Analyzing industrial structure change in the Input-Output Economic System based on Q-analysis: an Application to Chinese’s Economy from 1992 to 2005

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The topological principles of the well-known Atkin Q-analysis are applied to the analysis of interconnectedness of sectors in input-output systems. This paper presents an attempt to integrate important coefficients(IC) and Q-analysis to find the changes of key sectors and analyze structural chains of highest dimension as the most significant input-output industrial clusters. Important coefficients analysis presents a transition from quantitative matrices to binary incidence matrices based on the maximum information content. While depending on above binary incidence matrices, structural Q-analysis provides a set of structural sectors which reflect the incidence relation of sectors and structural chains of highest dimension, and also provides a new way for visualizing economic complexity through the process of structural economic complication. Using a set of annual 19-sectors input-output tables, the application to Chinese’s economic structure analysis in the period of 1992 to 2005 revealed an increasing pulling function of other service industry to other sectors. Secondly, the key structural chains mainly composed of chemical industry、non-mental mineral product industry and metal smelting、 steel wire products industry both in the forward and backward linkages; besides that, a much more stable economic structure in the perspective of forward linkages than that in the perspective of backward linkages. However, it is also revealed that construction industry and real estate finance insurance industry didn’t play an important role in the industrial clusters as key sectors of economic system in the input-output models.