7 INTERNATIONAL PORTFOLIO INVESTMENT STRATEGIES AND THE CHANGING ROLE OF EMERGING MARKETS

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The difficulty lies, not in the new ideas, but in escaping the old ones, which ramify, for those brought up as most of us have been, into every corner of our minds.
John Maynard Keynes

Although to penetrate into the intimate mysteries of nature and thence to learn the true causes of phenomena is not allowed to us, nevertheless it can happen that a certain fictive hypothesis may suffice for explaining many phenomena.
Leonard Euler

7.1 INTRODUCTION

This decade, the 1990s, has seen distinct changes in the pattern of portfolio investment strategies in especially when looking at the geographical allocation of funds. Starting from a predominantly domestic investment allocation, fund managers and individual investors have been moving to a more international portfolio allocation investing not only in mature foreign capital markets[1] but also searching for new investment opportunities internationally. Especially attractive to international investors have been the emerging capital markets of Asia and Latin America. During the first half of the 1990s, international portfolios including emerging market securities appeared to provide a higher return at lower risk compared to international portfolios excluding these new markets. After the Mexico crisis in early 1995 and the financial crisis in Asia in the second half of 1997, however,

1 For most of this paper, i.e. when data is presented, the discussion of "capital markets" or "emerging markets" will refer to equity markets rather than other financial markets such as bond markets.

many international investors have been re-thinking their investment strategies yet again. This paper discusses international portfolio investment strategies and specifically focuses on the role of emerging market investment. Section 2 provides a review of international investment behavior and explores the benefits and risks of international portfolio investment. Section 3, as the main section of the paper, presents an overview over emerging equity markets, discusses their risk and return patterns over time, and their investment benefits and risks for an international investor in search of superior portfolio diversification. Furthermore, the emerging market crises in 1995 and 1997 are discussed in light of their affect on potential portfolio diversification benefits. Section 4 will conclude the paper by focussing on changes in investment strategies resulting from the lessons learned from these crises.

7.2 INTERNATIONAL INVESTMENT BEHAVIOR AND PORTFOLIO THEORY

Despite the increase in international portfolio investment flows, investors still tend to allocate the majority of their funds to domestic securities. In 1989, the portfolio compositions for U.S., Japanese, and British investors show a clear focus on domestic securities (e.g. French and Poterba 1991): U.S. investors hold 93.8% in U.S. securities but only 1.31% in Japanese and 0.59% in British securities. Japanese investors hold 98.11%, 3.1%, and 4.8% in Japanese, U.S., and British securities respectively. Only for British investors is the investment proportion in domestic securities slightly smaller with 82%, 1.1% and 0.19% in British, U.S., and Japanese securities respectively. Investors from France, Germany, and Canada hold less than 4% in securities of these 3 foreign markets. For the equity markets of the developed countries, this results in a situation where the large majority of shares is owned by domestic investors. The percentage of shares owned by domestic shareholders is clearly high for the major stock markets: in U.S. 92.2%, in Japan 95.7%, in U.K. 92%, in Germany 79% in France 89.4% of the securities are held by domestic investors (e.g. French and Poterba 1991). There exists, however, an increasing trend at least among institutional investors towards a more international portfolio allocation. Whereas in 1973 U.S. institutional investors did not hold any foreign assets, by 1995 this proportion had increased to 10% (e.g. Solnik 1996). For British institutional investors the proportion of foreign shares increased from 6% in 1979 to 21% in 1991 to more than 25% in 1996 (e.g. Solnik 1996, French and Poterba 1991). This investment behavior might, however, be sub-optimal when evaluated from a theoretical point of view. In its most basic form, portfolio theory argues in favor of "diversification" meaning the distribution of one's investment across different securities and security classes thus clearly promoting investment in securities from different national markets.

Portfolio theory as developed by Markowitz (1959) is based on the belief that two factors matter to the investor: the return and the risk of a portfolio where the risk of a portfolio is measured as the variance or standard deviation of the portfolio's return. As most investors are assumed to be risk-averse, they will – for a given portfolio return – prefer a portfolio with the lowest possible risk. For any additional unit of risk that they are asked to bear, investors will require a risk premium in form of additional return. In this setting, diversification helps to achieve these low risk portfolios as figure 1 shows. As number of securities increases, the risk of the portfolio decreases. With approximately 20 different securities included in a portfolio, most of the possible risk reduction is achieved and any additional securities do not significantly reduce portfolio risk.

This diversification benefit is due to the fact that the risk of a portfolio does not only depend on the risk of the individual securities included in the portfolio but also on the co-movement of the security returns which can be measured by the correlation coefficient[2]. The lower the co-movement of the security returns, the higher the effect of diversification. In the case of perfectly negative correlation when the correlation coefficient of two securities equals -1, a positive return of the one security is exactly offset by the negative return of the other security. In total, the overall portfolio return is stable and thus, the portfolio does not exhibit any risk. In the case of perfectly positive correlation when the correlation coefficient of two securities equals +1, no diversification effect can be achieved. Since in actual financial markets securities are not perfectly positively correlated, diversification works in favor of the investor. However, correlation coefficients of about 0.8 to 0.9 between domestic securities have to be considered as fairly high, thus limiting diversification benefits. On the other hand, correlation coefficients between securities from different national markets are significantly lower (e.g. Solnik 1996, Michaud et al. 1996, Solnik et.al. 1996). Thus, international diversification provides additional risk-return benefits for the investor[3]. Next to the reduction of risk via diversification, there exist other potential benefits from international investment. If international security markets are not fully integrated, return patterns of securities of different

2 Whereas the return of a portfolio is simply the weighted return of all securities in the portfolio, the risk of a 2-asset portfolio can be calculated by its variance as $\sigma_p^2 = w_1*\sigma_1^2 + w_2*\sigma_2^2 + 2*w_1*w_2*\rho_{1,2}*\sigma_1*\sigma_2$ where w_1 = proportion of security 1 in the portfolio, s_1^2 = variance of the return of security 1, w_2= proportion of security 2 in the portfolio, σ_2^2 = variance of the return of security 2, and $\rho_{1,2}$ = correlation coefficient between the returns of security 1 and 2.

3 The proposition of holding diversified portfolios is also supported by the Capital Asset Pricing Model (CAPM) which states that investors are only compensated for undiversifiable risk. Each security pays a return that reflects not its total risk but only the amount of risk that the security contributes to a diversified portfolio. – In figure 1, the undiversifiable risk can be identified as that level of risk that cannot be reduced by including additional securities in the portfolio. As can be seen from figure 1, the undiversifiable risk for an international portfolio is lower than the undiversifiable risk of a domestic portfolio.

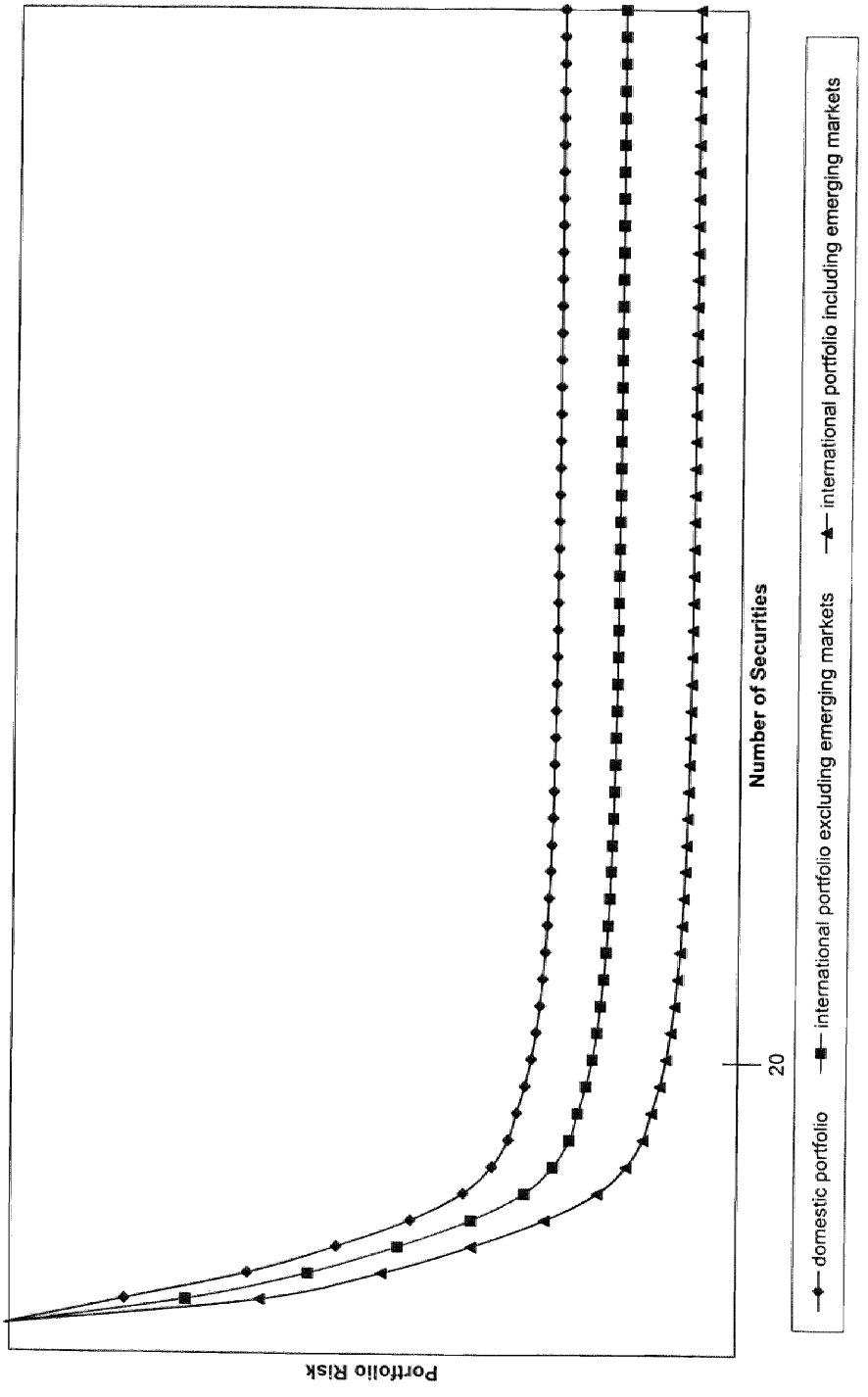


Fig. 1: Possible Benefits of Portfolio Diversification

countries will be different. Foreign markets can provide a risk-adjusted return that is higher than the domestic risk-adjusted return. This is due to the fact that in segmented markets primarily domestic factors will affect security risk and return. As domestic factors such as money supply, interest rates, or the development of the national economy differ across countries, an investor can achieve a preferable risk/return combination by investing internationally. During the early 1990s, this argument was perceived to be especially true for emerging capital markets and thus lead to the growth of these markets as will be documented in more detail in section 3 of the paper. If the benefits of international investment are so clearly present, why is actual investment behavior biased towards the domestic markets? Why do investors not fully exploit the benefits of international investment? The answer to these questions lies in the additional risks perceived or actually inherent in international investment. These risks include currency risk, higher market volatility, lower market efficiency, restrictive regulations, transaction cost, psychological barriers to international investment[4], and political risk. In detail, these reasons can be discusses as follows:
Currency risk is clearly a concern that is only relevant for international but not for domestic investment. However, three arguments suggest its manageability in an international portfolio: First, currency risk should not simply be added to the market risk of the portfolio because the correlation between the two can be low or even negative and could thus even have a reducing effect on overall portfolio risk. It can even be argued that currency risk benefits the investor particularly in emerging markets. Here, not hedging currency risk can lead to superior portfolio performance regarding risk and return (e.g. Hauser et.al. 1994). Second, currency risk can be hedged via currency options, futures, or forward contracts. Furthermore, currency risk in currencies for which no currency derivatives are available – as for example for most emerging markets – can be cross-hedged meaning that derivatives on a different currency can provide an effective hedge. In particular, it has been shown that currency risks for most of the Asian emerging markets can be effectively hedged with currency options or futures on the Japanese yen (e.g. Aggarwal and DeMaskey 1997). Third, in an international portfolio the risk of each currency will be diversified away when investing in a larger number of different countries. Higher market volatility would seem to increase risk in international investment as it increases the risk of a specific security. However, market risk has to be viewed in the context of the overall international portfolio taking correlation between markets and currency risk into account. As correlation of securities of different countries is lower than correlation between securities of the same country, a low correlation can offset the effect of high volatility with respect to total portfolio risk.

4 The following discussion of these risks is based on Solnik (1996) with additional sources as indicated.

Lower market efficiency can be a barrier to international investment in especially for recently established markets. Lower market efficiency can occur in different forms, for example in form of lower market liquidity, which limits the sale of portfolio positions, or in form of price manipulations which affect the investment return. Regulations in the foreign markets but also at home can furthermore restrict international investment: On the one hand, institutional investors can be limited by statue in the amount of foreign assets that their funds can hold. One the other hand, foreign investors might be restricted to special classes of securities or in the amount of investment they can hold in a specific security. Special withholding taxes might apply for foreign investors reducing the return from foreign investment. Along similar lines, foreign investment can be more costly as transaction cost in foreign markets is higher[5]. Political risk should also be considered in the international investment decision. When considering investing in young capital markets, questions such as the following are relevant: Will the government continue its capital market policy? Will capital market regulations be stable? In addition, political risk has an even more direct impact on international investment. Research has shown (e.g. Diamonte et.al. 1996) that political risk directly affects stock returns. In especially in emerging markets, changes in political risk have an economically significant impact on stock returns. The return differences between markets with an increase in political risk and those markets with a decrease in political risk can be as large as 11% per quarter. Finally, there exist psychological barriers to international investment as investors feel more comfortable investing at home because of perceived cultural barriers such as different language, different trading procedures, different reporting standards, etc. Overall, foreign markets might incorrectly appear more risky or less profitable for these reasons (e.g. French and Poterba 1991). Overall, the benefits of international portfolio investment as presented in Markowitz's portfolio theory have to outweight the additional risks of international portfolio investment. As the discussion of these risks has shown, they appear to be largely manageable as for example for currency risk or appear to be simply illusory as for example for the psychological barriers. More and more investors evaluate this tradeoff between risks and benefits in favor of the benefits of international investment. Thus, international capital markets have become an attractive alternative to domestic investment and the proportion of foreign securities in the portfolios is increasing. The following section will now focus on issues concerning those investors who embark on international portfolio investment and in particular on investment in emerging markets.

5 See table A.1 in the appendix for a listing of institutional details on foreign investment for a selection of emerging markets including entry and exit regulations and taxation.

7.3 THE ROLE OF EMERGING MARKETS IN INTERNATIONAL PORTFOLIO INVESTMENT

7.3.1 Introduction to Emerging Markets

Whereas the exact definition of an 'emerging capital market' or more specifically an 'emerging stock market' might differ within the financial industry and refer to newly established stock markets as well as to established but changing stock markets, there are two guidelines to follow when categorizing stock markets (e.g. International Finance Corporation 1997): (1) the Emerging Economy Criterion, and (1) the Developing Stock Market Criterion. The International Finance Corporation (IFC), for example, has up to date applied the first criterion and defined an emerging stock market as a market located in a low to middle-income economy using the categorization of the World Bank. This criterion categorizes all stock markets in countries with a GNP per capita of $9,385 or less in 1995 as an emerging stock market. For the future, however, the IFC is considering applying both criteria in combination. Based on the first criterion, the IFC categorizes more than 70 emerging markets and includes 44 in its indices and statistics. Among these 70 markets, differences are clearly present resulting from the different developmental stages a market is undergoing[6]. In particular, four stages can be distinguished (e.g. Papioannou et.al. 1993): During the initial stage, equity prices increase and the market finds acceptance with domestic investors. After the market has established its credibility, the second stage begins which is characterized by deregulation, an increase in liquidity and risk-adjusted returns, which in turn starts to attract international investors. In the following expansion phase, returns increase and become less volatile as trading volume and the number of listed companies increase. Next to the stock and bond markets, the need for derivative markets arises. Finally, in the mature phase the equity risk premium declines and the market reaches a stable growth.

Table 1 presents the development of emerging markets between 1986 and 1996 with respect to four measures – market capitalization, value traded, number of listed companies, and portfolio equity flows to emerging markets – all of which indicate the enormous growth of emerging markets over the last ten years. As indicated earlier in section 2, investor interest in international investment including emerging market investment has grown and is reflected the increase of portfolio equity flows to emerging markets from $110 million at the end of 1986 to $1,610 million at the end of 1996. Up from 39% in 1986, more than half of the worlds listed companies was by the

6 For example, markets such as in Egypt or India have a long history but are currently being restructured. Other markets such as in Vietnam are newly established and still under development. Markets such as Singapore, Taiwan, or Portugal are so far developed that they are considered developed markets by some investors.

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
market capitalization in US$ million										
emerging markets										
IFC index markers	319,706	483,115	737,051	609,998	817,636	878,421	1,581,062	1,834,203	1,838,870	2,161,657
all emerging markets	331,747	488,597	745,304	614,585	861,635	913,308	1,637,079	1,914,876	1,931,411	2,225,957
all developed markets	7,499,071	9,239,900	10,967,395	8,784,770	10,432,928	9,921,841	12,326,261	13,209,111	15,855,775	17,951,705
world total	7,830,818	9,728,497	11,712,699	9,399,355	11,294,563	10,835,149	13,963,340	15,123,987	17,787,186	20,177,662
all emerging markets as percentage of world total	4%	5%	6%	7%	8%	8%	12%	13%	11%	11%
value traded in US$ million										
emerging markets										
IFC index markets	164,716	408,626	1,165,310	894,375	600,075	605,720	1,068,309	1,631,971	1,025,847	1,574,927
all emerging markets	169,549	411,076	1,169,224	900,045	616,027	636,608	1,099,146	1,665,270	1,042,589	1,586,818
all developed markets	5,677,215	5,586,247	6,298,778	4,614,006	4,403,567	4,150,807	6,090,899	7,156,619	9,175,380	12,011,057
world total	5,846,864	5,997,323	7,468,002	5,514,051	5,019,594	4,787,415	7,190,045	8,821,889	10,217,969	13,597,875
all emerging markets as percentage of world total	3%	7%	16%	16%	12%	13%	15%	19%	10%	12%
number of listed companies										
emerging markets										
IFC index	10,901	11,349	11,839	12,544	12,934	13,675	14,367	16,245	18,605	20,596
all emerging markets	11,296	11,730	12,270	12,866	13,532	14,467	15,412	17,613	20,133	22,263
all developed markets	17,982	17,540	17,216	16,323	16,199	16,937	16,973	18,425	18,607	20,141
world total	29,278	29,270	29,486	29,189	29,731	31,404	32,385	36,038	38,740	42,404
all emerging markets as percentage of world total	39%	40%	42%	44%	46%	46%	48%	49%	52%	53%
portfolio, equity flows to emerging markets	110	140	410	320	590	750	2,120	1,580	1,350	1,610

Note: Market capitalization is given as end of period levels. Value traded refers to the annual total turnover of listed shares and is given as end of period levels. Portfolio, equity flows to emerging markets refer to aggregate net long-term resource flows.
Source: Emerging Stock Markets Factbook (IFC, various issues).

Table 1: Institutional Aspects of International Stock Markets.

end of 1996 listed in emerging markets. In 1995, the number of listed companies in emerging markets exceeded for the first time those listed in developed markets. Comparatively, the value traded and market capitalization of these shares is significantly lower than 50% but increasing. The market capitalization of all emerging markets at the end of 1996 was with $2,225,957 million seven times as high as the market capitalization at the end of 1986 reflecting an increase from 4% to 11% of the total world market. Similarly, the value traded rose steadily from $169,549 million in all emerging markets in 1986 to $1,586,818 million in 1996, an increase from 3% to 12% of the total world market. As these figures suggest, emerging markets account for most of the smaller markets (e.g. International Finance Corporation 1997). Emerging markets account for 98% of the market capitalization in the market capitalization group (MCG) of $10,000 million or less, for 66% in the MCG of $ 10,001 to $100,000 million but only for 25% in MCG of $100,001 to $1,000,000 million and 0% in MCG of $1,000,001 million and above. During this decade, the height of emerging market growth has clearly taken place in the early 1990s, when market capitalization rose to 13% and value traded to 19% of the total world market in 1994 and portfolio equity flows reached $2,120 million in 1993. The consequent drop in 1995 could be explained by the effects of the Mexico crisis on market values and international investor behavior, which will be discussed in more detail in a later section of this paper.

7.3.2 Evaluating the Benefits of Emerging Market Investment

Having established in general the benefits of international diversification in section 2, the question now arises why international investors have found emerging markets increasingly attractive. Or in other words: Are there additional benefits to be obtained from investing in emerging markets? Initially, the answer to this question was simple: "Yes, there is a free lunch as one can achieve higher returns at lower portfolio risk." Focussing on the first part of the answer, the higher returns, figure 2 provides empirical evidence on historic stock market levels in emerging as well as developed markets from the beginning of 1993 until the end of 1996[7]. Comparing the IFCI Composite

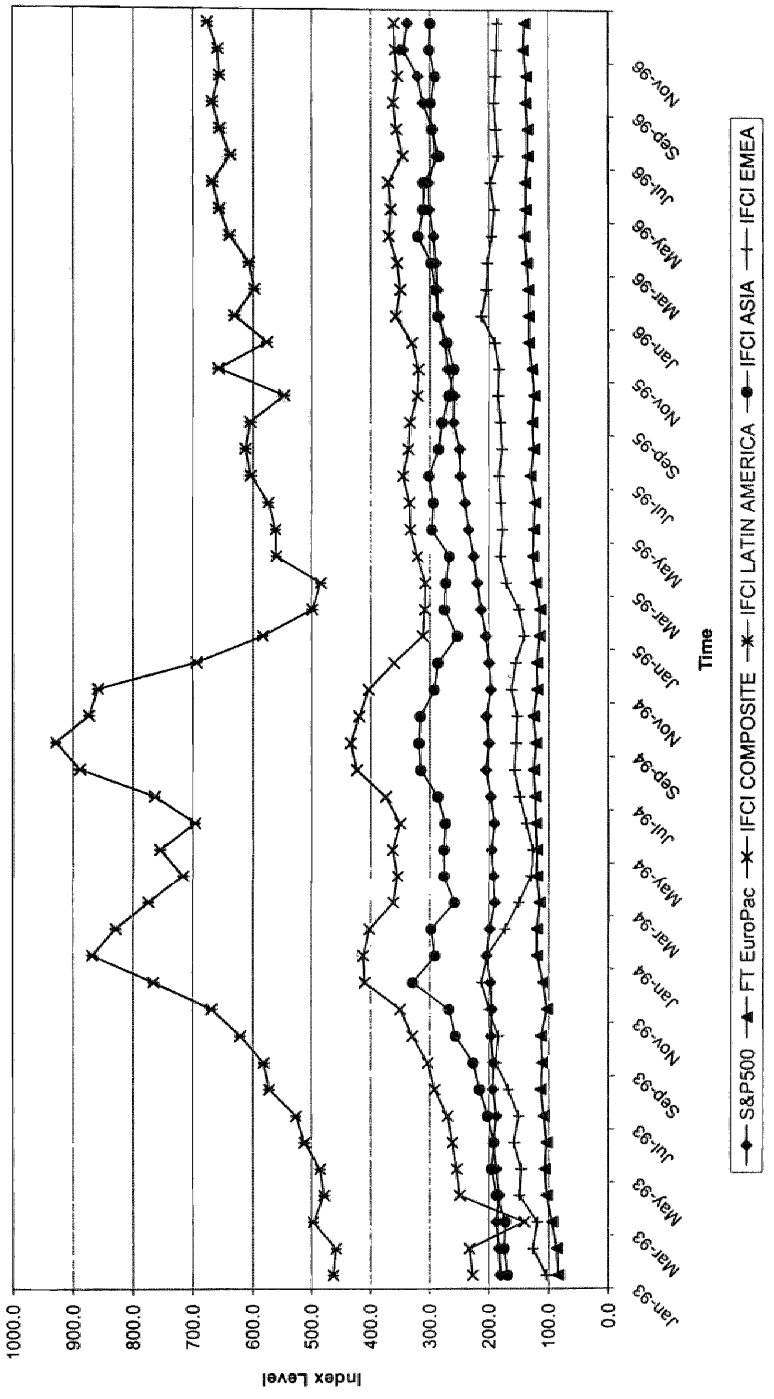
7 For emerging markets, monthly, investable, total-return indexes are used which are reported in end of period US dollar value. Thus, these indexes represent the return that the foreign (U.S.) investor would have actually achieved in his/her home currency and not in the local currency of the foreign market thus including the currency risk component discussed in section 2. Furthermore, investable indexes were chosen to represent a return that was actually obtainable for the foreign investor. Investable stocks are defined by the IFC as "stocks which are available to foreign institutional investors, and which pass screens for minimum size and liquidity" and which would be " legally and practically available" to the foreign investor (IFC's Emerging Stock Markets Factbook 1997, page iii). The developed markets are represented by the S&P500 index for the U.S. and by the FT EuroPac for non-U.S. developed markets. The emerging markets are presented as a whole via the IFCI Composite index and for the regions Latin America, Asia, and Europe/Mid-East/Africa (EMEA).

index with either developed market index reveals that emerging markets outperformed developed markets for most of the 1990s, i.e. until the end of 1995. Since 1988, emerging markets have grown by more than 350% from an index level of 100 in 1988 to a high of above 400 in 1994 and finally to a level of 360.4 by December 1996. Over the same period, the developed markets rose to index levels of around 100 for the FT EuroPac and 300 for the S&P500. Within the emerging markets, Latin American markets are the clear leaders having reached index levels above 900 in late 1994 and – having recovered from the Mexico crisis in December 1994 / January 1995 – are now trading at index levels close to 700. Next to emerging markets in Latin America, Asian emerging markets also outperformed the developed markets as can be seem from the higher index levels of the IFCI Asia over the S&P500[8] and the FT EuroPac. The other emerging markets in Europe, the Mid-East, and Africa (EMEA) remained at levels below the U.S. market but still achieved higher index levels at the non-U.S. developed markets included in the FT EuroPac. Figures A.1 to A.4 in the appendix provide similar information for individual emerging markets and generally reveal the same picture.

Focussing on the second part of the answer, the risk that emerging market stocks contribute to an international portfolio has to be considered[9]. Figure 2 reveals that market volatility appears higher in emerging markets than in developed markets. As however discussed in section 2, it is not the individual market risk that matters but the risk that a market contributes to the overall portfolio which is clearly influenced by the correlation between the different markets. Figures 3.1 and 3.2 display these correlations. As can be seen, the correlation between developed markets (S&P500 versus FT EuroPac) is the highest whereas the correlation between developed and emerging markets (S&P500 versus IFCI indexes) is significantly lower even displaying negative correlation between Latin America and Europe/ Mideast/Africa. Between emerging markets the correlations are also lower than the developed market correlations as figure 3.2 reveals.

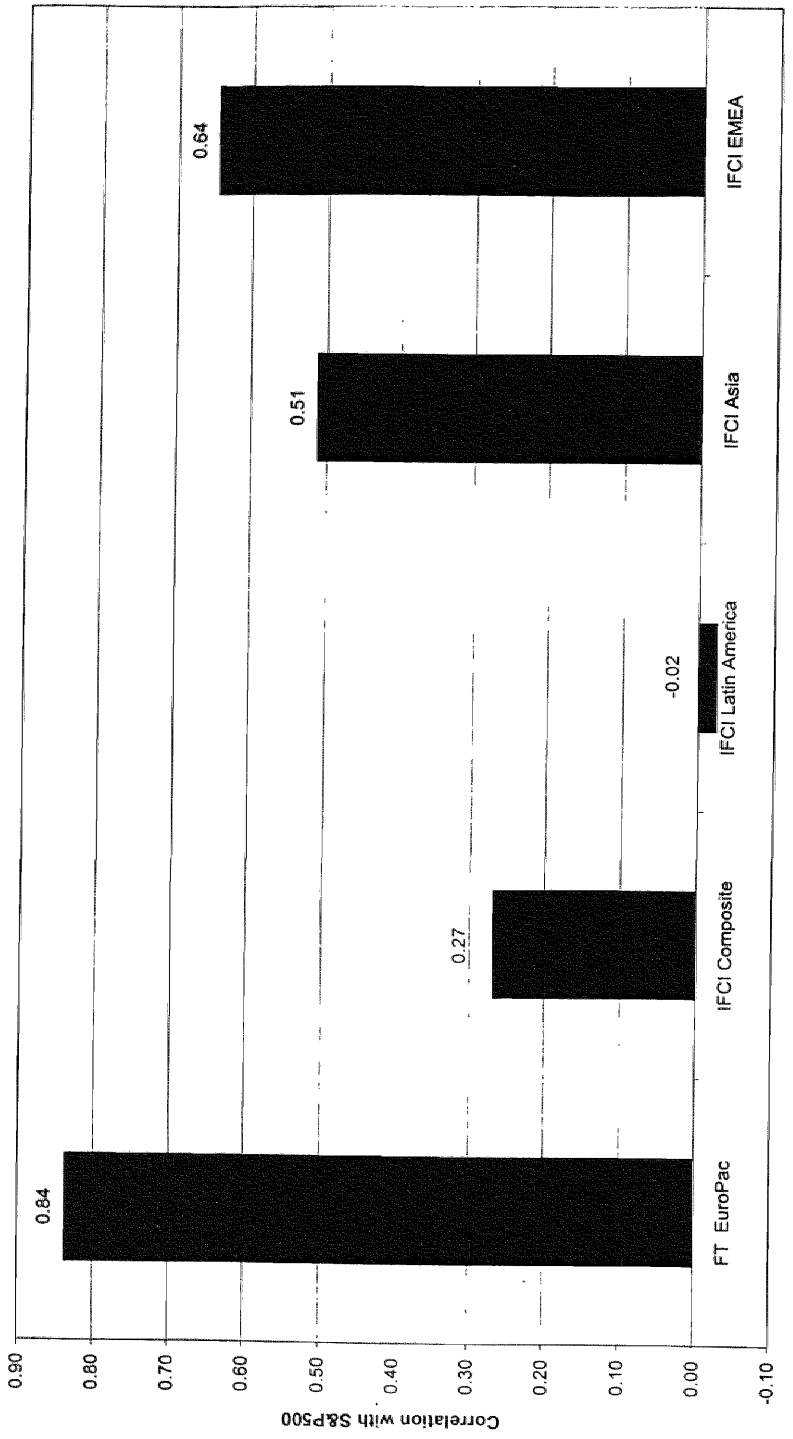
8 With the exception of the second half of 1996.

9 The remainder of this section will not discuss the risks associated with international investment mentioned in section 2 but focus on the evaluation of the diversification benefits i.e. those driven by low correlation. The risks discussed in section 2 are present or investor-perceived in emerging as well as developed markets. I.e. the psychological barriers might be even stronger and currency risk has to be considered carefully. Political risk and regulatory barriers clearly have to be taken into account.



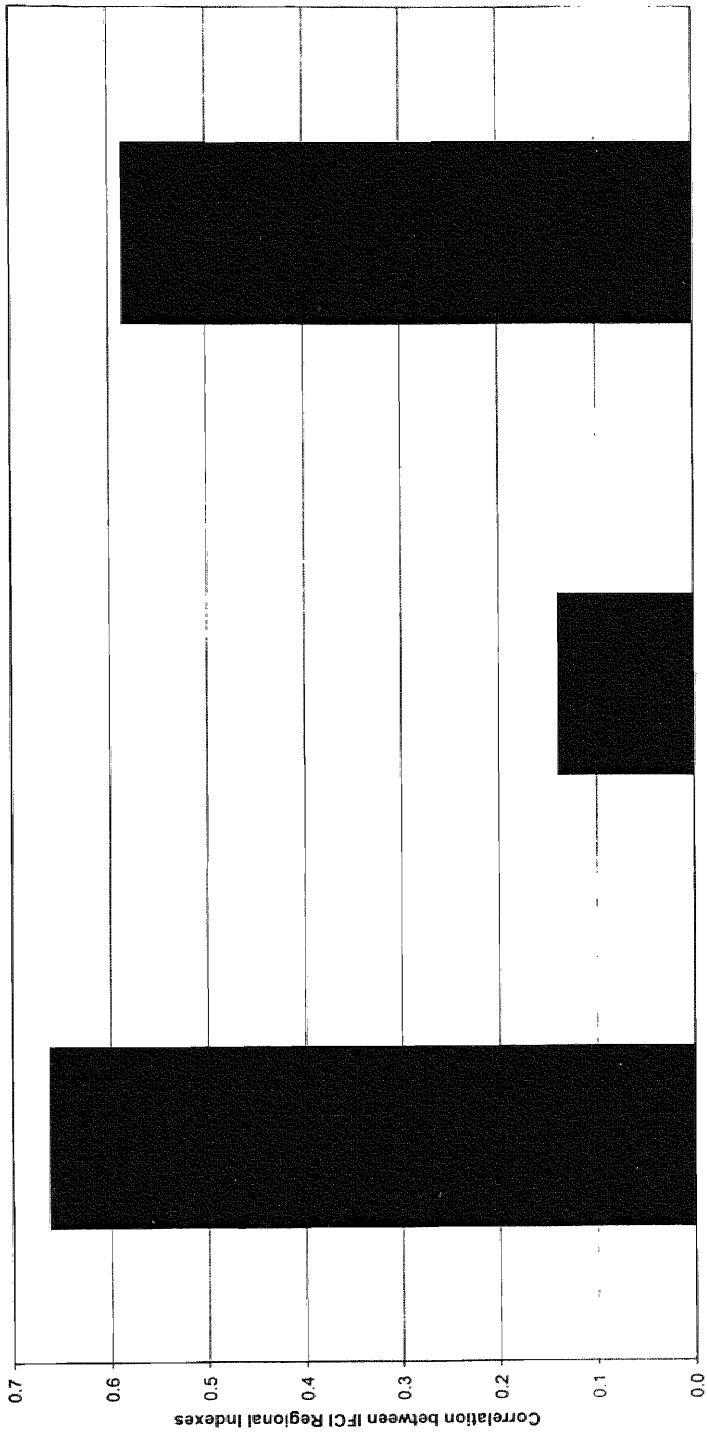
Note: The IFCI indexes represent monthly, total return indexes measured in US$ with a base of 100 in 1988. Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. 2: Stock Market Performance in Developed and Emerging Markets



Note: The correlations are calculated based on the end-of-the-month index levels between January 1993 and December 1996. The IFCI indexes represent total return indexes measured in US$.
Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. 3.1: Correlation between Developed and Emerging Markets



Note: The correlations are calculated based on the end-of-the-month index levels between January 1993 and December 1996. The IFCI indexes represent total return indexes measured in US$.
Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. 3.2: Correlation between Emerging Markets

For details of individual country correlations see table 2. Here, some very low correlations such as the one between Sri Lanka and the U.S. of -0.49 or China and Jordan of -0.71 can be found. Some countries however exhibit rather high correlations such as Korea and Thailand with 0.84. However, compared to developed market correlations of figure 3.1, emerging market correlations are low but varying from country to country.

Given the high returns, high volatilities, but low correlations of emerging markets, how do these emerging markets affect the overall portfolio risk and return of an internationally diversified portfolio? One way to illustrate this effect is to look at the efficient frontier, a concept that is also founded in Markowitz' portfolio theory. The efficient frontier contains only dominant or optimal portfolios, those which combine securities in such a way that maximizes return for a given level of portfolio risk or that alternatively minimizes portfolio risk for a given level of return. Figure 4 shows the efficient frontiers for international portfolios excluding and including emerging market securities. When investing only in developed markets, investors could have achieved optimal portfolio combinations with risk levels measured as the variance of portfolio returns between 6 and 7 and monthly return between 1.32% and 1.38% (see insert in figure 4). When, however, investing in emerging as well as developed markets, investors could have achieved a reduction of portfolio risk at equivalent return (or alternatively a higher return at the same level of risk) as the efficient frontier for international portfolios including emerging markets lies above the one for portfolios excluding emerging markets. Portfolios including emerging markets dominate those that exclude emerging markets. Furthermore, a second benefit existed: Including emerging markets, portfolios could be constructed that were not available with developed market securities only. For investors with a low level of risk-aversion, high risk-return portfolios with returns above 1.38% and risks above 7 are available. Portfolios with monthly returns up to 1.80% could now be constructed – implying of course a higher portfolio risk up to a variance of 193. In this sense, including emerging market securities creates a more complete global market as emerging market securities expand the risk-return possibilities open to international investors.

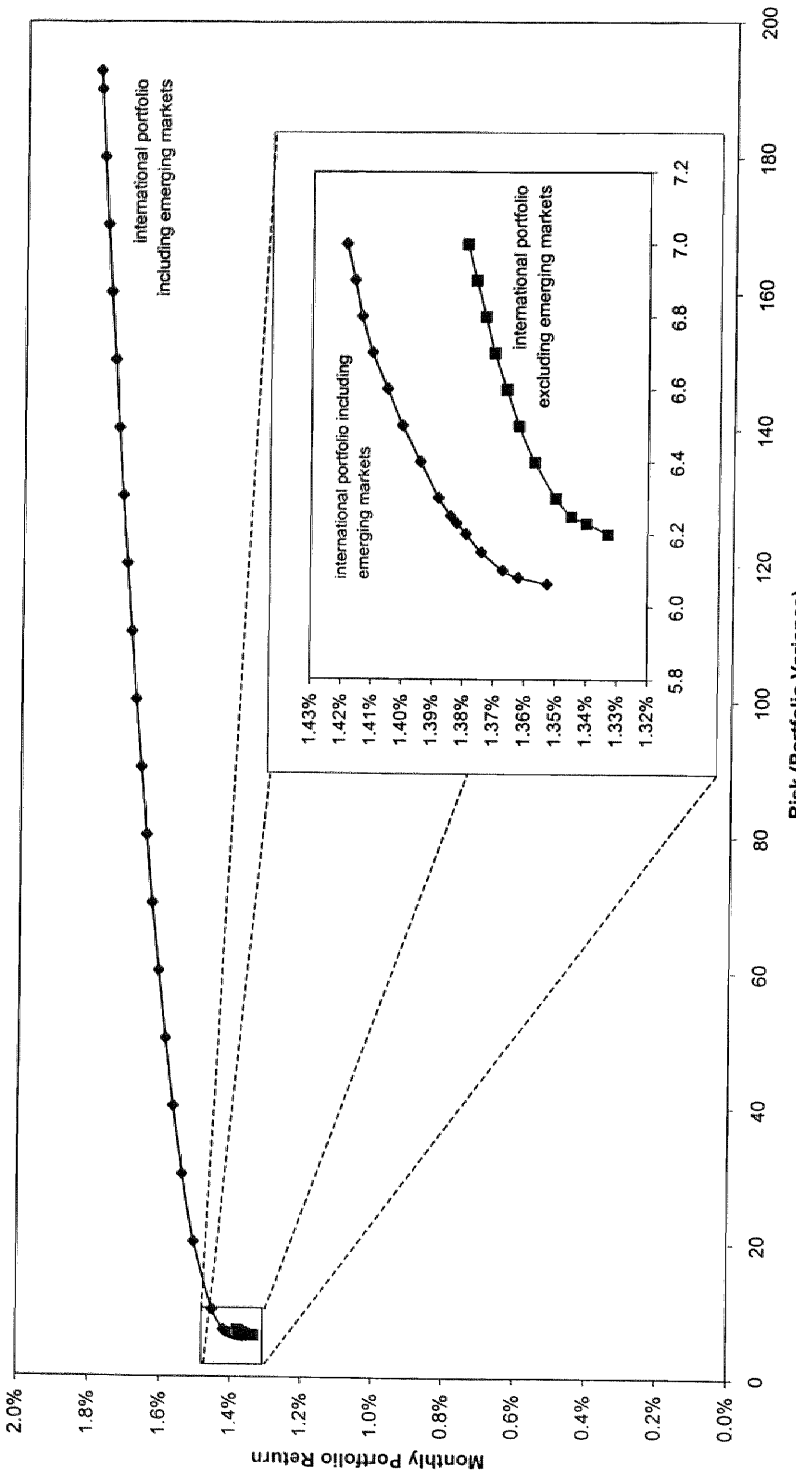
Similar diversification benefits from emerging market investment have been demonstrated by other researchers for the time period between 1960 and 1990 (e.g. Levy and Sarnat 1970, Lessard 1973, Errunza 1977, Agtmael and Errunza 1982, Errunza 1983, Bailey and Stulz 1990, Bailey and Lim 1992, Diwan et.al. 1992 as summarized in Errunza 1994). The empirical evidence in these studies leads to the following conclusions (e.g. Errunza 1994): Emerging markets provide diversification benefits in form of higher returns at lower risks. Even if the market risk of emerging markets is larger than that of large developed markets, their low and even negative correla-

	USA	ARGENTINA	BRAZIL	CHILE	COLOMBIA	MEXICO	PERU	VENEZUELA	CHINA	KOREA	PHILIPPINES	TAIWAN, CHINA	INDIA	INDONESIA	MALAYSIA	PAKISTAN	SRI LANKA	THAILAND	GREECE	HUNGARY	JORDAN	POLAND	PORTUGAL	TURKEY	ZIMBABWE
USA	1.00																								
ARGENTINA	0.43	1.00																							
BRAZIL	0.64	0.67	1.00																						
CHILE	0.54	0.42	0.82	1.00																					
COLOMBIA	0.02	0.55	0.60	0.62	1.00																				
MEXICO	-0.53	0.44	-0.08	-0.32	0.27	1.00																			
PERU	0.82	0.55	0.87	0.87	0.41	-0.35	1.00																		
VENEZUELA	0.15	0.49	0.22	-0.14	0.19	0.39	0.03	1.00																	
CHINA	-0.72	-0.11	-0.58	-0.68	-0.21	0.71	-0.75	0.22	1.00																
KOREA	-0.08	0.24	0.45	0.66	0.62	0.10	0.40	-0.32	-0.25	1.00															
PHILIPPINES	0.49	0.81	0.83	0.79	0.73	0.13	0.77	0.23	-0.37	0.51	1.00														
TAIWAN, CHINA	0.37	0.58	0.77	0.67	0.72	0.05	0.59	0.28	-0.32	0.38	0.78	1.00													
INDIA	-0.35	0.51	0.34	0.31	0.79	0.66	0.07	0.21	0.25	0.59	0.54	0.50	1.00												
INDONESIA	0.74	0.80	0.78	0.66	0.43	-0.04	0.80	0.27	-0.47	0.32	0.84	0.52	0.21	1.00											
MALAYSIA	0.72	0.76	0.82	0.72	0.51	-0.06	0.82	0.32	-0.49	0.31	0.89	0.67	0.26	0.93	1.00										
PAKISTAN	-0.29	0.52	0.40	0.39	0.85	0.59	0.16	0.15	0.14	0.69	0.62	0.49	0.92	0.31	0.34	1.00									
SRI LANKA	-0.49	0.45	0.20	0.11	0.71	0.76	-0.12	0.27	0.37	0.51	0.38	0.31	0.89	0.13	0.14	0.90	1.00								
THAILAND	0.03	0.48	0.50	0.69	0.65	0.19	0.46	-0.21	-0.16	0.84	0.73	0.43	0.64	0.55	0.55	0.75	0.56	1.00							
GREECE	0.85	0.45	0.64	0.64	0.19	-0.41	0.85	0.13	-0.65	0.11	0.58	0.32	-0.12	0.76	0.72	-0.05	-0.26	0.24	1.00						
HUNGARY	0.20	0.87	0.54	0.28	0.65	0.58	0.36	0.61	0.04	0.17	0.69	0.53	0.65	0.61	0.59	0.62	0.61	0.36	0.36	1.00					
JORDAN	0.77	0.54	0.67	0.66	0.33	-0.32	0.80	0.18	-0.71	0.26	0.63	0.32	-0.04	0.84	0.80	0.10	-0.08	0.39	0.82	0.40	1.00				
POLAND	0.35	0.85	0.54	0.33	0.53	0.41	0.45	0.61	-0.07	0.16	0.70	0.45	0.50	0.72	0.69	0.51	0.49	0.39	0.52	0.90	0.56	1.00			
PORTUGAL	0.73	0.71	0.87	0.76	0.60	-0.14	0.85	0.36	-0.59	0.27	0.84	0.73	0.26	0.83	0.90	0.32	0.12	0.42	0.78	0.66	0.79	0.70	1.00		
TURKEY	0.45	0.25	0.28	0.26	-0.14	-0.19	0.34	0.15	-0.20	-0.05	0.33	0.09	-0.16	0.56	0.57	-0.11	-0.14	0.23	0.45	0.13	0.52	0.34	0.40	1.00	
ZIMBABWE	0.88	0.53	0.74	0.50	0.13	-0.32	0.82	0.31	-0.53	-0.19	0.61	0.54	-0.22	0.74	0.80	-0.25	-0.43	-0.16	0.75	0.33	0.68	0.39	0.87	0.12	1.00

Note: The correlations are calculated based on monthly IFCI total return indexes from January 1993 until December 1996 with the exception of the USA (S&P500) and Zimbabwe (June 1993 to December 1996).

Source: The underlying index values have been obtained from the Emerging Stock Markets Factbook (IFC, various issues).

Table 2: Stock Market Correlations.



Note: The portfolios are constructed based on average monthly return and risk measures from January 1993 until December 1996. The developed markets are represented by the S&P500 and the FT EuroPac, the emerging markets are represented by the IFCI total return Composite Index. All indexes are measured in US$. Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. 4: Efficient Frontiers

tions with developed markets allow for these overall diversification benefits. Furthermore, correlation between emerging markets has been found to be virtually non-existent[10]. These historically documented benefits from emerging market investment depend of course on the fact that market correlations remain low in the future. One line of research (e.g. Michaud et.al. 1996, Solnik et.al. 1996, or as reported in Errunza 1994), investigating the stability of correlations over time, could not find clear evidence for increasing correlation of developed or emerging markets. Correlations have been changing over time without exhibiting an overall-increasing trend. One aspect of correlation movements that has become evident during the second half of the 1990s and that could greatly limit the benefits of international diversification especially in emerging countries, however, has to be investigated in detail. As figures 2 and A.1 to A.4 reveal, stock markets dropped significantly at the end of 1994 and at the beginning of 1995. The largest movement occurred in the Mexican market that had already lost about 20% between September and December of 1994. In December 1994, the market fell by 51.32% and by further 44.95% in January 1995, followed by another 21.09% loss in February. In March finally a small positive return of 2.86% was achieved. The sever crisis in Mexico of 1994 involving financial events such as currency devaluation and a deterioration of banks' balance sheet due to loan losses but also political events such as the assassination of a leading presidential candidate and the uprising in Chiapas, had lead to investor uncertainty reflected in a significant outflow of foreign portfolio investment and consequently to the collapse of the Mexican stock market (e.g. Grabel 1996, Mishkin 1996). However, this downward movement was not limited to Mexico or Latin American markets but could be observed for most emerging markets as figures 2, A.1 to A.4, and table 3 report. In Asia markets dropped – with the exception of Taiwan – between 1.33% and 16.50% in December and between 4.65% and 18.15% in January. In other regions extreme losses such as 35.35% in Hungary or 25.45% in Poland could be observed in January[11]. Overall, confidence in emerging markets as a whole fell and portfolio equity flows to all emerging markets dropped from $2,120 million in 1993 to $1,580 million in 1994 and $1,380 million in 1995 as reported in table 1.

10 One reason for these clearly different risk return characteristics might be found in the fact that international equity markets are segmented rather than integrated. If market segmentation is prevailing, securities of similar risk classes exhibit different return patterns that are consistent over time and thus not exploited and consequently eliminated by international arbitrageurs. Based on the data used in this paper, risk adjusted returns – measured as average monthly return divided by the standard deviation of return – differ across countries with values such as 0.14% per month for the IFCI Latin America or 0.22% per month for IFCI Asia. However preliminary, these data provide evidence for market segmentations. In more rigorous study of market integration conducted by DeFusco et.al. (1996) no evidence for market integration could be found. Thus, market segmentation can be seen as one potential reason for the demonstrated benefits of emerging markets investment.

11 Similar figures have been reported by Smith and Walter (1995).

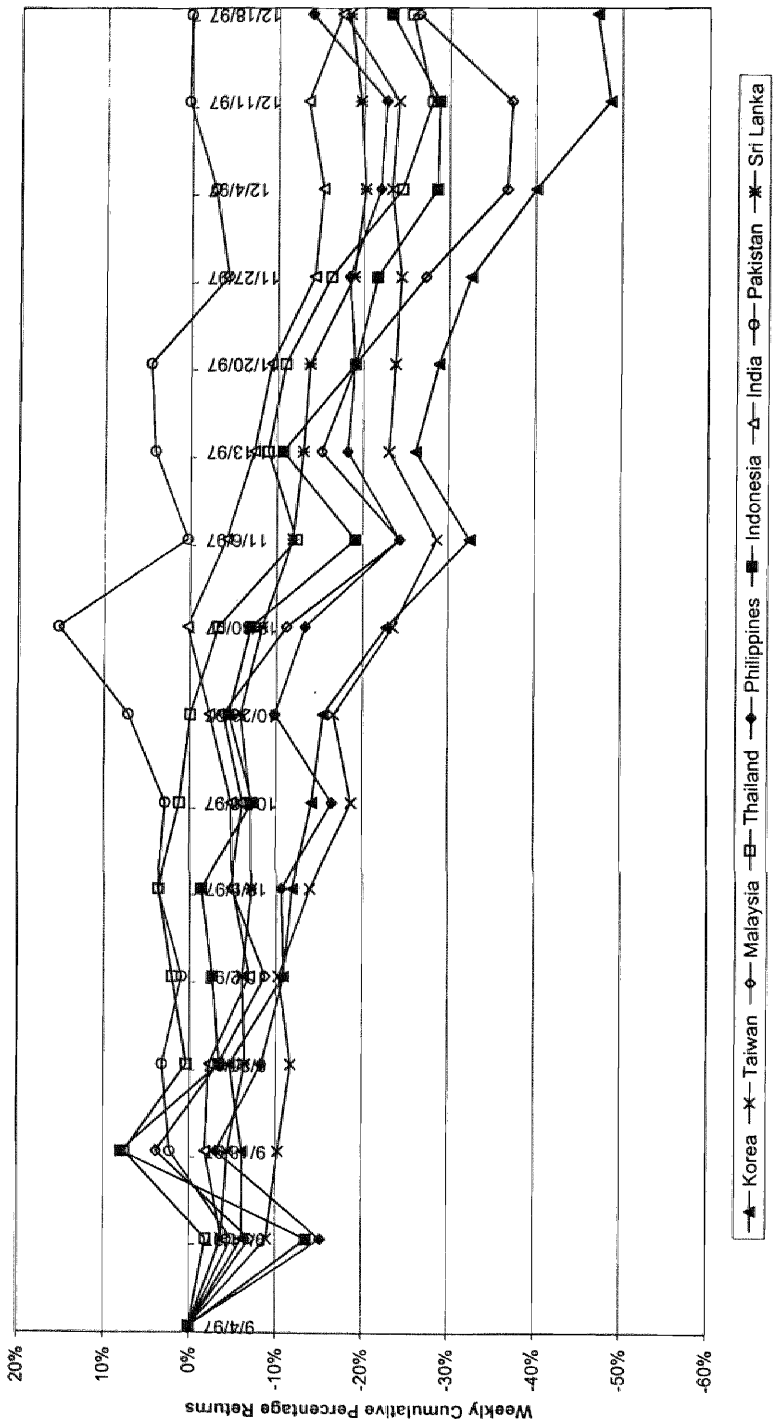
Lstin America										
country	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela			
monthly return December 1994	-14.68%	-5.90%	-4.66%	5.38%	-51.32%	-2.47%	10.38%			
monthly return January 1995	-4.99%	-10.02%	-4.22%	9.82%	-44.95%	-23.61%	-6.54%			
monthly return February 1995	-26.46%	-17.04%	-3.65%	-7.09%	-21.09%	-6.20%	-11.08%			
Asia										
country	China	India	Indonesia	Korea	Malaysia	Pakistan	Philippines	Sri Lanka	Taiwan, China	Thailand
monthly return December 1994	-16.50%	-4.75%	-1.33%	-5.69%	-3.22%	-5.90%	0.76%	-7.74%	11.60%	-2.27%
monthly return January 1995	-17.59%	-11.86%	-9.02%	-10.26%	-13.97%	16.92%	-18.15%	-4.65%	-13.50%	-9.25%
monthly return February 1995	10.14%	-5.90%	7.31%	-3.65%	13.31%	5.68%	1.54%	-22.04%	2.77%	7.63%
Europe, Mideast, Africa										
country	Greece	Hungary	Jordan	Poland	Portugal	Turkey	Zimbabwe			
monthly return December 1994	3.57%	-9.83%	-2.67%	-7.29%	-2.73%	-8.84%	-7.70%			
monthly return January 1995	-6.24%	-35.35%	1.40%	-25.45%	-7.44%	-11.96%	6.21%			
monthly return February 1995	2.70%	-0.08%	2.41%	3.04%	5.20%	8.94%	-19.26%			

Note: The returns are calculated based in IFCI total return indexes measured in US$ for the individual countries as reported in the Emerging Stock Market Factbook (IFC, various issues).

Table 3: Stok Market Returns During the Mexico Crisis.

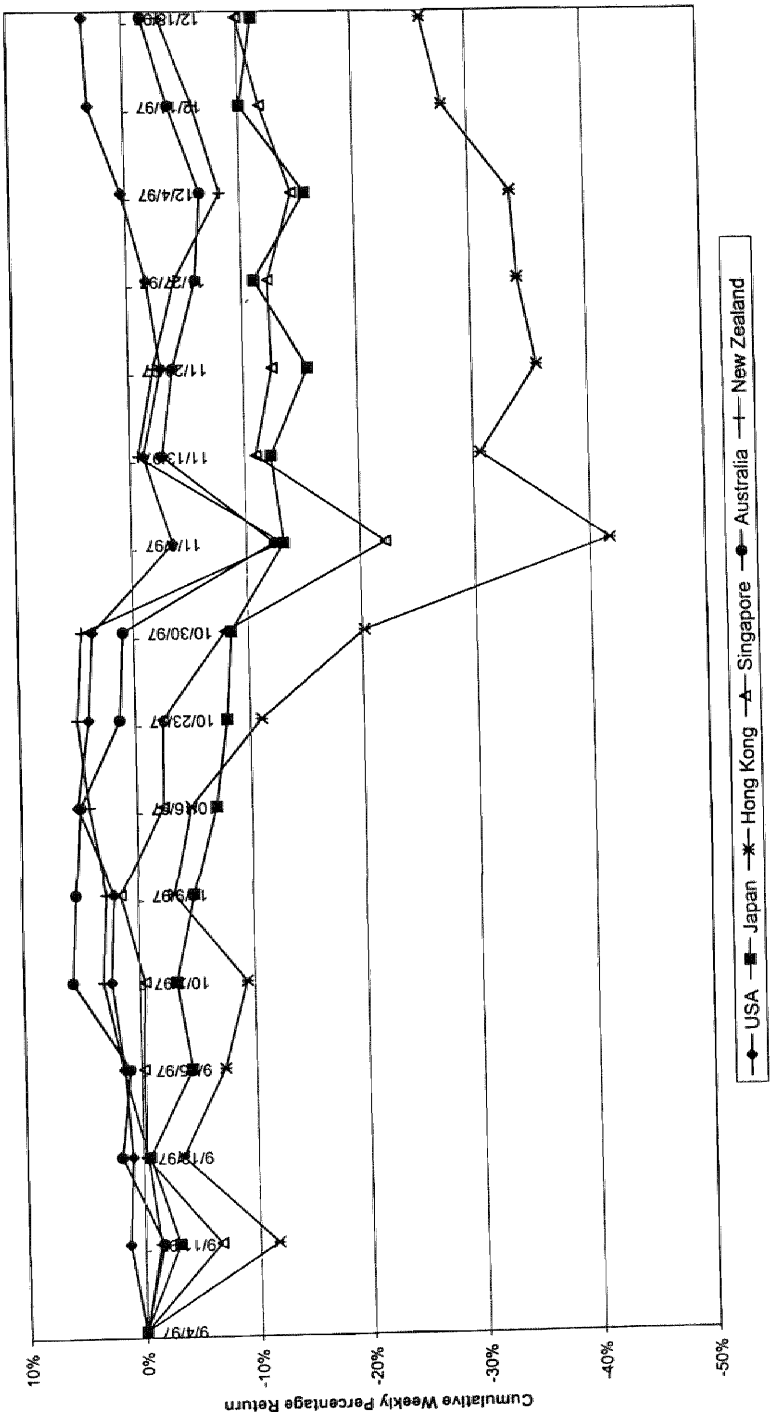
A second crisis, which has affected stock markets in a similar manner, occurred just 2 years later. Starting in July 1997 in Thailand, an economic and financial crisis spread through Asia, in especially affecting Indonesia, South Korea, Malaysia, the Philippines and Hong Kong. As in Mexico, banking failures and currency devaluation characterized the situation (e.g. Sender 1997, Warner 1997). This crisis affected not just regional stock markets but emerging as well as developed markets worldwide. As figure 5.1 shows, Asian emerging markets dropped during October and November 1997 with a particularly pronounced downward movement in the first half of November, followed by a short-term upward movement in the second half of November, only to drop further during the remainder of the month before seemingly stabilizing in December. As with the Mexican crisis, these stock market effects were not limited to the region were the underlying fundamental causes occurred but spilled over into markets of other regions. As figure 5.2 shows, developed markets were equally affected during October and November 1997 with stabilization occurring towards the end of the year.

Evaluating the benefits of international diversification in emerging markets in the light of these two crises raises the question whether diversification really works as well as the previous evidence has suggested. As market correlations are the key forces behind the diversification benefits, it is useful to analyze these correlations during a financial crisis. The fact that both the Mexican as well as the Asian crisis spilled over dramatically into other markets provides first evidence that stock market returns are not as uncorrelated as they might appear. Table 4 presents the actual market correlations during the Asian crisis. Compared to table 2, the correlations are clearly higher between developed and emerging markets as well as between emerging markets. During the height of the Asia crisis, correlations above 0.75 were no exception. Similar increases in stock and bond market correlations have been found for the October 1987 stock market crash (e.g. Roll 1988, Bookstaber 1997) and for the 1992 ERM crisis and the 1990 Iraq crisis (e.g. Bookstaber 1997). Furthermore, the evidence presented in this paper is supported in general by empirical evidence (e.g. Solnik et.al. 1996) that market correlation increases when volatility increases. Thus one can generally assume that in times of a stock market crisis, when volatility is high, correlations also tend to be high. Thus, in cases of financial crisis, international portfolio does not seem to provide the protection against adverse market movements as the previous data suggest. But it is just in these times of financial crises, that investors especially want to rely on the diversification potential of emerging markets.



Note: The returns are calculated based on weekly data for local market indexes. Source: Far Eastern Economic Review (various issues in 1997)

Fig. 5.1: Market Returns for Emerging Markets in Fall 1997.



Note: The returns are calculated based on weekly data for local market indexes. Source: Far Eastern Economic Review (various issues in 1997)

Fig. 5.2: Stock Market Returns for Developed Markets in Fall 1997.

	USA	Japan	Korea	Taiwan	Hong Kong	Malaysia	Singapore	Thailand	Philippines	Indonesia	India	Pakistan	Sri Lanka	Australia	New Zwaland
USA	1.00														
Japan	0.91	1.00													
Korea	0.89	0.71	1.00												
Taiwan	0.76	0.59	0.89	1.00											
Hong Kong	0.97	0.84	0.96	0.89	1.00										
Malaysia	0.86	0.63	0.98	0.83	0.91	1.00									
Singapore	0.86	0.68	0.87	0.94	0.93	0.81	1.00								
Thailand	0.88	0.68	0.96	0.73	0.90	0.98	0.74	1.00							
Philippines	0.94	0.79	0.91	0.91	0.98	0.86	0.98	0.82	1.00						
Indonesia	0.89	0.75	0.94	0.72	0.90	0.96	0.76	0.96	0.82	1.00					
India	0.64	0.52	0.65	0.23	0.56	0.71	0.27	0.83	0.42	0.77	1.00				
Pakistan	0.73	0.47	0.68	0.37	0.65	0.76	0.53	0.82	0.61	0.79	0.82	1.00			
Sri Lanka	0.74	0.57	0.85	0.54	0.74	0.89	0.50	0.95	0.62	0.87	0.93	0.78	1.00		
Australia	0.86	0.63	0.84	0.84	0.89	0.83	0.96	0.77	0.94	0.80	0.38	0.72	0.54	1.00	
New Zealand	0.87	0.65	0.84	0.84	0.89	0.82	0.96	0.76	0.95	0.79	0.37	0.70	0.53	1.00	1.00

Note: The correlations are calculated based on weekly local stock market index levels from October 23 to November 27, 1997.
Source: The stock market indexes underlying these correlations are reported in the Far Eastern Economic Review.

Table 4: Stock Market Correlation During Asia Crisis in Fall 1997.

7.4 CONCLUSIONS REGARDING INTERNATIONAL INVESTMENT STRATEGIES INVOLVING EMERGING MARKETS

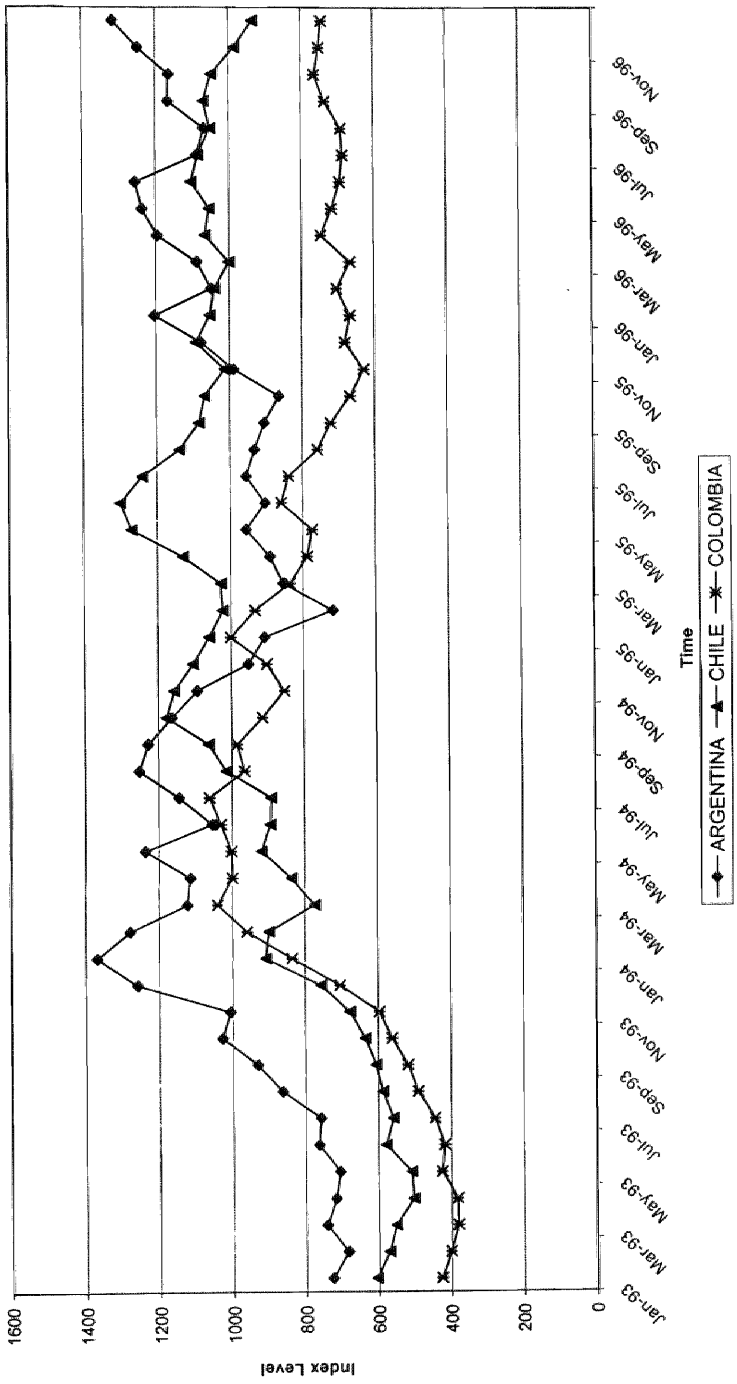
Having learned the lessons from the two recent crises that the benefits from emerging market diversification are not automatic and that the perception of emerging market investment as a "free lunch" is utterly misleading, international investors have had to change their investment strategies yet again. Following the emerging markets investment wave of the early 1990s, the current situation calls for a more critical investment approach in especially including a more careful asset allocation decision across different markets. Models for global rather than domestic asset allocation are not only being developed for developed markets -as for example the models proposed by Kahn et.al. (1996) and Chaumeton et.al. (1996)- but models specifically tested on developed as well as emerging markets are available, for example the global asset allocation model developed by Akdogan (1996) or the asset allocation approaches based on country risk measures proposed by Erb et.al. (1995, 1996). One of the most important considerations in international emerging market investment, is that of expected correlations. As Erb et.al. (1994) state: "If a portfolio is formed based on average correlations [...] the performance of the investment could be worse than expected in down markets because the correlations increase. The lesson is that portfolios need to be constructed on the basis of expected correlation rather than past averages." In order to be able to forecast correlations, Erb et.al. (1994) developed a multivariate forecasting model based on lagged values for return, dividend yield, and term spread for both markets in questions, and on lagged correlations. Correlations for different horizons can thus be calculated using different lags. The model's correlation forecasts differ from forecasts based on historic correlations only and thus also lead to different portfolio allocations. Overall, the model seems to be able to predict most of the variation in correlations and can therefore serve as a very useful tool in fund allocation decisions regarding different countries. The focus of the above models on specific asset allocation and risk assessment reflects the expected changes in investor behavior as predicted by Smith and Walter (1996) after the Mexico crisis: Investors will be more careful in investing large amounts of funds in emerging markets and will be especially cautious not to rely too heavily on the low historic correlations between the emerging markets. Furthermore, investors might become more concerned about the specific country risk of their investment as is reflected in political risk, liquidity risk, or market inefficiencies. Finally, the large volatility of emerging markets requires substantial investments and higher than previously assumed risk-premia. Overall, it seems that the new millenium will be the era for the specialist among the international investors in emerging markets.

Appendix

				% witholding taxes for US institutional investors on		
market	access in listed stocks	repatriation of income	repatriation of capital	interest	dividends	long term capital gains
Argentina	free entry	free	free	0.0	0.0	0.0
Bangladesh	free entry	free	free	0.0	15.0	0.0
Bostwana	free entry	free	free	0.0	15.0	0.0
Brazil	free entry	free	free	15.0	0.0	0.0
Bulgaria	free entry	free	free	0.0	30.0	0.0
Chile	relatively free entry	free	after 1 year	35.0	35.0	35.0
China	special classes of shares	free	free	0.0	20.0	0.0
Colombia	authorized investors only	free	free	0.0	0.0	0.0
Costa Rica	free entry	free	free	24.5	0.0	14.8
Cote d'Ivoire	relatively free entry	free	free	0.0	10.0	0.0
Czech Republick	free entry	free	free	0.0	0.0	0.0
Ecudor	free entry	free	free	0.0	0.0	0.0
Egypt	free entry	free	free	0.0	0.0	0.0
Ghana	free entry	free	free	30.0	10.0	0.0
Greece	free entry	free	free	15.0	0.0	0.0
Hungary	free entry	free	free	0.0	10.0	0.0
India	authorized investors only	free	free	20.0	20.0	10.0
Indonesia	relatively free entry	some restrictions	some restrictions	20.0	20.0	0.1
Jamaica	relatively free entry	free	free	25.0	25.0	0.0
Jordan	free entry	free	free	0.0	10.0	0.0
Kenya	relatively free entry	free	free	10.0	10.0	0.0
Korea	relatively free entry	free	free	13.5	16.5	0.0
Latvia	free entry	free	free	0.0	10.0	0.0
Lithuania	relatively free entry	free	free	0.0	0.0	0.0
Malaysia	free entry	free	free	15.0	0.0	0.0
Mauritius	free entry	free	free	0.0	0.0	0.0
Mexico	free entry	free	free	0.0	0.0	0.0
Namibia	free entry	free	free	0.0	10.0	0.0
Nigeria	free entry	free	free	10.0	10.0	10.0
Oman	relatively free entry	free	free	0.0	0.0	0.0
Pakistan	free entry	free	free	15.0	15.0	0.0
Panama	free entry	free	free	0.0	10.0	0.0
Peru	free entry	free	free	0.0	0.0	0.0
Philippines	special classes of shares	free	free	20.0	15.0	0.0
Poland	free entry	free	free	40.0	20.0	0.0
Portugal	free entry	free	free	20.0	17.5	0.0
Russia	free entry	free	free	15.0	15.0	20.0
Slovakia	free entry	free	free	15.0	15.0	15.0
Slovenia	closed	restrictions	restrictions	0.0	15.0	0.0
South Africa	free entry	free	free	0.0	0.0	0.0
Sri Lanka	relatively free entry	some restrictions	some restrictions	0.0	15.0	0.0
Taiwan, China	authorized investors only	some restrictions	some restrictions	20.0	35.0	0.0
Thailand	relatively free entry	free	free	15.0	10.0	0.0
Trinidad & Tobago	relatively free entry	free	free	25.0	25.0	0.0
Turkey	free entry	free	free	0.0	0.0	0.0
Venezuela	relatively free entry	free	free	5.0	0.0	0.0
Zambia	free entry	free	free	0.0	15.0	0.0
Zimbabwe	free entry	free	free	10.0	15.0	10.0

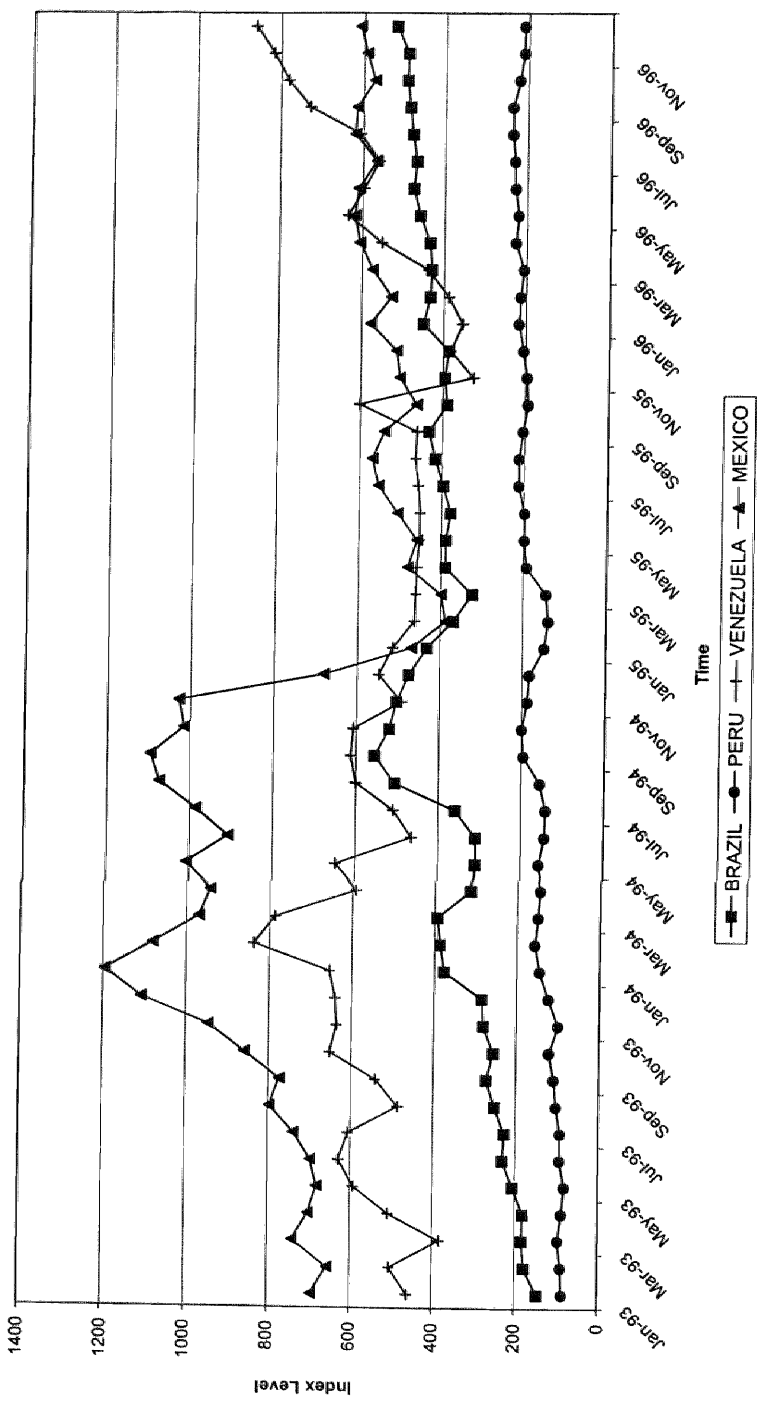
Note: Conditions as present at the end of 1996. Source: Emerging Stock Markets Factobook (IFC. 1997).

Table A.1: Institutional Aspects of Emerging Stock Markets.



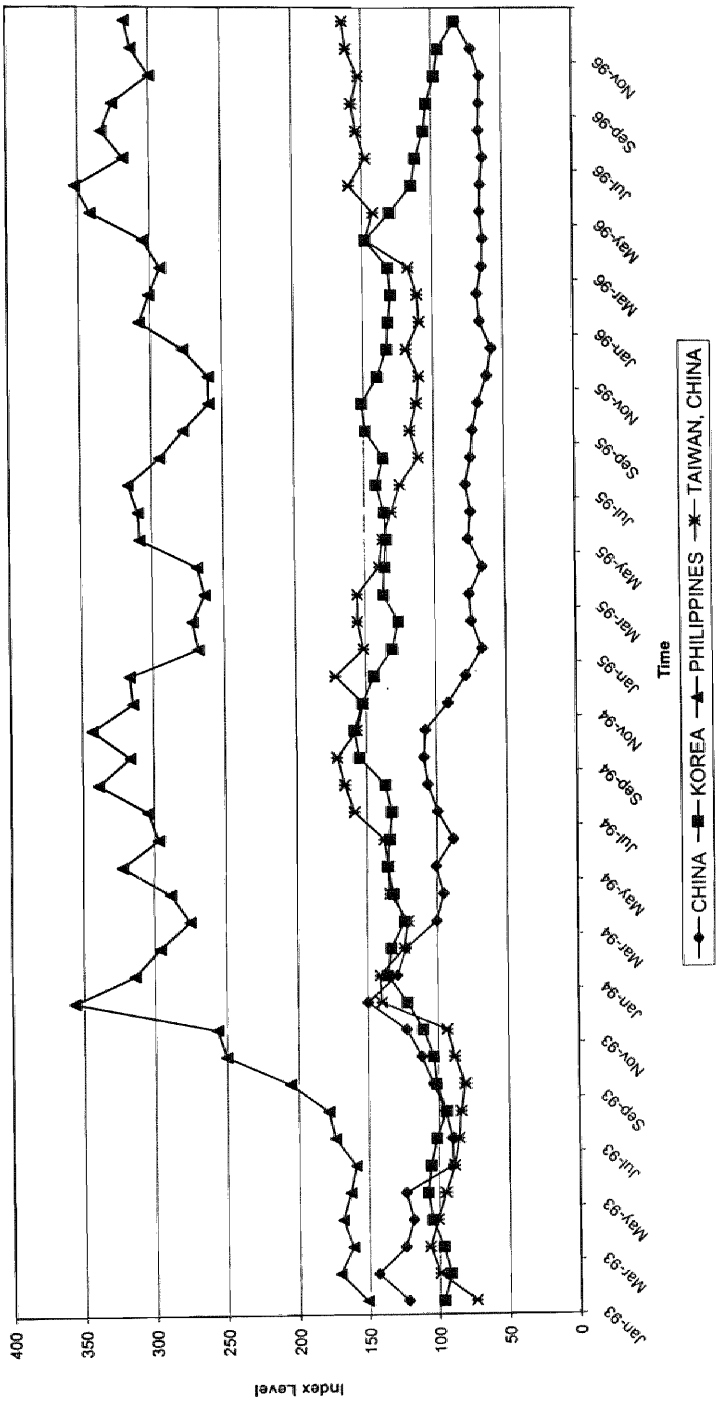
Note: The IFCI indexes represent monthly, total return indexes measured in US$ with a base of 100 in December 1988 with the exception of Colombia (base = February 1991).
Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. A.1: Stock Market Performance in Latin America.



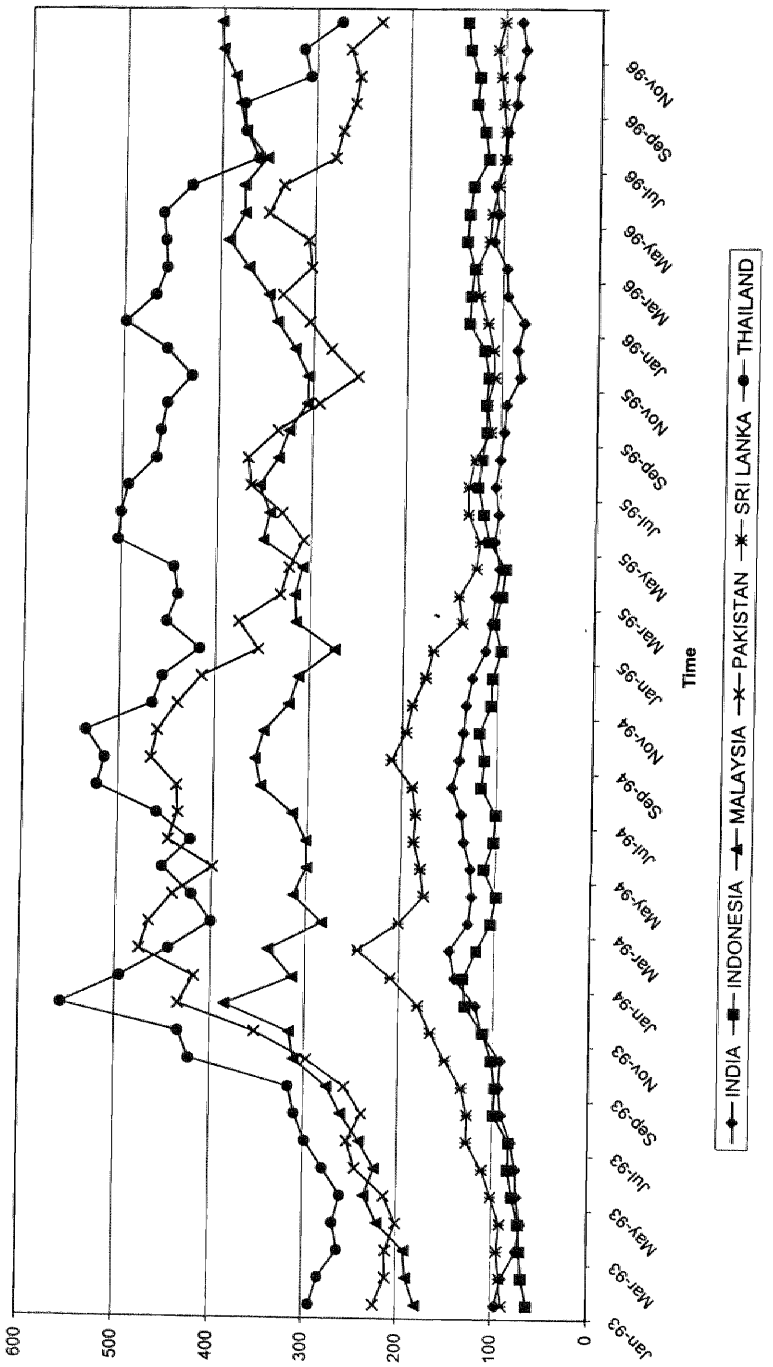
Note: The IFCI indexes represent monthly, total return indexes measured in US$ with a base of 100 in December 1988 with the following exceptions: Peru (December 1992), Venezuela (January 1990). Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. A.1 (cont.): Stock Market Performance in Latin America.



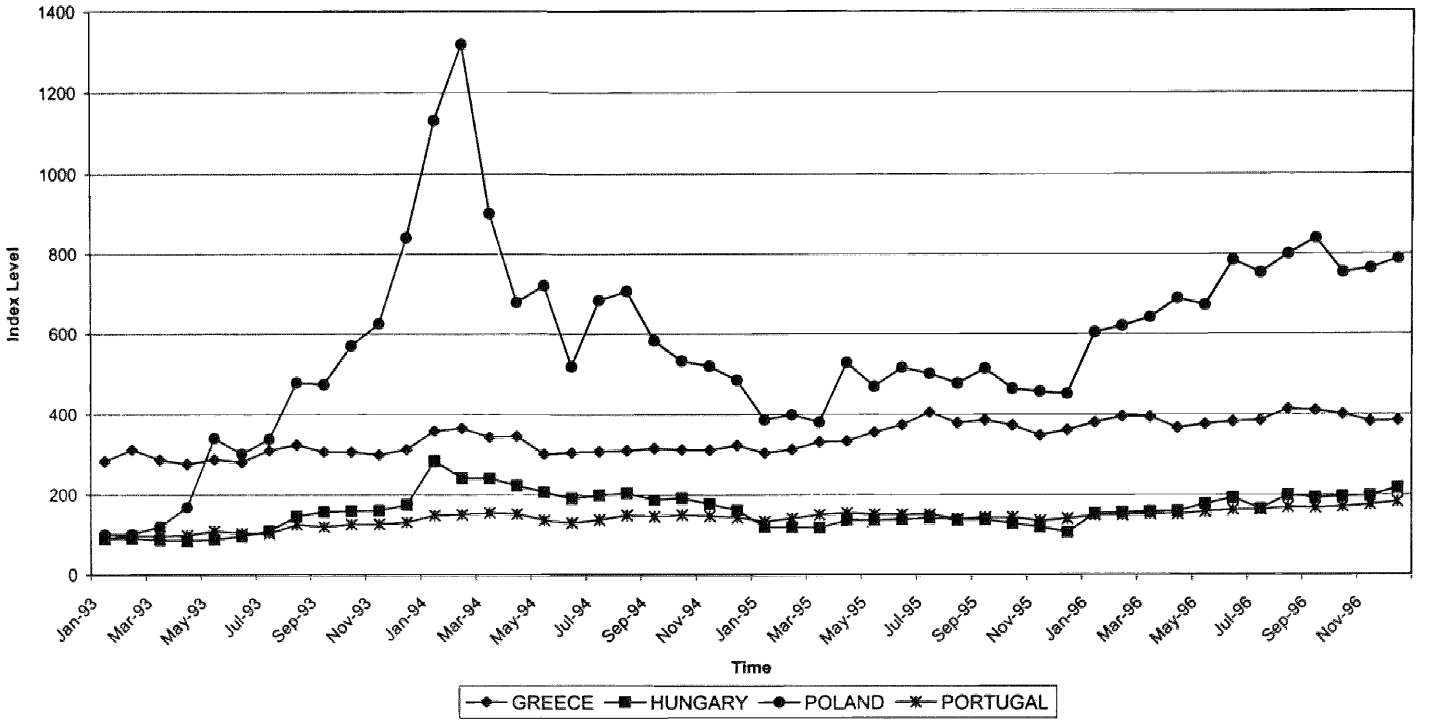
Note: The IFCI indexes represent monthly, total return indexes measured in US$ with a base of 100 in 1988 with the following exceptions: China (December 1992), Korea (January 1992), Taiwan (January 1991). Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. A.2: Stock Market Performance in East Asia.



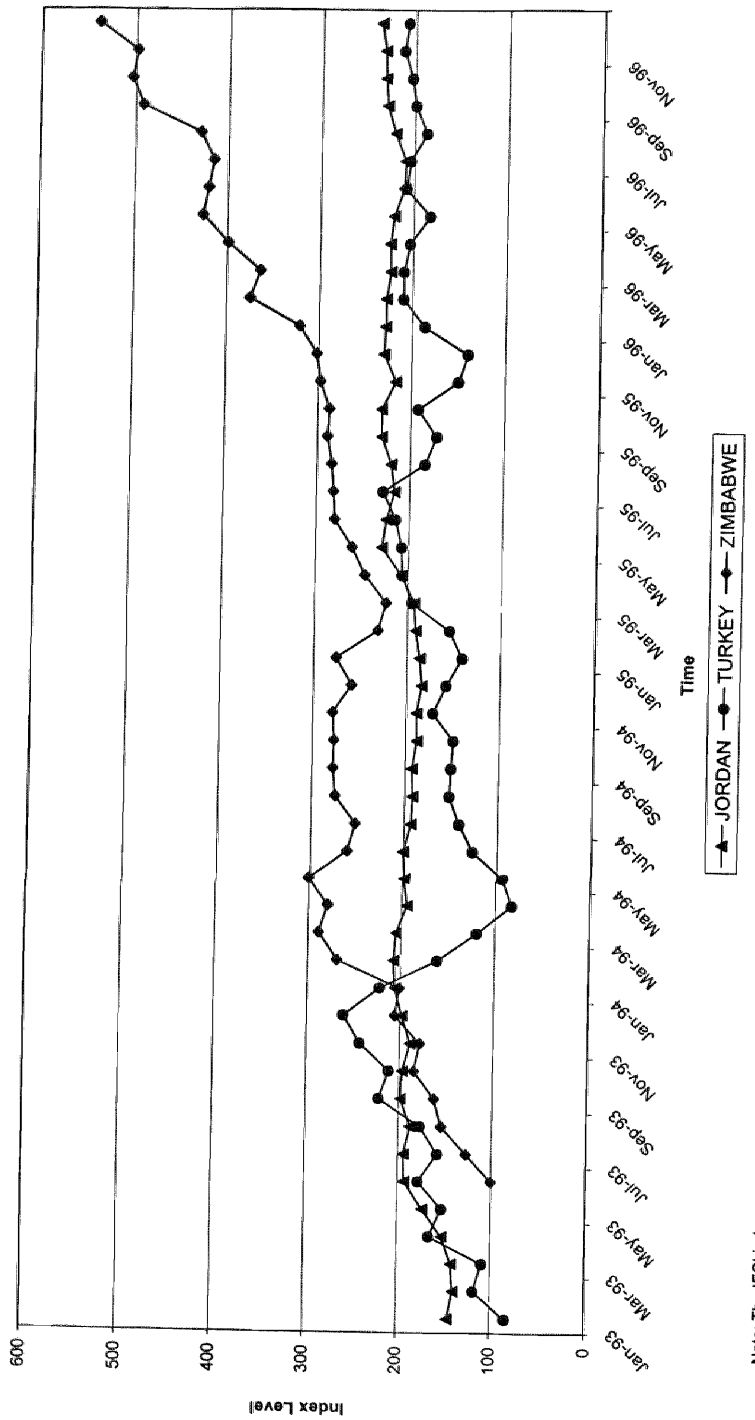
Note: The IFCI indexes represent monthly, total return indexes measured in US$ with a base of 100 in 1988 with the following exceptions: India (November 1992), Indonesia (September 1990), Pakistan (March 1991), Sri Lanka (December 1991). Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. A.3: Stock Market Performance in South Asia.



Note: The IFCI indexes represent monthly, total return indexes measured in US$ with a base of 100 in 1988 with the following exceptions: Hungry (December 1992), Poland (December 1992). Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. A.4 : Stock Market Performance in Europe, Mideast, and Africa.



Note: The IFCI indexes represent monthly, total return indexes measured in US$ with a base of 100 in 1988 with the following exceptions: Turkey (August 1989), Zimbabwe (June 1993).
Source: Emerging Stock Markets Factbook (IFC, various issues).

Fig. A.4 (cont.): Stock Market Performance in Europe, Mideast, and Africa.

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