Economic dominance theory (Roland Lantner, Didier Lebert, Jérôme Gallo and Fabrice Lequeux)

Topic: Special session on Economic Dominance Theory
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Roland Lantner: Dominance, influence and general interdependence in linearizable structures

The theory of dominance is based on influence graphs theory. It does not aim to draw the IO structure, but to prove theorems based on a particular class of valuated graphs.
Relation between two poles.
The relationship between two poles m and n is a function of the paths leading from m to n and of the paths from n to m, amplified by the adjacent circuits.
Analysis of the overall structure.
The macroscopic analysis of the structure as a whole can be based on the determinant of the IO matrix. The determinant is easily interpreted from the Hamiltonian partial graphs structure. The analysis of the determinant leads to several structural indicators, which is relevant to both Leontief and Ghosh matrices: autarky (or independence), hierarchy (or dependence), circularity (or interdependence), given that the relations of the structure with its outside are assumed fixed.
Relations between sub-matrices.
These indicators can be generalized to subsets of the matrix: between separate parts of the structure, there are also phenomena of independence, dependence, and interdependence. Thus a general theorem allows us to articulate the different levels of aggregation, from the simple pole to the overall structure.
An index of general interdependence.
The question of the degree of general interdependence is a difficult one,even in computable general equilibrium models. From the previous partition theorem, an evaluation is proposed, and a connection is made between general interdependence and partial dependencies.
Didier Lebert: Economic dominance theory and the evolving structure of international trade

The theory of economic dominance uses techniques from both input-output analysis and graph theory. The aimof this paper isto summarize theclarifications provided by this approachconcerning the structureand the dynamics of international trade. Using the TradeProd database published by theCEPIIforthe period1980-2004 (171 countries, 28 industrial products), the following topics are reviewed: centralityindicesof countries andindustries,indices of the trade globalization, identification of emerging economies,conformation of international trade patterns to a core/periphery structure.
The structural indices of the theory of economic dominance identify historical bifurcations in the "product space" (Hidalgo et al., 2007). These bifurcations can be identified for a product, a product category or for the whole products, for a group of countries or a particular country. The indices have the particularity to deal – separately but complementarily –with production and consumption trade structures. Over a long time period these techniques can be used to clarify the contributions of countries and productive sectors to the evolution of the core/periphery boundaries.
Structuraltechniquesareincreasinglyused to studyinternational trade.The approach wepropose in this paperwill be comparedto the workof both theCenter for International Development(R.Hausmann et al.)and theLaboratoryof Economicsand Management (G. Fagiolo et al.).

JérômeGallo and Fabrice Lequeux: Economic dominance theory and information flows: new indices of intra-organizational power

The theory of economic dominance can combine different levels of analysis of exchange structures

(global, local, and bilateral). Moreover, it caneasily quantify the relationships of dependence and interdependence between members inside the structure. We use the techniques associated with this structural theory to quantify the "intra-organizational power" in an organization based on actual flows of emails. This figure is consistent with the economic definition of information given by J.Marschak (1960), i.e. "all messages associated with a channel." It also allows us to quantifythe intra-organizational power only from flows, without considering the content of these messages.

The study of email technology and information flows it generates in the organizational context seems appropriate to identify the variety of possible relations between authority and discretion. Previous studies, based on traditional measures of centrality, yield results that reflect the diversity of the authority / discretion combinations in the organization: while Sproulland Kiesler (e.g. 1986) find that this technology helps to reduce distances between members of the organization by bypassing the hierarchical relations of authority and by forming informal "cliques", Tyler et al. (2003) find that the structure of email flows, in the organization they study,mimics the formal structure, and the transverse networks they identify overlapprojects driven by the management. Dealing with both local and global structures, the theory of economic dominance enriches the analysis. Our empirical results (email flow among researchers in a French business school)are similar to those of Sproull and Kiesler: the interdependence, i.e. discretion, prevails at the global level. However, we show that the logic of authority (dependency) prevailsstrongly at the local level.