

---

# **A Review of Research into Emerging Stock Markets**

**S G M Fifield, A A Lonie and D M Power<sup>1</sup>**

---

---

## **Abstract**

*Emerging stock markets have been the subject of extensive scrutiny since their emergence as a separate investment category some twenty years ago. This review article explores the major debates which have taken place in the emerging stock market literature, including (1) the definition of what constitutes an emerging stock market, (2) the diversification benefits of incorporating equities from emerging markets into an investment portfolio, (3) the predictability of returns in emerging stock markets and (4) the character and volatility of emerging market equity returns. This review analyses the existing research into emerging markets and also indicates areas where future research might prove useful.*

---

## **1. Introduction**

Recent years have seen a tremendous growth in the opportunities for developed country investors to acquire shares in emerging stock markets (ESMs). Specialist unit and investment trusts have been set up which invest wholly or primarily in the securities traded on these smaller stock exchanges and increasingly, large financial institutions have introduced an ESM component in their global security portfolio. This increasing interest in emerging markets has generated a fast-growing body of academic research. This review article summarises the findings of this research, highlights the major controversies and indicates possible avenues for future research.

A variety of topics is examined in the ten sections of this paper. Section 2 briefly

outlines the background to the concept of emerging market investment and explains the different ways in which the term 'emerging market' is defined. Sections 3 and 4 present an overview of, and the motivations for, foreign portfolio investment in emerging stock markets. The risk-return characteristics and diversification properties of emerging stock markets are analyzed in sections 5, 6 and 7; which also considers the nature of the possible gains from ESM diversification. Section 8 examines whether emerging markets have become more fully integrated into the system of international security markets in recent years and considers the potential of these markets for diversification in the future. Section 9 discusses the predictability of emerging market share returns, and the possible implications of this apparent predictability for portfolio investment strategies. Section 10 focuses on emerging stock market volatility. In particular, the nature and the determinants of both the time-series and the cross-sectional behaviour of ESM volatility are explored. A final section offers conclusions and suggests areas where future research might be valuable.

## **2. The definition of an emerging market**

The concept of emerging market investment dates back to before the turn of the century, with the formation in 1868 in the UK of the Foreign & Colonial Investment Trust, whose aim was to invest in the railway and trading companies of America. The promotion of shares in emerging equity markets as a form of institutional portfolio investment did not take place for over a hundred years. However,

during the past thirty years the recognition of emerging market securities as eligible portfolio assets has received an impetus from several sources. For example, the establishment in 1971 of a unit in the International Finance Corporation (IFC) responsible for capital market development succeeded in focusing the attention of the member countries of the World Bank Group on the importance of securities markets as an essential mechanism in mobilising domestic savings and in attracting foreign capital to developing economies. However, despite this emphasis on capital market development, it was not until 1987, with the formation of the Templeton Emerging Markets Fund in the USA, that investment in emerging markets became a recognised investment category. Nevertheless, there remains no universally accepted operational definition of what precisely constitutes an emerging market, with a wide range of definitions employed in both the academic and the professional literature.

One of the earliest attempts to classify emerging markets into homogenous groupings was made by Errunza (1983). While this classification affords no definition, it does provide a guide as to the financial markets that the term 'emerging markets' may embrace. Errunza suggested that the term subsumes three general categories of financial markets, although these are by no means mutually exclusive. The first category includes the old-established markets, many of which have been in place for over a century. For example, the first attempt to establish a stock market in Caracas, Venezuela, took place as early as 1805, when a group of businessmen founded the Commerce Exchange. Indeed, many markets in the Latin American region date back to the 1800s. The second category identified by Errunza includes those markets that owe their growth and development to special situations. For

example, active government support, turmoil in the Middle East and OPEC money are three factors largely responsible for the growth in size and sophistication of the Jordanian market. The third, and final, category includes new markets which have been organised to foster economic growth. An example of such a market is Korea, which has grown over the ten years from the beginning of the 1980s to the start of the 1990s from being a small market, largely unknown to international institutional investors, to becoming one of the worlds leading emerging markets. For example, by 1994 Korea had attracted 4.6 per cent of total net assets invested in emerging markets, and approximately ten per cent of the total number of funds that invest in emerging markets (1994-1995 Micropal Directory of Emerging Market Funds). This classification highlights the fact that the definition of an emerging market is not solely a question of age or size. Indeed, Kuczynski (1994) argues that the term refers to stock markets that 'are developing from an incipient stage toward a more modern and mature stage', (p.10). Thus, he argues that the key ingredient of the definition of an emerging capital market is the market's close relationship to economic growth and trade, and the financial development is therefore simply a reflection of the pace of economic expansion.

The definition of what constitutes an emerging market that has so far met with the widest acceptance is that proposed by the IFC; this organisation considers all stock markets in developing countries to be emerging. In defining 'developing', the IFC adopts the criteria of the World Bank, which classifies countries according to their income status; low and middle income countries are regarded as developing. In 1994, low income countries had a per capita GNP of US\$725 or less, while middle income countries had a per

capita GNP of between US\$726 and US\$8955 (IFC, 1996). This definition has been adopted in numerous academic studies (Speidell and Sappenfield 1992; Wilcox 1992a, 1992b; Hartmann and Khambata 1993; Harvey 1994, 1995a, 1995b). A review of the emerging market literature reveals a marked difference between the definition adopted by academics and the definition employed by practitioners. Practitioners tend to focus on a more narrow definition than that of the IFC, emphasising those markets where the purchase and sale of securities by global investors is achievable in practice, and where investment may be made in an orderly and relatively safe manner (Mobius, 1994; Barry and Lockwood, 1995; Helliard, Lonie, Power and Sinclair, 1996). For example, Mark Mobius, President of Templeton Emerging Markets Fund, declares that emerging markets are defined by some market analysts as being those markets which are not part of the United States, Canada or the EAFE (Europe, Australia and Far East), provided that (1) there is a fully functioning stock exchange or active OTC market, (2) foreign portfolio investors have access to securities, and (3) there is free repatriation of capital and income or, alternatively, the currency is convertible. According to Mobius, by 1992 only 24 stock markets fulfilled this criteria. Furthermore, a Wall Street Journal report devoted to emerging markets reveals that practitioners also consider other factors when deciding on what constitutes an emerging market; one practitioner is quoted as saying that politics can play a role in such definitions (Wall Street Journal Europe, 1993).

The essence of this disparity, and the possible inappropriateness of the definition laid down by the IFC is captured by Barry and Lockwood (1995) who state that: 'Investors tend to focus their attention on a

more narrow definition [than the IFC] that emphasises those developing countries in which capital markets are increasing in size, activity or sophistication', (p.16). Direct evidence on this issue is documented in a study by Helliard *et al.* (1996) on investors' perceptions of barriers to investment in emerging markets. In interviews with a wide range of professionals including fund managers, analysts, economists, brokers, traders and custody and settlement staff at 18 financial institutions in London, Edinburgh, Dundee and Perth, it appeared that the definition of emerging markets varied considerably across the institutions surveyed. Whilst some institutions regarded the more developed markets of Hong Kong and Singapore as 'emerging', others limited the use of the term to the more embryonic markets of China and Russia. This led the authors to conclude that 'the IFC definition...is therefore not always regarded as appropriate by practitioners', (p.3).

Thus, there is no definitive answer to what constitutes an emerging market. Since financial institutions have adopted investment in emerging markets as a specific objective, the term has been variously defined, with definitions based on a number of factors including, *inter alia*, *per capita* income, market turnover, degree of freedom from regulations and restrictions on inflows and outflows of funds and capital market size. Certainly the term does not refer to a static group of markets, but rather to one that is rapidly evolving. For example, the 'emerging markets list' has expanded significantly since the changes in the economic policies of the former Communist countries have included recourse to 'capitalistic' methods of finance. Furthermore, this expansion is set to continue as serious efforts are made to establish or revive markets and to liberalise foreign

investment regulation in the African and Asian regions.<sup>2</sup>

### ***3. The global investment stampede***

The last decade has witnessed a significant transformation in the operation of global financial markets. The increased integration and liberalisation of many developed markets has prompted a flurry of cross-border investment activity.<sup>3</sup> But in recent years the spotlight has tended to focus increasingly on the developing world. A phenomenal growth in the capital inflows from the industrialised markets has accompanied the relaxation of foreign investment restrictions in many emerging markets.<sup>4</sup> Over the 1989-93 period, total net capital flows to all developing countries reached a level which was unparalleled since the international debt crisis in the early 1980s (Gooptu, 1993). More importantly however, a larger proportion of the increasing capital flows to emerging markets reflects the growing importance of portfolio investment.<sup>5</sup> In particular, gross portfolio flows increased by more than sevenfold over the period 1989-1993, reaching a level of \$55.8bn (World Bank, 1993).

Equity financing - comprising direct equity purchases by foreign investors, investment through country funds,<sup>6</sup> and American Depository Receipts (ADRs)<sup>7</sup> or Global Depository Receipts (GDRs)<sup>8</sup> - is an essential component of these portfolio flows. Until recently, cross-border equity flows to developing countries have been sparse, totalling only \$3.5bn in 1989. But the picture is changing. Equity flows quadrupled over the 1989-93 period, reaching a level of \$13.2bn in 1993. In short, developing country equity markets are evolving from virgin territory to an increasingly well-developed and well-researched arena for global finance.

### ***4. Behind the stampede***

Although regulatory changes in the international investment process account for much of the growth of foreign investment in emerging markets, they are probably not the sole cause of this capital stampede. First, 'pull' factors in developing countries and 'push' factors emanating from developed country markets, which have contributed to the enhanced profitability of emerging market investment, have fuelled a surge of interest in these frontier markets (Calvo, Leiderman and Reinhart, 1993; Chuhan, Claessens and Mamingi, 1993). Using a panel data approach, Chuhan et al. investigated the motivations for the observed large private capital inflows into the emerging stock markets (ESMs) in recent years. Specifically, they examined the relative importance of 'push' factors (that is, exogenous conditions in the international financial markets), and 'pull' factors (for example, endogenous domestic adjustment and reform policies) on US portfolio equity and bond flows to nine Latin American and nine Asian markets over the period January 1988 through September 1992. Their results confirmed the findings of Calvo, Leiderman and Reinhardt (1993) and indicated that global factors, such as US interest rates (which plunged precipitously over the period), and US industrial activity (which experienced a slowdown over the years 1989-1992), have been influential in motivating capital to flow out of the US and into the developing countries. Furthermore, they found country-specific factors, which reflect the opportunities and risks of investing in a particular country, to be at least as important in explaining these flows.<sup>9,10</sup> Indeed, for the Asian markets, domestic variables were estimated to be three to four times more important than global factors in explaining the inflow of capital.

The high levels of real and nominal growth which have been earned by equities in many stock markets in developing areas, have also greatly increased the interest of foreign investors in the emerging markets (Hale, 1994; Kuczynski, 1994; El-Erian and Kumar, 1995; Smith and Walter, 1996). From the perspective of an international investor, these rapidly growing, less-traditional markets offer potentially higher rates of return, and provide an important means of enhancing portfolio performance (Greenwood, 1993). Furthermore, not only have investors expected extraordinarily high returns, but the international portfolio diversification (IPD) benefits have also been seen to be exceptional, due to the existence of relatively low correlations between emerging market stock returns and the returns of major market indices (Errunza, 1994; Speidell and Sappenfield, 1992). Additionally, the role of emerging markets in IPD has been enhanced in recent years. As the world economies have become increasingly interdependent, the correlations among the major equity markets have been rising. Consequently, the effectiveness of portfolio diversification via investment in developed markets has been somewhat reduced. But the returns in emerging equity markets have remained weakly and at times negatively correlated with those of the established markets of the world (Cabello and Ortiz, 1995). Indeed, a number of them actually display correlations with the US market that are on a downward trend, suggesting potential for increased risk reduction in the future (Speidell and Sappenfield, 1992).<sup>11</sup> The result is that international investors have been able to achieve both lower risk and higher returns by devoting a portion of their portfolio to the securities of emerging market firms (Divecha, Drach and Stefek, 1992; Speidell and

Sappenfield, 1992; Harvey, 1993, 1994). Attention has thus been drawn away from the conventional international investments of the past towards the promise of high-growth and diversification opportunities in parts of the world that had not previously participated in international portfolio investment.

### ***5. Investing in emerging markets: the empirical evidence***

The emergence of large financial flows to emerging markets has posed a number of important research questions concerning the potential benefits accruing to developed countries' investors from investing in these markets. A plethora of academic studies has investigated (1) the diversification benefits from direct investment in ESMs,<sup>12</sup> (2) the optimal method of achieving such benefits, and (3) the sources of these benefits. The arguments and evidence are convincing: they are unanimous in their suggestion that investors can reap substantial benefits from a strategy of careful diversification into equities traded in ESMs.

Evidence on the desirability of portfolio investments in the corporate securities of less developed countries was documented as early as the 1970s, in studies conducted by Levy and Sarnat (1970), Lessard (1973) and Errunza (1977).<sup>13</sup> More recently, in the first comprehensive analyses of emerging markets, Harvey (1993, 1994, 1995b) provides an important contribution to the topical issue of diversification into such markets, with his examination of the impact of emerging equity markets on global investment strategies. Using monthly index returns for 20 ESMs, and data on 21 developed stock markets (DSMs) over the period January 1976 to June 1992, he investigated whether the addition of emerging markets to the portfolio optimisation problem enhanced the reward to risk profile for his

sample by shifting the mean-variance efficient frontier to the left. This analysis was based on allocations to (1) developed markets (2) developed and emerging markets, and (3) developed and emerging markets with an upper limit of 20 per cent placed on emerging market investment. Two basic investment strategies based on the same allocations were also evaluated. The first strategy involved choosing the minimum variance portfolio, and the second strategy was based on the objective of selecting a portfolio with a target volatility of 16 per cent. His graphical analysis of the mean-variance frontiers suggested that inclusion of emerging market assets into a globally-diversified portfolio greatly increased investment possibilities; a sharp movement upwards of the frontier occurred upon the introduction of emerging market securities, even when they were restricted to 20 per cent of the investment portfolio.

This finding corroborates past studies which suggest that theoretical gains exist from diversification into emerging stock markets because of a shift in the mean-variance efficient frontier (for example, Bailey and Stulz, 1990,<sup>14</sup> Bekaert, 1993, 1995; Diwan, Errunza and Senbet, 1993). However, recognising that such an analysis is limited in that it says nothing about the statistical significance of diversification benefits, Harvey extended his work by calculating whether the risk-return combinations of developed markets offer investors the same possibilities as the combinations provided by developed and emerging markets, using the test statistic developed by Shanken (1986), Huberman and Kandel (1987) and Jobson and Korkie (1989). He found that the observed upward shift in the frontier was not only dramatic but also statistically significant. This finding confirms the earlier results of De Santis (1993), who used a somewhat different approach to investigate this same question. By exploiting

the mapping between the Hansen-Jagannathan bounds and the more traditional mean-variance frontier for asset returns, De Santis found that statistically significant changes in the volatility bounds occurred when emerging market returns were added to the investment opportunity set. These results indicate that investors who are already diversified across developed markets can significantly improve the performance of their portfolios by also investing in the stock markets of emerging economies.<sup>15</sup> Performance measures for each of the strategies which were evaluated further confirmed the benefits from ESM investment: the strategies which included an emerging market component consistently outperformed other strategies that were restricted to developed markets only. Thus Harvey's conclusion that his results 'suggest an unambiguous benefit to diversifying into emerging markets' would appear to be wholly justified (1994, p.12).

The argument that ESMs have an important role to play in effective diversification has been cogently argued in the substantive literature. Consequently, researchers have set out to determine the best way of exploiting the 'diversification free lunch' that is currently available (Divecha, Drach and Stefek, 1992, p.50). In examining the effect of adding an emerging market equity component (the IFC Composite index) to portfolio A, a domestic portfolio of US shares, and portfolio B, a market capitalisation-weighted, indexed international portfolio, Hartmann and Khambata (1993) confirm the benefits from emerging market diversification: an investment of any size in the IFC Composite increased portfolio efficiency for both domestic and international investors, regardless of their risk attitudes<sup>16</sup> - although they argued that an investment of less than 20 per cent in the IFC Composite was 'suboptimal from the standpoint of either

portfolio A or B', (p.97). Writing from the perspective of a UK investor, Avgoustinos, Lonie, Power and Sinclair (1994) found similar results. In particular, they argued that the case for emerging market diversification applies even when the ESM commitment is as high as 90 per cent of portfolio value, although their mean return per unit of risk (MRPUR) optimal portfolio had a slightly smaller weighting of 80 per cent towards emerging markets. This issue of optimal weighting however is contentious. For example, Divecha et al. (1992) argue that a diminution in diversification benefits occurs beyond a 20 per cent ESM component, while other writers advocate a still more prudent 10 to 15 per cent ESM weighting (for example, Speidell and Sappenfield, 1992; Poshakwale, 1996). In contrast to the unanimity expressed by many researchers regarding the existence of benefits from emerging market diversification, the issue of how large a portion of one's portfolio should be devoted to the securities of developing countries is controversial. In the end however, despite the controversy, all of these studies carry the same simple, but important message: international investors are foregoing substantial diversification benefits by underweighting the ESM component of their investment portfolios. The proportion of portfolios devoted to emerging market assets is well below even the most conservative of weightings (10-15 per cent) suggested by some commentators.<sup>17</sup>

The optimal composition of the emerging market component of a portfolio has also been addressed in several investigations. An important insight into this issue is provided in the Hartmann and Khambata (1993) study. Their analysis suggests that investment in an ESM component whose weights do not conform to weights in the IFC Composite

index can result in considerable improvements in the risk/return tradeoff. Furthermore, Hartmann and Khambata posit that diversification benefits vary according to the geographic composition of the ESM component: the risk, return and efficiency of their test portfolios altered dramatically with changes in the geographical composition - even when the emerging market investment represented only 20 per cent of the total portfolio. The subsequent results of Avgoustinos et al. (1994) corroborate this finding. Their MRPUR optimal portfolio consisted of four non-indexed ESM components from different geographical regions. Importantly, however, these analyses do not dispute that gains are available from investment in a single geographical area. Indeed, considerable evidence demonstrates the diversification value of investment which is concentrated in the emerging economies of a single region. For example, studies by Bailey and Stulz (1990), Greenwood (1993) and Poshakwale (1996) are unanimous in their conclusion that investment in Asian markets can yield substantial diversification benefits.<sup>18</sup> A similar result has been obtained for the Latin American region, most notably in an early study by Lessard (1973).

#### ***6. An industry or a country effect?***

Since the benefits of international diversification were first documented, attempts have been made to decompose risk and return into their component sources in order to explain the low comovement between these markets' returns, and the cross-sectional differences in the volatility of returns. In particular, researchers have examined the competing influences of country and industry effects in international stock returns. Recently, the focus of this country and industry research has turned to the emerging markets, although

empirical evidence remains scarce.

For 19 ESMs, Zervos (1996) quantified the importance of country and industry components in individual stock returns over the period 1976-1992. By employing a fixed effects model her analysis overcomes the problems inherent in the estimation procedure of earlier papers by Grinold, Rudd and Stefek (1989) and Divecha et al., (1992). Using the industry portfolio returns to approximate for industry factors and country index returns to proxy for national factors, these earlier papers were unable to disentangle the two components. Additionally, Zervos extended the analysis of these early papers by examining the behaviour of country and industry effects over time, and throughout a period when many of the sample countries removed barriers to inward investment. Thus, during the sample period many of the sample countries became more integrated into the world economy and thus became more susceptible to general movements in world stock returns. Hence, the country-specific component of returns may have diminished in importance over the time period, with a corresponding increase in the strength of the industry component. Similar to the results for emerging markets (Errunza, 1983; Errunza and Padmanabhan, 1988; Grinold et al., 1989; Divecha et al., 1992), and for most investigations into developed markets,<sup>19</sup> Zervos found that although both country and industry specific disturbances are important factors in understanding emerging market returns, industry effects explain little of the cross-sectional differences in returns and return volatility across markets, and that the low correlations between markets are primarily due to country-specific sources of return variation.<sup>20</sup> Additionally, results indicated that country effects have become more significant through time, while the impact of industry effects have declined

sharply since 1986 - a result which contradicts the conventional wisdom that increasing market integration should have reduced the importance of country effects.<sup>21</sup> Furthermore, in comparing emerging and developed markets, Grinold et al. and Divecha et al. suggest that whilst there exists a dominant country factor in returns from both sets of markets, country effects play a larger role in explaining emerging market returns than in explaining developed market returns, with industry effects explaining a larger portion of developed market returns than emerging market returns. Thus, security returns tend to be more homogeneous in the emerging markets than in developed markets.

This relatively greater homogeneity has important implications for the management of global investment portfolios. By investing internationally, a portfolio manager achieves risk reduction through the benefits of both geographical and industrial diversification. Importantly however, the robust finding that country effects are larger than industry effects in both emerging and developed markets suggests that the performance of international portfolios is largely country driven. Consequently, the most critical aspect of emerging market (and DSM) investment is country selection. The importance of country selection in emerging markets investment is exemplified in the Hartmann and Khambata (1993) study. The performance of three portfolios consisting of equally-weighted investments in three different emerging markets from three different geographical regions illustrated the enormous impact that country selection can have on both portfolio risk and return; huge disparities existed in the risk and return of each of the three test portfolios.

### *7. An overstatement of gains?*

All too often the benefits from diversification

have been analyzed in the classical *ex post* mean-variance framework, which assumes that the required inputs to the analysis (returns, variances and covariances) are known with certainty (for example, Levy and Sarnat, 1970; Errunza, 1977; Bailey and Stulz, 1990, Diwan et al., 1993). Thus the gains from IPD are computed on the assumption that the portfolio manager is prescient; empirical studies do not therefore reflect the realities under which actual investment decisions are made. For the practitioner, the non-stationary nature of the inputs renders the selection of an optimal investment strategy extremely difficult. Such an exercise becomes even more precarious, however, if the variance-covariance/correlation matrices between market returns display inter-temporal instability, for it is *ex ante* stability of the correlation matrix that provides the fulcrum for the portfolio investment decision.

Although a substantial body of (conflicting) evidence addresses the issue of correlation matrix (in)stability in developed stock market relationships,<sup>22</sup> very little research has examined this topic for ESMs. In the most comprehensive analysis of correlation matrix stability in emerging market relationships to date, Sinclair, Power, Lonie and Avgoustinos (1994) examine monthly return indices for nine ESMs from four geographical regions, over the period 1977-1992. Employing an array of techniques, the authors concluded that, except for the period spanning the October 1987 crash, 'no signs of stability were identified in any of the time-series patterns of the variance/covariance matrices', (p.17). This confirms the earlier results of Cheung and Ho (1991), who investigated the issue of stability for seven Asian-Pacific ESMs and four DSMs over the period 1977-1988. However, results from their principal component analysis indicated that

the correlation structure became more stable over longer time horizons. Additionally, cluster analysis revealed the existence of some prime clusters (for example, Malaysia-Singapore) which persisted over a long time period, although with the exception of these observations, the Asian-Pacific markets did not appear to have any stable clustering pattern. This evidence therefore, does not appear to obviate the general result that the correlation matrix is unstable over time.<sup>23</sup>

Given the multitude of tests that have been performed on a broad cross-section of ESMs, over a lengthy time period, it seems reasonable to conclude that, despite the relative paucity of research examining this issue for emerging markets, the inter-temporal correlations between returns may be insufficiently stable to permit first, the generation of optimal portfolios on an *ex ante* basis and second, the exploitation of the theoretical gains available from IPD on an *ex post* basis. Although not in abundance, evidence does exist suggesting that the employment of a simple strategy to forecast covariance matrices can result in effective IPD (for example, Elton and Gruber, 1973; Elton, Gruber and Urich, 1978; Sinclair, Power, Lonie and Avgoustinos, 1994). Focusing exclusively on ESMs, Sinclair et al. investigated whether the theoretical gains documented in *ex post* analyses of IPD can also be achieved in practice. More specifically, using *ex post* mean returns and standard deviation of returns, and calculating the simple moving average of the correlation matrices over some past period as a forecast of the correlation matrices for the future, the authors examined whether, given the best possible estimates of means and standard deviations, an *ex ante* correlation matrix could achieve the same IPD gains as those earned on an *ex post* basis. Their results are

promising: in all subperiods examined, the *ex ante* strategy delivered approximately the same gains as the *ex post* strategy - indicating that the portfolio manager may be able to achieve a sizeable portion of the theoretical gains documented in *ex post* analyses of IPD.

#### **8. Integration and the sustainability of emerging market diversification benefits**

The historical evidence is therefore clear; the literature suggests that, due to competitive rates of return and low cross-country correlations, emerging markets have offered attractive investment and diversification opportunities for the foreign investor. In turn, these benefits have, most likely, attracted the large portfolio investment inflows to these markets in recent years. An important question concerning these diversification benefits however, is the extent to which they are sustainable in the future. Given that the benefits of diversification depend on the degree of market integration/segmentation and the degree of correlation among markets, the concern is that as emerging markets become increasingly integrated with world financial markets, return correlations will rise and hence the benefits from diversification will decline.

A number of approaches have been adopted in the finance literature to test for and measure the degree of market integration/segmentation.<sup>24</sup> The first approach has been to explicitly model barriers to capital flows and to determine whether a market integration or segmentation model best describes the structure of emerging capital markets. Errunza and Losq (1985a) developed and tested a 'mild segmentation' model and found tentative support for the mild segmentation hypothesis for a group of emerging markets. In a later paper, Errunza, Losq and Padmanabhan (1992) tested the two polar cases of (1) complete integration and (2)

complete segmentation, using stock level data for eight ESMs over the period 1975 to 1987. They rejected complete integration for all eight markets, and complete segmentation for five markets, and concluded that their results provided 'strong evidence in favor of a nonpolar structure', (p.968). Two problems render their analysis questionable however. First, all three hypotheses were rejected for India, thus casting doubt on their market classification scheme. Second, the use of the US as the world portfolio would appear to be a poor proxy given that, over the sample period, the US represented only two-fifths of the world market capitalisation (Buckberg, 1993, 1995). Additionally, their analysis sheds no light on the variations in the degree of integration/segmentation of emerging markets over time.

The second approach has been to assume market integration and the validity of a particular asset pricing model. Tests have centred on the use of both the single factor capital asset pricing model (CAPM) and more complex multifactor models. In a single factor CAPM, tests of market integration and diversification benefits are identical; deviations from integration amount simply to unexploited diversification benefits. Using the world portfolio as a benchmark for measuring risk, Bekaert (1993, 1995) and Harvey (1993, 1995a, 1995b) reported that the single factor CAPM was unable to explain the cross-sectional variation in emerging market returns - thus confirming the benefits from diversification. Moreover, Bekaert noted that, for the more recent time period, betas have increased for most emerging markets - a result that he claimed 'indicate(d) a higher degree of integration with the industrial world', (1995, p.91). Buckberg (1993, 1995) confirmed the increasing integration of emerging financial markets. Testing the conditional International Capital Asset Pricing Model (ICAPM) over

two different time periods, she found that 14 of the 20 ESMs considered were integrated over the 1985-1991 period, but that many of the same markets rejected the model using data from 1977-1984 - indicating that fewer emerging markets were integrated in this earlier period. Noting that this earlier period marked a time when emerging markets were effectively isolated from world capital markets, Buckberg conjectured that the rising equity capital inflows from developed markets that took off in the late 1980s served as the mechanism for this integration and the associated decline in diversification benefits. Using a multifactor model, Harvey confirmed this finding that emerging markets were becoming increasingly integrated over time. In particular, Harvey found first, that global risk factors insufficiently characterise returns in emerging markets, and second, that the exposures of many emerging markets to these global risk factors have increased in recent years. Harvey attributed this increased ability of exposures to account for the cross-sectional variation in emerging market returns as evidence of greater, although not full, integration. Similarly, Bekaert and Harvey (1995) developed an asset pricing model where risk exposures and premiums were allowed to change over time conditional on world and local market factors, and found that some emerging markets have become more integrated. However, their results also suggested decreasing integration for some markets.

Integration tests utilising specific asset pricing models however, are hampered by the lack of a well-established asset pricing framework. Thus, it is unclear whether to attribute rejections to (1) the model or to (2) a lack of integration. This, coupled with recent evidence suggesting the existence of significant time variation in emerging market

returns,<sup>25</sup> has led to a third approach to measuring integration. More specifically, researchers have attempted to test whether ESM returns can be predicted using a common set of world factors. The finding of commonality in factors driving predictability is then suggestive of integration. However, on employing both global and local variables to investigate the predictability of returns in emerging markets over time, Bekaert found no clear pattern on how predictability has changed for individual emerging markets over time. For example, he discovered that predictability arising from global factors was actually stronger in the pre-1985 period for five markets, compared to the 1985-1992 period.

The fourth approach to investigating market integration is to examine actual investment patterns. Any evidence of 'home bias', although not rejecting capital market integration, would suggest that investors act as if markets are segmented. On examining US equity investment in emerging markets over 1978 to 1991, Tesar and Werner (1993, 1995) documented a significant home bias towards domestic securities; over the sample period, 96 per cent of the equity portfolio chosen by US residents was invested in domestic equities. However, they found that the amount recently invested in emerging markets, as a share of total US foreign investment, was proportionate to the global market capitalisation value of these markets - suggesting that, at the margin, they are becoming part of the global investment orbit. Consequently, the evidence suggests that emerging markets are becoming de facto integrated.

The evidence to date therefore indicates that emerging markets have become more integrated in recent years. The concern now is that, with this increasing economic and capital

market integration, a diminution in diversification benefits will occur and consequently, the appetite of the international investment community for the shares traded in emerging markets will be reduced. However, a number of qualifications are in order. First, despite the evidence that emerging markets have become a larger part of the global financial market since the late 1980s, empirical studies investigating the gains from IPD for emerging market investment over the same period indicate that such investment has continued to offer significant diversification benefits for international investors (for example, Speidell and Sappenfield, 1992; Avgoustinos et al., 1994); so long as markets are imperfectly integrated, diversification will reduce risk. Second, Bekaert (1993, 1995) found no significant relationship between the risk-return tradeoff and market integration and measures of market openness, suggesting that the concern of increasing capital market integration leading to lower diversification benefits may in fact be ill-founded.<sup>26</sup> Third, market integration does not eliminate all of the reasons for international investors to invest in these emerging markets; investors in emerging stock markets may gain access to shares in industries that either do not exist or are inaccessible in the domestic market. Additionally, this broader choice of securities amounts to a wider range of investment opportunities even if capital markets are fully integrated and cross-country correlations are high (Lonie, Power and Sinclair, 1993). Fourth, a new wave of markets are still in the very early stages of development (for example, markets in Africa, Central America, Eastern Europe and the Middle East), and they therefore represent new frontiers that promise investors similar rewards to those provided by the larger emerging markets over the last decade.

### ***9. The predictability of emerging market returns***

Recent years have seen a proliferation of papers in finance investigating the predictability of rates of return, in both the developed and emerging equity markets. The approaches used to test for return predictability over time can be divided into two categories. The first approach has attempted to measure the extent to which stock prices are forecastable from past price behaviour alone. The second approach uses information variables observable at the start of the holding period to forecast returns over the period. The evidence suggests the presence of predictable time-varying components in returns earned by emerging market equities. Moreover, results from at least one approach (the information variable approach) suggest that this predictability can be successfully exploited to reap substantial gains from an IPD strategy directed towards the emerging markets (Harvey 1993, 1994).

The notion of a random walk is central to testing the ability of past returns to predict future returns. Random Walk theory, when applied to share prices, assumes that successive price changes are independent and identically distributed over time. Thus, if prices follow a random walk, then the price change of yesterday should not be related to the price change of today, or any other day. This in turn implies that historic returns cannot be used to successfully predict future returns. The principal test of the hypothesis is to investigate whether share price movements are serially correlated. Results from these analyses have generally indicated that daily, weekly and monthly emerging market returns are predictable from past returns. For example, Claessens et al. (1993, 1995) estimated the first and second order autocorrelations for the monthly returns of 20 ESMs over the period 1976 to 1992, both at