

Togetherness: The Increase in Global Stock Market Correlations

Chryssi Giannitsarou

Abstract: We develop a theoretical framework in order to investigate the link between two recent trends: (i) the rise in cross-country stock market correlations over the past three decades, and (ii) the increase in global foreign direct investment (FDI) positions over the same period. Our objective is twofold: first, we investigate empirically the channel through which the rise in global stock market correlations is associated with the observed increase in global FDI. Second, we develop a two-country stochastic asset pricing model with multinational firms that allows us to quantify the extent to which the recent rise in global FDI can account for the observed increase in cross-country stock market comovement. Calibrating three versions of the model (financial autarky, incomplete markets and complete markets) to the US and the rest-of-the-world, we find that a permanent increase in FDI positions, as observed in the late 1990s to mid 2000s, leads to substantial increase in cross-country stock market comovements, in line with that seen in the data.

Summary: Historically, the correlation between international stock markets had been fairly low, providing significant diversification benefits. However, this pattern started to change in the mid-1990s. Over the past two decades, international stock markets have steadily become more correlated. During the period mid-1990s to late 2000s, we observe some very sharp increases in correlations of major stock markets, often at the scale of almost threefold increases, from around 30% to 80% or more.

What drives the observed rise in cross-country stock market correlations? We posit that the bilateral foreign direct investment (FDI) positions between the big world economies act as an important determinant of stock market comovements. The link between the comovement of stock markets and global FDI positions is multinational firms. Generally, the equity price of a multinational firm is determined by their earnings generated all over the world. Since the earnings of a foreign subsidiary are directly affected by the economic conditions of the country that it operates in, as multinationals increase their overseas investment, their earnings and thus equity value, will be affected more from cross-border business cycles. Thus, the correlation of cross-country stock market indices will increase, as the global FDI openness increases. Indeed, actual FDI positions were roughly on a stable level until the early 1990s, but there was a permanent increase in them since then and up until the mid 2000s. This level change seems to be mostly driven by increased FDI activity between developed economies, mainly within and between two regions, the US and the European Union and coincides with the period of rising stock market correlations.

In this paper, we have two main objectives. First, we carefully document evidence that uncovers the relationship between the rise in global stock market correlations and the rise in global FDI. Second, we develop a two-country stochastic asset pricing model which incorporates multinational firms, in order to quantify the extent to which the recent rise in global FDI can account for the observed increase in cross-country stock market correlations.

To understand the mechanisms at work, we first work with a stripped down model with exogenous production, in order to show that stock markets may comove even when business cycles are not synchronised. In this setting, we can generate simple increases in stock price correlations that are only due to increased openness between the two economies, and over and above any increases

resulting from an increase in GDP correlations. Next, we move to a full production model of two countries with multinationals calibrated to the US and the rest of the world, and consider three versions of this setting, namely economies in financial autarky, incomplete markets and complete markets. The case of financial autarky serves as useful benchmark for quantifying the importance of FDI in a world where, apart from the presence of multinationals, the two economies do not have any other interaction. In this setting, we show that a permanent increase in FDI positions in the order of magnitude of what we observe in the data may well generate up to threefold increases in the stock market correlations. We also explain how this happens, by a heuristic decomposition of the comovements in stock prices into the comovement of the two multinational firm equity payouts and the comovement of the stochastic discount factors in the two countries. Our numerical results are broadly in line with the correlations and other statistics we observe in the data.

Research Progress: The research is partly funded by the British Academy, under the Newton Advanced Fellowship scheme, for the period Oct 2017 to Sep 2020. We effectively started working on this project at the start for 2018. We have now completed a first draft of the paper, which we have submitted to conferences to be presented in the summer and early next year. In the meantime, we expect to work on extending our results and improve our draft, by some time in late June.

Current Research Outputs: A preliminary draft, which we have submitted to conferences for presentation. The draft can be found here:

https://drive.google.com/file/d/1vYzRxfjkF_m1KpP956TLc2TCij0K0dzE/view

Conference and Seminar Presentations: None yet.