How strong is the global integration of emerging market regions? An empirical assessment

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ABSTRACT

This paper attempts to evaluate the time-varying integration of emerging markets from a regional perspective based on a conditional version of the International Capital Asset Pricing Model (ICAPM) with DCC-GARCH parameters that allows for dynamic changes in the degree of market integration, global market risk premium, regional exchange-rate risk premium, and local market risk premium. Our findings reveal several interesting facts. First, the time-varying degree of integration of four emerging regions under consideration, satisfactorily explained by the regional level of trade openness and the term premium of US interest rates, has recently tended to increase, but these markets still remain substantially segmented from the world market. Second, the local market risk premium is found to explain more than 50% of the total risk premium for emerging market returns. Finally, we show that conditional correlations usually underestimate and overstate the measure of time-varying market integration. The empirical results of this study have some important implications for both global investors and policymakers with respect to dedicated portfolio investments in emerging markets and policy adjustments.

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1. Introduction

The development of the contemporary world economy has been particularly characterized by the intensive globalization of national capital markets. Emerging markets begin to play an active role in this movement since the early 1980s by initiating a gradual process of market liberalization activities which include internal policies aimed at deregulating interest and exchange rates, as well as decisions designed to reduce the barriers to receiving international investments (Awokuse et al., 2009; Bekaert and Harvey, 1995, 2000). We subsequently observe a spectacular development of international exchanges with these markets (Bekaert et al., 2002). As reported by the International Finance Corporation in its 2008 annual report, net flows of private capital towards emerging markets, including direct foreign investments and portfolio investments, had already reached 616 billion USD in 2007, whereas little capital had been invested before 1980 because of the lack of products and financial services available to foreigners. In recent years emerging markets have accounted for about 50% of the world's economic growth.

In parallel with the movement towards the globalization of national markets, a number of economic areas have continued to develop their institutional aspects, as shown by the growing number of regional economic agreements (NAFTA, ASEAN, EU, MERCOSUR, etc.). These regional trade agreements result in part from a greater openness of the member countries, and a desire to become more competitive in world markets by mobilizing their joint efforts and synergies. Several emerging regions such as Asia, Central and Eastern Europe, and Latin America are also in keeping with this dynamics, both on the regional and global levels. However, the links between global and regional integration are not the same in every area. In some regions international integration preceded the regional integration, as happened in Asia, whereas the reverse approach is seen in other areas such as Latin America. Moreover, the speed of this financial integration process may vary over time, and differs from one region to another.

However, if globalization, and financial integration in particular, can enable emerging markets to obtain a better diversification of their risks, a more efficient allocation of capital, and a better potential for economic growth, they may have undesirable effects, including an increase in financial vulnerability due to external shocks, and disparities in their commercial exchanges with developed countries (Bekaert et al., 2005; Levine and Zervos, 1998; Stiglitz, 2002). An assessment of the level of financial integration of these markets is thus crucial, since the latter seems to be inevitable and the source of all the complexities affecting international asset pricing and regional economic-cooperation policies. Studies conducted on this topic can also shed light on other aspects, including the current trend of financial integration, its determinants, and its effects on the risk premium and the cost of capital in an international context.

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Although previous studies have provided a general understanding of the global integration process of individual emerging markets over the recent decades (Bekaert and Harvey, 1995; Carrieri et al., 2007; Errunza and Losq, 1985; Pukthuanthong and Roll, 2009), little attention has been paid to the dynamics of the integration of emerging market regions into the world market, which has now become an undeniable trend. Moreover, the potential time-varying shifts in the integration process that governs stock-market return dynamics, resulting from the structural reforms undertaken by emerging countries, have rarely been considered. This then leads to a biased assessment of the degree of financial integration.

This study contributes to the existing literature by developing a dynamic international capital asset pricing model (ICAPM) allowing for smooth transition between different integration regimes. Specifically, expected returns may move from a perfectly-segmented regime to a perfectly-integrated one, or vice versa, depending on a certain number of national and international factors that are likely to drive the process of financial integration. Although the proposed model was developed in the spirit of that presented by Bekaert and Harvey (1995), it allows for the dynamic conditional correlations between stock returns by using the multivariate DCC-GARCH model of Engle (2002). It also enables an examination of the relevance of the dynamic measure of financial integration over the conditional correlations, very frequently used in the literature when referring to the level of integration. Lastly, our study differs from past studies in that we investigate the integration of emerging market regions into the world market, rather than individual emerging markets, using actual real exchange rates as a common source of risk, in addition to world and domestic sources of risk.

Our results show that the integration degree in four emerging market regions (Latin America, Asia, Southeastern Europe, and the Middle East) varied widely through time over the period 1996–2008, and this can be satisfactorily explained by the level of trade openness and variations in the US term premium. Although the general trend is towards increasing financial integration, emerging market areas seem to be still significantly segmented from the global market. A breakdown of the total risk premium confirms this finding, in that it underlines the dominant role of the local risk factor in explaining variations in the expected returns for the four areas studied. Finally, a close inspection of the conditional correlations indicates that they constitute a biased indicator of financial integration.

The remainder of the article is organized as follows. Section 2 presents a brief review of the literature on financial integration in emerging markets. Section 3 describes the empirical approach which we employ to measure and investigate the level of emerging market integration over time. Section 4 presents and discusses the results obtained. Section 5 provides some concluding remarks.

2. Literature on the integration of emerging markets

Using data from 20 emerging markets, Harvey (1995) tests the international version of the traditional CAPM by replacing the national market portfolio by the world market portfolio, represented by the MSCI world index. His results suggest that emerging markets are not fully integrated into the world market because the considered pricing model is not pertinent, in view of the low betas obtained[1].

Rejection of the hypothesis of perfect integration has motivated the authors to examine the idea of the partial integration, since it seems to be unrealistic that emerging markets are perfectly segmented from the world market. Errunza and Losq (1985) introduces a pricing structure, called "mild segmentation", in which access to the various asset classes is not equal for two types of investors: investors not subject to legal restrictions on holding assets

have access to all securities, while investors subject to reference restrictions are able to conduct transactions on only a subset of assets. Their empirical results show that emerging markets are neither strictly segmented nor perfectly integrated. In a different way, Claessens and Rhee (1994) apply the methodological procedure of Stehle (1977) to study the risk-return linkages in 16 emerging markets. Their empirical evidence contradicts the hypothesis of integration in most of the markets, whereas the segmentation hypothesis cannot be rejected in any of the markets.

Some papers have looked at the dynamic degree of emerging market integration. For instance, Bekaert and Harvey (1995) develop an asset pricing model which nests the two extreme cases of perfect segmentation and integration so that at each point in time expected return on an asset (or a market) depends simultaneously on a global risk factor weighted by an integration coefficient, and a local risk factor weighted by a segmentation coefficient. Applying this model to 12 emerging markets, they document changes in market integration through time. In the same vein, Adler and Qi (2003) generalize the model of Bekaert and Harvey (1995) to study the integration of the Mexico into the North-American market while controlling for the peso/dollar exchange rate risk. They show that the integration measure experienced a drop during crisis periods and began to rise in the early 2000s.

Carrieri et al. (2007) extend the model of Errunza and Losq (1985) to assess the integration levels of eight emerging markets using an aggregated measure of financial asset substitution. The results obtained indicate that the local pricing factor continues to be relevant in the valuation of emerging market assets, but none of the markets considered is completely segmented from the world market. Chambet and Gibson (2008) estimate a multifactor asset pricing model of partial integration, also inspired by that of Errunza and Losq (1985) for 25 emerging markets, and show that some markets still remain segmented.

Bekaert et al. (2009) measure a country's degree of segmentation by the weighted average of the absolute differences between the global and local price-to-earnings ratios for industries. According to these authors, the segmentation level of emerging markets remains significant, even if it tends to fall over time.

Pukthuanthong and Roll (2009) suggest a measure of financial integration based on the adjusted coefficient of determination (R^2) of a multifactor asset pricing model. Inspection of the time profile of the proposed measure of integration for 82 developed and emerging markets indicates the general trend of an increase in financial integration for the majority of markets over the last three decades, but the extent of the changes varies considerably among the markets.

Our study differs from previous contributions in that we test the hypothesis of time-varying integration of emerging market regions, rather than considering individual markets. It is of great interest to both policymakers and investors, with respect to regional development policies and dedicated portfolio investment strategies in each emerging region respectively. The international asset pricing model we use is built so that it characterizes the changes in market integration through time owing to the impacts of the gradual removal of direct and indirect barriers to emerging market investments. We also examine the portions of the returns explained by global and local risk factors respectively, by carrying out a decomposition of the total risk premium.

3. Empirical approach

Our asset pricing model builds on the conditional ICAPM developed by Bekaert and Harvey (1995), which allows a local market's expected return to vary over time according to its covariance with the world market return and its own variance. In a perfectly integrated market only the covariance risk is priced, whereas the variance risk is solely relevant in a strictly segmented market. This

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[1] The MSCI world market index provides a satisfactory explanation of relationship between return and risk in developed markets (Harvey, 1991).