



ELSEVIER

Mathematical Social Sciences 39 (2000) 119–132

mathematical
social
sciences

www.elsevier.nl/locate/econbase

Existence of stable outcomes and the lattice property for a unified matching market

Marilda Sotomayor*

*FEA-USP-Department of Economics, Universidade de São Paulo, 908 Butantã SP,
05508-900 CEP Sao Paulo, Brazil*

Received 1 December 1997; received in revised form 1 June 1998; accepted 1 February 1999

Abstract

This paper establishes the existence of stable matchings, the lattice property of the core and the existence of optimal stable payoffs for each side of the market. We do this in a matching market consisting of a ‘mixed economy’ in which some firms compete by means of salary and others have no flexibility over terms of appointment. Common proofs are used, which unify the traditional discrete and continuous cases, namely the marriage and assignment models. © 2000 Elsevier Science B.V. All rights reserved.

Keywords: Matching; Stable matching; Core

JEL classification: C78; D78

1. Introduction

There is now a large literature on matching, both theoretical and empirical, concerned with stable matchings and mechanisms which achieve them. An unusual feature of the theoretical literature is that quite similar results have been established for both discrete and continuous models, initially with fundamentally dissimilar proofs, and it has turned out to be difficult to unify these models. This divide goes back to Gale and Shapley (1962) and Shapley and Shubik (1972) which show the non-emptiness of the set of stable matchings for discrete and continuous models, respectively, using combinatorial arguments in one case and linear programming arguments in the other. These same families of arguments can then be extended to show that the sets of stable matchings in

*Tel.: +55-11-211-8706; fax: +55-11-814-3814.

E-mail address: marildas@usp.br (M. Sotomayor)

each kind of model share many common properties such as a lattice structure in terms of the common preferences of agents on one side of the market, with corresponding optimal outcomes for each side of the market at which agents on that side will have no incentive to misrepresent their preferences etc. (see Roth and Sotomayor, 1990, for a review of the literature).

The empirical importance of both kinds of models comes from the variety of labor markets. For example, new law school graduates may enter the market for associate positions in private law firms, which compete with each other in terms of salary, or they may seek employment as law clerks to federal circuit court judges, which are civil service positions with predetermined fixed salaries. Traditionally the former kind of market has been modeled as an Assignment Game, in which salary may be negotiated and may vary continuously on the set of real numbers, while the latter has been modeled as a Marriage Market. In this market salary is modeled as part of the job description and it is one of the factors that determine the preferences that workers have over firms.

One line of work which went some way towards unifying these disparate models involved creating linear programming formulations of stable matchings in discrete markets (for example, Vande Vate, 1989; Rothblum, 1992; Roth et al., 1993). Those papers revealed a good deal of surprising algebraic structure in the set of stable matchings of discrete markets, but the large differences between the linear programming formulations for the discrete case and the continuous case only emphasized that similar results were being obtained for very different reasons in the two cases.

Another approach has been to look at models which generalize both the Marriage Model and the Assignment Model, and try to obtain the common results for the two in the more general model. This was the approach taken in Roth and Sotomayor (1996). In contrast with previous treatments, this paper derives the parallel conclusions for the two sets of models in the same way from the same assumptions. It shows the lattice property of the core, the existence of optimal stable outcomes and some comparative statics results.

However, that paper does not provide any existence theorem of stable outcomes. Furthermore, in the model of Roth and Sotomayor (1996) a given agent either is in the discrete market or is in the continuous one. This depends on the set of allowable salaries. For empirical purposes, the problem with such a model is of course that all individuals have their choices restricted to only one of the markets, although some of them may wish to enter both kinds of markets simultaneously. In the real world these markets are really parts of a single market.

Kaneko (1982) provides a quite general and complex model that generalizes the Assignment Game of Shapley and Shubik. He observes that the Marriage model is a special case of this model. He proves the non-emptiness of the core (but not the lattice result or related structural properties).

Eriksson and Karlander (1997) also provides a single market in which the two kinds of agents can trade. However, they prove the existence of stable outcomes and the lattice property of the core for a particular case of this model, which does not include the continuous market as it was proposed by Shapley and Shubik.

In the present paper, following the idea of Eriksson and Karlander (1997), we unify the two kinds of markets by presenting a single market that includes the discrete and

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات