



The degree of financial liberalization and aggregated stock-return volatility in emerging markets

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ABSTRACT

In this study, we address whether the degree of financial liberalization affects the aggregated total volatility of stock returns by considering the time-varying nature of financial liberalization. We also explore channels through which the degree of financial liberalization impacts aggregated total volatility. We document a negative relation to the degree of financial liberalization after controlling for size, liquidity, country, and crisis effects, especially for small and medium-sized markets. Moreover, the degree of financial liberalization transmits its negative impact on aggregated total volatility through aggregated idiosyncratic and local volatilities. Overall, our results provide evidence in favor of the view that the broadening of the investor base due to the increasing degree of financial liberalization causes a reduction in the total volatility of stock returns.

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1. Introduction

Many emerging markets liberalized their capital markets in the last few decades.¹ With the removal of restrictions on cross-border transactions, investors participate in emerging markets to take advantage of high returns in these markets and to reduce the risk of their portfolio by international diversification. Financial liberalization provides some advantages for emerging markets, too. It fosters the stock market development (De La Torre et al., 2007), lowers the cost of capital (Bekaert and Harvey, 2000; Chari and Henry, 2004), which, in turn, leads to investment booms (Henry, 2000) and thus spurs economic growth (Bekaert et al., 2005; Moshirian, 2008). On the other hand, some researchers share the concern that financial liberalization causes excess volatility in emerging markets (Bae et al., 2004; Li et al., 2004; Stiglitz, 2004). However, there is no consensus about this view in the literature. For example, De Santis and Imrohorglu (1997), Hargis (2002) and Kim and Singal (2000) find either a reducing impact or no impact of financial liberalization on volatility.

Uncovering the ambiguity in the relationship between financial liberalization and volatility has policy and asset allocation implica-

tions. For instance, any possible adverse volatility effects may lead governments to employ restrictive regulatory shifts over foreign equity investments, especially in emerging markets, diminishing the ability of firms to raise capital for profitable projects and thus resulting in poor economic growth. It is also important for financial managers to understand the effects of financial liberalization on the volatility of stock returns since high stock-return volatility can lead to an increase in firms' cost of capital. Finally, portfolio managers are interested in this particular research question, as they might need to rebalance their portfolios to properly reflect the risk preferences of their investors due to potential changes in the risk profiles of their holdings stemming from changes in the degree of financial liberalization.

Most of the previous works assume that financial liberalization occurs at a single point in time and treats it as a one-time event. These studies mainly analyze time-series characteristics of the volatility of local market indexes in the event window around the liberalization date and use alternative event dates for financial liberalization.² Different liberalization dates may lead different inferences in such studies, which may be one reason why mixed

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¹ See (Moshirian, 2007) for a historical review on global integration.

² For instance, regulatory reform date (Kim and Singal, 2000; De Santis and Imrohorglu, 1997; Chari and Henry, 2004), announcement of the first American Depository Receipt or the first country fund (Foerster and Karolyi, 1999; Umutlu et al., 2007) are some of the alternative event dates used in the literature.

results are obtained in the literature. However, some studies (Bekaert and Harvey, 2002; Bae et al., 2004; Edison and Warnock, 2003) show that the implementation and speed of financial liberalization varies, depending on the conditions of local markets. Researchers now agree that for many emerging markets, financial liberalization is a process rather than an event and that its intensity and speed changes over time. Another possible problem in the previous literature is the analysis of the return variance of a market portfolio to make inferences about average stock-return variances. This practice may cause erroneous results because a change in the variance of a portfolio may be due to changes in the covariances of the stocks forming the portfolio, without an accompanying change in their variances.

In this study, we address whether the degree of financial liberalization affects the aggregated total volatility of stock returns by considering the time-varying nature of financial liberalization. The degree of financial liberalization represents the extent of the removal of restrictions on cross-border transactions through time. By using several continuous measures for the degree of financial liberalization, we not only properly specify the gradual nature of financial liberalization but also eliminate the imprecision problem in dating the liberalization. Our next objective in this study is to determine the channels through which the degree of financial liberalization transmits its impact onto aggregated total volatility. For this purpose, we extend the volatility decomposition of Campbell et al. (2001) in a modified market model framework. Campbell et al. (2001) decompose the aggregated return volatility of stocks by using a methodology that does not require the estimation of covariance or stock beta terms. In our extended model, we model the returns of individual stocks to be driven both by local and global portfolio returns, and thus, we consider the partially segmented/integrated nature of many emerging markets.³ The appealing feature of our extended model is that it accounts for the conditional effect of one factor, given the other. By value weighting the return volatility of stocks in a country, we decompose aggregated total volatility into local, global and idiosyncratic volatility. After this volatility decomposition, we are able to examine through which components of aggregated total volatility is affected. Interestingly, no other study in the literature investigates the mechanisms through which the degree of financial liberalization transmits its impact on aggregated total volatility. Moreover, unlike previous studies that examine the return volatility of a market portfolio, we analyze the aggregated total volatility of stocks. Our aggregated volatility measure is independent of the co-variation in stock returns and therefore, is a pure measure of the average stock-return volatility in a country.

We find that the degree of financial liberalization has a negative impact on aggregated total volatility, even after controlling for size, liquidity, country and crisis effects, especially for small and medium-sized markets. We find similar results with binary modeling of financial liberalization and for different time periods. Furthermore, we show that the degree of financial liberalization transmits its reducing impact on aggregated total volatility through aggregated idiosyncratic and local volatilities. This finding is robust to the alternative order of orthogonalization of returns in the volatility decomposition process and to the alternative model-independent definition of idiosyncratic volatility. The documented negative relationship between total volatility and the degree of financial liberalization is consistent with earlier studies suggesting a decrease in volatility due to the investor-base broadening phenomena. A broadened investor base, stemming from the entry of foreign investors during the financial liberalization process, can

cause a decrease in total volatility because of an improvement in the market-wide accuracy of public information.

The rest of the article is organized as follows: Section 2 discusses the theoretical motives for a possible relationship between the degree of financial liberalization and volatility. This section also introduces the details of the construction and decomposition of aggregated total volatility. Section 3 describes the data and the estimation methodology of aggregated total volatility and its components. Section 4 analyzes the relationship between aggregated total volatility and the degree of financial liberalization; Section 5 extends the analysis to include the volatility components and the final section concludes the study.

2. Aggregated total volatility, its components and the degree of financial liberalization

2.1. How can the extent of financial liberalization affect total volatility and its components?

Several theoretical studies attempt to explain how financial liberalization may affect the level of volatility. Stiglitz (2004) states that financial liberalization leads to instability in the economy by increasing the consumption and output volatility, which are mainly caused by the pro-cyclical nature of foreign capital flows, in the presence of market imperfections such as information asymmetry and incomplete markets. On the other hand, by extending Merton (1987)'s investor-base broadening hypothesis, Wang (2007) shows that increasing number of foreign investors as a result of financial liberalization causes a decrease in total return volatility of stocks in a market where each investor only knows a subset of the available securities.⁴ Every added investor helps complete the information in a market where the existing investors have only partial information on a subset of available stocks and where these subsets differ across investors. As a result, an increased investor base increases the accuracy of market-wide information and cause a reduction in total volatility. In a similar vein, Kwan and Reyes (1997) analytically show a reduction in volatility with the broadening of the investor base in a market where investors have heterogeneous information about stock prices. Domowitz et al. (1998) construct a theoretical model to examine the impact of firm-level financial liberalization, namely cross-listing, on volatility where inter-market information is costly. Their model suggests that firm-level liberalization may either increase or decrease volatility in the local market, depending on the transparency of inter-market informational linkages.⁵

It is also crucial to know how the financial liberalization process influences the components of volatility because this improves our understanding of the driving forces of a potential change in the total volatility. The financial liberalization process can affect systematic and idiosyncratic components of volatility in different ways and through different motives, resulting in important implications for investors seeking diversification. A candidate explanation of a possible change in systematic volatility due to the process of finan-

⁴ In his model, Merton (1987) assumes that existing investors in the market know only a subset of the available securities and that an investor includes a security in his portfolio only if he has information about this security. Merton theoretically shows that broadening the investor base in a market with this kind of incomplete information increases risk-sharing and lowers expected returns.

⁵ With freely available price information, some foreign investors who were previously unable to participate in the local market due to high entry costs enter the international market after cross-listing. This increases the total number of traders in both markets, and increases the analyst coverage and publicly available information flow, which in turn reduces variance of public information and thus decreases volatility. If information linkages are imperfect, then some investors may migrate from the local market to the international market, where they find it cheaper to trade, resulting in an increase in volatility in the local market.

³ Errunza and Losq (1985), Chari and Henry (2004), De Jong and De Roon (2005) and Panchenko and Wu (2009) are examples of studies that follow the partial segmentation/partial integration paradigm.

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