

***Sensitivity and vulnerability of European countries  
in time of crisis based on a new approach to data clustering  
and curvilinear analysis***

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**Abstract:** *In this paper we inquire into the way the global crisis during the period 2008-2012 reflected in some macroeconomic and social indicators of the EU member states. Applying Curvilinear Component Analysis (CCA) on a dataset representing these social indicators, a classification of EU countries is obtained. Comparing this classification with the one resulted from a previous study with self organizing maps (SOM) it was noticed that the clusters are almost identical, CCA having the advantage of dimensionality reduction over SOM. CCA shows the detailed distances between the countries/year, dismissing outliers. This allows for a case by case study both in terms of clustering and in terms of temporal analysis. The research findings prove the sensitivity and vulnerability of European countries during the crisis and could help the policy makers to identify effective measures for strengthening the protective capacity of their states in the event of a future economic and social crisis.*

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