Granular institutional investors and global market interdependence☆

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ABSTRACT

We study the propagation of global investment risk across markets through the granular view of institutional investors. Applying the conditional value-at-risk estimation to micro-level weekly observations of international mutual funds between 2003 and 2011, we find that idiosyncratic shocks to large institutional investors explain both aggregate market risk and cross-market risk interdependence. Conditional on the US capital markets being in financial distress, idiosyncratic shocks to the top 10% largest funds investing in the US explain about 40% of the risk fluctuations in other non-US markets. The findings are also economically and statistically significant for the top largest funds investing in non-US markets, with the effects becoming especially large during the global financial crisis of 2007–09. These results are robust after controlling for common risk factors and applying alternative measures of idiosyncratic shocks.

1. Introduction

The recent global financial crisis of 2007–2009 has highlighted exceptional magnitude of global interdependence across financial markets. The market linkages seem particularly pronounced when

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financial shocks hit head on large financial institutions. On the date of Lehman Brothers bankruptcy, the S&P 500 lost 4.7% of its value, and the market tumble immediately spread to most major financial markets, with the MSCI world index dropped by 3.6% on that day. Yet, while there is garden-variety anecdotal evidence about the role of idiosyncratic shocks to large financial institutions, empirical studies on how they account for the global financial market interdependence remain scarce and largely inconclusive.

Built upon the granular view of Gabaix (2011) and the CoVaR (conditional value-at-risk) method-ology of Adrian and Brunnermeier (2011), this paper sheds new light on the association between idiosyncratic shocks to large financial institutions, 'the granular institutional investors', and global market interdependence as well as market aggregate risk. Gabaix's granular view suggests that the idiosyncratic micro-level shocks are not cancelled out at the aggregate level; instead, they have the potential to generate nontrivial aggregate shocks, and via general equilibrium, all market players.

> "… many economic fluctuations are not, primitively, due to small diffuse shocks that directly affect every firm. Instead, many economic fluctuations are attributable to the incompressible "grains" of economic activity, the large firms. … call this view the "granular" hypothesis. In the granular view, idiosyncratic shocks to large firms have the potential to generate nontrivial aggregate shocks that affect GDP, and via general equilibrium, all firms."
> (Gabaix, 2011: 734–735).

Gabaix finds that a third of variations in the US output growth is dependent significantly on the performance of the largest 100 firms, thereby providing some smoking-gun evidence of this granular hypothesis. Through the lens of this granular view transposed onto the financial market, we are interested in whether idiosyncratic shocks to large financial institutions provide information on the aggregate market risk and the cross-market risk interdependence. If the granular view holds broadly in the financial market, we expect the micro-level shocks to explain an important fraction of the overall market risk fluctuations. Moreover, as the idiosyncratic shocks to big institutions could generate not only nontrivial aggregate shocks in a single market but also additional impacts on other institutions across borders, we also expect the shocks to contribute to the variations in the global market risk co-movements.

As the granular view motivates our study with respect to the role of idiosyncratic shocks to large financial institutions, the CoVaR methodology provides a foundation to estimate the cross market interdependence in a simple and efficient way for the objective of our empirical exercise. Adrian and Brunnermeier (2011) apply CoVaR to measure the systemic risk contribution of individual financial institutions. Several studies extend this CoVaR method and its related versions to investigate different aspects of interdependence in the financial market.[1] We contribute to this strand of literature and apply CoVaR, essentially the value at risk of one financial market conditional on another financial market being in distress, to measure the magnitude of global market interdependence. The CoVaR measure incorporates the risk driven by the market-specific characteristics, risk transmitted from another market as well common factors that affect all financial markets alike. This empirical approach enables us to estimate the aggregate market interdependence efficiently and is especially useful in accounting for potential channels through which the idiosyncratic shocks may influence the global market interdependence.[2]

Using a weekly micro-level dataset on international mutual funds, we find that an economically significant fraction of the cross-market risk interdependence is explained by the idiosyncratic shocks to large institutional investors. In particular, idiosyncratic shocks to the top 10% largest funds investing in the US account for about 40% of the variations in the non-US market's risk conditional on the US being in distress. Our results suggest that 13% of the variance of global market interdependence can be

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[1] See Engle and Manganelli (2004), Adams et al. (2010), Wong and Fong (2011), and Gauthier et al. (2010).
[2] It is true that we may apply CoVaR to calculate the aggregate market risk conditional on a big financial institution being in trouble to gauge the importance of the institution. However, such a CoVaR measure cannot differentiate whether the risk transmitted from a specific financial institution originates from its idiosyncratic shock or common factors that affect both the financial institution and the whole market. That is why we complement it with the granular approach by Gabaix (2011).