Economic complexity as network complication: Multiregional input-output structural path analysis

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Abstract.

This paper presents a description of some fundamental properties of networks of economic selfinfluence and transfer of economic influence within hierarchies of economic sub-systems using structural path analysis within a multiregional input-output system. In this fashion, exchange between sectors, activities and regions is viewed as a network that can be decomposed hierarchically; economic complexity is viewed as an emerging property of the process of network complication that accompanies the augmentation of inputs and the growing synergetic interactions between regional sub-systems. For the reasons of clarity, the cases of two and three regions are considered in detail. The treatment of the general case of *n* regions and the graph-theoretical description of the global augmentation process

of the network complication is presented in two appendices, where the mathematical proofs can be found. It is expected that this analysis will provide a methodology that will be useful in understanding regional economic sustainability (i.e., spatial and temporal invariability), structural stability and structural changes in economic networks as well as providing insights into the role of internal and external trade between regions. To support this expectation, the detailed theoretical analysis of the block structural paths in the social accounting system is presented supplemented by economic analysis of the Indonesian social accounting matrices for 1975, 1980 and 1985.

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