Extracting the Sovereigns' CDS Market Hierarchy: A Correlation-filtering Approach

Working Paper No. 766 Keep in mind
The series Working Papers on Economics is published by the Office for Economic Studies at the *Banco de la República* (Central Bank of *Colombia*). It contributes to the dissemination and promotion of the work by researchers from the institution. This series is indexed at Research Papers in Economics (RePEc).

On multiple occasions, these works have been the result of collaborative work with individuals from other national or international institutions. The works published are provisional, and their authors are fully responsible for the opinions expressed in them, as well as for possible mistakes. The opinions expressed herein are those of the authors and do not necessarily reflect the views of Banco de la República or its Board of Directors.

AUTHOR OR EDITOR León-Rincón, Carlos Karen Juliet Leiton Jhonatan Pérez AUTHORS AND/OR EDITORS León-Rincón, Carlos Eduardo Pérez-Villalobos, Jhonatan
Since correlation may be interpreted as a measure of the influence across time-series, it may be conveniently mapped into a distance and into a weighted adjacency matrix. Based on such matrix, network theory has attempted to filter out the noise in correlation matrices by extracting the dominant hierarchy (i.e. the strongest linear-dependence signals) within time-series.

The aim of this brief paper is to find the current hierarchy in the sovereigns' CDS market after the structural shift caused by the failure of Lehman Brothers. Thus, based on two different correlation-into-distance mapping techniques and a minimal spanning tree-based correlation-filtering methodology on 36 sovereign CDS spread time-series, the target is to identify which sovereigns are providing the strongest –less noisy- and most informative signals.

The resulting sovereigns' CDS market hierarchy agrees with prior findings of Gilmore et al. (2010) regarding sovereigns' bonds market, such as the importance of geographical clustering and the idiosyncratic nature of Japan and United States. Additionally, results (i) confirm that a small set of common factors affect the entire system; (ii) identify the relevance of credit rating clustering; (iii) identify Russia, Turkey and Brazil as regional benchmarks; (iv) suggest that lower-medium grade rated sovereigns are the most influential, but also the most prone to contagion; and (v) suggest the existence of a "Latin American common factor".

The opinions and statements are the sole responsibility of the authors and do not necessarily represent neither those of Banco de la República nor of its Board of Directors. Results are illustrative; they may not be used to infer credit quality or to make any type of assessment. As usual, any remaining errors are the authors' own.

Fuente: https://www.banrep.gov.co/en/borrador-766