Cranfield University

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Integration of Emerging Equity Markets

- A Systematic Review

School of Management

MRes Dissertation

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Integration of Emerging Equity Markets
A Systematic Review

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ABSTRACT

Emerging equity markets have attracted foreign investor by their higher returns and prospect of superior risk diversification benefits. In light of increasing flow of equity portfolio investments into these economies and their subsequent integration with equity markets of developed world, studies have not only shown concern over the reduction in the long term risk diversification benefits, but also there may be less of increase in the original price of securities. Local economy initiates formal financial liberalisation measures to integrate with world capital markets. However, removal of regulatory restrictions may not attract foreign investments in the presence of other indirect barriers and emerging markets specific risks. Also, the process of financial liberalisation is time varying and not one off event. This creates difficulty in pin pointing the exact date of liberalisation. These complexities cause difficulties in the development of dynamic models for pricing securities in emerging markets and measuring the impact of integration. However, with the removal of direct and indirect barriers to foreign investments, these markets are showing greater integration with world markets. With increasing integration emerging markets are becoming more susceptible to global risk factors. Higher degree of integration should reduce cost of equity capital (expected return) and increase the correlation of returns with developed markets. However, empirical works report the reduction in cost of capital to be lower than predicted by asset pricing models. It is also challenging to measure the degree of market integration because of the constant structural changes observed in emerging markets. Countries have even been found to exhibit segmentation over time. Hence, in the context of asset pricing models the findings on the degree of integration are inconclusive and conflicting.

AKNOWLEDGEMENTS

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I am indebted to my parents back in Nepal for their motivation during my stay in UK. Last but not the least, it would have been almost impossible to finish this project without the assistance of my dearest wife, Sunita Thapa, who constantly supported and encouraged me in conducting this review.

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Chapter 1

1 Introduction

The first step in any doctoral research is to survey the existing literature for positioning one's contribution by building logical and rational argument (see Denyer and Tranfield, 2006). As such, this dissertation seeks to compile and synthesize the understanding of the equity market integration phenomenon by conducting a systematic review of the empirical literature. The conventional form of literature review is less preferred because it does not provide an evidence based, transparent, replicable and auditable approach in assessing the literature as does the modern systematic approach. The review is conducted with the aim to generate future directions for the doctoral research in emerging markets finance.

Partington (2002) notes that research in someway or other should be beneficial to the society. Besides contributing to the knowledge, the aim of my doctoral research is to benefit the international investors who invest in the portfolio of emerging market asset class. International investors and the academic community have in the last two decades shown significant interest in the newly emerged equity markets. Numerous studies (such as Garcia and Ghysels, 1998; Harvey, 1995a; Harvey, 1995b, Bekaert and Harvey, 1995, Kohers and et el 2006) note that the strongest motivations of such interest have been relatively higher returns and greater diversification potential observed in emerging markets compared to that of developed markets. However, in light of the recent studies (Bekaert and Harvey, 2005, Jong and Dong, 2005, Cheng and Huang, 2007) on equity market integration, it seems that the attractive prospect of higher returns and superior diversification benefits may be reduced (discussed in the following sections) in the long run.

The following sections in this chapter provide definition of context (emerging equity markets) and the issues which will be reviewed within the context of emerging equity markets. Chapter 2 presents the theoretical background, followed by a chapter elaborating importance of the integration issue along with the motivations for the review. Chapter 4 reports the methodology (protocol) for conducting the review with the findings presented in chapter 5. Finally the project concludes with discussion, future research direction and reflection on the learning experience.

1.1 Definition of Emerging Markets (Context)

The term 'Emerging Markets' is affiliated with the World Bank which classifies countries as Emerging and Developed based on a certain but time varying hurdle per capita figure (GNP per capital of USD 10,726, 2005 data).[1] As the emerging country surpasses the figure, it graduates as a developed country. Although this definition is based on per capita figure, *The Economist, 2006,* claims that different organizations (IMF, OECD, UNCTAD and MSCI) have different classification criteria and hence, classifying a country as an emerging or developed is an issue of debate in itself. Dramatic change in USD exchange rate may substantially increase the dollar denominated per capita GDP but there may be no significant changes in their domestic capital market. Figure wise the country may graduate as developed country but in terms of capital market development it may not represent the markets of developed world. In such circumstance per capita basis may provide misleading picture. Also, different markets exhibit wide differences in their political and economic structures and are not homogenous in terms of investment environment. For example Zimbabwe and Korea are placed in the same list but are these two economies comparable and display similar characteristics. As per S&P Global Stock Market Factbook, 2007, the total market capitalization (S&P/IFCG Composite Index) of Zimbabwe was US$ 7.0 billion whereas that of Korea was US$ 511 billion (both figures relate to end of 2006). The price earning ratio (valuation ratios) of Korea at the end of 2006 for S&P/IFCG index was 12.79 whereas that of Zimbabwe was 156. Similarly the price-book value ratio for Korea was 1.74 whereas for Zimbabwe was 98. Korea's equity market's performance for 2006 in terms of percentage change was 13% whereas for Zimbabwe was 912% (reflects the hyperinflationary economic environment). Some of the extreme economic statistics are reported below which lend further support to the heterogeneity argument of these markets

Table 1: Extreme Cases of Emerging Markets

	2000 - 2005		2005
	Real Growth rate in GNI per capita (%)	Average Annual Inflation (%)	GNP per Capita (ppp) - US$ millions
Korea	4	2.4	21,850
Zimbabwe	-6.5	232	1,940

[1] S&P Emerging Stock Markets Factbook, 2007

Conclusively, we can infer that there is lack of clear and generally accepted definition of what constitutes a market as emerging and a market as developed. However, for our purpose we will consider a country as emerging which has adopted market oriented liberalization policies to attract foreign investments. These markets are expected to become financially and economically integrated. As framework for this study, I will follow the S&P/IFC classification of emerging and developed markets. S&P/IFC defines "emerging markets" as a market which is in transition, growing in size (market capitalization), activity (improving liquidity), or level of sophistication (modernizing and building market capacity). S&P/IFC classifies an equity market as "emerging" if it meets at least one of the following two criteria:

- It is domiciled in a low or middle income economy as defined by World Bank and
- Its investable (foreign portfolio open to foreign investors) market capitalization is lower compared to its recent gross national income figure.

S&P/IFC further documents equity markets which impose investment restrictions such as foreign ownership limits, capital controls, extensive government interest in listed stocks and other legal and political restrains on trading activity, particularly for foreign investors, are generally considered emerging markets. S&P/IFC notes "*Pervasive restrictions on foreign portfolio investment should not exist in develop stock markets, and their presence is a sign that the market is not yet "developed"*." (S&P Global Stock Market Fact Book, 2007, pg. no. 70)

1.2 Definition of key concepts (Issues)

This section provides definition of few basic concepts which are essential in further understanding of the issues related to integration in emerging equity markets.

1.2.1 Financial Integration

In finance, markets are said to be financially integrated when assets of similar risk command similar expected returns despite being domiciled in different countries. In international finance this is called law of one price. It simply refers that theoretically if two similar assets in two different countries are identical in their level of risk, their price should also be equal.

1.2.2 Source of Risk

Pay off in investments is determined by the returns which an investor receives by investing in any asset (be it real or financial). In simple one period world, return is determined by difference in the price which the investor pays and the price at which he sells the asset. How does the investor know what is the right price to pay? Following the most simple asset pricing model, the equilibrium (when the demand and supply of the asset is equal) price is determined by discounting the expected future pay offs with a certain discount rate. This discount rate (also called cost of capital) is determined by the risk level of the asset's expected returns. Theoretically, expected returns are related to various factors. The sensitivity of the asset's return with these factors determine the magnitude of expected return which is called risk premium because the investor needs to be compensated for being exposed to the various sources of risk. But what are these risk sources? This is a debatable area in literature and studies refer to various theories. As an exemplar, the simple CAPM (model shown below) states only the asset's covariance with market portfolio should be the source of risk.

$$r_s - r_f = \alpha + \beta_s (r_m - r_f)$$

Where:

r_s is the expected return asset s

r_f is the risk free return

r_m the return on market portfolio

β_s is the beta coefficient which is the measure of risk of the asset

α measures the abnormal return

If CAPM holds the abnormal returns α should be zero.

The proponents of Arbitrage Pricing Model advocate more than one fact. For example, in our case of emerging markets, if markets are integrated the global sources of systematic risks (Risk common to all countries such as world market portfolio, world business cycle, global oil price, global term structure, global dividend yield etc) should be priced but in segmented case local

sources of systematic risk are important (Risk common to securities in a particular country such as local market portfolio, local dividend yield, local market capitalisation (size), local political risk and economic risks etc).

1.2.3 Cost of Equity Capital

The concept of cost of capital is related to the pricing issue. Generally the dividend capitalization model is used to compute the cost of capital, which is defined as follows:

Cost of capital = (dividend per share / price per share) + growth rate of dividend

The first part of the model is called dividend yield and following the simple asset pricing theory, price per share is determined by the discounted future pay offs (dividends) as explained above. Hence, keeping the growth rate of dividend constant, cost of equity capital is inversely related to the price of the share. Cost of capital is a signal which affect price. It provides information about the future risk of the assets. As investor's view about the future risk changes; it affects the cost of capital, which is reflected in the price. For example, as local equity market integrates with world capital markets, the cost of capital decreases because of global risk sharing which further bid up the price.

1.2.4 Risk Diversification

Diversification is an important concept of spreading investments among different assets having negative or lower return correlation between them. Generally diversification is called free lunch in finance as investors can reduce the risk of their portfolio without sacrificing the return prospect. If two assets are negatively correlated then combining them to form portfolio reduces the risk without reducing their combined expected returns. If one of the assets performs negatively, the other asset moves in the opposite directions offsetting the loss in the first one, thus reducing the overall risk of the portfolio. As all investors can form such portfolios and avoid significant portion of portfolio risk, the market does not compensate or provide premium (in spirit of capital asset pricing model) for this kind of risk. These risks are specific to each assets and therefore also called idiosyncratic or asset specific risks. Diversification prospect depends on correlation of one asset with other assets. Higher the correlations, lower is the diversification

prospects and vice versa. All the above defined concepts are crucial in examining the following section on why emerging markets are considered as asset class in the global portfolio management, our theoretical framework (Chapter 2) and the subsequent review of the empirical studies base their studies on the above mentioned concepts.

1.3 Emerging Markets as Asset Class

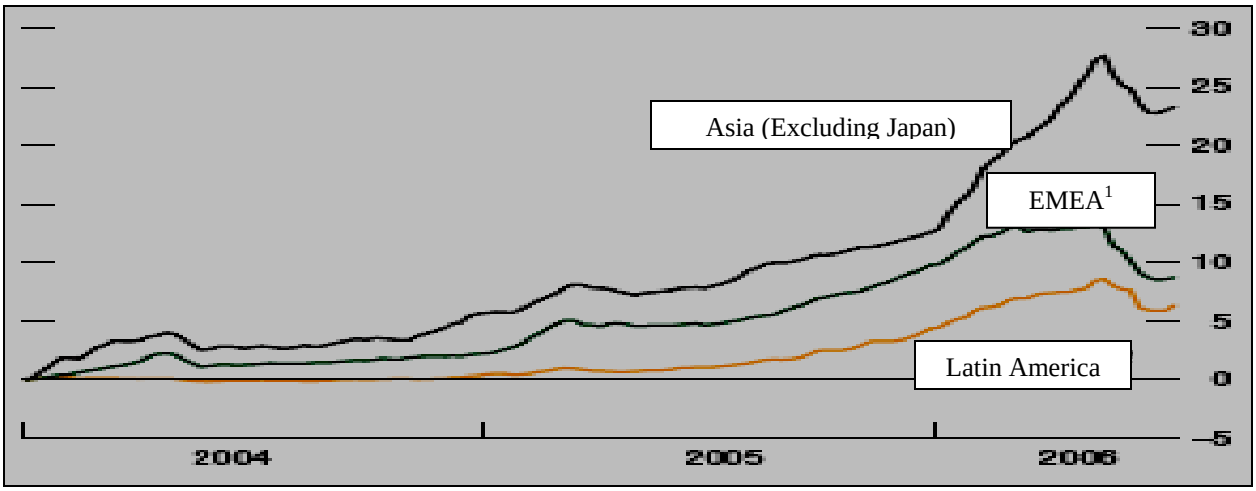
After having defined the above key concepts, now we are ready to justify why EMs are considered as asset classes in global portfolio where the standard empirical analysis of basic portfolio management (Markowitz, 1952) is often employed. As shown in figure 2 and 3, the share of EMs in world market capitalization has increased from 9.35% at the end of 1997 to 19.3% in 2006. If we follow the past fifteen years average growth in increase of share and extrapolate the past average that EMs should catch up the developed markets somewhere in the year 2043 (Figure 4).

Table 2 shows that almost all the composite indexes of emerging equity markets performed better than their developed counterparts. Their correlations with the developed markets are relatively lower than that of developed markets. This implies that following our discussion of the key concepts, investors are found to manage risk through diversification because of lower correlation. However, EMs is also associated with higher risk as indicted by the higher standard deviations. Harvey (1998. pp. 1) states "*Emerging market investments are certainly not for the faint heart*". Higher returns in EMs have always been accompanied by higher risks (Kohers et al, 2006; Bekaert and Harvey, 1997; Harvey, 1995). Bekaert (1995, pp. 75) claims that the following three questions are important in light of the increased portfolio flows (fig 1) into the emerging markets.

- What are the expected return and diversification benefits of investing in these markets?
- How well are these markets integrated with the markets of industrial economies and to what extent is integration a function of identifiable barriers to investments?
- What are the opportunity costs (for foreign investors and host nation receiving the foreign capital), associated with these barriers?

All the above mentioned questions are very closely related and to answer any one of them on stand alone basis may not provide the bigger and clearer picture. *For the purpose of present review I will only focus on the linkage between integration, asset pricing and cost of capital*.

Figure 1: Cumulative Net Flows into Emerging Markets Equity Fund (US$ billions)



Source: Emerging Portfolio Fund Research, Inc.; and IMF staff estimates.
[1]EMEA = Europe, Middle East, and Africa.

Table 2: Comparative Total Return Summary (US$, Dec. 2001 – Dec. 2006)

Markets	Annualized Mean (%)	Annualized Standard Deviation (%)	Correlation with S&P 500
World Benchmarks			
U.S. S&P 500	6.84	12.4	1
S&P/Citigroup BMI Global	12.72	12.57	0.95
Developed Markets			
World	12	12.4	0.96
Asia Pacific	16.92	14.1	0.47
Europe	17.04	15.28	0.88
North America	8.64	12.33	0.99
Emerging Markets			
Composite	25.44	16.14	0.73
Latin America	33	24.49	0.75
Asia	21	16.9	0.69
EMEA	33	17.46	0.49
Europe	42.96	27.37	0.51
E. Europe	46.32	27.12	0.42

Source: S&P Global Stock Markets Factbooks

Figure 2: Market Capitalization Share (1997)

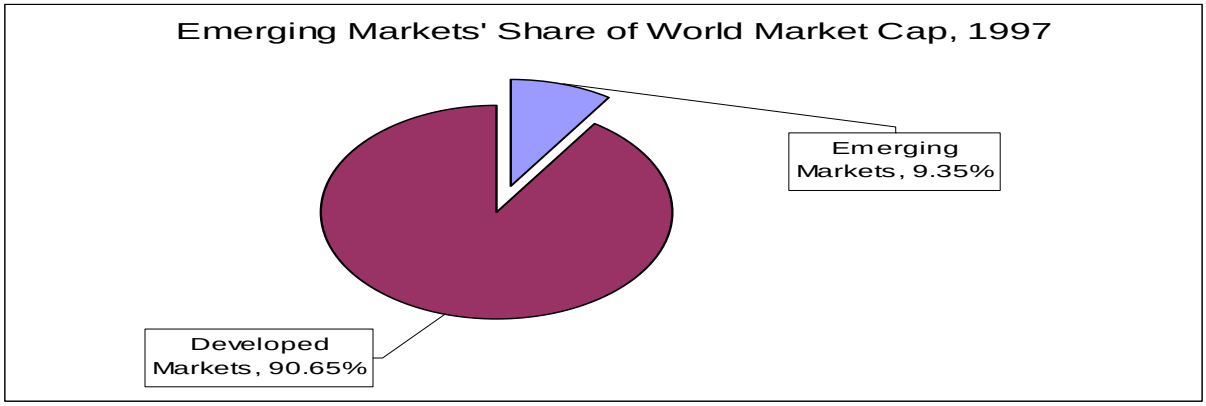


Figure 3: Market Capitalization Share (2006)

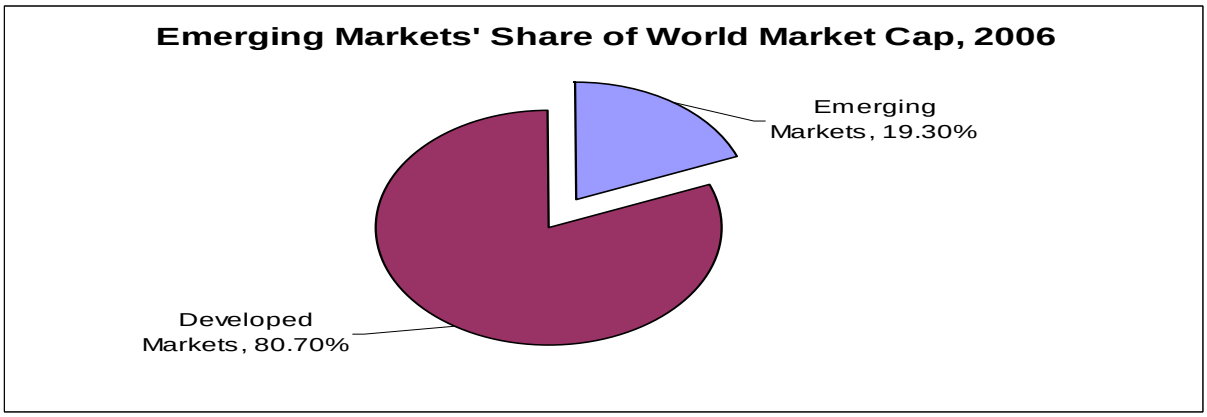
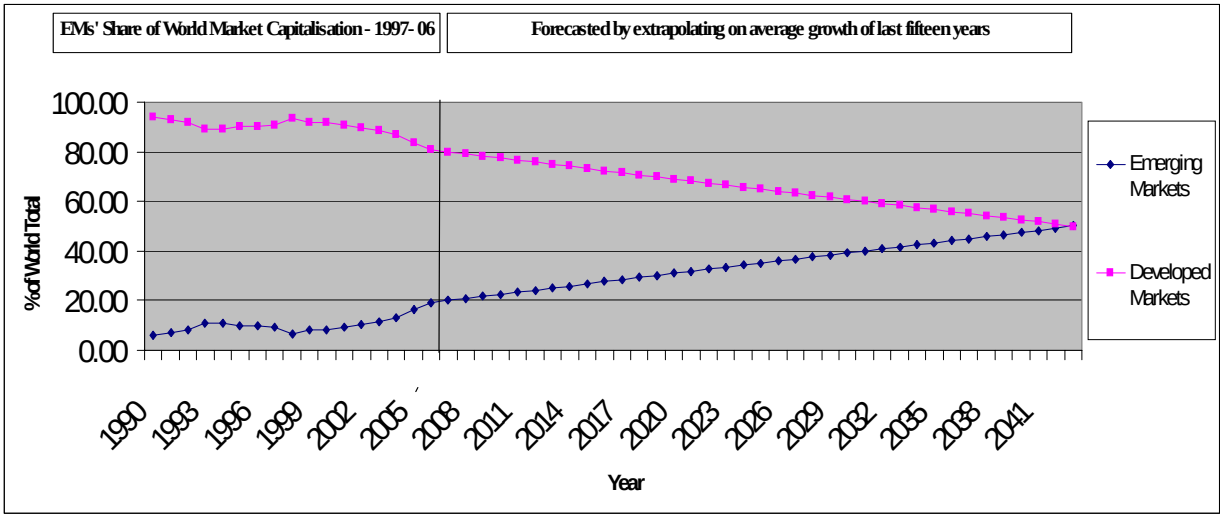


Figure 4: Growth in EMs Capitalization Share



Chapter 2

2 Theoretical Background

2.1 Introduction

Harvey (1995) points out that there could be various sources of statistical rejection of asset pricing models in Emerging Markets (EMs). Violation of fundamental assumptions, such as utility specification and distributional characteristics of returns in emerging markets may be sources of rejection. Additionally, the benchmark portfolio (market portfolio or mean variance efficient portfolio may not be properly specified. Other problems associated in employing the asset pricing models in EMs are:

1. Problems with the returns data which is most generally caused by infrequent trading of component stocks i.e. returns are not normally distributed and are highly skewed.

2. Capital market may not be integrated

In case of EMs the integration assumption is one of the fundamental ones. The integration assumption implies that risk in EMs can be effectively defined by the variations in the world factor returns if the markets are completed integrated. In a liberalised equity market which allows foreign investors free access to local market, the sensitivity of fluctuations in local factors and events can be hedged away by holding a well diversified portfolio. This implies that a negative variability in one factor in one country may be offset by a positive move in another country. However, may studies (Bekaert and Harvey, 2003, Errunza, 2001 etc) report various restrictions to free flow of foreign capital which creates de facto segmentation. It is difficult and complicated to identify these barriers as countries may not officially have direct restrictions but there could be indirect barriers, such as poor liquidity condition, availability of inadequate information, poor corporate governance structure, market specific risk such as political and economic risk etc, which contribute to such restrictions.

Another important issue in dealing with asset pricing model in EMs is *'how do we incorporate information in our model?* The conventional model takes a static position, which assumes the risk exposures, sensitivity to these exposures and hence, the expected returns are constant. In case of the matured economies this might be a reasonable assumption but in case of EMs, it is

very unlikely that the risk exposures and their sensitivities remain constant because these economies, by the term itself, are undertaking many economic and financial liberalization measures to integrate themselves with the world markets. These measures are gradually initiated over time inducing structural changes over time. The gradual process implies the risk exposures, magnitude of sensitivities to these exposures and expected returns on securities also varies over time. This begs the question on how do we identify the sources of risk in such dynamic economic environment which are undergoing structural changes in their trade, political, economic and social environment? This is a very complicated issue and there are no authentic or adequate approaches to this. In view of above complexities, we can infer that it is a challenging task to price securities in emerging markets. However literature has, based on the prediction of simple CAPM, proposed model of asset pricing and integration for emerging markets.

There have been several studies which concentrate on the evolution of a country migrating from segmented state into integrated with world market. There are two broad categories of investigation in this aspect. First, economic integration is the study which deals with removal of barriers in the mobility of goods and services. Financial integration refers to the removal of barriers allowing access to international investors into local capital market and local investors into international capital markets. Numerous early works have been done to model the impact of market integration on security prices (Stulz, 1981; Errunza and Losq, 1985, Eun and Janakiramanan, 1986, Bekaert and Harvey, 1995). In the simple CAPM framework of Sharpe's (1964) pricing model, when markets are segmented, local market portfolio is the only relevant element which influence the price. Because the volatility of local return is high, the expected return is also higher. In a completed integrated market, the variation in expected return is explained by the sensitivity with respect to world market portfolio. As such, expected return is lower because the volatility of world market portfolio is lower than that of local market portfolio. Conclusively, the theory implies that as markets move from being segmented into integrated, security price should go up and expected return (cost of capital) should fall. A brief technical detail of the model is discussed below.

2.2 Asset Pricing and Integration

Figure 2 below shows a three period phase model for a developing market. For simplicity lets assumes there is only one share outstanding of the emerging market asset class and the risk free rate is zero. The figure shows that as the local government initiates liberalisation measures to integrate local economy with world markets, the cost of capital should decrease and the share price should rise. The liberalisation announcement is made in period one and price of the share in period two depends whether the market becomes integrated or remains segmented or to what extent the market becomes integrated. As such, investors attach a probability of λ as presented in equation 1. Equation 2 and 3 reflects the price in period 2 under the assumption of perfect segmentation and perfect integration respectively.

$$P_1 = \lambda P_2^I + (1-\lambda) P_2^s \quad \textbf{(1)}$$

$$P_2^s = E[D_M^E] - \rho Var[D_M^E] \quad \textbf{(2)}$$

$$P_2^I = E[D_M^E] - \rho Cov[D_M^E, D_M^W] \quad \textbf{(3)}$$

Where:

P_1 = Price of security in period one when announcement is made

P_2^s = Price of security in period two under perfect segmentation

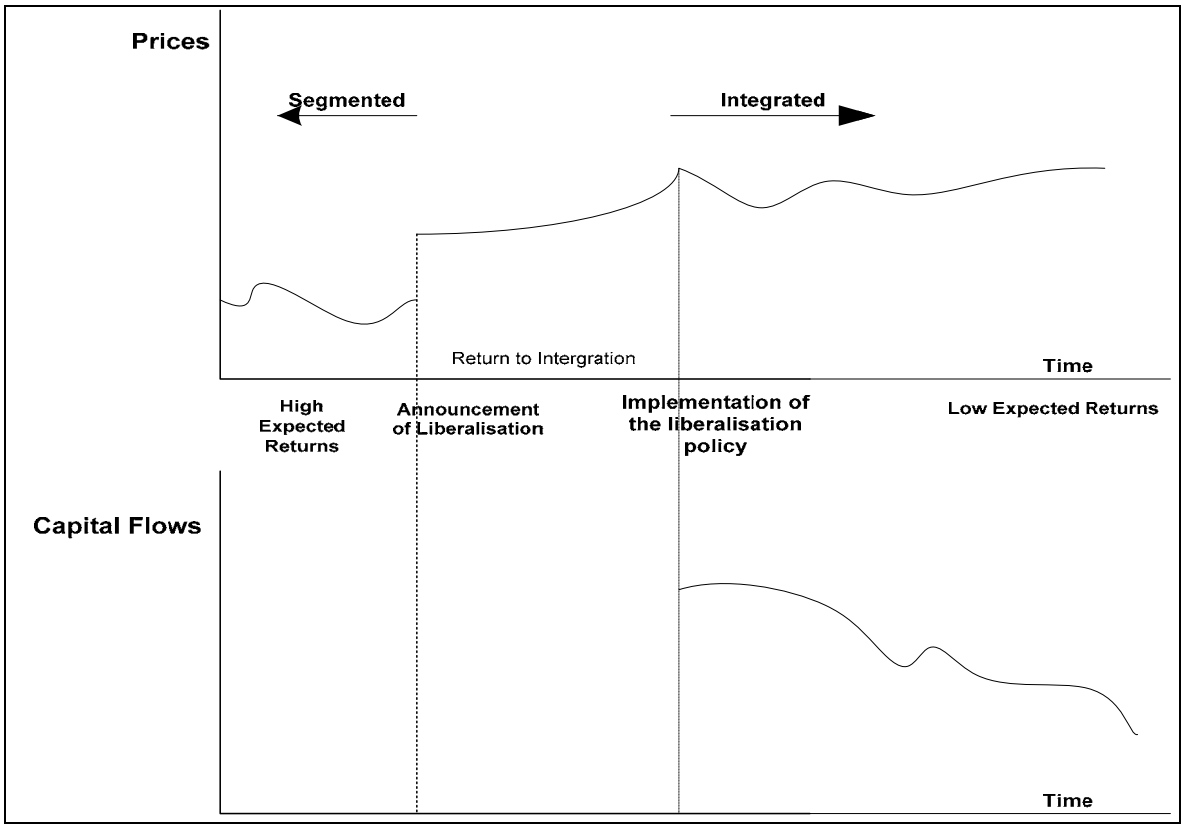
P_2^I = Price of security in period two under perfect integration

D_M^E = Aggregate market payoff in emerging market.

D_M^W = Aggregate market payoff in world market

ρ = Risk aversion coefficient

Figure 5: Asset Pricing and Integration



Source: Bekaert and Harvey (2003), Emerging markets finance, Journal of Empirical Finance, p.7

Price in period one (announcement of liberalization measures) depends on market's perception on how effectively the announced liberalization would be implemented depending on the credibility of the government's announcement as captured by λ and the diversification benefit that could be gained, represented by P_1^I. When the government in period 1 announces liberalization measures to be implemented in period 2, the above models predict price to be pushed up and the magnitude of the jump is reflected by λ. Once the liberalization is finally implemented and foreign capital begins flowing in, the share price further rises, although at a slower pace. The price could change as soon as the liberalization announcement is made or when the market anticipates it. This, however may devoid the foreign investors to enjoy the higher return because the capital begins flowing in only after the 'return to integration' (the initial price jump due to integration measures) has occurred.

As per the figure 3, the cost of capital should decrease and the price should go up but why? In a segmented market, local variance of returns is much higher than their covariance with the world market returns. As markets integrate with world economy, the systematic risk becomes global. Holding other factors constant, the implication is that as markets becomes more susceptible to global sources of risk, the local variance decreases accompanied by increase in the covariance with world market portfolio. The world market portfolio is assumed to be less volatile than local market portfolio (see Bekaert and Harvey, 2003 for further details). This further reduces the cost of capital and pushes up the local price. The covariance with world portfolio may be smaller relative to local variance following sharing of risk on global basis. Conclusively, the model relates the significance of domestic market variance (covariance with world market) to the degree of integration. With effective liberalization process, the cost of capital goes down and covariance with world markets becomes more important than local variance. This reduction in cost of capital should induce more initial public offerings decreasing market concentration and individual securities may further become less sensitive to local information and more sensitive to world events.

Chapter 3

3 Importance of Integration and Motivation for Review

Integration phenomenon has been extensively studied for the developed markets (see Errunza and Losq, 1992). However, the result regarding the structure of world capital markets is inconclusive with conflicting findings. Errunza and Losq (1992) quote several studies and confirm the wide differences observed regarding integration issue of developed markets. "*The phenomenon of home asset preferences leads many international economists to believe that even developed markets are not well integrated*" (Bekaert and Harvey, 2003, pp. 4). Errunza and Losq (1992) also report that most of the studies which test the null of integration versus segmentation takes the stand that rejection of integration is segmentation, which may not be the case and they themselves (Errunza and Losq, 1985) show that rejection of integration hypothesis does not implies complete segmentation of the markets. Integration phenomenon has also been studied through the lens of foreign direct investment (FDI). Albuquerque et al (2005) examines a number of emerging markets for the period of 1976 to 1989. They conclude FDI has increased at an annual average rate of 9% higher than portfolio flows. Increased flow of FDI leads greater exposure of domestic market to world factors. However, our focus will be to study integration from through the eyes of equity investors.

3.1 Integration, Sources of Risk and Cost of Capital

The major questions posed in the arena of equity portfolio investments in EMs are:

What are the return opportunities in these transition economies?

What price should be paid for these securities?

How do we determine price and how pricing relationship changes over time?

These are the most fundamental questions in the area of emerging markets finance and for investors willing to invest in securities of emerging markets. Theoretically, fundamental value of equity is explained by the asset pricing models (CAPM, APT, ICAPM etc) but under strict assumptions. However, when it comes to making decision in the real world of portfolio selection

global investment managers are faced with the complexities of assigning weights subject to a number of constraints. These constraints may be level of investor's risk aversion, restriction on short-selling, maximum ownership limit in certain markets, and limits on the exposure of the portfolio to a number of risk factors.

The identification and quantification of the risk exposures becomes crucial for incorporating the constraints of risk exposures. For example, a global investment manager may not choose a global portfolio which has higher expected return than S&P500 (lets say), same volatility (standard deviation) but different betas for risk exposure to global oil price (let's say -3.0 against -0.3 for S&P500). In this scenario, if there is an increase of 10% in the increase of oil price, the global portfolio would lose 30% against the small loss of 3% only for the S&P500. For many managers such type of exposure may not be acceptable. This shows it is not only important to identify and measure risk exposures but also estimated risk exposures are used in the construction of portfolio. In case of emerging markets and in the spirit of basic asset pricing models, higher expected returns are associated with higher measure of risk related to a number of risk factors. However, whether prices in emerging markets are related to same exposures as developed markets and if they are, what are these risk factors? Gysels and Garcia (1998) identify two different recognising these factors. First, if emerging markets are segmented from world capital markets, its only local sources of risk that should be priced. However, if these markets are integrated, expected returns of the country should be explained by its world risk exposures. Wheatley (1988) suggests some issues in financial economics cannot be addressed without making valid assumption of whether the equity markets are segmented or integrated with the world market. If a market is segmented, the cost of capital (expected return in terms of asset pricing model) for a project or investment will solely be explained by the domestic risk sources and in an integrated state by the world sources, significantly affecting expected return. From investors' point of view, level of integration determines various sources of risk. Bekaert and Harvey (1995) claims the concept of different countries demanding different expected returns lies at the core of international finance. They further document beside the most obvious country specific exchange risk, it is very complex and difficult to quantify the risk sources in emerging markets particularly when studies show that these markets are not fully integrated with the world capital markets and integration is a time varying phenomena.

3.2 Integration and Risk Diversification

Theoretically, financial liberalization integrates emerging markets with global capital market and should influence pricing of securities. With the flow of capital, foreign investors' purchase will lower the expected returns and bid up the prices of domestic stocks. As markets integrate, they are exposed to common global sources of risk, which means they move more in tandem with the markets of developed world. Bekaert and Harvey (2003) propose following argument. Following greater market integration, a rational international investor may contemplate reduction in expected returns and increase in correlation between emerging markets and world market returns. In light of reduced diversification benefits the investor may reduce the investment exposures in EMs. The decrease in demand for securities may negatively affect pricing. Consequently, to the extent liberalisation process decreases diversification prospects in the long run; there may be less of an increase in the security price affecting the long term higher return prospects.[2]

All the above mentioned issues and theoretical underpinnings must be corroborated by empirical findings which a growing body of research has been endeavouring. There are two major motivations for conducting the review. First, equity market integration issue in international finance is one of the most important concepts. It is a perquisite in justifying the pricing of securities in terms of different risk sources and long term sustainability of higher return. Second, the challenging context of emerging markets, which exhibit unique characteristics owing to their transitory state in terms of changing market structure and time varying integration of their equity markets, is a perfect laboratory for applying the different theoretical bases. Given the aforementioned motivations, I aim to conduct a systematic review to understand and update myself on:

What has already been done? What is the current state? What further needs to be done?

3.3 Conclusion and Review Question

There is growing body of literature which indicates that capital markets around the world are becoming more integrated. Bekaert and Harvey (1995) document that emerging markets show

[2] For details please refer to Bekaert and Harvey, 2003

time varying integration but there are differences on the degree of integration across countries. They predicted these markets to become more integrated over time. It's been more than 12 years this prediction was made. In a recent study, Patricia - Steeley (2005) finds global factors are having increasing influence on stock market returns of Hungary and Poland indicating greater move towards market integration. Jong and Roon (2005) document that in the last two decades emerging stock markets have become more integrated with the world stock markets. Bashar and Sadorsky (2006) report significant evidence of oil price influencing returns in emerging equity markets. However, numerous studies also indicate moves towards greater segmentation or are showing slower pace of integration than expected by the theoretical framework of integration. Francis, Hassan and Hunter (2002) state that markets previously revealing high level of integration has in fact regressed to near segmentation. Hunter (2005) states that Argentina, Chilli and Mexico's integration is time varying and they have not yet fully integrated. Bekaert and Harvey (1995) document that emerging markets experience changing level of integration and some markets have even become more segmented in the post liberalisation period. These conflicting studies demand further investigation into the matter of integration.

In light of theoretical and empirical discussions what emerges is that the core characteristic of higher return relative to developed market is not static as there is evidence of segmentation and integration. The above study has also shown how theoretically integration influences the expected returns and bid up the security prices as markets become more integrated. In the present context of the growing investments into emerging stock markets as an asset class, I propose to conduct a systematic review of the existing literature with the aim to examine the empirical studies on the relationship between integration and expected return within the theoretical framework of international asset pricing model. The review question is as follows:

What are the findings of empirical studies in explaining the relationship between integration and expected return in emerging markets?

If a global portfolio manager is aware how integration is measured and how it influence return prospects over time, s/he may be in better position in formulating effective investment strategy. Higher return in emerging markets is one of the fundamental attractions. Integration influence the sources of risk and associate the local returns with the returns of world market portfolio but

the process of integration is time varying, which implies that expected return is also function of time variation. The following sub questions are worth reviewing within the framework of integration and asset pricing theories in emerging equity markets:

What are the changes observed in expected return, when markets move from being segmented to integrated?

How the degree of integration/segmentation is manifested by the significance of local and global sources of risk in pricing security?

Chapter 4

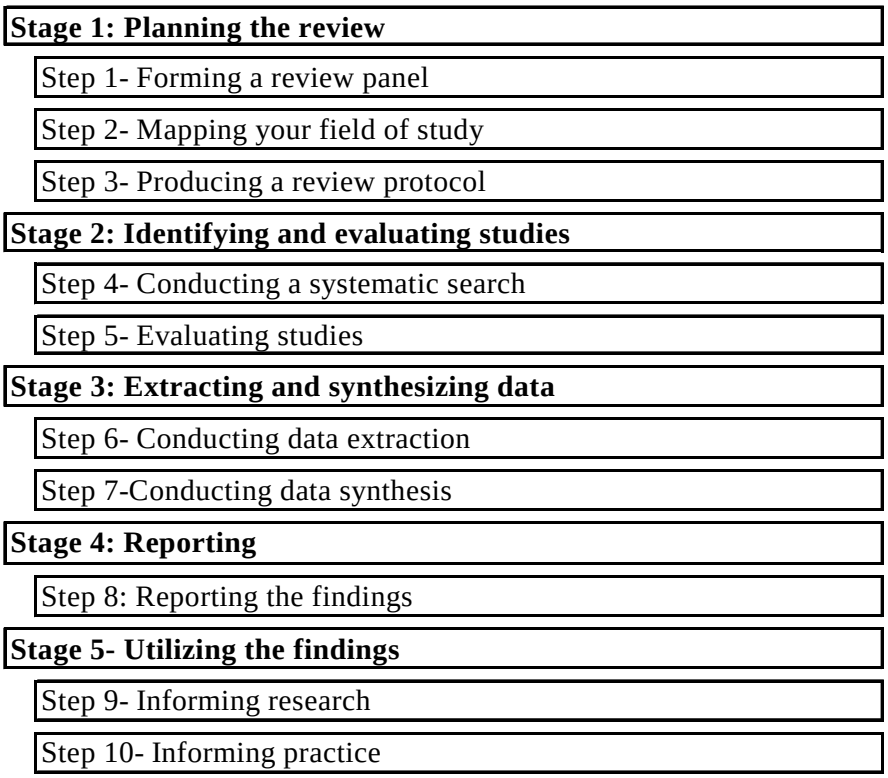
4 Methodology

Reviewing existing literature is the most important part of any research project as it not only renders clear understanding of developments in the field but also provides the basis on which a researcher can place him/her in the literature supplementing it with his own contribution. However, the traditional literature review which is conducted unsystematically has its own flaws and hence, a novel procedure was needed to provide better logic and transparency for the review. The present chapter provides a brief description of the rationale for using the systematic approach and detailed methodology applied in conducting this review, commonly referred as the protocol.

4.1 Rationales for Systematic Review

Undertaking a thorough review of existing studies is an important part of research projects (Tranfield et. al., 2003). The researcher needs to identify, assess and investigate relevant studies in order to generate research questions to further contribute in the relevant field of knowledge. However, the traditional narrative literature review lacks the rigour and thoroughness needed to justify the research question/s. The traditional approach only provides a subjective analysis (hence biased), which may be appropriate to identify gaps but it might not provide basis to justify that gap or make any sense of why the gap is worth researching. In order to justify research question/s, a thorough, reproducible, auditable and scientific approach is needed. Tranfield et al. (2003) document that in the past 18 years medical science has made significant effort to improve on the traditional review approach by synthesising the process in systematic, transparent and replicable manner. Management field has also embraced similar approach. The systematic approach makes the case for the question/s strong and provides rationale for the empirical study. It avails the researcher evidence based means to convince the audience that the study is worth undertaking and make sense to academic and practitioners. The present review has made an attempt to apply the same rigour and transparency in order to justify the area of research. Figure 6 illustrates the step-by-step process of the systematic review a.

Figure 6: Systematic Review Process, AMRC – Cranfield University



As noted earlier, systematic review is an important tool and first step in the process of producing a good piece of research at doctorate level. Given the importance of this transparent, auditable and replicable approach, I intend to apply the above stated process (Figure 6) with the aim to identify, extract, synthesize and evaluate relevant studies for answering the above stated review questions. The objective of the review is as follows:

- Employing a transparent and thorough systematic approach and selection criteria, identify the key papers relevant to the stated research questions.
- Using the background developed in chapter 2 and 3, synthesize and evaluate all the studies applying strict evaluation criteria.
- Identify issues which are already known in the literature and what further needs to be done?
- To position my PhD research question/s and contribute in the existing literature

The following chapter aims to address the first two objectives whereas the final chapter address the remaining aims.

4.2 Systematic Review Protocol

This section provides the detailed methodology and framework used in conducting the systematic review. This is the most important part of the novel systematic approach which distinguishes itself from the traditional narrative reviews.

4.2.1 Consultation Process

Table 3: Review Panel and External Advisor

Person	Title/Organization	Role
Prof. Sunil Poshakwale	Professor of Finance, Cranfield School of Management	Supervisor
Prof. Sudi Sudarsanam	Professor of Finance, Cranfield School of Management	Advisor and Member of Panel
Dr. Bhaskar Das Gupta	Director, Strategy and Architecture ABN Ambro Group London	Practitioner and External Advisor
Prof. Kenneth A. Froot	Professor of Finance, Harvard Business School, U.S.A	External Advisor
Prof. Vihang Errunza	Associate Dean, Research and International Relations Director, Finance Research Centre, McGill University, Canada	External Advisor
Prof. Mardi Dungay	Professor in Finance, Cambridge Endowment for Research in Finance, University of Cambridge	External Advisor
Dr. David Drenyer	Lecturer, Cranfield School of Management	Advisor of the systematic review process
Ms. Heather Woodfield	Chief Librarian, Cranfield School of Management	Advisor for supporting extract data for the review
All PhD students in Accounting and Finance group and my cohorts	Cranfield School of Management	Peer Reviewers

Prof. Sunil Poshakwale

Professor Poshakwale is my supervisor, who guided and shaped my review. His expertise in emerging financial markets was an important source of guidance for the review. He assisted me

throughout the review with his valuable input, referenced the best available sources and provided constructive criticism on my written work.

Prof. Sudi Sudarsanam

Professor Sudarsanam has long experience in dealing with systematic review, particularly in finance. Professor Sudarsanam comments during the review were enriching. He made me aware of some important and related concepts in my field.

Dr. Bhaskar Das Gupta

Dr. Gupta is the head of global change strategy of ABN AMBRO and has several years of professional experience in dealing with international investments. He assisted by providing some advice to incorporate issues relevant for international investors.

Prof. Vihang Errunza

Professor Errunza is one of the most cited names in the field of emerging financial markets research. A dean, chairman, director, Prof. Errunza has held wide positions and is one of the leading contemporary academic and advisory in the field of international finance. He guided me in identifying some key papers.

Prof. Kenneth A. Froot

Prof. Froot is professor at the Harvard Business School, Boston, U.S.A, who was helpful in shaping my scoping study.

Prof. Mardi Dungay

Prof. Dungay is professor at the Cambridge Endowment for Research in Finance. She assisted me with her valuable written feedback on my work.

Dr. David Denyer

Dr. Denyer was the most important source in clarifying and guiding the entire systematic process throughout the MRes course.

Heather Woodfield

Heather was very helpful in developing my skills on information search, extraction, cross referencing and creation of bibliography using *refworks*.

4.2.2 Search Strategy

4.2.2.1 Key words and rationale

The following key words were generated from abstract of key papers, supervisory guidance, advisory panel's advice and employing cross referencing strategy. Based on the keywords, research strings were developed and applied in the search engines described below:

Table 4: Key Words

Concepts	Keywords	Rationale
Emerging markets	Emerging Markets Equity Developing Industrializing Economy Transition Semi Industrialized	These words incorporate my research context i.e. emerging markets
Integration phenomenon	Financial Liberalization Integration Segmentation Time Varying Complete Partial	These words capture integration phenomenon
Impact on returns	International Asset Pricing Risk World Sources Global Expected Return Factors Cost of Capital	These words constitute element of expected return

4.2.2.2 Key words and string build-up process

Key words selection procedure

1. I randomly selected words from my memory in light of the studies done so far.
2. I also used www.thesarus.com for alternative words

3. I also received assistance from panel members, particularly from my supervisor.
4. I used the abstracts of key papers from my field to build up the key words lists.

Search plan using search strings

- I grouped words which display similar concepts and characteristics to form strings.
- I used logical combination of these words to form strings.
- I truncated the words such as *integrat** which captures words like integrated and integration. *Return** constitute return and returns etc.
- I tested the databases ProQuest/EBSCO/Social Science Index/Google Scholars using the strings/words.
- I have systematically documented the search results.
- I constantly searched for new terms/authors throughout the review process.
- I used cross references to build up my further database for the review. I found this strategy was effective in generating a good number of relevant papers.
- I constantly searched the database and used my panel to remain updated with all the developments in my field during the review to incorporate the latest findings and concepts.

4.2.2.3 Research Engines

Following search engines were employed to extract papers for the review:

Primary

- ProQuest
- EBSCO
- Social Science Citation Index

Secondary

- Google Scholar
- SSRN
- Publish or Perish

The basis on which the six search engines have been categorized into primary and secondary is the frequency of their use. ProQuest and EBSCO are the most popular and widely used search

engines for research in accounting, finance and economics. This was verified after consultation with chief librarian, Heather Woodfield and supervisor, Prof. Sunil Poshakwale. Social science citation index is a very useful source for finding out the citation and their impact. This has been found to be an excellent source of information to track down the developments in the field, forward and backward.

The secondary database Google Scholar and SSRN (Social Science Research Network) are also good sources for finding the working papers which are under refinement process. It is well know that it takes several years to get a work published and in my topic area, things can change significantly. For example, a country may be considered segmented from the world market when a paper is written and submitted but in due course the same country may embark on market friendly policies and become integrated with the world market. When published, the paper may provide misleading information. As such, constant scrutiny of the aforementioned database becomes imperative to keep updated with the latest developments. Google Scholar is very useful in identifying the key authors to identify other most cited and relevant studies. Such process was very helpful in identifying some important papers. Publish and Perish was handy search engine of Harzing.com helping me to locate some relevant papers and was fruitful in sorting papers on the basis of impact, years of publication, citation etc.

Sources

My expected rankings of sources in terms of percentage for extracting the relevant literatures were:

Ranking	Sources	Expected percent of Literature
1	Journal Articles	80%
2	PhD Thesis	10%
3	Books	5%
4	Working papers	5%

4.3 Selection Criteria

Once the papers and empirical works are selected through search engines, the next challenge is how and on what basis this large pool of studies should be filtered out in order to include the most relevant papers and exclude the irrelevant ones given the scope of the study and time

constraint. The question of relevancy was based on review question and scope of the review. The following section list down some of basis for including/excluding studies:

4.3.1 Selection from the titles and abstracts

Once the papers were selected from the search engines, titles and abstract were skimmed to further filter them. Following criteria was used while conducting the first layer of filtering:

Table 5: Criteria for Title and Abstract

Criteria	Rationale
Academic and Scholarly Journals	The review is to study the phenomena and could only be logical and evidence based if rigor has been applied in the studies and have been judged by a wide audience with specific expertise. As such, I excluded magazine, press articles etc unless it's a survey, as they lack scientific logic and verification.
Studies involving Integration phenomenon only	The review is based on understanding the relation between integration and expected returns. Other aspects of EMs such as, volatility, political issues, economic development, privatization, contagion, domestic market microstructure were not studied.
Empirical studies incorporated data from Emerging Markets except the theoretical and conceptual papers.	The review is being made to get an up to date insight into the empirical studies which only focus on emerging markets. The review excluded studies which focus on integration of developed countries with each other. However, the exception being the key theoretical papers which employ data from developed market, particularly US data.
Studies on firm/industry level were excluded and only country level analysis was incorporated.	The review focuses on the Emerging Markets as an asset class in the global portfolio of international investor. I will included studies which used the IFC list of emerging markets at country level index and excluded firm/industry level analysis.
Qualitative studies (except review and theoretical papers) excluded as these do not provide the evidence of the phenomena being studied	Integration phenomenon is explained by its effect and using econometric analysis and as such, qualitative studies were not included.

4.3.2 Selection from Full Text Papers

Theoretical/Conceptual papers must contain:

- Discussion leading to the development of the theory, literature displaying its critical discussion and its pitfall in its intuition and application.
- The modeling of the theory must incorporate: all the assumptions, the mathematical logic, its applicability and its generalizability.
- Clear economic intuition behind the formulation of the theory.

Empirical papers must contain:

- The theoretical basis or intuition behind the research question. The theory or intuition must be thoroughly discussed explaining where it stands in the literature, what are the key debates and descriptive of its tests.
- The mathematical intuition behind the model employed must be clear with vivid description of the model and its parameters. It must also discuss the strength and weakness of the model with the robustness of the test employed and all possible biasness.
- The context where the theory and its mathematical/econometric model being applied must be stated with the justification on sample size, the institutional framework, time period, frequency of data etc.
- The variables included should be clearly defined with the justification of the proxy being employed and does the proxy capture the complexities to be studied. The quality of data being employed must be discussed as it is important in evidencing the robustness of the tests being employed.
- The paper must explore its limitation and should provide potential for further research to justify or authenticate the objective of the paper.

Methodological paper must contain:

- Clear understanding of why and how the methodology employed to interpret the phenomena or statistic or variables is derived with their strengths and drawbacks.

4.4 Quality Appraisal

I applied all my selection criteria and developed the pool of database for the review. The following bases were employed to asses the quality of the papers used in the review:

- Theoretical and Conceptual underpinnings
- Contribution to the Literature
- Empirical Analysis and Interpretation
- Use of Appropriate Methodology
- Discussion of the problem/phenomena and potential for further research

The table in the following page was used as a framework to evaluate the quality of papers relevant to my review questions. Empirical papers in research are judged by the quality of the data, methodology, power of the tests and its contribution in the literature and practice. The quality of findings depend how well the model is specified and how robust is the methodology applied? Data mining is one of the biggest issues in empirical finance where anticipated results drive the analysis. Research in emerging markets is a big challenge because of unavailability of the quality data, and even if available, are noisy and their distributional properties are not consistent with the assumption of the most of the methodologies applied. For example, in the international CAPM regression framework, returns are assumed to be normally distributed but most of the return's data in emerging markets have been found to be non normal. Also, quality is judged on the innovation exhibited in terms of confirmatory study, context specific application of the model and empirical analysis of new perspectives, which may or may not be based on strong theoretical groundings. If the study is not based on strong theoretical framework, then the econometric methodology applied needs to be extensively discussed. The applicability and power of the test with all possible limitations should be discussed and debated. Also studies may lack authenticity if they do not discuss the findings and its limitation. This opens up the avenue for further research either in the form of the applicability of the same methodology in different context to further validate/refute the findings. A good piece of work often emerges more question than only answering the one in hand.

Table 6: Quality Appraisal Framework

Discussion Rating	Theory and Conceptual Underpinnings	Use of Appropriate Methodology	Robustness of Test and Empirical Analysis	Contribution to the Literature	Limitation and Future Research Potential
Three Star - Good in Quality	Evidence of the clear and in-depth understanding of the underlying theory and a sound employment of the framework to the problem.	Design and model selection in line of the underlying research question. Clear explanation of the methodology, variables or proxy.	Sample selection, frequency of data, time period and power of the test applied to answer the hypothesis/research objective clearly explained and justified.	Findings are justified and thoroughly discussed to support the contribution to knowledge and practice.	Limitation of the study clearly identified and discussed leaving enough room either to further confirm the study or emerge more questions from the study for future research.
One Star - Average in Quality	Not enough understanding of the underlying theory.	A descent but not strong attempt to identify and justify an appropriate methodology. Readers are not sure whether the design, methods and variable are aligned with the research question.	All the above mentioned aspects are just reasonable or the analysis lacks the robustness.	Findings are trivial and may not be justified in terms of supporting the contribution to the literature and practice.	Limitations are poorly discussed leaving enough evidence to doubt the analysis and contribution and do not reveal any direction for further research.
Non Star- Poor in Quality	Lack of adequate information to asses the criteria	Lack of adequate information to asses the criteria	Lack of adequate information to asses the criteria	Lack of adequate information to asses the criteria	Lack of adequate information to asses the criteria

The above table provides the framework which I applied on all the studies to judge their quality. For the sake of providing rating system, three stars were accorded to papers which passed the criteria set above and discussed previously. Studies which failed to get through all but only few criteria were awarded 2 stars. Papers which did not pass any of the criteria were judged as none star studies.

4.5 Data Extraction

Following is the proposed data extraction format which was used to extract relevant data. These were further synthesized and integrated for generating key discussions and debates.

Citation Information

Author/s
Title
Publication
Date of Publication
Context
Database
Key Words

Methodological Information

Empirical or Theoretical
Quantitative or Qualitative
Model Employed
Sample Size
Data Frequency
Year Range
Data Description

Quality Assessment Information

Theory and Conceptual Underpinnings
Use of Appropriate Methodology
Robustness of Test and Empirical Analysis
Contribution to the Literature
Limitation and Future Research Potential

Thematic Information

Research Objective
Key Findings
Abstract
Critique
Research Prospects

4.6 Synthesis

Once the studies were assessed against the set of quality criteria, the extracted data were coherently integrated. This was the most important part of the review which provided further research direction. Synthesis, along with descriptive statistics, not only identified the gaps but they also provided framework to justify the positioning of the research questions.

Chapter 5

5 Findings

The current chapter presents the findings of the steps adopted in the protocol. The chapter is divided into two parts. The first part deals with the results related to identification of studies and their selection followed by descriptive statistics of the findings. The second part reports the extraction of the data and integrates the information, concepts and ideas in coherent manner.

5.1 Description of Results

5.1.1 Selection of studies

There are two major steps in conducting the selection procedure for relevant literature. The first step is to identify and locate key papers using the keywords/strings mentioned earlier in chapter 4. The findings of only three search engines are reported. The other three were used for cross referencing strategy to identify key papers from the references of most cited authors. As it is not possible to use search strings in SSRN, the words were keyed in the logical sequences (such as Integration in Emerging Markets, Risk Sources in Emerging Markets, Cost of Capital in Emerging Markets, Liberalisation and Integration in Emerging Markets). Majority of the papers were obtained from ABI/ProQuest and BSP/Ebsco and only two working papers were obtained from SSRN.

Once the list of papers was identified, strict selection criteria were applied as shown in the Table 7. After excluding overlapping studies, the search procedure ended in final 18 numbers of studies. This was further filtered down to 15 applying out of scope criteria because they were not related to the issue of integration and return issues in emerging markets. Applying the quality appraisal criteria (Table 6) this number further came down to 12. Google scholar, Social Index and the top most cited papers (Table 10) were then used to find key papers using cross reference strategy (on the basis of top 10 key authors). This strategy further availed 9 papers. Two book chapters were also selected as they provided good theoretical basis and 4 other papers were provided by Prof. Vihang Errunza, one of my external advisors and most cited authors in the field of integration in emerging markets. As such, a total number of 27 studies were selected for the final review. The following section provides the general description of the studies.

Table 7: Selection of Studies

	ABI/ProQuest	BSP/Ebsco	SSRN
String 1 only (Concept Capturing Emerging Markets)	54,910	60,504	12,345
String 1 and 2 (Concept Capturing Emerging Markets and Integration Phenomena)	4,663	3,647	1,234
String 1, 2 and 3 (Concept Capturing Emerging Markets, Integration Phenomenon and Expected Returns)	81	36	18
Academic and Scholarly Journals Only	28	14	23
Further filtration from Titles	19	10	16
Further filtration from Abstracts	19	10	16
Full Text Selection Criteria Filtration	14	9	2
After Excluding Overlapping Studies	18		
After out of scope filtration	15		
After Employment of Quality Appraisal	**12**		
Other Source:			
Book Chapter	**2**		
Cross Reference (After Quality Appraisal)	**9**		
Papers provided by external advisor	**4**		
Total number of studies to be reviewed	**27**		

5.1.2 Descriptive Findings

Descriptive statistics of the relevant studies provides important information. It provides basis to justify the research in terms of descriptive statistics and is a means to rationalize the saleability of the future research projects.

In this section brief descriptive statistics of the 27 studies are presented. Table 8 shows the distribution of the studies by research categories which are mainly empirical and only four includes theoretical papers. Among the four theoretical papers, two also incorporates the empirical analysis of their theoretical models. The inclusion of the working papers and two

books chapters were discussed with supervisor and external advisors. They were only incorporated after carefully assessing the quality and their relevance for this study.

Table 8: Theoretical and Empirical Work

	Academic Journals	Books
Empirical	**23**	-
Theoretical	**4**	**2**

Note: Two Journals include both theoretical and empirical analysis

Figure 7 shows the distribution of the studies by number of studies published each year in a chronological manner beginning 1977 till 15 July 2007. The pattern shows increasing trend of the number of studies being conducted on integration of emerging markets with 1995 being an outlier. Major conclusions of the studies conducted in 1995 were that the emerging markets show time variation and as more and more foreign investments flows in, the markets are expected to become integrated over time. This prediction itself provides basis to verify the theoretical prediction as more and more data becomes available. Figure 7 provides a good basis for the rationale of conducting research in this area of integration. The acceptance of the topic's publication potential in world class journals is increasing as evident from the growing number of studies. Also as indicated above, the timing of conducting such studies is reasonable as these markets initiated liberalisation policies in the late eighties and early nineties. In the last 15-20 years, these markets have gone significant changes. Whether the early predictions made in the early 1990s (particularly 1995) are true could now be empirically tested because of the availability of more data and actual changes that has taken place due to the liberalisation measures.

Figure 7: Number of Studies per Year

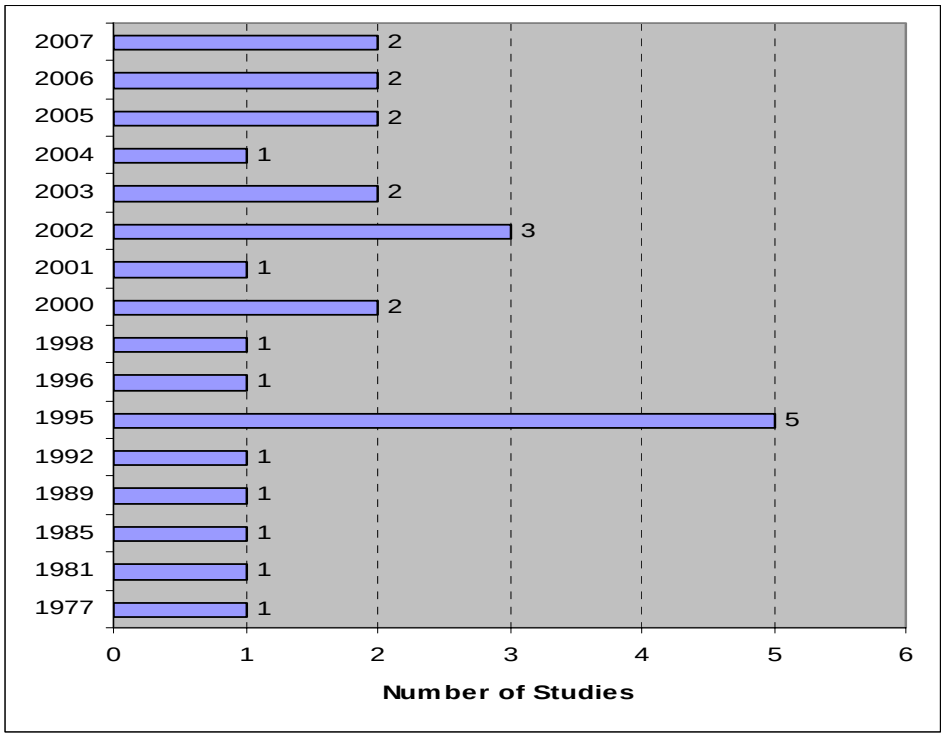


Table 9 provides distribution of the publications of all the papers journal wise. As shown below, majority of studies are published in four star rated journals, including the most popular and highly regarded journal of finance. This again shows the area is well received by the highly rated academic journals.

Table 9: Number of Publication per Year

Publication	Number of Studies
The Journal of Finance	7
Journal of International Money and Finance	3
The World Bank Economic Review	3
Journal of Financial Economics	2
Text Books	2
Working Papers	2
Applied Financial Econnomies AFE	1
International Financial Markets, Instiutions and Money	1
Journal of Banking and Finance	1
Journal of Business	1
Journal of economics and business	1
Journal of Empirical Finance	1
Review of International Economics	1
The Review of Financial Studies	1

Applying the strict quality criteria mentioned above, the studies were also checked against the rating of their impact. Google scholar publishes the figure which shows number of times the papers are cited by other quality journals. This figure is a proxy for assessing the impact of each study individually. The table below shows that most of the highly cited papers were published in middle of 1990s or in early 2000s. This again indicates that most of these studies used quite old data but did make prediction of growing integrration because of the time varying nature of the emerging markets.

Table 10: **Ranking of Paper in Terms of Citation (Google Scholar)**

Year	Author/s	Citation
1995	Bekaert and Harvey	606
2000	Bekaert and Harvey	471
2000	Henry	387
1995	Harvey	379
1985	Errunza and Losq	229
1981	Stulz	224
1995	Bekaert	184
2002	Bekaert, Harvey and Lumsdaine	149
2005	Bekaert et al.	110
2002	Bekaert, Harvey and Lumsdaine	91
1995	Harvey	70
1996	Korajczyk	57
1989	Errunza and Losq	50
1992	Errunaza, Losq and Padmanabhan	50
1995	Classen, Dasgupta and Glen	38
1977	Solnik	35
2003	Errunaza, Carrieri and Hogan	35
1998	Garcia and Ghysels	24
2005	Frank de Jong and Frans A. de Roon	19
2001	Vihang Errunza	11
2003	Taskin and Muradoglu	1
2006	Hunter	0
2007	Chen and Huang	0
2007	Wang and Iorio	0

Table 11 provides the statistics of the different forms of integration measures (variables) used in the literature. The most commonly used is the global source of risk employing the static asset pricing models where the risk measures (betas) and risk premium are assumed constant. The most widely used variable is the return on world market portfolio (proxied by the world return index of the MSCI) as exhibited in table 12. The second most common source is the observed

changes in cost of capital and following our theoretical basis the cost of equity capital should show decreasing trend. Time varying measures have also been used and most of the studies employing time varying models are widely cited as they capture the real phenomenon of the emerging markets. As shown in the table 11, there are other measures of integration which have been used in the literature but not extensively. This again provides a basis for using them in further research particular the structural changes in trading activities of foreign equity investors and price earning ratios as these are directly expected to show variation in response to liberalisation measures.

Table 11: Measure of Market Integration Used

Measure of market integration	Number of studies using them
Structural changes in Trading Activities of Foreign Equity	1
Correlation of Expected Return	1
Price Earning Ratio	1
Pricing Error in APT model	1
Ratio of value of investable to global index of IFC	1
Unconditional Correlation	2
Time varying sources of risk	3
Cost of Capital	5
Static sources of Risk	17

In order to identify and assess the importance of sources of risks used in the literaure, Table 12 and 13 provides a list of the variables used as global and local sources of risk in pricing of securities in emerging equity markets. The tables illustrate various global and local sources of risks used with almost equal distribution except the most widely used world returns. These proxies are employed in the asset pricing model to show that emerging markets are fully integrated, completely segmented or partially segmented.

Since the share of world market capitalisation of the emerging markets is increasing at a reasonable rate (Figure 2, 3 and 4), it is not reasonable to use S&P 500 as proxy for world returns. Also the widely used 23 developed countries MSCI world return index may not represent world market portfolio because the world market capitalisation share of developed countries is decreasing compared to the increasing share of emerging markets. The MSCI all

country world index should be a better proxy for world market portfolio. Also, as shown in the tables below, only two studies have used oil price as a source of global risk and it's now well known that in forth coming years, emerging markets oil demand will almost be 80% of the total world demand (The Economist, 2006). This clearly means changes in the oil price will significantly affect the performance of their economy. Hence, using oil price as a proxy for world risk factor provides a good basis to be used as an important global source of risk in further empirical studies.

Table 12: Global Risk Factors

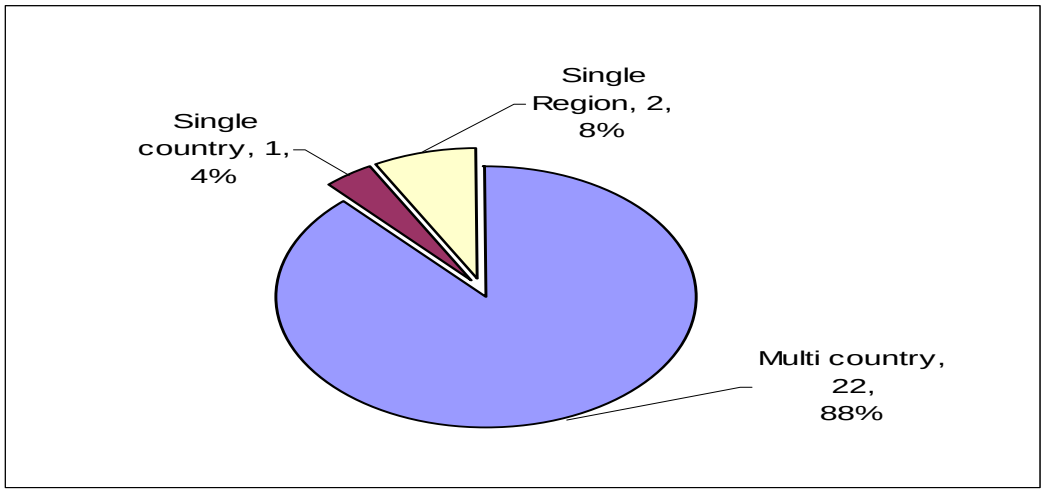
Variable	Description	Explanation of Economic Theory	Source	Number of Studies Using the Variables
Return on MSCI World Index	ICAPM - World Market Portfolio	World Market Portfolio - Local return Should price if market is integrated	Morgan Stanley Capital Investment (MSCI)	5
World Dividend Yield in excess of risk free rate	DY on world equity index	Should be priced if market is integrated	DataStream (DS)	2
Change in US Term Premium Spread	Yield on ten year US Treasury notes in excess of the yield on the three month bill	Should be priced if market is integrated	Federal Reserve Board (FRB)	2
Real trade weighted exchange rate of the US dollar against major currencies	Proxy for global exchange rate risk. It is referred to as 'major partners' index, includes the currencies of the Euro-area countries plus Australia, Canada, Japan, Sweden, Switzerland and the UK.	Should be priced if market is integrated	FRB	2
S&P 500	US Market Portfolio	Should be priced if market is integrated	S&P	1
Default Spread Premium	Difference between Moody's Baa-rated and Aaa-rated corporate bonds	Should be priced if market is integrated	FRB	1
Industrial Production	Proxy for world business cycle (OECD growth rate in industrial production)	Should be priced if market is integrated	OECD	2
Global Inflation	Proxy for aggregate global inflation	Should be priced if market is integrated	OECD	2
GDP weighted average of the short term government TB rate	G7 countries	Lower interest rate Should push the capital into higher yield markets	DataStream	2
Oil Price	Proxy for world commodity price	Should be priced if market is integrated	Commodity Research Bureau's (CRB)	2
Commodity Research Bureau's (CRB) industrial inputs index in excess of a risk-free rate	Proxy for global industrial input	EMs have undiversified industrial structures and most of the equities are resource based and therefore EMs may have significant exposure to price fluctuations in an index of natural resources.	Commodity Research Bureau's (CRB)	2
CRB food price index in excess of risk free rate	Proxy for world agricultural variance factor	Emerging economies have larger proportional agricultural sectors than the developed economies and change in CRB food index in excess of a risk-free tare may influence their return	Commodity Research Bureau's (CRB)	2
Per capita GDP	Proxy for global economic condition	Should be priced if market is integrated	OECD	2

Table 13: Local Risk Factors

Variable	Description	Explanation of Economic Theory	Source	Number of Studies Using the Variables
IFC Country Index	Emerging markets aggregate country index (constituting almost 80% of local market capitalization)	Global sources should be explained or priced if markets are integrated	IFC Country Index	6
Local market dividend yield - excess of the risk free rate	Proxy for cost of capital	Should be priced if market is segmented	S&P/IFC EMDB	5
Lagged local market excess return	Local information variable	Should be priced if market is segmented	S&P/IFC EMBD	5
Change in local inflation rate	Proxy for local business condition	Should be priced if market is segmented	IMF-IFS	3
Real Bilateral Exchange rate with respect to the dollar	Nominal Bilateral Exchange rate with respect to the dollar minus CPI	Should be priced if market is segmented	IMF-IFS and DS	2
Local Interest Rate	Proxy for domestic cost of borrowing	Should be priced if market is segmented	IMF-IFS and DS	2
Domestic Money Supply	Proxy for variation in economic policies and liquidity	Should be priced if market is segmented	IMF-IFS and DS	1
Industrial Production Index	Proxy for changes in domestic real activity	Should be priced if market is segmented	IMF-IFS and DS	1

Tables 14-17 provide distribution of the empirical papers in terms of number of countries used in their studies. Figure 8 shows that 88% of the studies have employed multiple country analysis. Majority of papers which are published in the highly rated journals have used multiple countries to support their findings. In terms of publications, this provides indication that multiple country possess better prospect of publication relative to single region or country.

Figure 8: Aggregate Distribution by Region and Country



The above figure clarifies the saleability of paper in terms of unit of analysis but which are the most research counties and which are the ones that provide ample opportunities to apply the asset pricing models? Table 14 shows number of times each of the Asian countries has been used in the analysis. The most frequently used country is South Korea and the least used is Sri Lanka despite both of them classified as emerging and placed in the same list. One of the possibilities for such discrepancies is the availability of data. What is surprising is the use of Chinese equity markets despite China being the fastest growing economy of the world and a favourite destination for all multi nationals. As such, this analysis provides a good opportunity to use China along with Pakistan and Sri Lanka in the Asian region in further empirical works.

Table 15 reports that with the exception of Turkey, Eastern Europe is also the least researched region in terms of employing the international asset pricing models to measure the degree of integration. For Middle East and Africa, only Zimbabwe, Jordan and Nigeria are the most used countries. Middle East countries are almost untouched. These countries have recently qualified

for entry in the IFC emerging market database and offers good laboratory for empirical analysis. Table 17 illustrates that similar to most of Asian countries Latin American countries are also widely researched with the exception of Peru. Table 18 presents the weightings associated with each region on the basis of number of studies presented in tables 14-17. As shown, Middle East and Eastern Europe are the least researched countries with less than 8% of the total studies.

Conclusively, based on the aforementioned descriptive analysis, Table 19 lists the number of countries which still remains to be explored in terms of the application of the asset pricing models to measure the degree of integration.

Table 14: Studies Using Asian Markets

Asia	**Countries Used**	
	Nos.	**%**
Korea	18	15%
India	17	14%
Thailand	16	14%
Malaysia	15	13%
Taiwan	14	12%
Indonesia	12	10%
Phillipines	12	10%
Pakistan	10	8%
China	2	2%
Sri Lanka	2	2%
	118	100%

Table 15: Studies Using Eastern European Markets

Eastern Europe	Countries Used	
	Nos.	%
Turkey	12	60%
Czech Republic	2	10%
Hungary	2	10%
Poland	2	10%
Russia	2	10%
	20	100%

Table 16: Studies Using Middle East and African Countries

Midle East and Africa	Countries Used	
	Nos.	%
Zimbabwe	13	33%
Jordan	12	30%
Nigeria	11	28%
Egypt	1	3%
Israel	1	3%
Morocco	1	3%
South Africa	1	3%
Bahrain	0	0%
Kuwait	0	0%
Oman	0	0%
Qatar	0	0%
Saudi Arabia	0	0%
UAE	0	0%
	40	100%

Table 17: Studies Using Latin American Countries

Latin America	Countries Used	
	Nos.	%
Chile	19	19%
Mexico	18	18%
Argentina	17	17%
Brazil	17	17%
Colombia	14	14%
Venezuela	13	13%
Peru	2	2%
	100	100%

Table 18: Distribution of Studies according to Regions

Region	Nos	%
Asia	118	42%
Latin America	100	36%
Africa	39	14%
Eastern Europe	20	7%
Middle East	1	0.4%
	278	100%

Table 19: Least Researched Countries

Asia	Eastern Europe	Midle East and Africa	latin America
Pakistan	Czech Republic	Egypt	Peru
China	Hungary	Israel	
Sri Lanka	Poland	Morocco	
	Russia	South Africa	
		Bahrain	
		Kuwait	
		Oman	
		Qatar	
		Saudi Arabia	
		UAE	

5.2 Extraction and Synthesis

The following section presents explanation of the data extracted following the extraction sheet presented in the protocol. Sources of risk and cost of equity capital are determined applying the various asset pricing models. Standard finance models are ill suited when applied in the specific circumstances (discussed in 5.2.1) arising in the emerging markets (See Bakeart and Harvey, 2003). Asset pricing models in emerging markets are significantly affected by the process of financial liberalisation and integration process. In order to get clear picture of asset pricing, sources of risk and cost of equity capital, it is important to understand the relation between liberalization and integration. The starting point of this section is the process of liberalisation and integration. It provides an overview of the initial process of integration and its associated impediments. Following the discussion on liberalisation-integration, theoretical development of the asset pricing models is discussed before elaborating on the main issues, the sources of risk and cost of capital.

5.2.1 Liberalization, Capital Flow and Integration

During the 1970s, most of the foreign capitals in emerging markets were in the form of commercial bank lending. However, during the late 1980s and till date, there have been significant changes in the composition of international capital flows. As a result of progressive financial liberalisation measures, foreign direct investments and portfolio flows (fixed income and equity) have become the most predominant source of capital inflows to emerging countries (see Taskin and Muradoglu, 2003 and Bekaert and Harvey, 2003). Financial liberalization is referred to the removal of legal barriers which inhibit international investors to trade on domestic market and the domestic investors into international markets. Theoretically financial liberalisation should integrate local emerging markets with the global capital markets. However, whether removal of formal barriers (such as ownership restriction, tax discrimination, exchange control, repatriation issues etc) attracts foreign investors is a debate in itself. Studies (Bekaert et al, 2003; Bekaert and Harvey, 1995; Bekaert, 1999; Hunter, 2006; Errunza, 2001) show that indirect barriers (availability of adequate information, accounting standards and investor protections) and emerging market specific risks (EMSRs) (liquidity risk, domestic political risk , economic policy risk and exchange risk) are sometime more important. Using country fund data

Nishiotis (2002) finds indirect barriers and EMSRs have more pricing effects than direct barriers. Hunter (2006) claims that a country may formally invite foreign investors but their formal effort may not succeed integrating the local economy with the global market place due to the presence of indirect barriers. This clearly shows the danger of using regulatory framework to measure market integration. Nevertheless, many researchers have used these dates, which includes Henry, 2000 and Bekaert and Harvey, 2000a. Bekaert et al (2000a) examine 20 EMs to detect the breaks (tentative liberalisation dates) in the time series variables. The variables used capture financial (dividend yield), economical (equity capital flows) and liquidity information (equity trading volume) of local economy. They find significant breaks with tight confidence intervals, which provide robustness in their test. The breaks are not only found in the mean but also in other parameters using univariate and multivariate analysis. They propose three alternative break dates: date of regulatory change liberalizing foreign investments, introduction of first ADR and launching of first country fund. They find significant change in the variables (dividend yields is applied which capture permanent price level changes rather than noisy return data), as expected, after integration. However, they also document that announcement or measures initiated to bring about integration do not necessarily attract foreign investments, which reflects other indirect and EMSRs barriers to investments.

The overall liberalization pace differs from country to country and is adopted progressively. Bekaert (1995) states it is unlikely that the barriers to foreign investments (as mentioned above) will disappear at single point in time. Errunza (2001) claims the level of trading activities (direct or through CFs/ADRs) depends on restrictions imposed by local government. The extent of direct participation in the local market are determined by various factors such as market depth, breath, liquidity, efficiency, regulation, information availability, removal of direct and indirect barriers, and reduction in EMSRs. He states that over time EMs have initiated reform measures to build institutions and markets with the aim to improve foreign investability. However, such processes are time varying and not a one off event.

Also the sequencing of the reforms which integrates the local economy with the world is an important and topical issue in the research domain of EMs. Different countries adopt different sequencing of trade, foreign exchange and capital market conducive to their economic climate. Also, other forms of reforms, such as macro economic stabilization and privatization programs

go hand in hand and usually it is found that local policymakers liberalise when the economic conditions are favourable.[3]

5.2.2 Theoretical Development of International Asset Pricing Model (IAPM)

The previous discussion projects the instable, complex and time varying nature of the emerging markets. Most of the standard asset pricing theories used in finance employ static models of integrated/segmented economies. However, as mentioned before, the true process in emerging equity markets is dynamic and more complicated. For example, policy makers in emerging markets may financial liberalise their local capital markets to maximize the payoffs from privatizations programs. Most studies realise that the assumption of CAPM are violated in EMs.[4] Korajczyk (1996) documents that the International Asset Pricing Theory is one of the most widely used model to measure the deviations from law of one price. However, there are many challenges in using such equilibrium model in emerging markets, such as difficulty in identifying the type of risks, challenges in modelling the barriers to capital flow (regulatory barriers, indirect barriers and EMSRs) and issues of taking into account the dynamic time varying nature of transitory emerging markets. These issues may lead to significant changes in the asset pricing relationship.

Bekaert et al (2002) note till date there has not been any satisfactory and widely accepted work on the economic theory which could capture the evolution of a country from segmented to integrated financial markets. Solnik and McCleavy (2004) suggest that in the international context, in addition to the world market risk premium, the risk pricing relationship of simple CAPM must also incorporate risk premiums to supplement the covariance of the asset with the various exchange rates. However, this risk-pricing relationship applies to securities only in the perfectly integrated world capital market. They document '*financial markets are segmented if securities that have the same risk characteristics, but are listed in two different markets, have different expected returns*' (Solnik and McLeavy, 2004). Solnik (1977) claims IAPM does not hold in the international investment horizon and therefore needs further theoretical elaboration. He further reports that there are many difficulties in applying IAPM, particularly the

[3] For further discussion please refer Henry, 2000 and Taskin and Muradoglu, 2003
[4] See Bekaert and Harvey, 2002 for further details

incorporation of exchange risk factor as source of premium. The theoretical exchange risk portfolio is function of changes in factors like net foreign investment position and relative risk aversion, which are very difficult to quantify and measure. However, Solnik and McLeavy (2004) report that most of the studies conducted on integration/segmentation exclude currency risk and focus more on the degree of integration, modelling the imperfections which create segmentation on the pricing of securities. The general approach is to test alternative models, which incorporate both global risk factors and local risk factors. If IAPM holds in pricing the securities then the local risk factors should not be priced. Solnik (1977) also suggests that incorporating the integration and segmentation issue is a challenging task as it is not easy to quantify whether markets are completely integrated or segmented. Errunza and Losq (1992) theoretically examines the model and suggest that the tests of integration and segmentation under the mean-variance paradigm could most probably reject the integration state even if the markets are fully integrated but priced in line with APT type model. Additionally, the actual market structure may depart from the extreme polar case of either full integration or complete segmentation. There could be many imperfections (direct and indirect barriers) which could create segmentation.

Solnik (1977) normatively suggests that 'T*he efficient way to test for segmentation would seem to be to specify the type of imperfection which might create it and study its impact on portfolio optimality and asset pricing*' (Solnik, 1977, p. 505). Picking up on this recommendation, Errunza and Losq (1985) develop a novel theoretical model incorporating, what the authors call more realistic state of the market integration, referring it as asset pricing model of mild segmentation. The imperfection which creates segmentation is suggested to be restriction on the access to capital market imposed on foreigners. The restriction on foreign investors is more stringent than restriction on local residents. They suggest model which incorporates such imperfection is appropriate in an international setting than in the domestic context. The incorporation of imperfections commands a super risk premium on those assets which are inaccessible to foreign investors. Using the concept of conditional market risk, their model generates a solution for the equilibrium risk-return trade off in segmented market. The theoretical model of the integration/segmentation takes into account, what they term realistic state of emerging markets, refuting the studies which assume either the market is completely segmented or completely

integrated. They conclude most of the emerging markets are neither perfectly segmented nor integrated and hence, are in the intermediate state of mild segmentation.

Once the model is developed and its testable version is formulated, the authors employ a dataset from developed and less developed countries with the prior expectation that the level of segmentation between the markets of developed countries should be lower than that of between LDCs and US markets. They find their model is not statistically inconsistent with mild segmentation hypothesis. However, the model ignores the availability of substitutes (mentioned below) and the time variation phenomenon.

Errunza and Losq (1989) theoretically investigates the impact of capital flow restrictions on the pricing of securities, impact on the optimal selection of portfolio for different nationalities and the impact on their welfare. They note that the barriers which restrict flow to foreign capital may result in a market structure which is neither fully segmented nor fully integrated and therefore, equilibrium pricing is determined jointly by the national and international risk premiums. In the presence of restriction on the capital flow, foreign investors are prohibited from holding a world market portfolio. This implies investors are forced to acquire national specific portfolios (because of segmentation) along with the proxy for the world portfolio. They further suggest that as investment barriers are removed, the price of local security should increase and therefore all investors will favour moves toward greater integration as this will reduce the country specific risk allowing maximum diversification. Further confirming their work in a later study, Errunza et al (1992) employs a two polar case (either fully integrated or fully segmented) and mild segmentation (neither completely integrated nor segmented) version of IAPM. They find emerging markets should lie in between the continuum. However, most of the above mentioned study does not incorporate the time varying nature (discussed below) of the market rather only takes the static stance.

Numerous (Harvey, 1995 and Bekaert and Harvey, 1995) studies have shown that integration is a time varying phenomenon and not one off event which suddenly integrates the market after the formal date of liberalisation. Literature (Errunza, 2001, Bekaert and Harvey, 1995,) suggests that there are two most important factors to be incorporated in the international asset pricing model. The first is the impact of barriers to free flow of portfolio capitals (direct and indirect, as

mentioned before). The second is the impact of the availability of substitute assets (such as ADRs, CFs, Multinational Firms ... etc) that allows investors to emulate the returns through in house diversification. The availability of these substitutes should effectively integrate EMs even in the presence of explicit barriers to portfolio flows. But, how do we know markets are integrated or not? In terms of International Capital Asset Pricing model, the asset's risk in EMs should be determined by the covariance of the asset's return with the return on world market portfolio and therefore, the latter should determines cross section of returns in EMs. However, because EMs are transitional economies, it is reasonable to assume that they are not fully integrated with world capital markets as examined by Erruzna and Losq (1985). Harvey (1995) investigates the model in EMs and claims that factors which may contribute to the degree of integration/segmentation are:

- Tax differentials
- Timeliness of trading information
- Foreign exchange regulation
- Availability and accuracy of accounting information
- Number of securities listed in developed exchanges
- Market Liquidity
- Political Risk
- Institutional structures that protect investors

Solnik and McLeavy (2004) further complicate the model by claiming that investors' psychological aspects are also important in international investments. International investors may not follow the theoretical allocation because they feel psychologically more safe investing in home markets than investing in remote and unfamiliar markets. Technically, this is called home bias and is also one of the important impediments to international investments.

In line to our above discussion, it is very unlikely that any asset pricing model which works under the assumption of complete market integration will be able to fully explain the behaviour of security prices in these EMs. As evident from the short discussion, developing an asset pricing model to price the securities of EMs is not an easy task because the model needs to incorporate the following issues:

- Availability of market substitutes which affect the degree and time variation of equity market integration
- Impact of direct regulatory barriers, indirect barriers and EMSRs.
- Time varying nature of the markets
- Homogeneous nature of the markets as discussed in our introductory section
- Investors' psychological aspect (e.g. home bias effect)

5.2.3 Integration and Sources of Risk

If we assume that a market is fully segmented from the world capital markets, the expected return of securities in emerging market is function of only local price and national covariance risk (see Errunza, 2001). Before any foreign investors are allowed, all the securities in the local market are held by domestic investors. However, if the removal of barriers to international investors attracts foreign investments and the market is assumed to be fully integrated, the expected return would depend on the global price of risk and the global covariance risk. Generally it is expected that the global price of the risk is lower than the local price as the world market portfolio is assumed to be less volatile than the local market portfolio and the domestic securities to be more correlated in their local market than across global markets. As such, the expected return (cost of capital) should decline due to market integration. There are two basic approaches in linking the integration, sources of risk and expected relation. The first is the one which employs the static or unconditional model and second is the time varying or conditional International Asset Pricing Model.

Bekaert (1995) examines the impact of barriers to investments on returns for 15 emerging markets (sample 1986-1992). Using the dataset from IFC he regresses returns on five variables (local lagged returns, local dividend yield, U.S lagged returns, U.S dividend yield and U.S interest rate changes. He documents that high betas of a regressions of excess return onto a constant and world market return is an indication of high degree of integration. Most of the factor loadings for EMs are small and insignificant, although the betas in the second sample (1986-92) increase with the exception of Argentina, India and Zimbabwe. The findings are consistent with that of the single index CAPM model. The emerging markets show different degrees of integration with US markets and this cross sectional variation is not directly

associated with direct investment barriers. He reports that the most important barriers are, as stated before not the direct but indirect ones along with EMSRs. However, there may be a problem associated with the study as the first sample used from 1976 - 85 may show survivorship bias. Data are only available from early 1980s but back calculated indices prior to 1984, which may potentially induce survivorship bias as firms which went bankrupt or de-listed are not included in the indices. Hence, the regression results using the first sample period may not be reliable.

Claessens (1995) investigates 21 emerging markets of IFC and uses various unconditional asset pricing models to verify the cross sectional explanatory power of various factors which have been found to have explanatory power in developed markets. The results for EMs are substantially different than those observed in developed markets. The authors' attribute such anomalies in EMs to poor market structure, differences in tax and exchange rate regime, which may force investor to behave differently in different countries and the assumption of full integration of EMs with that of developed markets. However, the model used is unconditional and therefore static in nature whereas studies have shown that these markets are dynamic and ever changing in terms of economic and financial globalisation. Hence, an unconditional and static model may not capture this dynamism. Also, it does not test the proper international asset pricing model whereby the world returns should be considered as world market portfolio. Other important explanatory variables in case of emerging markets which have been suggested in the literature such as political risk, corporate governance structure, quality of institution, etc have not been discussed. Furthermore, no diagnostic tests of the econometric mode used have been presented and the robustness of the tests has not been discussed, which casts doubt on the statistical power of the tests. Although this study lacks statistical power and rigour in its methodology, it opens up a wide avenue for further research not only to confirm the present study but to further extend the work by incorporating other factors and time varying models.

Similarly, Harvey (1995a) uses 20 emerging markets to test the asset pricing model which imposes restriction of the null hypothesis of complete integration. The unconditional single factor model test is inconsistent with the world CAPM. The single and multivariate tests suggest that world market portfolio is not the Sharpe-Linter tangency portfolio in most of the emerging markets and there is often indications of not only pricing errors (significant intercept) but also all

of the significant intercepts are positive. Hence, the intercept test supports the case of diversification benefit in the framework of mean-variance frontier (of adding EMs into the portfolio of developed markets). The findings suggest the shift in the frontier is large enough to provide a rejection of the null hypothesis of complete integration. Countries which exhibit significant factor loadings to world market portfolio are conjectured to be the most integrated among the all 20 countries. They also use three factor model and find exchange rate risk to be slightly more influential and other two world factors to be insignificant. However, Harvey notes that there could be other reasons why the unconditional CAPM could fail in addition to the market integration issue. One of the assumptions of the linear factor specification is that the risk exposures are constant over the estimation period and therefore the model does not capture the time varying effect. Garcia and Ghysels (1998) suggest that allowing time variation in the factor loadings of asset pricing model is clearly an essential element in the context of emerging markets whereby the country's equity market can exhibit substantial variation owing to the underlying unstable macro economic and political instability and the dynamic reform activities initiated to integrate themselves with world capital markets.

Harvey (1995b) examines whether five global factors (world market equity return, return on foreign currency index, change in oil price, growth in world industrial production, and world inflation rate) have exposures to returns in EMs. Only few emerging markets have been found to have any kind of significant exposures compared to the highly significant betas of the developed markets. One possible explanation is that most the EMs are not well integrated with the global economy. The study is based on previous empirical work in terms of selecting the variables and testing the asset pricing model under few strict assumptions. The regression used in this analysis has not been extensively discussed in terms of possible bias which could result from several specification problems, particularly under fitting of the model. Literature has also identified several other variables which could be correlated with the right hand side variables used in the regression models, such as world GDP, US interest rate, world dividend yield, change in US term premium rate, US default spread premium etc. It may be that the R^2 and the magnitude of beta reported in this analysis may be picking up the effect of the aforementioned omitted variables. However, evidence has also shown that a number of these transitory markets may be becoming increasingly integrated and therefore the risk exposures studied in this paper back in

1995 may in the present context become significant factors to analyze the risk exposures. In a similar study of 18 markets Bekaert et al (2002) report world factors are more influential in most of the emerging countries after capital market liberalization.

Taskin and Muradoglu (2003) employs a multi country (15 countries) analysis to find the changing link between capital markets and real sector due to increasing integration. The study finds that the information content of world returns not only have significant influence after liberalization but also before the liberalization measures were initiated. This study is contradictory to the above mentioned studies whereby most the global sources of risk were no priced, particularly before liberalisation.

All the above studies use the static model, whereas EMs shows substantial time variation in their pricing relations. Bekaert and Harvey (1995) use a regime switching models in 11 emerging markets to model the time variation in the integration of EMs. The paper examines the degree of integration of emerging markets over a period of time taking the approach that integration is not a static phenomenon rather it changes over time as the policy measures leading to integration are initiated over time. The study finds significant evidence of time and cross sectional variation in the degree of integration in the emerging markets. World factors are more influential in most of the countries after capital market liberalization. However, the study uses returns data which is very noisy and not considered very reliable. In order to render their methodology more rigorous they could have also used dividend yield, which is regard more reliable measure. The study also does not use exchange rate measure of integration in their regression, which, if included, might have different result as the raw return measure could pick up the effect of exchange risk and hence, overestimate the factor loadings. The study also does not mention about impact of economic linkages on the time and cross sectional variation in the degree of integration in EMs. Regulatory issues have also been excluded which are deemed necessary when looking into the phenomenon of integration.

Carrieri et al (2003) looks in into the issue pricing various sources of risk in 4 Asian emerging markets. They find local sources of risk are consistently relevant in all countries but there is significant time variation. They claim their result to be supportive considering the fact that the non constant and time variation in the pricing of local risk has enough information to explain the

high volatility observed in the emerging markets. For three countries the study also finds global sources of risk to be priced with the surprising of Mexico not pricing the global source despite being the largest EM in terms of market capitalization. Again applying more powerful multivariate GARCH-M model, the study claims rejection of constant price of global risk as well. The study includes only four countries from Asia pacific region and therefore it's a single region study. They find that the sensitivities with world index in these countries are not constant. When they employ the regime switching model beside the constant beta, they report strong support for the former model. They further claim that constant beta measure underestimate the associated systematic risk during the high volatility regime and overestimate it during the low volatility regime. Hence, this study shows that beta with world market index is priced but is not constant, which is again attributed to the growing evidence that process of integration of the stock markets is time varying and more complex than recorded officially. However, the robustness of the tests is not found be extensively discussed and as admitted in the paper, the global pricing of risk did not explain the time variation in returns.

Garcia and Ghysels (1998) employ the conditional International Capital Asset Pricing Model and domestic CAPM on 10 emerging markets. Their results show that ICAPM is rejected in terms of rejection of no structural change in 8 of the 10 countries. The results exhibit that model which employs world market return or US return is unstable supporting the prior expected dynamics that is observed in such instable economic and political environment of the emerging markets. The tests of non significance of the world variables also provide indication for the rejection of integration, whereas the domestic CAPM seems to work well and is found to be stable. Although the robustness of the model has been discussed but it does not explain other control variables such as liberalisation effect (use of dummy), privatization effect, macro economic stabilisation influence and political risk which have been found to have significant effect. Other variables such as dividend yield, market capitalisation (size effect), P/E ratio have also been found influential but has been ignored in this study, which could also show time variation in terms of factor loadings. Using ADRs and employing the conditional and unconditional CAPM model in three emerging markets Hunter (2006) finds that liberalisation has not lead the subject markets towards greater integration with the international capital markets.

The brief discussion suggests that not only factor loadings are time varying but the sources themselves may change due to changing nature of EMs.

5.2.4 Integration and Cost of Capital (Expected Return)

One of the most important influences of foreign participation is the financial globalisation of the domestic market and its subsequent impact on cost of capital and project evaluation. Theoretical model predicts a reduction in cost of equity capital when markets liberalize and integrates its economy with the world markets. Errunza and Losq (1985) demonstrated that opening of capital markets leads to reduction in cost of equity owing to the global pricing of securities which before was priced locally in a mildly segmented market (i.e. both the national and global systematic risks are priced)

Henry (2000) conducts a study on 12 emerging markets and finds on average, a country's first stock market liberalization is preceded by a total revaluation of 38% for the first eight month window. The study also conducts impact on the dividend yield but the results are not as strong as those of using returns data. On average the dividend yield falls by 50 basis points but the study is consistent with the studies of Bekaert and Harvey (2000) and confirming that dividend yield results are not as significant as those of the returns. However, the negative coefficient confirms the prediction that initial stock market liberalization does leads to fall in cost of equity resulting in positive equity price revaluation. He also reports that inclusion of comovement, economic reforms and shock to macro economic fundamental as control factor, which could influence valuation does not alter the basic findings of the study. All the results of the tests are significant with few exceptions and confirm the prediction of international capital asset pricing model. On average a country's aggregate equity index experiences abnormal return of 3.3% per month in real dollar terms during the eight month window until the implementation of the announcement of initial liberalization. These results are also robust when shorter window period is considered.

Bekaert and Harvey (2000) employs a cross sectional study on 20 EMs and investigates the effect of integration on returns and dividend yield. Although they do not find any significant changes in realised returns, they do report a significant decline in dividend yields. The latter finding does not support the results of Henry's use of dividend yield.

Using VAR and four variables (capital flow, returns, dividend yields and world interest rates) in 20 emerging markets, Bekaert et al (2002b) measures to what extent the low level of interest rates in the developed countries drive up the increased capital flow and to what extent shocks in the flow affect the cost of capital among other dynamics. The BLS structural break test methodolgies are applied to find the endogenous breaks to track the liberalisation. The result shows that equity flow increases by 1.4% of market capitalization. The shocks in flow initially increase returns. The effect diminishes over time but there appears to be permanent impact as well. The proxy for cost of capital (dividend yield) also decreases further supporting the risk sharing hypothesis. However, the decrease in cost of capital is not as substantial as predicted by asset pricing model and is also not in consistent with the study of Henry (2000). They also show that when capital leaves it does so in a faster pace than its inflow, which may help to understand the dynamics of crisis in Asia and Latin America.

Jong and Roon (2005) uses 30 emerging markets and monthly data from IFC to test whether variability in segmentation of emerging markets translates into time variation in expected returns? They find most of the emerging markets' betas (single index CAPM) are significantly different from zero and in most cases greater than one. This finding is contradictor to the results of initial studies of asset pricing in EMs as discussed above. In terms of cost of capital, the expected returns in most of the markets are significantly influenced by the level of segmentation, although with different level of effects across countries. The strongest result is observed for Latin American markets. The result of regional and composite (all markets) level are also significant confirming the effect of segmentation on the expected returns. The regression results also present strong evidence of time varying betas related to market segmentation. The results show on average an annual decrease in segmentation of 0.055 (measured on a scale on of 0 - 1), accompanies a reduction of 11 basis points in the cost of capital (measured by dividend yield). The results also find significant regional segmentation effect on the expected returns. As such, there is strong evidence that returns in emerging markets are affected by the segmentation of both, their own market and of regional markets. The study also documents the annual decrease in local (4.2%) and regional segmentation (5.1%) which accounts annual decrease of almost 3.7% in the expected returns with 2.3% per annum due to their own level of segmentation and 1.4% due to decrease in regional level of segmentation. By adding other risk and integration measures

(ICRG country risk index for EMSRs and ratio of exports plus import to GDP as measure of openness), the regression does become weaker in terms of significance for the direct measure of segmentation for four regions except for Asia and Far East. The control variables have significant explanatory power signifying that the confounding variables constitute significant information on expected returns not captured by the segmentation variable (ratio of IFCI market capitalisation to IFCG market capitalisation). The results conclude that despite incorporating the control variable, the segmentation variable still possess information for expected return.

Chapter 6

6 Conclusion and Learning Experience

This chapter present the coherent integration of the issues elaborated in the previous chapters. It begins with brief discussion with the debates in the literature followed by proposed research areas for doctoral study and other possible future research direction. The final section provides a brief reflection on the learning experiences during MRes and the review in particular.

6.1 Discussion

After the debt crisis in mid-1980's there was significant shift in the composition of capital flowing into the emerging markets, whereby foreign direct investment and portfolio flows (fixed income and equity) replaced the traditional commercial bank lending. This would not have been possible without these countries embarking on the financial liberalisation process, relaxing the stringent restriction on ownership limit and taking other reform measures to develop their domestic capital markets. From an international investor's point of view, the intriguing question was what are the return and diversification prospects of investing in these newly available emerging markets? Bekaert and Harvey (2003) suggest market integration is central to the question. Given the importance of integration issue in pricing and diversification prospect, a good number of works have been published but there is no general consensus on any general theoretical underpinnings which could be employed to gauze the level of integration. Financial liberalisation should attract foreign investors but studies have shown that despite the removal of official barriers, the market may still be segmented from world capital markets due to indirect barriers and EMSRs. Neither experts of international finance nor financial econometricians have been able to develop a robust asset pricing model to price securities in emerging markets. Any international asset pricing model employed must make certain assumptions regarding the integration of the concerned markets with world capital markets. However, as mentioned above and evident from the literature, it is very complicated to measure the degree of market integration. The Capital Asset Pricing Model of Sharpe (1964) and its various extensions, particularly the different versions of International Asset Pricing Model (IAPM) have been employed to measure the degree of integration. However, as indicted before there are many challenges in employing the asset pricing model in EMs.

Literature has shown that emerging markets exhibit time varying integration with the developed markets with changes not only observed in the degree of expected returns and equity premium but the risk exposures and their sensitivities to the exposures also changes over time. Again, the degree of variation observed in the level of integration in one particular market may be different from others. Also there exist wide cross sectional differences in the time varying expected returns, equity premium and risk exposures. In light of the changing nature of equity markets in emerging countries, any academic work attempting to explain phenomenon of integration or other properties of equity markets, either based on theoretical foundation of asset pricing model or on purely empirical basis, is a contribution in extending the literature of emerging equity markets. Such contribution could have important implications not only for asset pricing mechanism and capital allocation decision taken by foreign investors but also by the domestic policymakers who are endeavouring to explore best policy prescriptions to integrate their economy with that of global market place for reaping the benefits of economic and financial globalization. Theoretically cost of equity capital should decrease but literature confirms that the decrease is not as substantial as predicted by the asset pricing model. Most of the studies on measuring integration and their theoretical impact were conducted during the 1990s when most of these markets had just embarked on the path of financial liberalisation. Major number of these studies did not incorporate data which could capture the series of financial crisis in late 1990s and early 2000, addition of which may significantly change the expected risk premium.

As mentioned in the previous section, there are number of global and local sources of risk which could be incorporated in the asset pricing model but the important point is the identification of right exposures because different countries may have different sources of risks. Again previous studies back in 1990s show global sources are not priced (Harvey, 1995) whereas some the latest study illustrates significant pricing (Jong and Roon, 2005). Harvey (1995) documents positive shift in the profile of the global portfolio (of including EMs) results from the high contribution to portfolio expected return per unit of covariance (not variance) because in globally integrated market economy, covariance with world market return and not variance of local market is priced. Lack of integration provides an opportunity to global investment manager who would prefer to hold under priced securities than that predicted by in an integrated world

economy. However, he further states that these benefits may reduce as emerging markets become more integrated with the global economy.

Again there are conflicting results on the degree of integration for same countries and similar sample period. Bekaert and Harvey (1995) find that Mexico was segmented over the period 1976-1992 and exhibited more segmentation after 1990. Similarly Chile also shows sign of greater segmentation. However, Errunza et al (2000) employs time varying model and finds that Mexico for the same period reveals substantial move towards greater integration, particularly after second half of 1981 and after May 1989. They also report the integration process for Chile increases by the end of 1989. Hence, both these studies conflict each other.

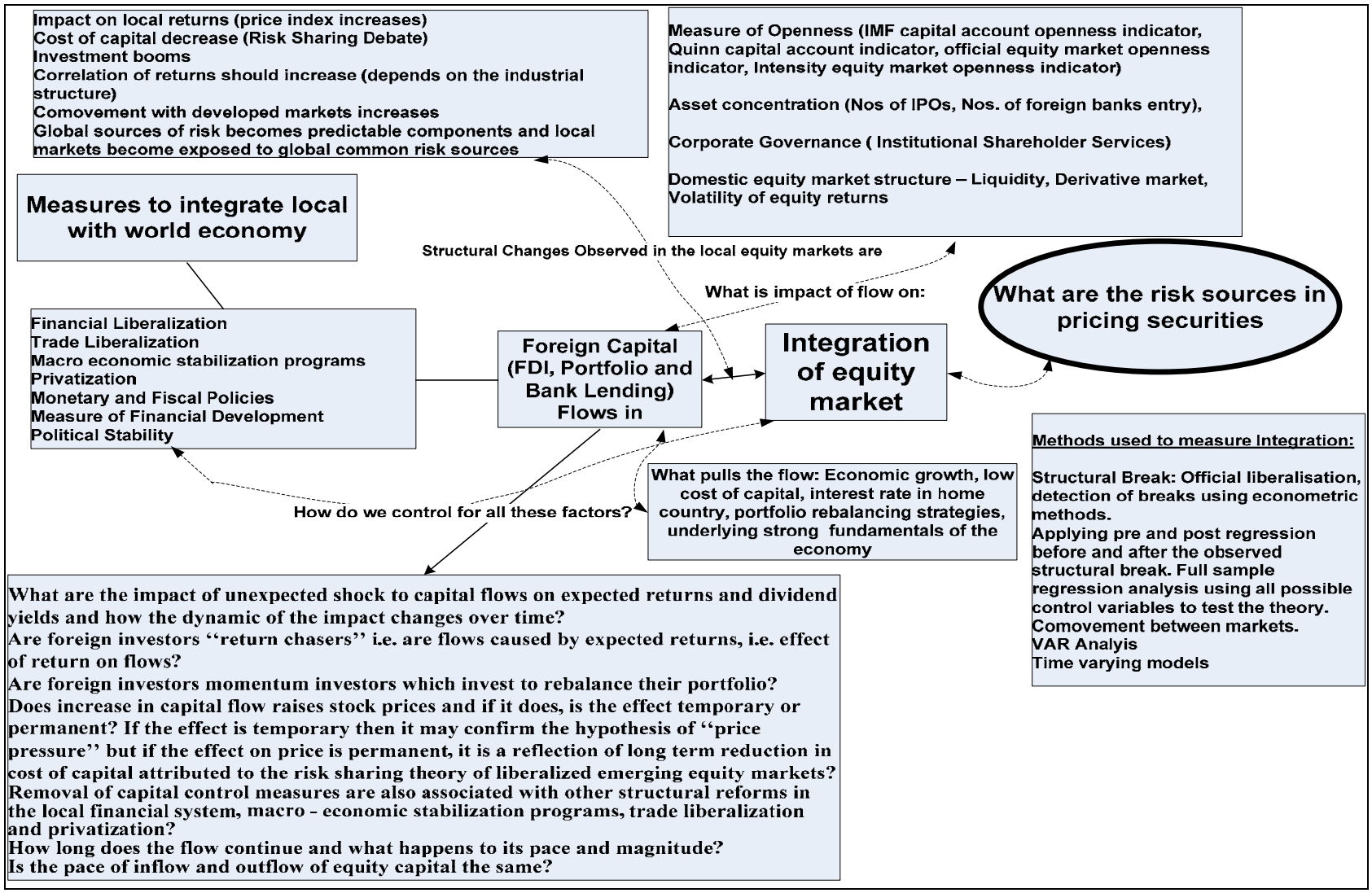
It has been almost a decade now that these markets have gathered the experiences (positive and negative) of liberalizing their economy and integrating their markets. We need to ask the following questions now:

In the present context when they have come long way from their initial liberalization measures, where does these markets stand in terms of integration of their local equity markets with that of developed markets, or in other words, to what extent they have been successful in integrating their local capital markets with the markets of developed world?

What are the factors which determine the flow of foreign capital and how can an international investor benefit by monitoring these factors which facilitate or inhibit foreign investments in emerging markets?

The issue of equity market integration is a complex field and there are many confounding factors other than those presented in the present studies which influence this process of integration. Figure 9 below is a complex picture of how different variables and measures may possibly influence the entire chain of liberalisation, capital flow and integration process. Based on the reported mind map, descriptive findings and above discussion, the next section presents the probable future research direction.

Figure 9: Liberalization – Foreign Capital Flow – Integration – Asset Pricing



6.2 Probable Research Directions

In line with the findings and prospect of further contribution in the literature, following three key areas of research may constitute my doctoral thesis centering on the issue of integration in emerging markets:

6.2.1 Prime Questions for Doctoral Research

First, as shown in the chapter of findings, the descriptive studies illustrates the international asset pricing model has not been extensively applied on the countries shown in table no. 19. These countries have been included in IFC's list of emerging markets and one of the criteria which IFC uses is high liquidity and future investable prospects from international investors' point of view. Hence, these are the markets which may exhibit high flow of foreign capitals. The application of single and multiple factor asset pricing models is a prospective area of making contribution not only in the literature for publication purpose but also assisting international investors appropriately price the risk in these markets.

Another important question to ask for the entire set of emerging markets is: what are the different measures which manifest the degree of emerging equity market's integration with the world equity markets and as mentioned before, to what extent these markets have been successful in integrating their local capital markets with world markets? Is there a way we can rank the following measures in terms of explaining the degree of integration?

- Increase in the movement of capital in and out of the domestic economy (following IAPT)
- Global or local sources of risk explain the pricing of securities
- Decrease in the cost of capital following the liberalization measures
- Increase in the ratio of investable and global market value maintained by IFC (Equity market openness)
- Increase in the correlation between equity returns of EMs and that of developed markets

Third, if increasing flow of foreign investments leads to market integration, one obvious question is: what are the factors that determines these flows and what are the cross sectional and time variation differences across different emerging markets.

6.2.2 Other Possible Areas of Research

A good research always crops more questions than answering the present one in hand. The issue of equity market integration, particularly in the transitory state of emerging markets is complex. Figure 9 above is the mind map of the entire review and beyond. As seen there are many important questions and may be worth exploring in the future. Some these issues are briefly discussed below:

In relative terms, which measures have greater impact on the revaluation of aggregate equity index as the country integrates with the world economy, i.e. can we rank measures such as Dismantling of Official Barriers, Issuance of ADRs and Country Funds in terms of their relative influence in financially integrating the local equity markets. Bekaert et al (2003) note that given the various paths which countries can initiate financial liberalization measures, understanding the importance and sequencing of liberalization measures are very important.

Liberalization and subsequent integration of the markets are accompanied by a number of other different reform measures initiated by the local government. In light of many confounding factors which may contribute to the degree of equity market integration, we may test the importance of the following factors which may explain the degree of market integration.

- Exchange rate regime
- Asset concentration in local equity market
- Changes observed in the corporate governance environment
- Privatization Programs
- Trade Liberalization
- Macro economic stabilization programs
- Liquidity in the equity market
- Number of IPOs (Foreign firms and local firms)

- Changes in regulation related to foreign investments
- Capital account openness
- Gross FDI/GDP – Gross FDI = absolute value of inflow and outflow

Also, in light of various studies confirming greater integration of the EMs in the present context than that observed in the mid 1990s, one important question for international investors is: Do EMs as an asset class still offers diversification opportunities?

Another important area which could significantly influence the investment of foreign investors is related to emerging market specific risk, particularly political risk in emerging markets. Bekaert et al (2003) note there are many factors which may confound the effect of regulatory reform. Among such many reforms which may cloud the prominence of regulatory changes political risk is one of the least researched ones. The question is whether political stability attracts foreign investors or foreign investments influence the political environment or the effect is bidirectional? It can be argued that once there is enough evidence of political stability, foreign capital starts flowing into local economy. With the presence of foreign investors, demand for better corporate governance climate, more transparency in information dissemination and less bureaucracy, may influence the country's domestic political scenario. Hence, an important area which has not attracted much attention is the impact of liberalization on political risk and how political risk is priced in emerging markets, particularly it would be very interesting to see the differencing in the pricing before and after liberalization once the proxy for changing political climate is taken into account (particularly after the activities of foreign investors increases).

6.3 Limitation of the Review

Systematic review is an important project and a tool to justify, with full evidence and rationale, the proposed doctoral research question/s. It has a means to immerse oneself into relevant literature but in an objective manner. Despite its many advantages over the traditional and narrative literature review, it is not free of its own limitations.

The major limitation I personally experienced was the focus itself. The review was too narrowed down and constrained the scope of study. This devoid in grasping some possible linkages between integration and other important aspects, which I have mentioned very briefly in

the mind map and in the second section of research direction (6.2.2). I hold the opinion that no matter what kind of research project we undertake, it always herds the researcher to think of other possible areas because of the nature of inquisitiveness but given all the constrains, we cannot take on board all the possible questions but need to focus. However, a balance needs to be mentioned between being too focussed and being able to exercise some flexibility for sustaining the innovative character of a researcher. For example, in my review I discovered an important literature concerning the role of growing portfolio flows which deals with hypotheses of momentum investment, herd behaviour, portfolio rebalancing, price pressure hypothesis and feedback mechanism. This domain of literature is essential in understanding the integration process.

The second limitation was time constraint given the importance of systematic review in justifying the doctoral research questions. At least 6 months should be allocated for the project. The review process is also lengthy and hence, students should be encouraged to begin the review in the first week of April.

Third, principally the process of searching and selecting the studies should be transparent, auditable and reproducible. However, I found this aspect to be subjective as much depends on the level of knowledge the reviewer possess. The key words in my case were not able to extract all the relevant studies. The strategy of cross referencing was the second most important source of extracting relevant studies along with references from the advisors. Since I was just beginning to build my understanding in the area, selection of studies based on the preset selection criteria may become different for an experienced campaigner having in depth knowledge in the field. Level of knowledge in the field is positively related to robust development of the protocol, which is the most important aspect in systematic review.

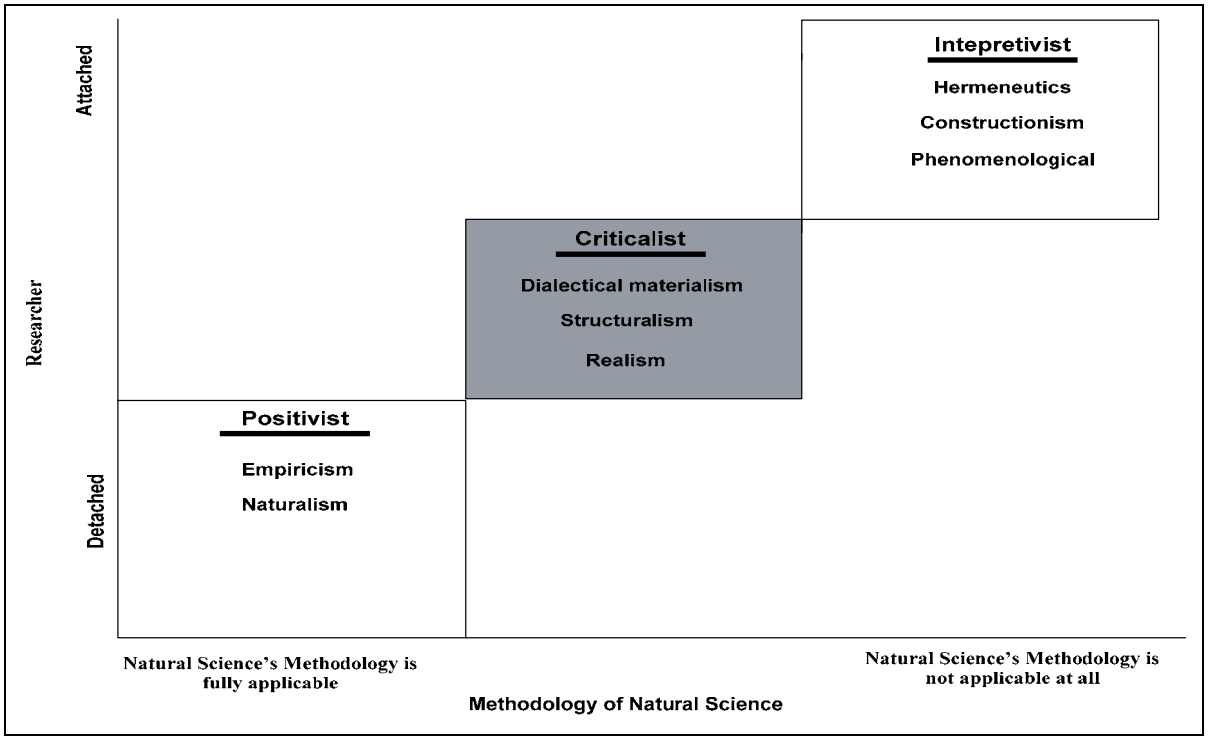
Finally the process of synthesis cannot escape subjectivity because two different researchers may organise the key concepts in different manner. The understanding of studies and the evaluation criteria may be different for both researchers despite the fact that both evaluates the same study.

6.4 Reflection on the Learning Experience

6.4.1 Brief view on Research Paradigm in Finance

The philosophical issues discussed during MRes programme and its link with the research paradigm of finance was one of the most important learning experiences during the entire review and MRes period. Given the importance of research philosophy in social science, I could not resist the temptation of mentioning it in this review. Philosophical assumption is crucial because it's the basis on which researcher perceives the reality and takes the approach in understanding or discovering that reality.

Figure 10: Philosophical Positioning



The biggest philosophical debate in social science is to what extent the phenomenon or problems of social science could be studied in the same manner as natural science (Blaikie, 2003). As shown in the figure above, the classification of approaches employed in social science is based on the debate of whether methods of natural science are appropriate or not. Positivists are proponents of the methods applied in natural science. They believe that reality is objective and could be understood or discovered by using the methods of natural science. Interpretivist

disagrees with positivist in defining reality and advocates reality is something construed by the observer or researcher. They hold the belief that reality is not out there, but created in the mind of the person encountering it and therefore, subjective in nature. In between these two, we may place criticalist who supports the criticism on positivist made by interpretivist but also completely does not agrees with notions advocated by interpretivist.

There are many other paradigms which either fall within the domain of Interpretivist, Positivist or Criticalist or they adopt a mixed approach. Other paradigms have also evolved over time, which take different approaches. My doctoral research will be testing hypothesis using econometric models based on the finance theories. I find my approach to be placed in the lower left cell of positivist. However, personally I do not agree with the view of realities the traditional finance scientists embrace. As an exemplar, if a ball is thrown in the air, as per the Newton's 2nd law, it will be attracted by centre of gravity with the same result, no matter how many times we repeat the experiment. The physical models may have their own limitations but on the measure of reliability, they score high ratings. However, if we employ an econometric model, based on finance theory, the results could be different in different experiments employing different samples, as authenticated by the behavioural finance scientist. Hence, subjectivity (technically called anomalies) does finds its place in the decision making process of finance theories. The behavioural scientist claims that the traditional finance models have not been fully successful in capturing the complex phenomena in finance world. These models lacks the power to capture human behaviour (core of social science), which is complex, related to various interlinked variables and the linkages are unstable. Therefore, although the methodology applied in finance may be purely of natural science but the reality is not a clear object in terms of reliability exposing its true nature in the repeated experiments. The utility of financial models seems to be inadequate as they are not fully capable of effectively dealing with human behaviour and complexities because it's the rational or irrational decisions and actions of complex human beings which determine the phenomena in the financial markets. In light of aforementioned why should we then toil to study financial theories and models? No models or theories are self sufficient in itself and robust to criticism of its performance, be it in physical science or social science, although degree of reliability may be different. Investment decisions, which are at the

core of all financial theories, are complex but it is worth inputting them to the rigor of modelling exercises than purely comprehending them on the basis of intuitions.

6.4.2 Review Specific Learning Experience

The entire MRes programme and the systematic review was very enjoyable. Systematic review has provided subjective and objective understanding of the current literature in my topic. The biggest advantage of systematic review is its organised and rigorous methodology, which subjectively and objectively assess the relevant studies. The review has completely altered the way I used to assess the quality of papers and evaluate the validity of their findings. The descriptive results avail a good foundation for justifying the research questions.

Overall, the entire systematic review process has changed the way I will be analysing and assessing any paper in the future. It has provided me the means and skills to exercise evaluation in a 360 degree approach and justify the validity of its contribution in the knowledge.

The scoping study which was presented during the review has undergone changes in light of new concepts and better understanding of the field. There have been quite a number of changes in the first three chapters than what was presented in the scoping study. Although the review question has not changed but there have been additional findings which cannot be ignored because they are linked. For example, the issue of diversification cannot be ignored when dealing with sources of risk. As emerging markets become more vulnerable to global risk factors, they are affected by common shocks in developed world and hence, the correlation of equity markets also increases which further affects the diversification benefits. This notion of decreased diversification may discourage international investors resulting in lower demand of the securities.

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Appendix 1: Brief Summary of Data Extraction

S/N	Title	Conclusion	Critique
1	**Solnik (1977)**	International Asset Pricing Model (IAPM) does not hold in the international investment domain and therefore needs further theoretical elaboration. There are many difficulties applying the IAPM, particularly the incorporation of exchange risk factor as source of premium as the theoretical exchange risk portfolio is function of variation in factors like net foreign investment position and relative risk aversion, which are very difficult to quantify and measure.	Despite the conclusion that the IAPM is not fit for empirical analysis, huge number of subsequent works has been conducted using the IAPM, albeit with mixed results.
2	**Stulz (1981)**	If barriers to international investments hold, then it is costly for foreign investors to hold foreign assets, long or short. It is equally costly for domestic investors as well.	The model is not empirically validated and further research direction has not been mentioned.
3	**Errunza and Losq (1985)**	The authors claim that most of the previous studies in terms of integration and segmentation issues are based on the assumptions that international equity markets are fully integrated and most of the studies reject the integration phenomenon. One of the flaws the authors state is the unrealistic assumption of full integration and therefore they build a mechanism to incorporate the mild segmentation phenomenon in the IAPM. The model is also empirically validated using sample of multiple emerging markets concluding that emerging markets are neither completely integrated nor fully segmented.	Although they take a more realistic approach but they take a static view and avoid the time variation in the expected returns, risk exposures and premiums on the pricing of securities in emerging markets as number of studies show that emerging markets exhibit substantial time variation in the pricing of securities.

4	**Errunza and Losq (1989)**	The authors theoretically investigates the impact of capital flow restrictions on the pricing of securities, impact on the optimal selection of portfolio for different nationalities and the impact on their welfare. They note that the barriers which restrict flow of foreign capital may result in a market structure which is neither fully segmented nor fully integrated and therefore, equilibrium pricing is determined jointly by the national and international risk premiums. The assumption is that if there is restriction on the capital flow, it also restricts foreign investors from holding a world market portfolio, which means investors are forced to acquire national specific portfolios (because of segmentation) along with the proxy for the world portfolio. They further suggest that as investment barriers are removed, the local security market should show an upward trend in terms of valuation and therefore all investors will favor moves towards greater integration as this will reduce the country specific risk and make the world market portfolio more efficient allowing maximum diversification.	The model is not empirically validated
5	**Errunaza, Losq and Padmanabhan (1992)**	The study employs the mildly segmented international pricing theory of Errunza and Losq (1985) which models barriers to portfolio flows to tests the competing hypothesis of integration, mild segmentation and segmentation. The results suggest that the intuition developed in the model of mild segmentation is strongly supported for the emerging markets.	Robustness is discussed but other control variables which could also be modeled as competing variables capturing the effects of other confounding factors, such as exchange rate control, macro economic stabilization programme, privatization, direct investment flows and trade flows have not been used as the US returns (proxy for market portfolio) could itself pick up the influence of these controlling variables. Hence, trying to explain integration only in terms of US return may provide unbiased but not efficient estimates because US's relation in terms of trade and other foreign investment could be diverse with the different countries used and no such basis has been provided.

6	**Harvey (1995a)**	International version of capital asset pricing model (ICAPM) does not predict returns in Emerging Markets (EMs) and is inadequate to explain the cross section of expected returns. One of the fundamental reasons for the statistical rejection could be the assumption of complete integration EMs with the global capital markets. Hence, on the basis that this assumption is true, the author shows that adding EMs as asset class significantly shifts the efficient frontier the portfolio of developed markets.	Robustness of the empirical works, particularly related to the noise and problems in the properties of the data are not discussed adequately. Several other factors, such as domestic economic condition (GDP), inflation, price/book value), market capitalization and global information (global inflation, proxy for global output etc) are not considered, which previous studies have shown to have significant impact. Limitation of the study has not been extensively discussed and no future direction is provided to build upon the work for further contribution because the same author in his other works has repeatedly mentioned that a good research always digs out more questions than finding answers to the one in hand. This aspect of the author's philosophy has not been discussed.
7	**Bekaert (1995)**	This study develops various return based measures of quantifying the degree of emerging markets based on the assumption that capital flows into the EMs integrates the domestic equity market with the world markets and decreases the expected return (cost of capital). The predictability of the returns, based on global factors has decreased over time and the global factors account very small portion of the variation in expected returns. The emerging markets show different degrees of integration with US markets and this cross sectional variation is not directly associated with direct investment barriers.	The first sample used from 1976 - 85 may show survivorship bias. According to Solnik (2000) data are only available from early 1980s but indices are back calculated prior to 1984, which potentially may induce survivorship bias as firms which went bankrupt or de-listed are not included in the indices. Hence, the regression results using the first sample period may not be reliable.

8	**Harvey (1995b)**	The paper examines whether five global factors (world market equity return, return on foreign currency index, change in oil price, growth in world industrial production, and world inflation rate) have significant exposures to returns in EMs. Only few emerging markets have been found to have any kind significant exposures compared to the highly significant betas in almost all the developed markets. One possible explanation is that most of the EMs are not well integrated with the global economy. However, evidence has also shown that a number of these transitory markets may be becoming increasingly integrated and therefore the risk exposures studied in this paper may become significant factors to analyze the risk exposures	The study lacks discussion of the robustness of tests. Does not incorporate time varying model.
9	**Bekaert and Harvey (1995)**	The paper examines the degree of integration of emerging markets over a period of time taking the approach that integration is not a static phenomenon rather it changes over time as the policy measures initiated by local government is a gradual process. The study, employing regime switching models, finds significant evidence of time and cross sectional variation in the degree of integration in the emerging markets. Some of the results are against a prior intuition where few markets have been found to be more integrated and others significantly less but as suggested, there is significant time variation in the degree of integration.	The study uses returns data which is very noisy and not considered very reliable. The study could have also used dividend yield which is regard more reliable measure. The study also does not use exchange rate measure of integration in their regression, which, if included, might have different result. The study also does not talk about impact of economic linkages on the time and cross sectional variation on the degree of integration in EMs. Regulatory issues have also been excluded which are crucial when looking into the phenomenon of integration.

10	**Classen, Dasgupta and Glen (1995)**	Claessens et al (1995) use equity from 19 emerging markets of IFC and employ various unconditional asset pricing models to verify the cross sectional explanatory power of different factors which have been found to have explanatory power in developed markets. The results are dramatically different than found in developed markets and the authors' claim various possibilities for such anomalies such as poor market structure, differences in tax and exchange rate regime, which may force investor to behave differently in different countries. The authors suggest the findings may be related to segmentation of EMs with that of developed markets.	The model used is unconditional and therefore static in nature whereas studies have shown that these markets are dynamic and ever changing in terms of market microstructure, economic reforms, economic and financial globalization. Hence, an unconditional and static model may not capture this dynamism. Also, it does not test the proper international asset pricing model whereby the world returns should be considered as world market portfolio. Other important explanatory variables in case of emerging markets which have been suggested in the literature such as political risk, corporate governance structure, quality of institution, etc have not been discussed.
11	**Korajczyk (1996)**	The US return was used a single factor in the factor pricing model following Asset Pricing Theory framework to measure the miss pricing and how it has been changing. As expected, the greatest miss pricing has occurred in the emerging markets, although with different intensity but a common feature is that the miss pricing seems to become smaller and smaller in latter sample periods which is an indication the emerging markets are becoming more integrated over time.	Robustness of the test has not been discussed extensively which cast doubt on the stated results. Also other factors have not been used to capture the changes in miss pricing as literature provides enough evidence that many factors influence the returns.

12	**Garcia and Ghysels (1998)**	The ICAPM is rejected in terms of no structural stability of the statistical significance of the results in 8 of the 10 countries. The results exhibit that model which utilizes world market return or US return is unstable implying the prior expected dynamics that is observed in such instable economic and political environment of the emerging markets. The tests of non significance of the world variables also provide indication for the rejection of integration, whereas the domestic CAPM seems to work well and is found be stable.	Although the robustness of the model has been discussed but it does not explain other control variables such as liberalization effect (use of dummy), privatization effect, macro economic stabilization influence and political risk which have been found to have significant effect. Other variables such as dividend yield, market capitalization (size effect), P/E ratio have also been found influential but have been ignored in this study.
13	**Henry (2000)**	The study claims to have confirmed the prediction of the international asset pricing model (IAPM) in terms of positive revaluation of the aggregate stock market index as the government announces the liberalization measures to open local stock markets to foreign investors. Applying robust regression analysis on the panel data of 12 emerging markets and after controlling for other confounding factors, which could have similar impact, the findings are consistent with the prediction of IAPM and with other similar studies.	The study only looks at the positive aspect of the liberalization effect and ignores the destabilsation effect which could lead markets to adopt segmentation as Malaysia did by reverting to imposing capital control measures. Also the study only looks at a small sample and is also short term in nature.
14	**Bekaert and Harvey (2000)**	The findings conclude that the integration process does reduce the cost of capital in emerging markets with increased flow of capital but the magnitude of reduction is not as big as expected. Liberalization measures have been taken as an exogenous event but policymakers may liberalize when the economic environment is most advantageous to do so and hence, the policy endogeneity may bias the result in upward direction. However, the result suggest the effect is less than 1 percent which also supported by the positive effect on growth potential associated with decrease in cost of capital. One of the control variable with is very significant is economic openness which is generally accepted as a reliable predictor of growth. The results show increase of emerging markets return with world markets is smaller than expected.	The research seems to suffer from the problems of endogeneity which the authors have admitted.

15	**Vihang Errunza (2001)**	Errunza (2001) notes that the increasing trading activities (direct or through funds/ADRs) depend on restrictions imposed by local government. The extent of direct participation in the local market are determined by various factors such as market depth, breath, liquidity, efficiency, regulation, information availability, removal of direct and indirect barriers, transparency of investment, repatriation rules etc. He states that over time EMs have initiated reform measures to accelerate the growth of economy and build institutions and markets with the aim to improve foreign investability. However, such measures and the process of such measures are gradual and therefore it is very difficult to isolate the exact date of liberalization. Correlation of returns of EMs with domestic markets does increase after liberalization, however, the increment is not substantial enough to significantly affect the diversification benefit. However, Bekaert and Harvey (2003) suggest that the increase in correlation may affect the diversification benefit in the future as these markets become more integrated and therefore in light of the recent evidence of increasing integration, this needs to be tested.	The methodology applied is not rigorous and this paper is more like a review than an empirical study. It does open up avenue for further research but the claims made regarding the proposed findings lack rigorous methodological basis.
16	**Jaime (2002)**	Sabal (2003) suggests that the traditional CAPM cannot be directly employed when pricing risky real investments in emerging markets as the nature of the markets and the assumption of the traditional CAPM is not met. Emerging markets are very different from the developed markets in terms country risk, investor profile and ownership distribution, highly inefficient market portfolio etc. Hence, the traditional CAPM needs to be modified to take into account all the realities which reflect the actual business environment in emerging markets.	It's a text book and hence, the model is not empirically validated.

17	**Bekaert, Harvey and Lumsdaine (2002a)**	Using VAR and four variables (capital flow, returns, dividend yields and world interest rates) in 20 emerging markets, this study measures to what extent the low level of interest rates in the developed countries drive up the increased capital flow and to what extent shocks in the flow affect the cost of capital among other dynamics. The BLS structural break tests are applied to find the endogenous breaks to track the liberalization. The result shows that equity flow increases by 1.4% of market capitalization. The shocks in flow initially increase return which is in line with price pressure hypothesis. The effect does diminish over time but there appears to be permanent impact as well. The proxy for cost of capital, the dividend yield, also decrease, supporting the price pressure hypothesis. The study also shows that when capital leaves it does so in a faster pace than its inflow, which may help to understand the dynamics of crisis in Asia and Latin America.	Since VAR uses OLS, the assumptions underlying their employments should have been discussed. This leaves the question open that the impact found on the returns are due to inflow or other factors because studies have shown (Henry, 2000) that liberalization efforts are accompanied by other reforms such as macro economic stabilization programme and privatizations and also exchange rate control. Are these having effects on returns or the inflow is capturing the effect of all these reforms and hence, the results are over estimated. The study shows that capital leaves quickly but why does it leaves quickly if the investors have not been found to be momentum investors. What is the impact of the financial crisis on the overall result? Does such extreme event cast any doubt on the efficiency of the results? If it is using atheoretical method, then why ICAMP and Integration model is discussed. This may bias the result with prior expectation.

18	**Bekaert, Harvey and Lumsdaine (2002b)**	The study is based on structural theoretical framework but it uses the non structural autoregressive framework to detect the breaks in the time series variables which could be affected by integration. These variables include financial, economical and liquidity issues. They find significant breaks with tight confidence intervals, which provide robustness in their test. The breaks are not only found in the mean but also in other parameters using univariate and multivariate analysis. They proposed three alternative break dates: date of regulatory change liberalization of foreign investments, issue of first ADR and launching of first country fund. They find significant change in the variables, as expected, after integration. However, they also document that announcement or measures initiated to bring about integration do not necessarily attract foreign investments.	VAR is not as robust as the structural format. The study does not report the account and impulse-response analysis, which could have provided dynamics among the variables used.
19	**Taskin and Muradoglu (2003)**	Using multi country analysis to find the changing link between capital markets and real sector due to increasing integration, the study finds that the information content of world returns not only have significant influence after liberalization but also before the liberalization measures are initiated. They find that capital market as a whole are better integrated with the world and carry the impact of financial liberalization on local market.	Control variables not used. Future research direction no mentioned.
20	**Errunaza, Carrieri and Hogan (2003)**	Local sources of risk are consistently relevant in all countries and there is significant time variation. They claim their result to be supportive considering the fact that the non constant and time variation in the pricing of local risk has enough information to explain the high volatility observed in the emerging markets. For three countries the study also found that global sources of risk were also priced with the surprising result of non-pricing for Mexico being the largest EM in terms of capitalization. Again applying more powerful multivariate GARCH-M model, the study finds the rejection of constant price of global risk.	Further direction for research is not discussed. The robustness and the specification tests of the statistical issues not extensively discussed.

21	**Solnik and McLeavy (2004)**	Solnik and McCleavy (2004) notes that in the international context, in addition to the world market risk premium, the simple risk pricing relationship of simple CAPM must also incorporate risk premiums to supplement the covariance of the asset with the various exchange rates. However, this risk-pricing relationship applies to securities only in the perfectly integrated world capital market. They note 'Financial markets are segmented if securities that have the same risk characteristics, but are listed in two different markets, have different expected returns'.	Being a text book no empirical evidence is presented but only few references are provided.
22	**Frank de Jong and Frans A. de Roon (2005)**	The study quantifies the effect of segmentation phenomenon on the expected returns as an additional source of risk in the pricing of securities in the emerging markets. By using simple regression and different proxies for expected return it provides evidence that emerging markets have been showing decreasing trend in segmentation with world markets. Local and regional markets, both show decrease in expected returns because of increase in integration with the world market.	Capital flow issue has not been considered. Some of the robustness tests such as auto correlation and dealing with non-normal data (small sample) have not been discussed. Cross sectional differences in the final conclusion has not been extensively discussed. Future research direction is also not reported.
23	**Bekaert et al. (2005)**	Using 22 countries the study tests the integration and contagion issues using two and three factor models. It uses the two factor model and explains that if the model holds (i.e. if the foreign risk factors are significant), the local risk instrument should not have any effect and therefore it's a test of integration. The tests reveal that 15 out of 22 countries have pricing error which is related to local information and in 20 out of 22 countries the world CAPM is rejected and even in the case of US return as benchmark return, the results are same. This again shows that these markets are not completely integrated.	Other control variables have not be used in the regression analysis

24	**Carrieri, Errunza, and Majerbi (2006)**	The study makes an attempt to identify the premium for pricing the local currency and local market risk separately. The disentanglement of these risk sources shows that they are separately and significantly priced with the market risk clearly dominating the share of risk premium. The study may have important implications for international asset pricing for investors and companies contemplating to price risk in EMs.	The study re-opens the issue of asset pricing in EMs. It shows that risk factors in EMs are not as explicit as documented in the literature so far. The study has delved into the issue of two currency factors, the bilateral and the global one. The rationale for including global exchange risk factor is not explained in terms of EMs, i.e. why should the global exchange rate, which is the dollar's index performance with other major currencies may be relevant. The study also does not take into account the local economic factors which could pick-up important variation observed in other currency risk and market risk. Hence, addition of local economic risk factors, such as interest rate, growth output, political risk factors, etc may significantly affect the result and remains open for further research.
25	**Hunter (2006)**	Using aggregate ADRs the paper assess the evolution of the degree of market integration of the Latin American markets over the post liberalization period to investigate whether they are converging or diverging from integration. Using the CAPM model in the international context, the author finds that liberalization has not lead the subject markets towards greater integration with the international capital markets.	Robustness and diagnostic tests have not been discussed, Control factors have not been added, which might overestimate the results.

26	**Chen and Huang (2007)**	The study employs the constant and time varying ICAPM on the index of the four pacific countries and finds that the beta are not constant and hence, the time varying model better explain the systematic risk in these markets.	It does not explain whether the index used is from IFC or national stock market. It ignores the industrial and sectoral issues. It does not discusses the limitation of the study as many previous work on emerging markets have shown that data are very noisy and therefore the statistical estimation needs to be carefully judged. Model diagnosis has not been discussed. It does not show how the study paves way for further research issues.
27	**Wang and Iorio (2007)**	Using Jorian and Schwartz's (1986) asset pricing model on A, B and H type of stock markets of China, MSCI world index and Hong Kong stock market, the study shows that Chinese markets do not show greater integration with world markets.	Lack of robustness in empirical tests. Data has not been adequately described. Unconditional model has been used ignoring the time variation in the integration process. Only one factor to test integration has been presented, ignoring other factors like the employment of IFCI index, other global risk factors such oil price risk, effect of international trade issues, which could be priced considering the global influence China is having due to its past few years of rapid economic growth and growing presence of multinationals firms and financial services organizations

Appendix 2: Studies Excluded

S/N	Author/s	Rationale for Exclusion
1	Bekaert, Harvey and Lumsdaine (2003)	This study is related to identifying the complexities of dating liberalization as it is now well documented in the literature that liberalization is a gradual process and not a one off event. The sequencing and intensity of liberalization is different across countries. Since, it does not test integration issue; this study is not included in the review.
2	Phylaktis and Ravazzolo(2002)	The study finds financial integration is significantly accompanied by economic integration in pacific region bit does not relate to the review questions presented in the scoping study which primarily deals with asset pricing model to test the law of one price in terms of common sources of risk and cost of capital.
3	Errunza and Darius (2001)	The study does show the link between cost of capital and segmentation but is uses firm level analysis and not the aggregate country level index. The findings of this study are consistent with the theoretical modeling of the IAPM signifying a substantial reduction in the cost of capital following market integration which further has significant welfare effect.
4	Glen and Madhavan (1997)	The study is based on different classes of securities (using 21 companies) found in the Mexican markets and uses them to explain the link between equity prices and segmentation among the various asset classes. Following the selection criteria for full paper, it does not pass the selection barriers.

Appendix 3: Citation Vs. Internal Rating of Studies

S/N	Year	Author/s	Google Scholar Citation	Internal Rating using Quality Criteria	Rationale for Under Rating
1	1995	Bekaert and Harvey	606	3	
2	2000	Bekaert and Harvey	471	3	
3	2000	Henry	387	3	
4	1995 (a)	Harvey	379	3	
5	1985	Errunza and Losq	229	3	
6	1981	Stulz	224	3	
7	1995	Bekaert	184	3	
8	2002	Bekaert, Harvey and Lumsdaine	149	3	
9	2005	Bekaert et al.	110	3	
10	2002	Bekaert, Harvey and Lumsdaine	91	3	
11	1995(b)	Harvey	70	2	Lacks discussion of the robustness of tests. Does not incorporate time varying model and it also does not show any direction of the problems faced by global investors willing to price risk in emerging markets.
12	1996	Korajczyk	57	3	
13	1989	Errunza and Losq	50	3	
14	1992	Errunaza, Losq and Padmanabhan	50	3	
15	1995	Classen, Dasgupta and Glen	38	2	However, the model used is unconditional and therefore static in nature whereas studies have shown that these markets are dynamic and ever changing in terms of market microstructure, economic reforms, economic and financial globalization. Hence, an unconditional and static model may not capture this dynamism. Also, it does not test the proper international asset pricing model whereby the world returns should be considered as world market portfolio. Other important explanatory variables in case of emerging markets which have been suggested in the literature such as political risk, corporate governance structure, quality of institution, etc have not been discussed.
16	1977	Solnik	35	3	
17	2003	Errunaza, Carrieri and Hogan	35	2	Further direction for research is not discussed. The robustness and the specification tests of the statistical issues not extensively discussed.

18	1998	Garcia and Ghysels	24	2	Although the robustness of the model has been discussed but it does not explain other control variables such as liberalization effect (use of dummy), privatization effect, macro economic stabilization influence and political risk which have been found to have significant effect. Other variables such as dividend yield, market capitalization (size effect), P/E ratio have also been found influential but has been ignored in this study.
19	2005	Frank de Jong and Frans A. de Roon	19	3	Capital flow issue has not be considered. Some of the robustness tests such as auto correlation and dealing with non-normal data (small sample) have not been discussed. Cross section differences in the final conclusion have not been extensively discussed.
20	2001	Vihang Errunza	11	2	The methodology applied is not rigorous and this paper is more like a review than an empirical study. It does open up avenue for further research but the claims made regarding the proposed findings lack rigorous methodological base.
21	2003	Taskin and Muradoglu	1	2	Control variables not used. Future research direction no mentioned.
22	2006	Hunter	0	2	The study does not discuss diagnostic tests and does not make use of control variables and therefore the estimates of the repressors used may be biased.
23	2007	Chen and Huang	0	2	It does not explain whether the index used is from IFC or national stock market. It ignores the industrial and sectoral issues. It does not discusses the limitation of the study as many previous work on emerging markets have shown that data are very noisy and therefore the statistical estimation needs to be carefully judged. Model diagnosis and robustness of the model has not been discussed. It does not show how the study paves way further research issues.
24	2007	Wang and Iorio	0	1	Lack of robustness in empirical tests. Data has not been adequately described. Unconditional model has been used ignoring the time variation in the integration process. Only one factor to test integration has been presented, ignoring other factors like the employment of IFCI index, other global risk factors such oil price risk, effect of international trade issues etc which could be priced considering the global influence China is having in its past few years of rapid economic growth.
25	2006	Carrieri, Errunza, and Majerbi		3	