Correlation Tightening and Financial Liberalization

Master Thesis (MA)

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Executive Summary

Data on external claims and foreign direct investment (FDI) are indicative of an unprecedented increase in international financial liberalization since the 1980s and 1990s (Lane and Milesi-Ferretti (2003)). While there has always been a debate, whether the net effect of financial liberalization is positive (see Agénor (2003)), the financial crisis of 2008 has renewed the interest of researchers in the costs and benefits of financial integration and liberalization. This study examined the relationship between the phenomenon of correlation tightening and financial liberalization. It aimed at linking the results of the co-movement and transmission literature to the literature on financial liberalization through the channel of financial stability. In fact, it is an established result that integrated markets tend to co-move and shocks are transmitted between them (Ripley (1973), Eun and Shim (1989), Neaime (2016)). Furthermore, co-movement is especially high during crises, which is commonly referred to as "correlation tightening" (Roll (1988), Solnik et al. (1996), Leibowitz and Bova (2009)). In addition, it is also known that certain dimensions of financial liberalization have implications on financial stability (see Agénor (2003) for a summary). Thus, this study tried to explain the phenomenon of correlation tightening with policies of financial liberalization as financial stability, or the lack thereof, might be causal in explaining synchronous downside co-movement of stock markets. In this regard, the following three dimensions of financial liberalization were considered: entry barriers for foreign banks, the quality of banking sector supervision and state control over the banking sector.

As for the entry of foreign banks, the existing literature, both theoretical and empirical, postulates potentially positive as well as negative effects on financial stability. From an empirical perspective, the study of Peek and Rosengren (2000) had already demonstrated that foreign bank entry can be causal in transmitting shocks between economies. Given the inconclusive impact on financial stability, a clearly positive or negative effect of foreign bank entry on correlation tightening was proposed as the first hypothesis. Moreover, the quality of banking sector supervision was equated with power and independence of the supervision authority as well as the presence of regulatory capital standards. Since the empirical literature suggests a positive effect on financial stability (e.g. Barth et al. (2004)), the second hypothesis presumed a negative relationship between the quality of banking sector supervision and correlation tightening. A real-world indication for this kind of relationship is found in Kane (2000), who argued that the Asian crisis of 1997 was triggered by a "silent run" of Asian depositors who sought the safety of well-regulated foreign banks, implying that a regulatory deficit can induce downside co-movement. Last but not least, a relationship between state control over the banking sector and correlation tightening was postulated as the third hypothesis. While the corporate governance literature is highly concentrated on the potentially adverse effects of corruption and inefficiency in state-owned enterprises (Shleifer (1998)), the results of empirical studies on government ownership of banks are ambiguous. While government ownership seems to be related to inefficiency, its impact on banking crises is unclear (La Porta et al. (2002)). This might be related to the fact that nationalization is also a policy aimed at the resolution of banking crises. Thus, as a third hypothesis it was proposed that there should be a positive or negative relationship between government ownership and correlation tightening, depending on the overall impact of state-ownership on financial stability and consequently the banking system's resilience against shocks.

In order to assess these hypotheses empirically, two tests were conducted. The first one was based on a fixed effects panel regression model which tried to relate a country's annual downside correlation to indices of financial liberalization. The panel model featured up to 43 countries and covered

a time period of up to 26 years dependent on the applied sample. As the dependent variable, the downside correlation as defined in Estrada (2002) was used because of its ability to quantify the relative strength of downside co-movement of two assets during a predefined period of time. In addition, the model controlled for macroeconomic variables based on suggestions from the correlation forecasting literature (mainly Erb et al. (1994) and Tavares (2009)). In summary, the panel regression test suggests that the historical relationship between downside correlation and financial liberalization is not definite as results are highly contingent on the covered time period and countries. While the liberalization variables (or their interactions) turn out to be significant predictors of downside correlation in most specifications, the direction and absolute magnitude of the effects could not be determined in a reliable way. Consequently, a second test was performed which studied correlation tightening during the global financial crisis of 2008. Cross-sectional linear probability and logistic regression models were estimated in order to determine whether certain country characteristics had an impact on a country's likelihood of correlation tightening during the crisis. Instead of indices, this test drew on economic measures of financial liberalization, in order to ensure that index construction was not driving the results. Since the cross-sectional test failed to discern any statistically significant impact of financial liberalization on the likelihood of correlation tightening, it was concluded that the ambiguous results of the panel regression model are most likely the result of spurious correlation. As a consequence, all of the three hypotheses had to be rejected on the grounds that neither the results of the panel nor of the cross-sectional regressions were unambiguously supportive of them. In conclusion, this study did not find any definite effect of foreign bank entry, quality of supervision or state-ownership on correlation tightening.

Nonetheless, these results are subject to limitations. First of all, correlations and downside correlations had to be estimated based on local currency returns. Thus, exchange rate and inflation rate effects might only have been imperfectly controlled for. Secondly, the lack of macroeconomic, stock market or liberalization data for multiple countries lowered the sample size considerably. This issue was especially pronounced in the cross-sectional test, which was based on a sample consisting of merely 42 countries. Thus, future research might try to tackle this issue either through the careful collection of reliable stock market data from developing countries or the construction and application of more comprehensive financial liberalization indices. Last but not least, the focus on equity correlations has obscured the fact that correlation tightening is a phenomenon that occurs across asset classes (see Leibowitz and Bova (2009)). Consequently, future research could take a more general approach and examine correlations between asset classes as well.