Sqd	Obs
Expected Excess Return	0.74	-0.15	-2.7	0.83	2.2	2.9%	660
Expected Volatility	0.98	-0.17	-6.9	-0.58	-3.6	17.7%	660
Expected Correlation	-1.31	0.41	15.0	0.67	4.0	26.2%	660

Figure 1a

Distribution of Returns

IFCG Mexico

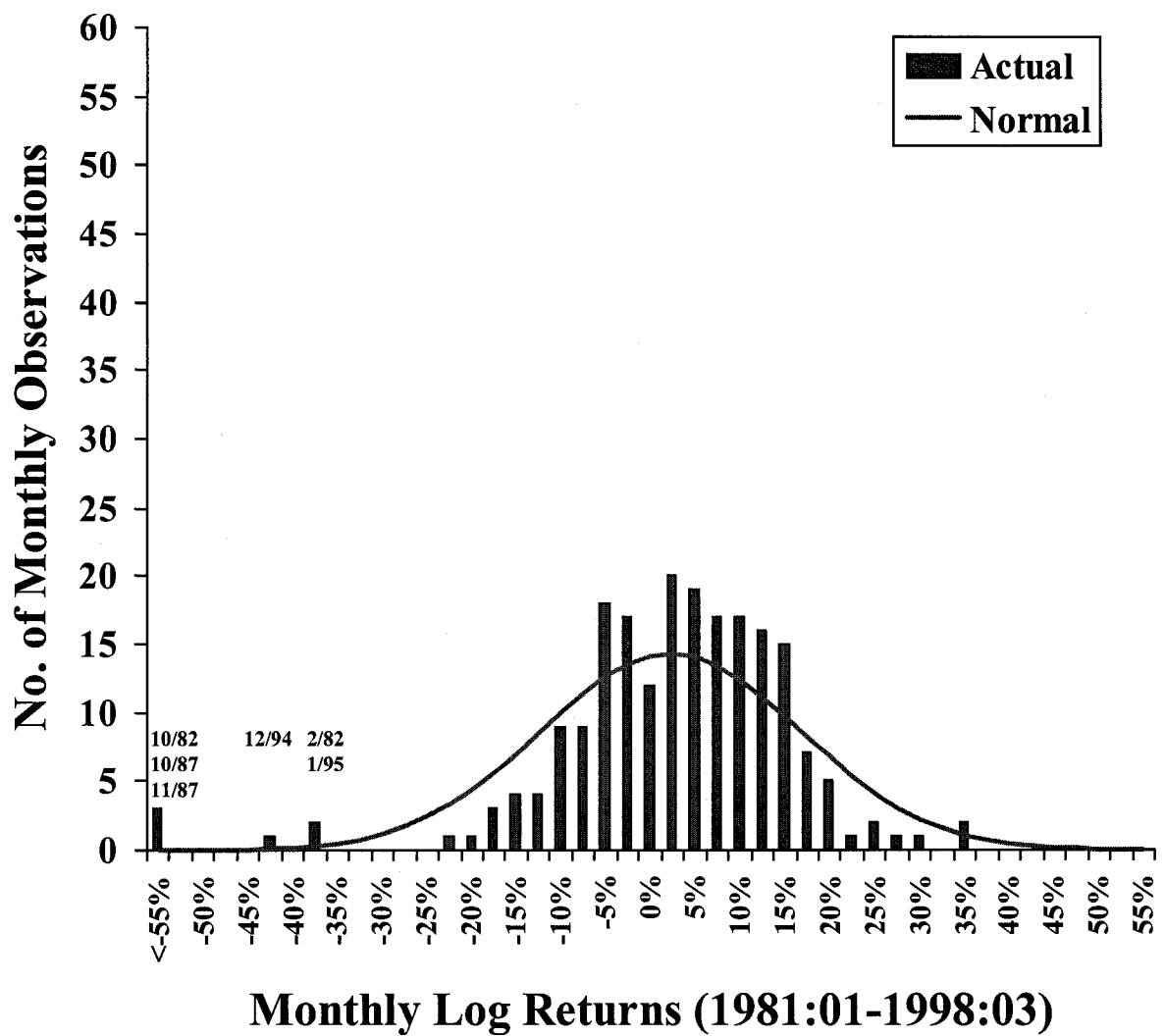


Figure 1b
Distribution of Returns
IFCG Thailand

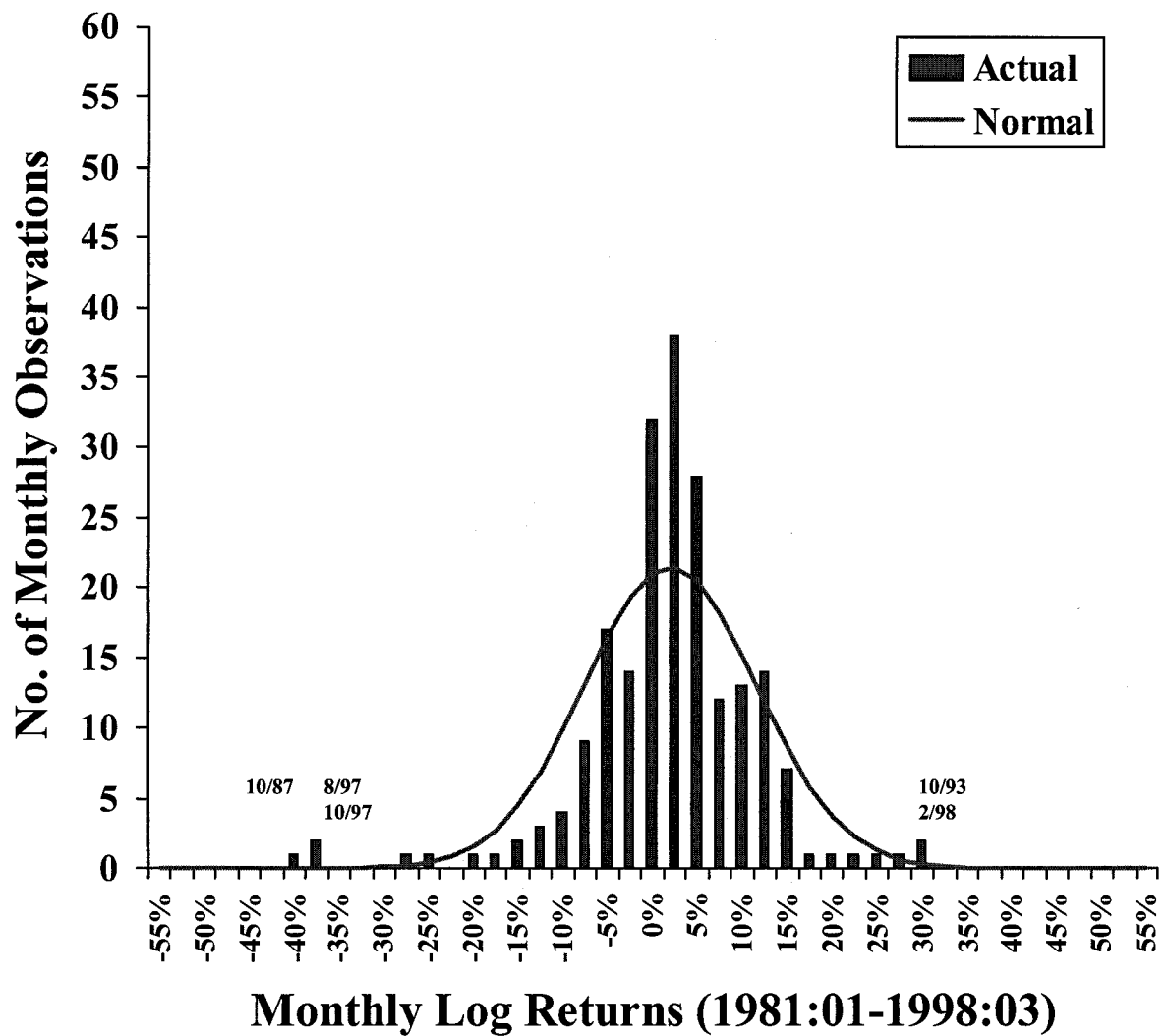


Figure 1c
Distribution of Returns
IFCG Malaysia

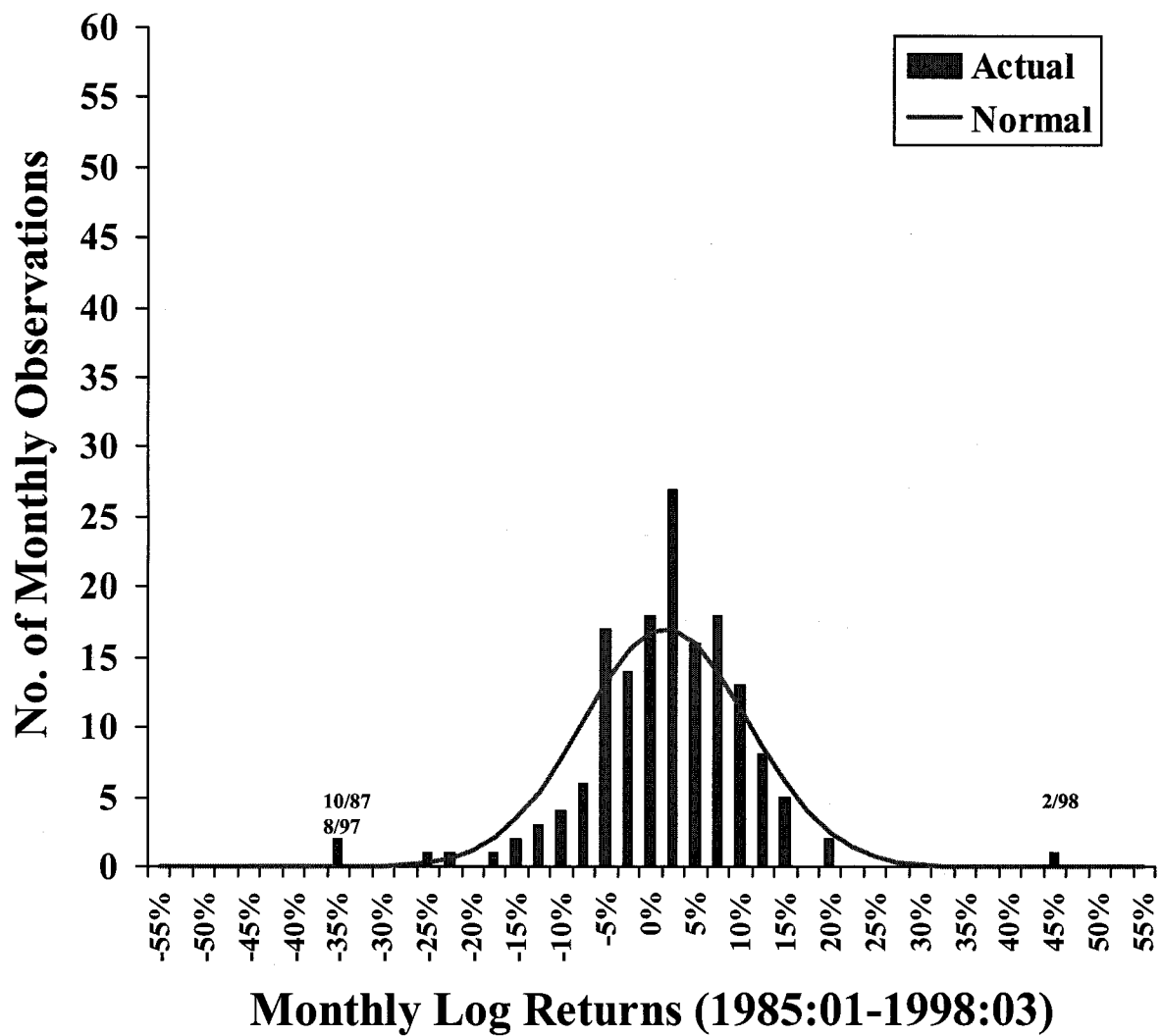


Figure 1d
Distribution of Returns
IFCG South Korea

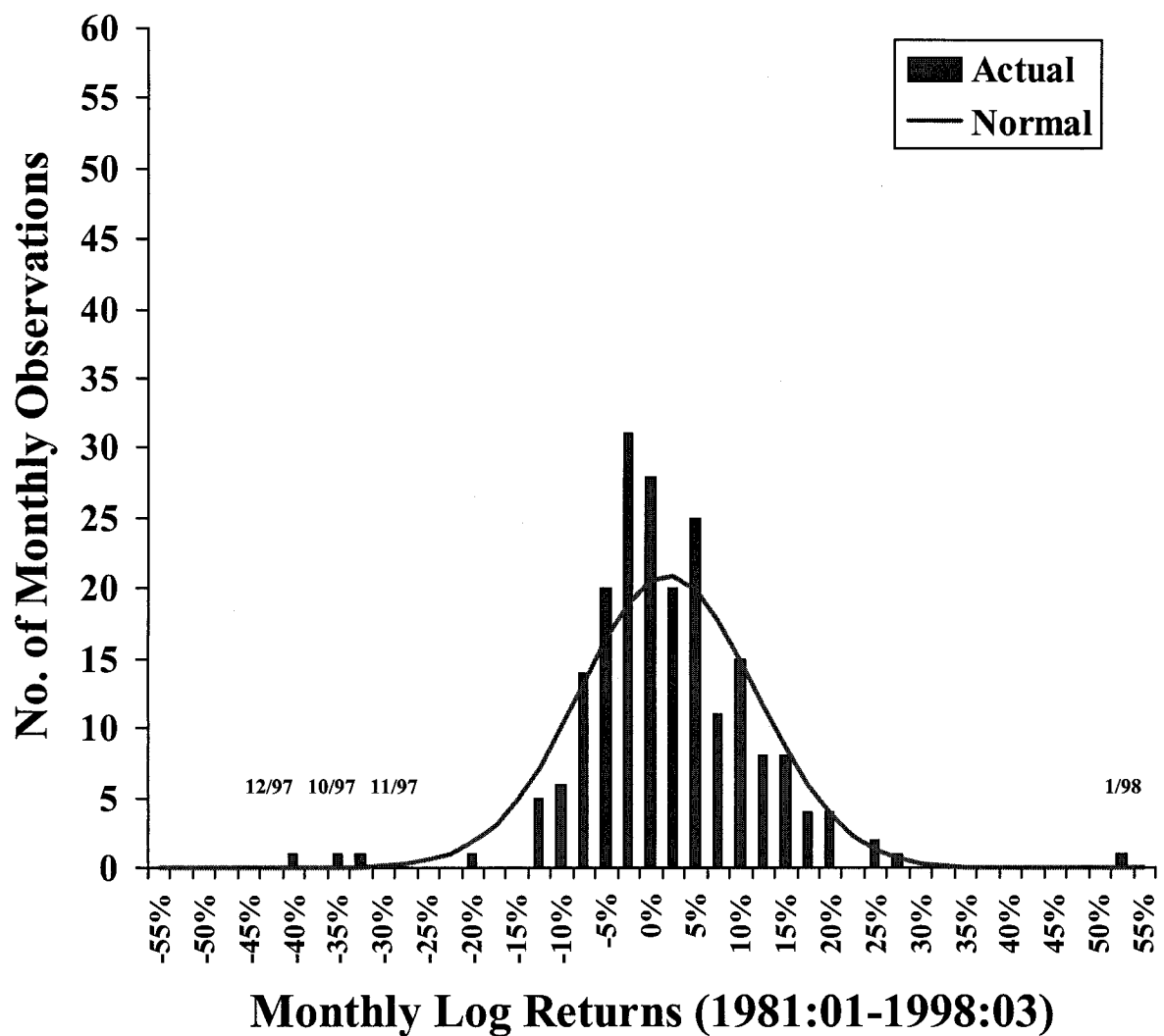


Figure 1e
Distribution of Returns
MSCI USA

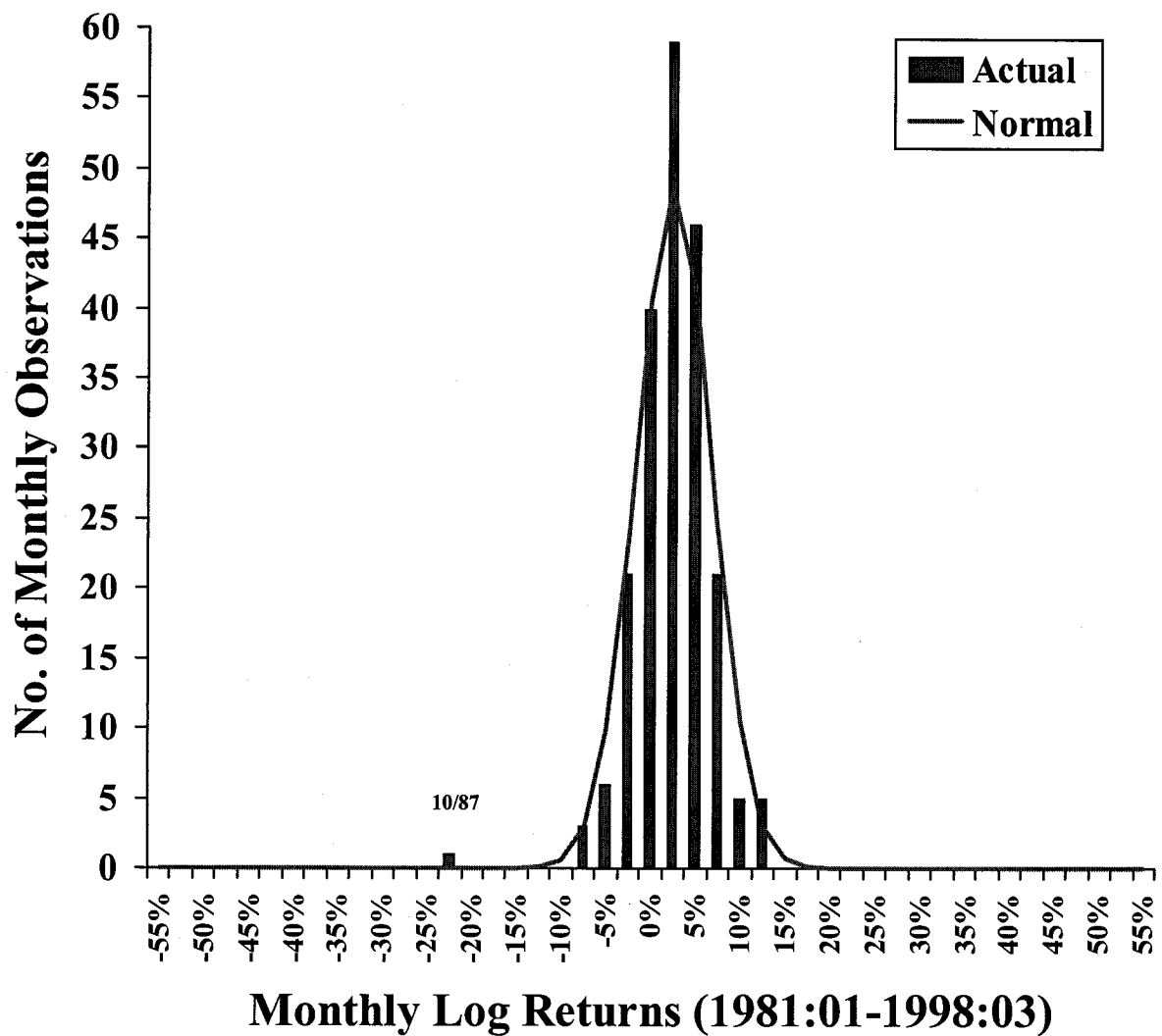


Figure 2a
Latin American Crisis: Equity Markets

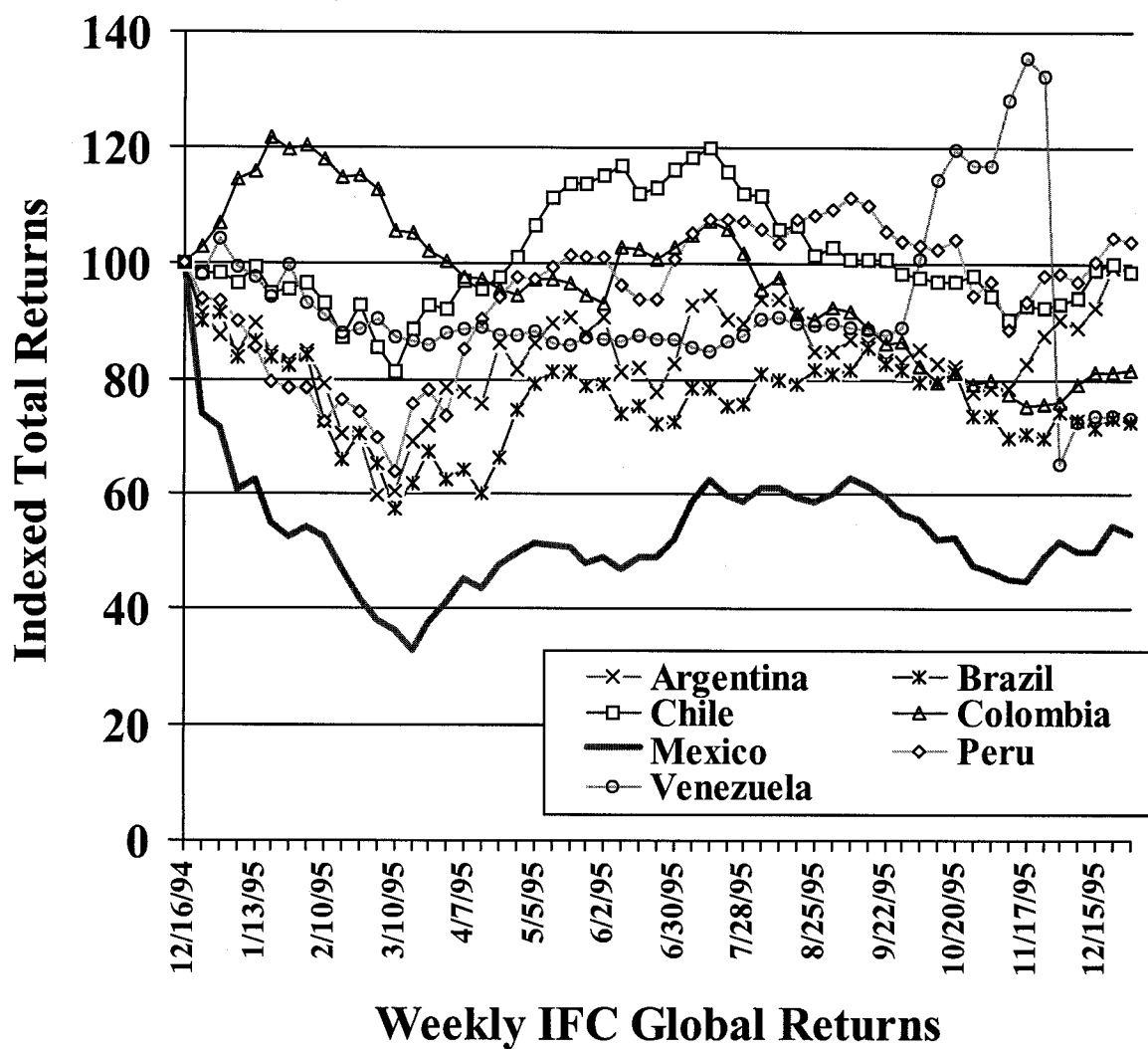


Figure 2b
Asian Crisis: Equity Markets

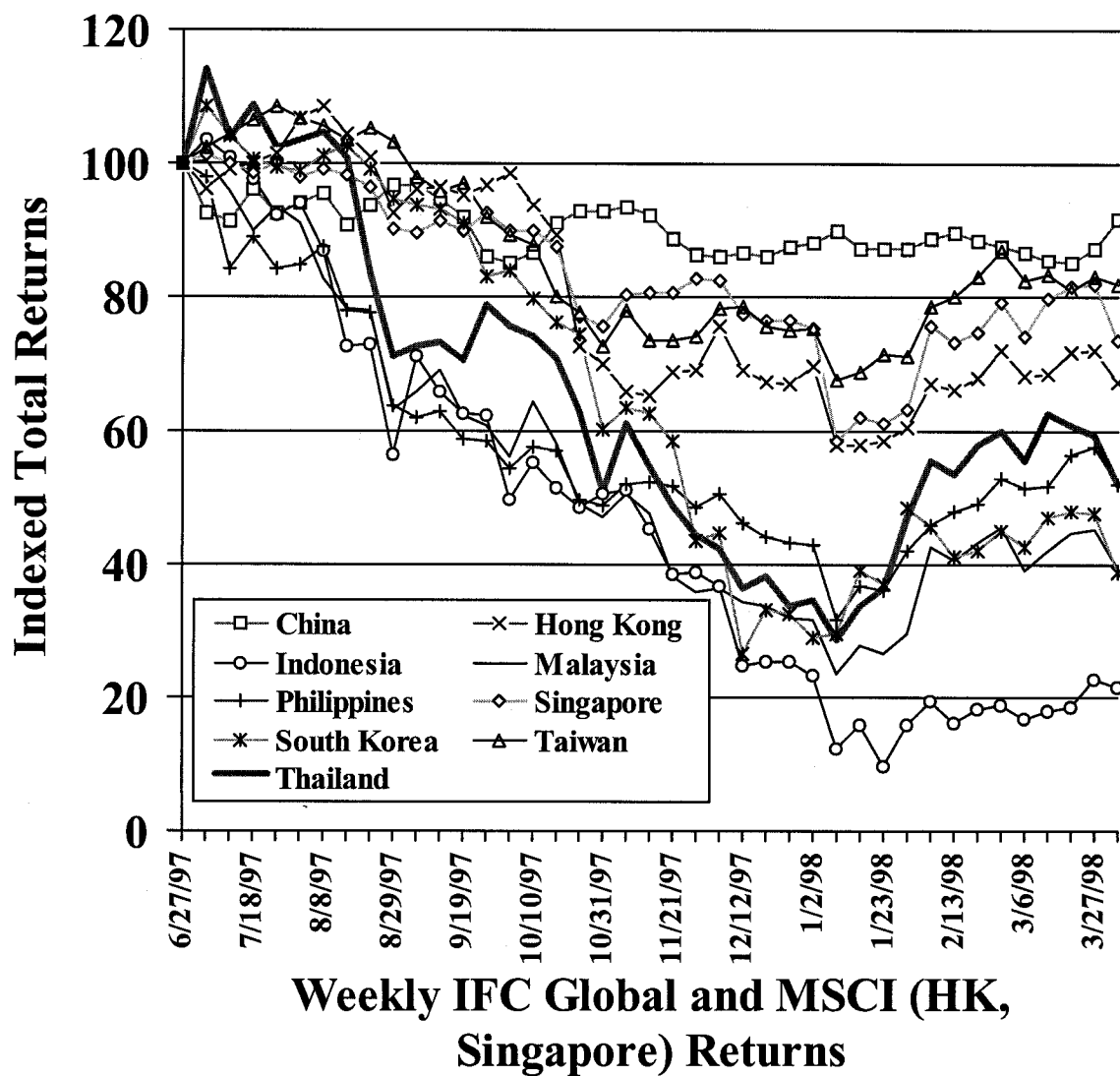


Figure 2c

Latin American Crisis: Currencies

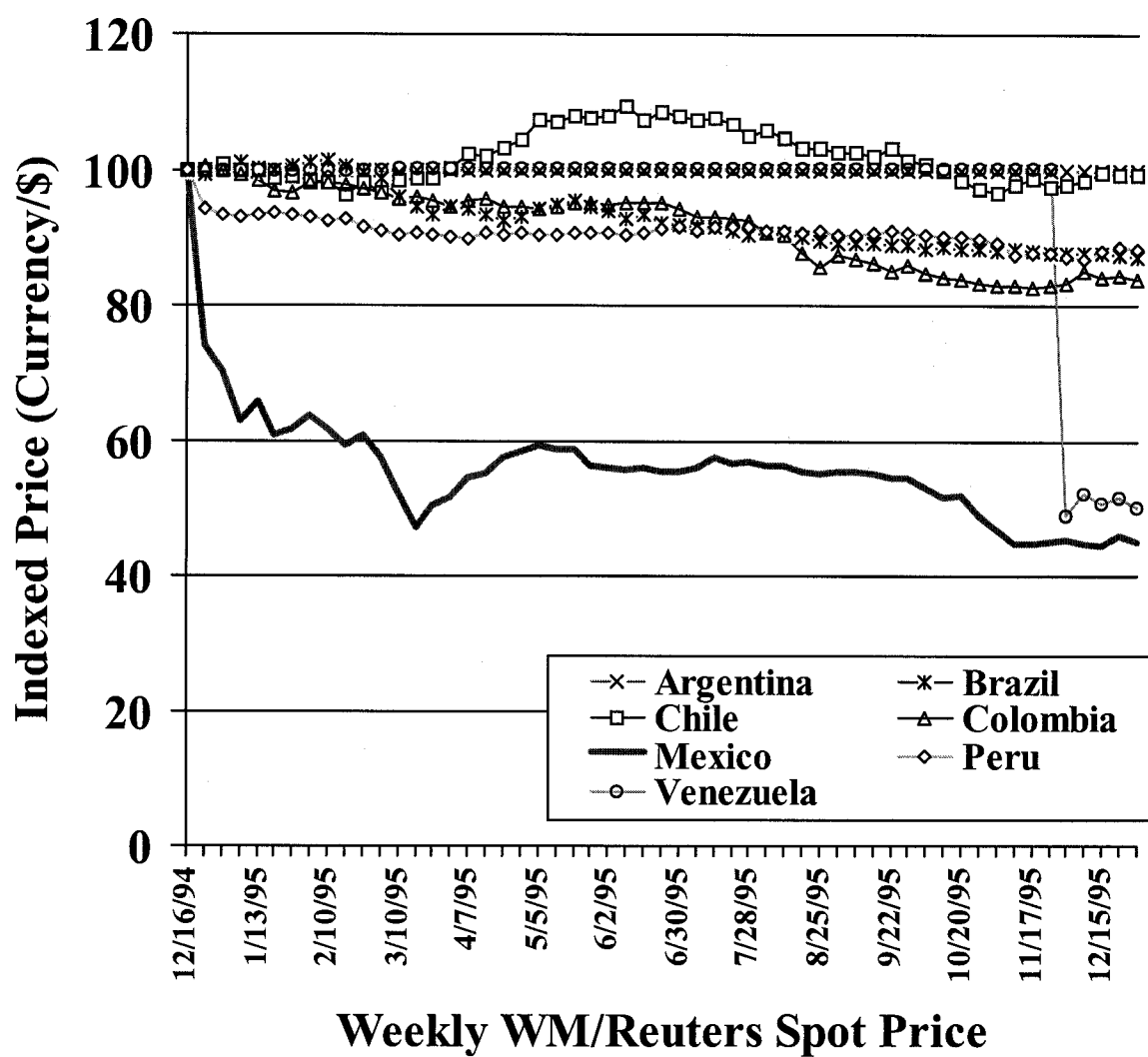


Figure 2d
Asian Crisis: Currencies

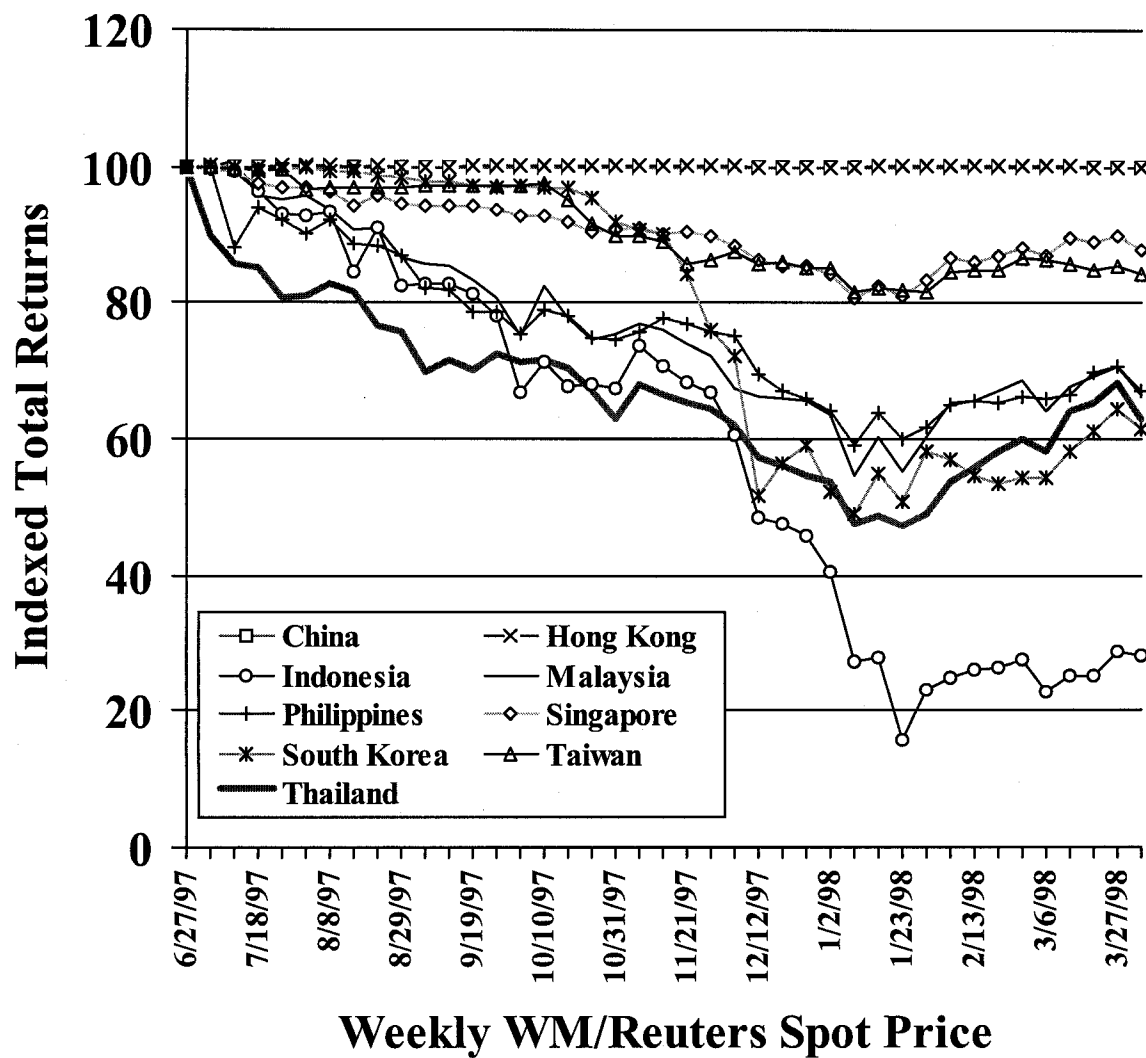


Figure 3a

Country Risk Contagion: Latin America

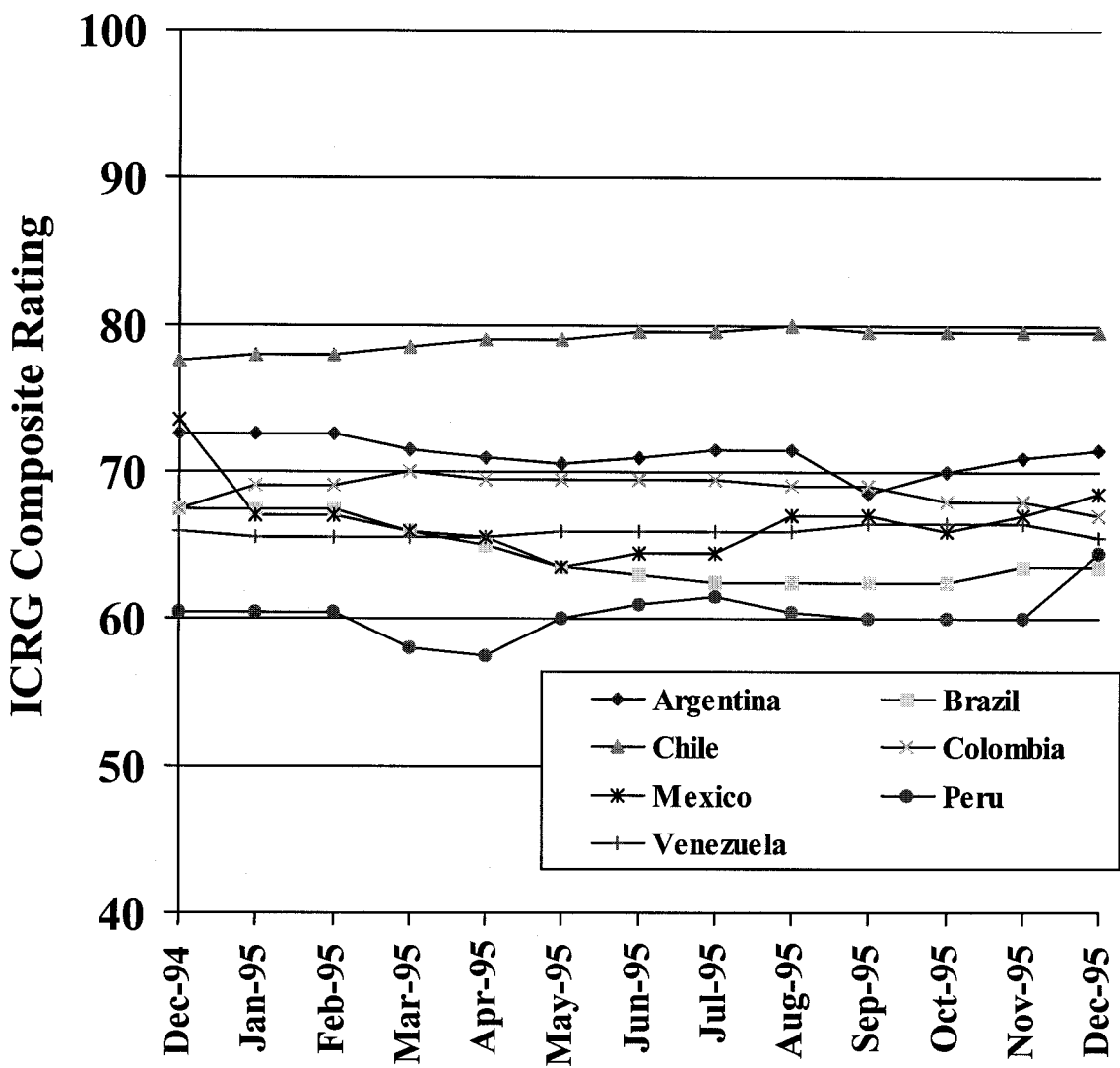


Figure 3b
Country Risk Contagion: Asia

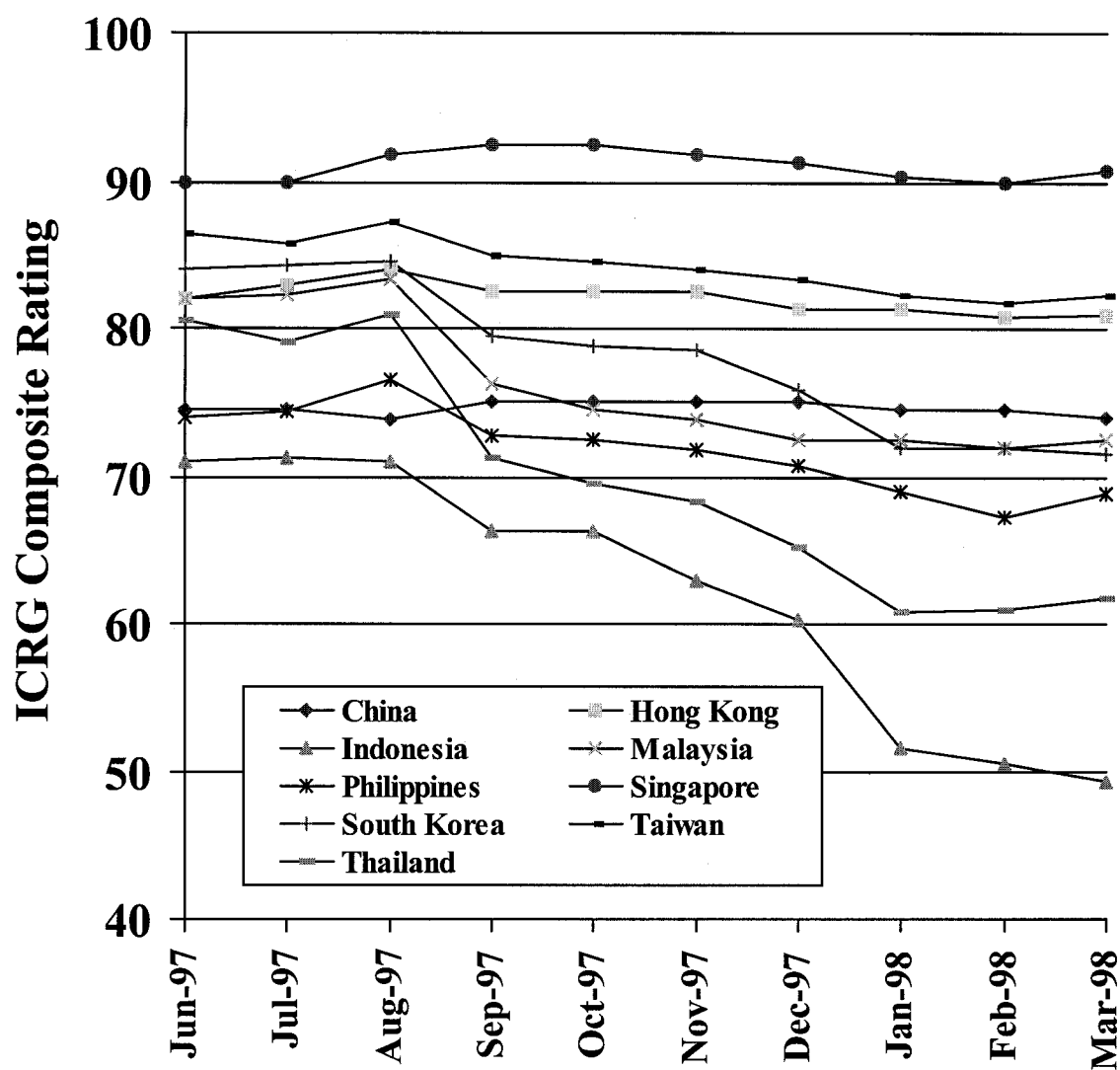


Figure 4
Correlation: US vs. Emerging

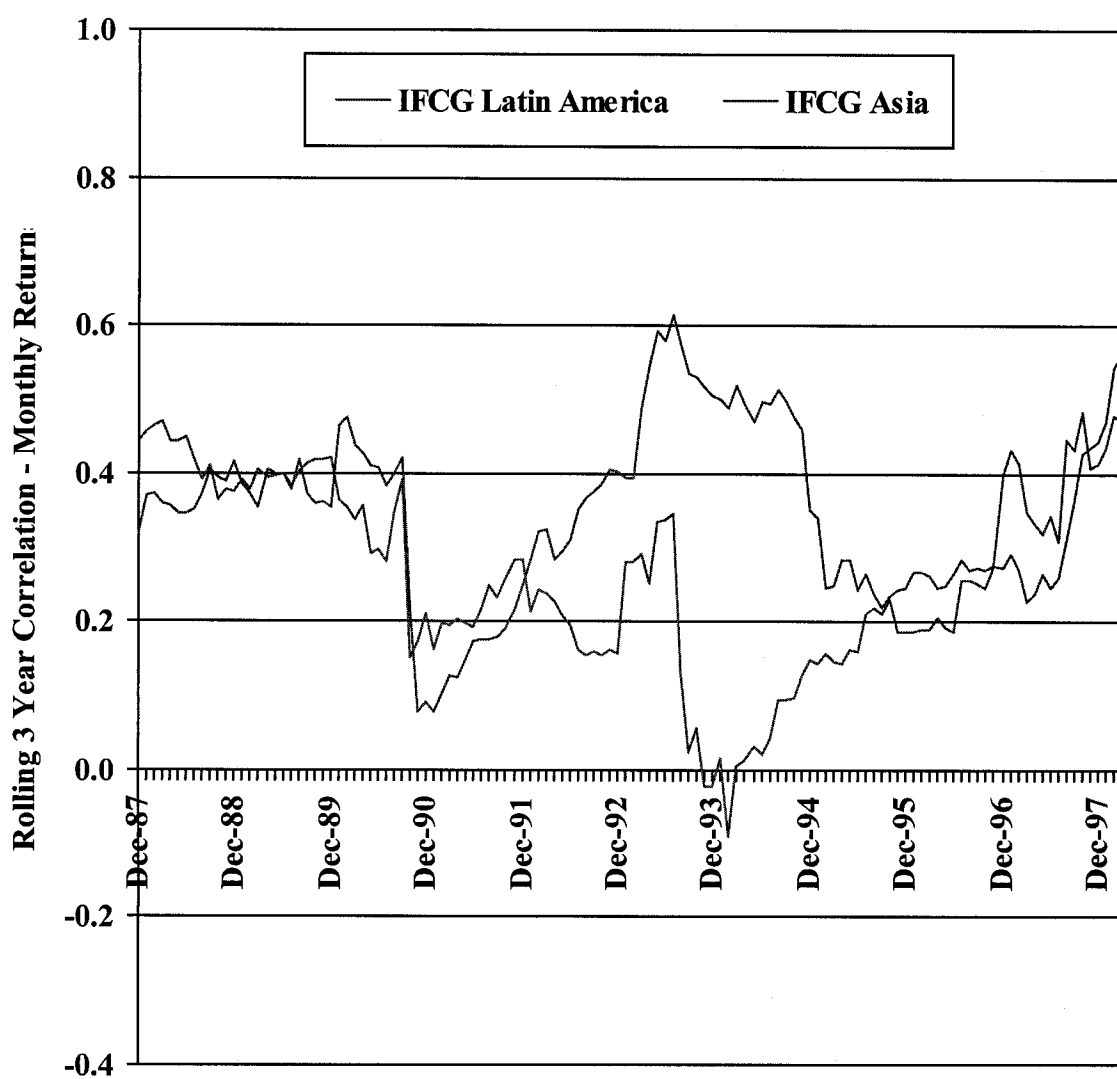


Figure 5a
Correlation: Mexico vs. Latin America

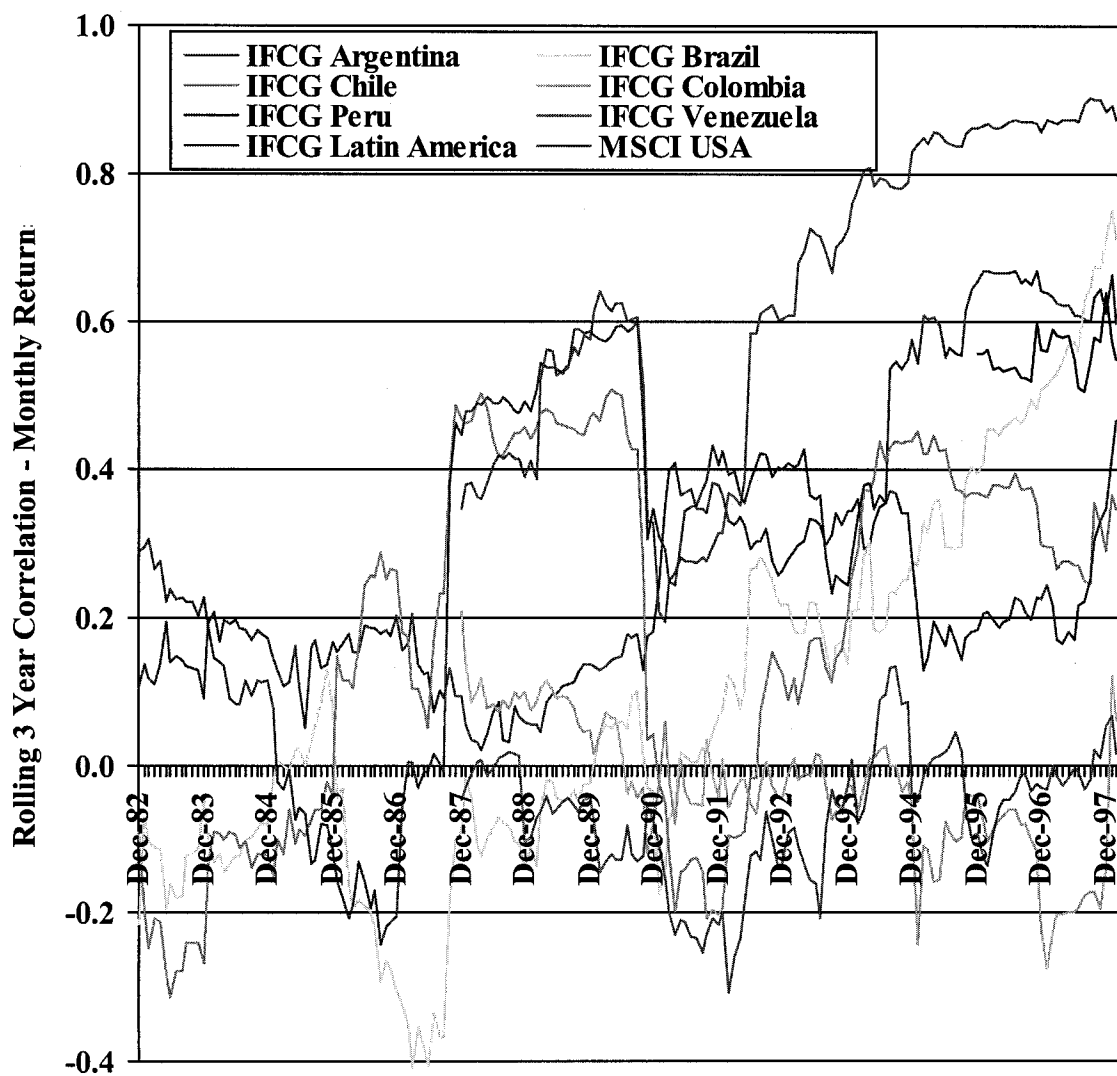


Figure 5b
Correlation: Thailand vs. Asia

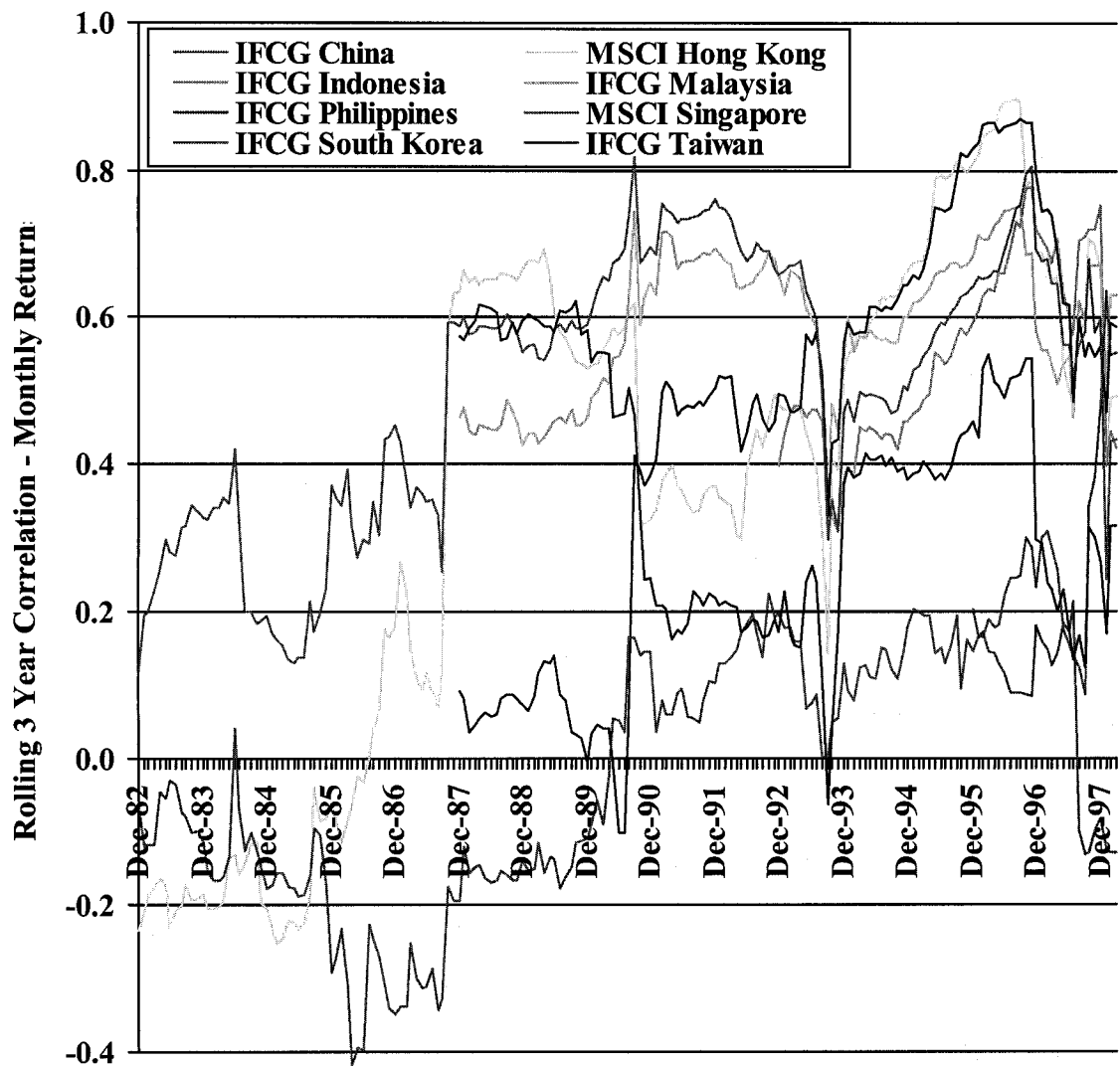
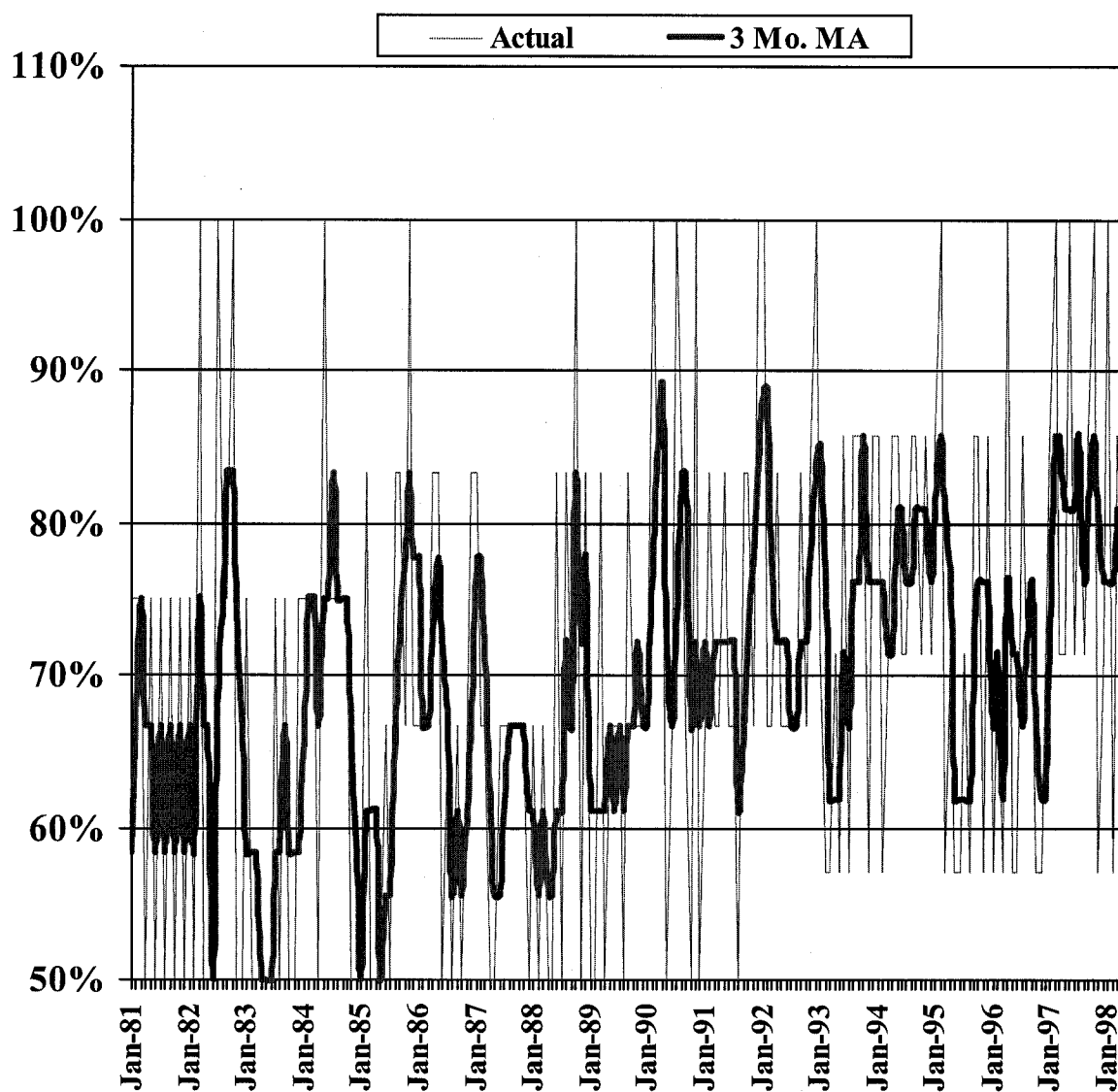


Figure 6a

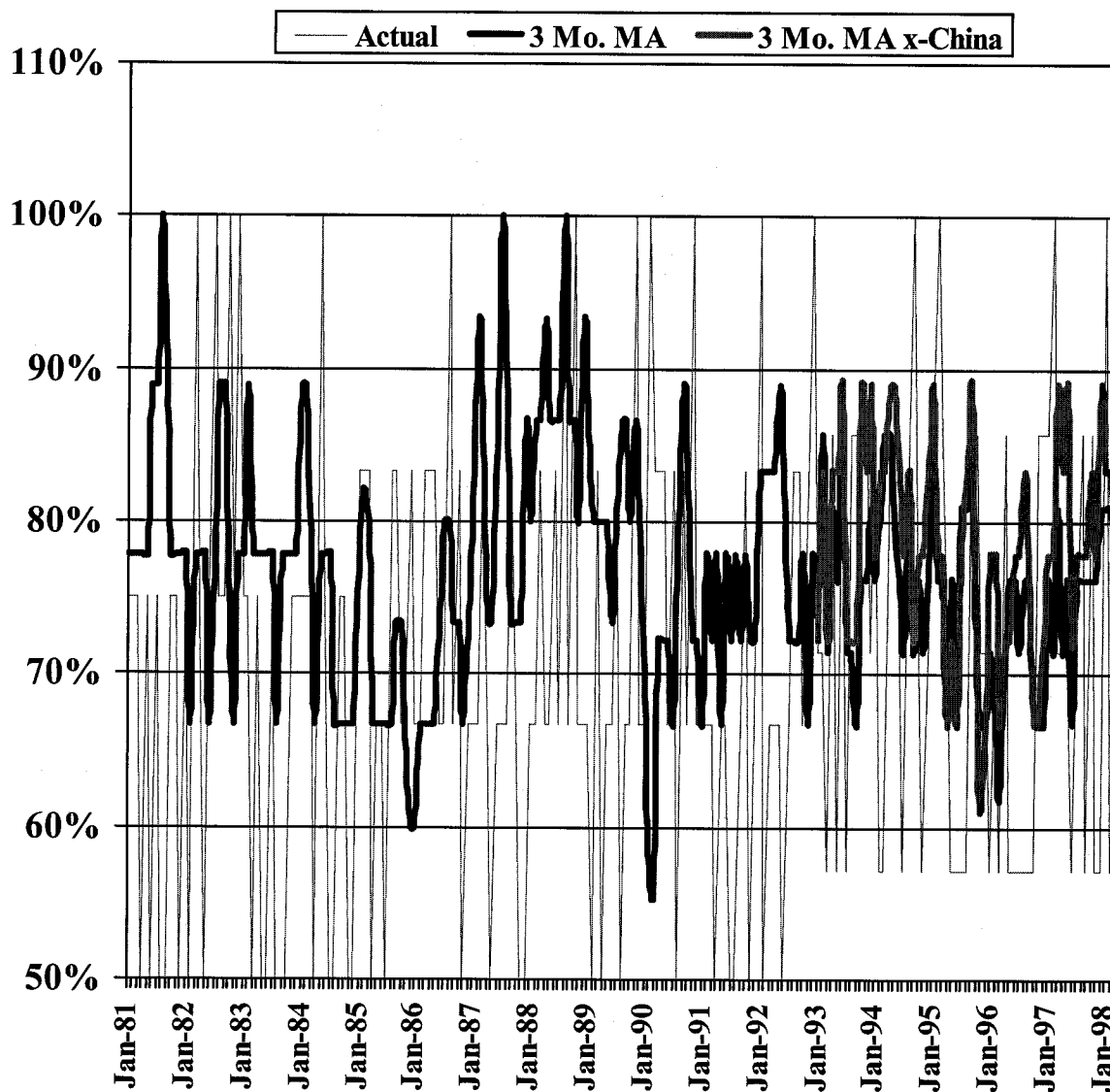
Regional Correlation: Latin America



Regional Correlation = $\text{Max}(\# \text{ of countries up}, \# \text{ of countries down}) / (\# \text{ of countries})$
 Monthly US\$ Total Returns - relative to 0.
 Countries include: Argentina, Brazil, Chile, Colombia, Peru, Venezuela

Figure 6b

Regional Correlation: Latin America



Regional Correlation = $\text{Max}(\# \text{ of countries up}, \# \text{ of countries down}) / (\# \text{ of countries})$
 Monthly US\$ Total Returns - relative to MSCI AC World.
 Countries include: Argentina, Brazil, Chile, Colombia, Peru, Venezuela