

Matching Theory and Economic Model Building

While building and by solving an economic model, the economists are confronted with the problem of knowing how to assign the variables of the model to the equations. By which equation does have one to calculate each endogenous variable of the model? Among the whole set of the possible and numerous solutions, only few of them will be eligible for an economic interpretation. In this study, we will show that the same economic model may have several "readings" according to economic theory or use for an economic policy purpose. Just take one familiar example : an empirical model for forecasting will have in the short run a "keynesian reading" with a production determination by demand components, while it will have "a classic readings" with supply determination, in the long run. The objective of this study is to deal matching problem using the concepts and algorithms of graph theory [2]. Within this framework, one can look at the existence of matchings (Tutte's theorem), at counting the matchings (Ryser's formula) and at finding all the perfect matchings (Fukuda and Matsui's algorithm). Two types of applications are proposed for an illustration. One application is an economic growth model of small size, with 5 equations [3]. The other application is a larger size empirical model, with 82 equations [1]. The computations have been carried out using the softwares Mathematica 5.1 and Lindo, as well as other Fortran 77 and C++ source programs.

References

- [1] Brillet, J. L., Win-MCD. Simulation sous Windows de la maquette économique Micro-DMS, INSEE Guides N^0 5-6, INSEE, Paris, 1997.
- [2] Lovász, L. and M. D. Plummer, Matching Theory, North- Holland, New York, 1986.
- [3] Vedel, Cl., *Politique Monétaire et Politique Budgétaire dans un Modèle Dynamique d'une Economie en Croissance*, Institut international de finances publiques, miméo, Tokyo, 1981.