Systemic Importance Index for Financial Institutions: A Principal Component Analysis Approach

Working Paper No. 741 Keep in mind
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As a result of the most recent global financial crisis literature has embraced size, connectedness and substitutability as key indicators for financial institutions' systemic importance. Despite the intuitiveness of these concepts, identifying systemic important institutions remain a non-trivial task that implies two primary challenges. First, designing metrics for connectedness and substitutability may require, as acknowledged by literature, non-standard data sources and techniques. Second, choosing a methodology capable of aggregating the metrics designed for the three aforementioned concepts into a systemic importance index may be intricate.

The herein paper addresses the second challenge. The chosen approach is to apply Principal Components Analysis to the metrics designed by León and Machado (2011) for assessing size, connectedness and substitutability, where those metrics rely on a combination of balance sheet data and the application of network theory to large-value payment system's information. Results (i) demonstrate that the three concepts and their metrics are explanatory and non-redundant for differentiating financial institutions' relative systemic importance; (ii) allow for constructing a PCA-based Systemic Importance Index, a valuable tool for financial authorities' policy and decision-making; and (iii) confirm the importance of the too-connected-to-fail criteria and the presence of non-banking firms among the most systemically important financial institutions in the Colombian case.

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Fuente: https://www.banrep.gov.co/en/borrador-741