

Matching and Market Design

Matteo Triossi

Cómo asignar personas u objetos a otras personas o empresas es un importante problema de la teoría de la elección social. Podemos citar varios ejemplos relevantes como la asignación de estudiantes a las escuelas, las admisiones a las universidades universidad y la donación de órganos.

La teoría del matching que tiene una importante tradición y un conjunto bien definido de herramientas.

El objetivo de este curso es acercar los estudiantes a la teoría y las aplicaciones de esta teoría y ponerlos en contacto con la investigación de frontera sobre tales argumentos. Vamos a utilizar la mayor parte de nuestro tiempo a discutir problemas reales y relevantes en la teoría de la asignación (por ejemplo: asignación de estudiantes a escuela, de trabajadores a empresas, de órganos de donantes vivos a enfermos, etc.), artículos que buscan solucionar estos problemas y posibles nuevas preguntas. En la sexta semana del curso el Profesor Cominetti contará su experiencia en el rediseño del mecanismo de la PSU.

Haremos énfasis en los desarrollos más recientes de la disciplina. Por lo tanto, algunas secciones de este programa pueden estar sujetas a cambios.

Semanas 1 y 2. Mercados bilaterales: una introducción.

Semana 3 Diseño de mercados laborales: National Resident Matching Program (NRMP).

Semana 4 y 5. Elección de escuelas: resultados básicos y desarrollos recientes.

Semanas 6-7. Matching con preferencias complejas.

En el caso, improbable, en que alcance el tiempo se podrán agregar argumentos de Mercados Unilaterales como métodos de asignación para la asignación de órganos de donantes vivos.

Evaluación

A lo largo del curso se asignarán entre cuatro tareas. Además los estudiantes deberán presentar artículos académicos de teoría de la asignación.

En lugar de presentar cada estudiante podrá entregar un trabajo final donde se tratan algunos desarrollos recientes de la teoría o bien un proyecto de trabajo de investigación original.

Se valorará el trabajo de quienes decidirán presentar y además presentarán el trabajo final, necesario para subir la nota final por encima de 6.

Referencias

Libros:

Gusfield, D. and Irving, R.W. *The Stable Matching Problem: Structure and Algorithms*. Cambridge, MA: MIT Press, 1989.

Roth, Alvin, and Marilda Sotomayor. *Two-sided Matching: A Study in Game-Theoretic Modeling and Analysis*. Cambridge, United Kingdom: Cambridge University Press, 1992. ISBN: 9780521437882.

Manlove, D. *Algorithmics Of Matching Under Preferences*. Series: Theoretical computer science . World Scientific Publishing, 2013.)

Surveys:

- Abdulkadiroğlu, Atila. and Sönmez, Tayfun, Matching Markets: Theory and Practice. D. Acemoglu, M. Arellano, and E. Dekel (eds), *Advances in Economics and Econometrics*, Vol. 1, Cambridge, 3-47, 2013.

- Kojima, Fuhito "Recent Developments in Matching Theory and its Practical Applications", Mimeo, 2015.

- Sönmez, Tayfun, and M. Utku Ünver. Matching, Allocation, and Exchange of Discrete Resources. *Handbook of Social Economics*, Volume 1A, 2011 Elsevier B.V. ISSN 0169-7218, DOI: 10.1016/S0169-7218(11)01017-3.

Web

Al Roth's website <http://kuznets.fas.harvard.edu/~aroth/alroth.html>

Referencias

En rojo se indican las referencias básicas.

Semana 1, 2 y 3.

- David Gale and Lloyd Shapley (1962), "College Admissions and the Stability of Marriage" *American Mathematical Monthly*, 69, 9-15.

- Alvin E. Roth (1982) "Incentive compatibility in a market with indivisibilities" *Economics Letters* 9, 127-132.

- Alvin E. Roth (2002) The Economist as Engineer: Game Theory, Experimentation, and Computation as Tools for Design Economics. *Econometrica* 70, 1341-1378.

- Alvin E. Roth and Marilda Sotomayor (1990) *Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis*, *Econometric Society Monograph Series*, Cambridge University Press. Chapters 1,2,4,5

- Alvin E. Roth and Elliott Peranson (1999) "The Redesign of the Matching Market for American Physicians: Some Engineering Aspects of Economic Design," *American Economic Review*, 89 (4) September, 748-780

- Lloyd Shapley and Herbert Scarf (1974) "On cores and indivisibility," *Journal of Mathematical Economics* 1, 23-28.

- Ma, J., "Strategy-Proofness and the Strict Core in a Market with Indivisibilities" *International Journal of Game Theory*, 1994(23), 75-83.
- Tarık Kara and Tayfun Sönmez "Implementation of College Admission Rules." , *Economic Theory* 9: 197-218, 1997.
- Tarık Kara and Tayfun Sönmez "Nash Implementation of Matching Rules." *Journal of Economic Theory* 68: 425-439, February 1996.
- Tayfun Sönmez "Games of Manipulation in Marriage Problems." *Games and Economic Behavior* 20: 169-176, 1997.
- Tayfun Sönmez "Implementation in Generalized Matching Problems." *Journal of Mathematical Economics* 26: 429-439, 1996.
- Tayfun Sönmez "Strategy-Proofness and Essentially Single-Valued Cores." *Econometrica* 67: 677-689, May 1999.
- Tayfun Sonmez, "Manipulation via Capacities in Two-Sided Matching Markets," *Journal of Economic Theory*, 1997, 77, 197–204.

Semanas 4 y 5

- Atila Abdulkadiroğlu and Tayfun Sönmez "School Choice: A Mechanism Design Approach" *American Economic Review* 93-3: 729-747, June 2003
- Atila Abdulkadiroglu, Parag Pathak, Alvin Roth and Tayfun Sonmez (2005), "The Boston Public School Match," *American Economic Review Papers and Proceedings*, 95, 368–372.
- Atila Abdulkadiroglu, Parag Pathak, and Alvin Roth (2005), "The New York City High School Match," *American Economic Review Papers and Proceedings*, 95, 364–367.
- Ehlers, Lars & Hafalir, Isa E. & Yenmez, M. Bumin & Yildirim, Muhammed A., 2014. "School choice with controlled choice constraints: Hard bounds versus soft bounds," *Journal of Economic Theory*, Elsevier, vol. 153(C), pages 648-683.
- Erdil, Aytek and Haluk Ergin (2007), "What's the Matter with Tie-breaking? Improving Efficiency in School Choice," *American Economic Review*
- Ergin, H. and Tayfun Sonmez (2006) "Games of School Choice under the Boston Mechanism," *Journal of Public Economics*.
- Haluk Ergin (2002) "Efficient Resource Allocation on the Basis of Priorities," *Econometrica*, 70, 2489–2498.
- Fuhito Kojima, Yuichiro Kamada, *Efficient Matching under Distributional Constraints: Theory and Applications*, 2014, *American Economic Review*, 105(1): 67-99.
- Michel Balinski and Tayfun Sönmez (1999) "A Tale of Two Mechanisms: Student Placement" *Journal of Economic Theory* 84: 73-94, January 1999.
- Tayfun Sönmez and Parag Pathak "Leveling the Playing Field: Sincere and Strategic Players in the Boston Mechanism." *American Economic Review*, 98(4), 1636-1652, 2008.
- Tayfun Sönmez and Parag Pathak "School Admissions Reform in Chicago and England: Comparing Mechanisms by Their Vulnerability to Manipulation." *American Economic Review*, 103(1): 80-106, February 2013
- Tayfun Sönmez and Yan Chen "School Choice: An Experimental Study.", *Journal of Economic Theory*, 127: 2002-231, March 2006.

Semanas 6 y 7.

- Hatfield, John William and Fuhito Kojima, "Group Incentive Compatibility for Matching with Contracts," 2007. Games and Economic Behavior, forthcoming.
- Hatfield, John William and Fuhito Kojima, "Matching with Contracts: Comment," 2007. American Economic Review, forthcoming.
- Hatfield, John William and Fuhito Kojima, Substitutes and Stability for Matching with Contracts 2010, Journal of Economic Theory 145, pp. 1704-1723.
- Hatfield, John William and Paul R. Milgrom, "Matching with Contracts," American Economic Review, 2005, 95, 913-935.
- Kelso, A. and Vincent Crawford (1982), "Job matching, coalition formation, and gross substitutes," Econometrica, 1982, 50, 1483-1504.
- Tayfun Sönmez "Bidding for Army Career Specialties: Improving the ROTC Branching Mechanism." Journal of Political Economy, 121(1): 186-219, February 2013.
- Tayfun Sönmez and Orhan Aygün "Matching with Contracts: Comment, American Economic Review, 103(5): 2050-2051, August 2013
- Tayfun Sönmez and Tobias Switzer "Matching with (Branch-of-Choice) Contracts at the United States Military Academy.", Econometrica, 81(2): 451-488, March 2013.