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Derivative markets in emerging economies: A survey☆

Yigit Atilgan, K. Ozgur Demirtas *, Koray D. Simsek

School of Management, Sabanci University, Istanbul, Turkey

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ABSTRACT

We review the literature on derivatives in emerging markets. This young but booming literature appears to be concentrated on a few countries, but is quite rich in terms of subject coverage. We classify these topics based on the generally recognized functions of derivative markets and restrict the review to the set of top journals in finance and those that specialize on emerging markets or derivatives.

1. Introduction

During the recent subprime mortgage crisis of 2008–09, three of the largest U.S. investment banks either went bankrupt (Lehman Brothers) or were sold at fire sale prices to other banks (Bear Stearns and Merrill Lynch). These failures augmented instability and caused significant shifts in the global financial system. Between July 2007 and June 2010, a broad U.S. equity index, S&P 500, declined by 32%. Over the same period, Dow Jones Industrial Average index which includes 30 highly liquid, large cap stocks declined by 28%. On the other hand, investors with high exposures to emerging equity markets generated handsome returns during the crisis period. From July 2007 to June 2010, equity market indices increased by 85% in Sri Lanka, 54% in Colombia, 44% in Indonesia, 43% in Venezuela, 26% in India, 24% in Chile, 11% in Brazil, Thailand, and Mexico, 7% in Argentina and South Africa, and 5% in Malaysia and South Korea. During the same period, total trading volume for both individual stocks and index funds also significantly increased in these emerging markets. Such sharp declines in developed economies coupled with the rise in equity values in quite a few emerging economies have shone the spotlight on the latter group.

As investors show an ever-increasing interest in emerging markets, a contemporaneous jump in the volume of academic research on emerging economies has occurred. One major branch of this research is directed towards derivative markets. This newly-formed attention in emerging derivative markets has strong merits. As discussed in Ehlers and Packer (2013), across 32 emerging economies for which the data are available, average daily turnover of derivative markets was $1.1 trillion as of April

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* Corresponding author.
E-mail addresses: yatilgan@sabanciuniv.edu (Y. Atilgan), ozgurdemirtas@sabanciuniv.edu (K. Ozgur Demirtas), ksimsek@sabanciuniv.edu (K.D. Simsek).

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2013. This figure accounts nearly for 4% of these nations' total GDP. Even though the corresponding magnitude is bigger in developed economies, the growth in turnover is higher in emerging markets. When one goes deeper, it can be observed that the average daily turnover was around only $250 billion as of 2001 and it more than quadrupled in a decade. Nearly half of the turnover in derivative markets comes from over-the-counter products. Outright forwards, FX swaps, currency swaps, options and other products account for nearly $535 billion. The significant increase in derivative trading in emerging markets and refreshed interest in emerging economies motivate a detailed literature review of the respected research on the topic.

In this survey, combining the emerging market country classifications of Financial Times Stock Exchange (FTSE) and Morgan Stanley Capital International (MSCI),[1] we focus on 25 countries. These are Brazil, Czech Republic, Chile, China, Colombia, Egypt, Greece, Hungary, India, Indonesia, Malaysia, Morocco, Mexico, Pakistan, Peru, Philippines, Poland, Qatar, Russia, South Africa, South Korea, Taiwan, Thailand, Turkey, and United Arab Emirates. We utilize Thomson Reuters Web of Science citation database and review articles that have been added to the index as of July 20, 2015. We only include publications in the top four journals within the finance area (Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis, and Review of Financial Studies), five journals that publish articles on emerging markets finance research (Emerging Markets Finance and Trade, Emerging Markets Review, International Review of Economics and Finance, Journal of International Money and Finance, and North American Journal of Economics and Finance), and two specialist journals on derivatives (Journal of Futures Markets and Journal of Derivatives). We only include articles covering options, warrants, futures, forwards, swaps, and credit default swaps. As a result of these filters, we reviewed 152 articles.

The development of derivative markets in emerging economies has been explored as case studies. Williams, Peck, Park, and Rozelle (1998) describe the early success of the mungbean futures market in China, while Fernandez (2006) explores the reasons for relative thinness of the Chile derivative markets in the region. Lien and Zhang (2008) provide an early literature survey of the emerging derivative markets.[2] Our main contribution is in providing an expanded and thorough review of this booming literature as 112 of the 152 articles we cover have publication dates after Lien and Zhang (2008).

We focus on a specific set of journals but keep the subject coverage as wide as possible. Although we do not intend to minimize the importance of other journals we exclude from our review, we have chosen to have a "mainstream" focus and keep the task manageable. The rest of the paper is organized as follows. In Section 2, we review the studies that analyze how derivatives are used for hedging and risk management in emerging economies. Section 3 highlights studies that shed light on how derivatives function in the price discovery process in these markets. In Sections 4 and 5, we cover the articles dealing with market structure and efficiency issues in emerging derivative markets. Section 6 provides an analysis of the studies that are concerned with pricing and risk measurement issues. In Section 7, we review articles that could not be classified under the previous headings. Finally, in Section 8, we offer some concluding remarks and make suggestions with respect to future research directions.

2. Hedging and risk management

One of the primary motives behind utilizing derivative products is hedging against various types of risk as highlighted by Hammoudeh and McAleer (2013). The academic literature covering the risk management functions of derivative instruments in emerging markets focuses mostly on the usage of currency derivatives. Many of these studies investigate the relation between the vulnerability of countries towards foreign exchange shocks and the mitigating role of futures, forwards, options and swaps.

Rossi (2009) investigates the corporate behaviors of non-financial Brazilian companies by examining their usage of currency derivatives in a fixed exchange rate regime versus a floating one. A floating rate regime may induce firms to take their currency exposures more seriously compared to a fixed rate regime under which hedging activities may be reduced. The study finds that the adoption of a floating rate regime in Brazil led companies to ramp up their usage of currency derivatives. Another finding is that, although other currency risk management practices such as reducing foreign currency borrowings or obtaining foreign assets are available, firms see these practices as complements rather than substitutes to utilizing derivatives. In a companion paper, Rossi (2011) documents that the number of firms exposed to exchange rate fluctuations decreased after the shift to a floating exchange rate regime. Moreover, although this reduction was partially driven by changes in international activities and operational hedging, the increased usage of derivatives was one of the major financial policy factors that determined companies' exchange rate exposures. In a methodological contribution to this line of research, Rossi (2012) emphasizes the importance of using nonlinear models to identify the relation between exchange rate fluctuations and valuations of Brazilian firms. The study adopts a smooth transition model to show that the aforementioned relation is indeed nonlinear and the main determinant of this nonlinearity is the use of currency forwards, futures and options. Findings also indicate that currency derivatives may exacerbate the problem of foreign exchange exposure for large movements in the exchange rate possibly due to the inhibiting role of currency market illiquidity when a firm needs to renew its hedged positions.

Schiozer and Saito (2009) focus on a sample of firms that list as ADRs from four Latin American countries to investigate the determinants of currency risk management. The main finding of the study is that although firms with foreign debt have a larger portfolio of currency derivatives, this relation is not bidirectional and hedging does not lead to a larger foreign debt capacity. It is mostly operational hedges such as matching the risk exposures of assets and liabilities that increase this capacity. The main determinant for derivatives-based risk management is the cost of financial distress and a second-order factor is maintaining access

[1] See http://www.ftse.com/products/indices/country-classification and https://www.msci.com/emerging-markets, respectively.

[2] See Bekaert and Harvey (2002, 2003); Kearney (2012); Claessens and Yurtoglu (2013), and Atılgan, Demirtaş, and Şimşek (2015) for surveys of emerging markets finance literature in other domains of finance.