Effects of financial turmoil on financial integration and risk premia in emerging markets

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ABSTRACT

The aim of this article is to analyze how financial crises affect the dynamics of international financial integration and of the risk premia in emerging markets. Accordingly, we estimate a variant of the International Asset Pricing Model developed by Carrieri et al. (2007), allowing for time-varying stock market integration, in which we include the foreign currency risk. Our sample consists of monthly data for 12 emerging stock markets over the period 1988M3–2015M3. We find that while the financial integration of emerging stock markets has registered short-term reversals episodes in countries that have been exposed to national or/and regional financial crises, it has decreased in most of the emerging countries of our sample since the global crisis. Moreover, the upward trend in financial integration has not reduced the local market risk premium component as much as could be expected. However, the recent global crisis has induced a reassessment of the world market risk premium for all emerging countries, highlighting the global nature of the crisis.

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1. Introduction

The rapid financial integration of emerging countries over the past twenty-years has left them relatively more exposed to financial crises and has resulted, in some of them, in increased restrictions on capital mobility. According to Karolyi and Stulz (2003), in the context of partial segmentation or imperfect financial integration, equity flows that take place either in or out of a country are limited because of explicit constraints or because of barriers to international investment. Recently, Karolyi and Wu (2012) have shown that the liberalization of financial markets around the world has increased market accessibility for global investors, but many regulatory restrictions constitute indirect barriers to investing in overseas markets. The difference between the legal and actual degree of capital mobility has been at the center of an extensive literature based on an empirical asset pricing approach.[1]

Among this literature, Carrieri et al. (2007) show that no emerging market of their sample (Argentina, Brazil, Chile, India, Korea, Mexico, Taiwan and Thailand) appears to be completely segmented from January 1977 to December 2000 and that both financial development and market liberalization have a positive impact on the financial integration of these countries. Their study is of special interest, as they develop an empirical variant of the theoretical model of international asset pricing (IAPM)

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  [1] See for example, Black, 1974; Stulz, 1981; Errunza and Losq, 1985, 1989; Eun and Janakiramanan, 1986; Cooper and Kaplanis, 2000; De Jong and De Roon, 2005; Chaieb and Errunza, 2007. All these studies provide an excellent survey on the main properties of the theoretical asset pricing model.

developed by Errunza and Losq (1985) to investigate the time-varying financial integration of stock markets. In particular, the measure they derive from their model has the advantage to be less variable and easier to interpret than the one proposed by Bekaert and Harvey (1995), which is allowed to only vary between two extreme regimes: perfect integration and strict segmentation.[2] However, their study, by considering only two sources of risk, related to local and global financial markets portfolios returns, does not capture the empirical evidence that exposure to exchange rates changes must also be priced in financial markets. Several empirical studies have, indeed, evidenced the importance of the currency risk in the assessment of the total risk premium, either by including a currency risk factor in addition to the global market risk factor (O'Brien and Dolde, 2000) or by implementing a currency version of the IAPM (Jorion, 1991; Dumas and Solnik, 1995; Bailey and Chung, 1995; De Santis and Gerard, 1998; Hardouvelis et al., 2006).[3] But these studies rely on assumptions which are unlikely to be true for emerging market assets: either assets are priced in integrated financial markets or when mildly segmented markets are considered, financial integration is not allowed to vary over time (Tai, 2004). One exception comes from Chaieb and Errunza (2014) who derive a time-varying market integration index from their initial model (Chaieb and Errunza, 2007). The authors compare their measure of financial integration with the integration index of Errunza and Losq (1985) in order to assess the consequences of the currency risk factors on the measure of integration.

In this paper, we consider simultaneously the time-varying integration of emerging stock markets and the exchange rate risk factor, by extending the model developed by Carrieri et al. (2007) with an exchange risk factor. However, we depart from the previous literature by analyzing two main issues regarding the development of emerging stock markets' financial integration over the last decades. Firstly, we estimate the time-varying financial integration index derived from our empirical international asset pricing model and investigate whether its evolution has been consistent with the capital account openness, measured by the Chinn-Ito index (Chinn and Ito, 2008) and the opening process of equity markets. We also analyze if this process of financial integration has been affected by the recent global crisis in the same way as it was affected by the various financial crises that have occurred during the 90s in emerging markets. Secondly, we check whether the developments in emerging markets over the recent decades have induced changes in the importance and the dynamics of each component of the total risk premium by distinguishing their various sources (subcomponents). The integration of financial emerging markets into global markets can, indeed, make the performance of assets more dependent on global and foreign factors through spillover effects.[4] We can therefore conjecture that, despite diversified investments, investors may be less able to protect their portfolios from periods of worldwide financial turbulence.

Our results confirm that the degree of financial integration is characterized by an upward trend in most emerging countries of our sample. This upward trend is related to the *de jure* liberalization trend, but appears to be largely driven by the *de facto* liberalization process due to the cross listing of emerging countries stocks, through American Depositary Receipts (ADRs) in the US market, and the increasing availability of country funds. We also find that the financial crises experienced by emerging markets have tended to disrupt the progress in financial integration on national and regional levels. This appears to be especially true for Argentina, for which the recovery from its 1999–2002 crisis has been difficult. It is also true for the Asian crisis. In contrast, our findings reveal that the process of financial integration has decreased in most emerging countries of our sample since the global financial crisis. Finally, we also report evidence that the nature of financial crises matters in the determinants of the total risk premium. Indeed, while the idiosyncratic character of the risk premium may become important in the wake of regional crises, it has been outweighed by its world component during the recent global financial crisis.

The rest of the paper is organized as follows. Section 2 presents the model and the estimation method. Section 3 describes the data and the summary statistics. Section 4 examines the evolution of financial integration in emerging stocks markets along with their respective process of capital account openness. Section 5 provides results from country-by-country regressions, discusses the evolution of the various components of the total risk premium and contains further analyses such as robustness checks. Section 6 concludes.

2. The empirical model

Our empirical asset pricing model relies on the theoretical framework developed by Errunza and Losq (1985) and estimated, for a sample of eight emerging countries, by Carrieri et al. (2007). The main interest of this model is that it allows for time-varying financial integration: financial markets are allowed to switch smoothly and reversibly from being fully segmented to being fully integrated. This is made possible by the introduction of portfolio inflow restrictions that prevent some investors from holding all securities (restricted investors). More specifically, the model makes a distinction between a subset of the securities, termed eligible, including securities such as stocks cross listed on foreign markets, country funds, industry indices, *etc.*, which can be held by all investors and noneligible securities which can be held only by the unrestricted investors. A time-varying measure of *de facto*

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[2] Bekaert et al. (2011) develop an alternative measure of financial segmentation based on industry-level earnings yield differentials relative to world levels. It is not focussed on emerging countries and measures jointly financial and economic integration. As it seeks to be model free it does not provide information on the different components of the risk premium.

[3] More sophisticated models, relying on an intertemporal framework, include hedging factors such as hedging against future real exchange rate risk. We leave aside these intertemporal aspects as the literature shows that the intertemporal hedging factor does not improve the explanatory power over the static CAPM (Ng, 2004).

[4] Those spillover effects can be driven by financial contagion, but also by monetary policies (IMF, 2013) and global sentiments (Beckmann et al., 2011).