

Synchronization Patterns in the European Union

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Abstract

In this paper we propose a novel approach for investigating the synchronization of business cycles and we apply it to a EUROSTAT database that describes the manufacturing industrial production in the EU and that covers the 2000-2016 period at a monthly frequency. We employ the methods of Random Matrix Theory (RMT) and Principle Component Analysis, which are nowadays commonly used for the study of cross-correlations between stock-indexes. This approach allows one to extract the latent information stemming from a panel data of countries and to study the dynamics of the synchronization between different countries over time. Our empirical exercise therefore traces the evolution of the European synchronization patterns and identifies the emergence of synchronization clusters between different EU economies. Two main conclusions are drawn. First, synchronization in the Euro Area increased during the first decade of the century, reached its peak during the crisis period, but decreased in the aftermath of the great recession, reverting to the levels observable at the beginning of the century. Second, different clusters of countries that coordinate well among them are identified: while in the early years of the century the clustering broke along the East-West dimension, the recession brought about a structural transformation and nowadays the break is evident alongside the North-South axis. We conclude that the recent a-synchronization process might be harmful for the EU because of the heterogeneous responses from the common policies that it might entail.

Keywords: *Business Cycle Synchronization, Random Matrix Theory, European Union, Optimal Currency Area.*

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