

Matching Markets and Market Design: Theory and Application

References for NBER Methods Lectures

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July 2016

Slides available at: <http://bit.ly/29HtQri>

Game Theory and Market Design [Roth]

In the beginning:

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

Books:

Roth, Alvin E (2015): *Who Gets What and Why: The New Economics of Match Making and Market Design*. Houghton Mifflin. (this is a nontechnical intro to market design, written for a general audience)

Roth, Alvin E. and Marilda Sotomayor (1990): *Two-Sided Matching: A Study in Game-Theoretic Modelling and Analysis*. Econometric Society Monograph Series, Cambridge University Press. (this is

Survey papers:

Roth, Alvin E. (2002): “Economist as Engineer: Game Theory, Experimentation, and Computation as Tools for Design Economics.” *Econometrica*, 70: 1341-1378. <http://stanford.edu/~alroth/papers/engineer.pdf>

*Duke University, MIT, Stanford University, MIT, and Stanford University

Roth, Alvin E. (2008): “What Have We Learned from Market Design?” Hahn Lecture, *Economic Journal*, 118, 285-310. http://stanford.edu/~alroth/papers/2008_Hahn_Lecture_EJ.pdf

Roth, Alvin E. (2008): “Deferred Acceptance Algorithms: History, Theory, Practice and Open Questions.” *International Journal of Game Theory*, Special Issue in Honor of David Gale on his 85th birthday, 36, 537-569. <http://web.stanford.edu/~alroth/papers/GaleandShapley.revised.IJGT.pdf>

Design of Matching Markets [Pathak]

Shapley, Lloyd and Herbert Scarf (1974): “On Cores and Indivisibility.” *Journal of Mathematical Economics*, 1: 23-28.

Roth, Alvin E. and Andrew Postlewaite (1977): “Weak Versus Strong Domination in a Market with Indivisible Goods.” *Journal of Mathematical Economics*, 4: 131-137.

Roth, Alvin E. (1982): “Incentive Compatibility in a Market with Indivisibilities.” *Economics Letters*, 9: 127-132.

*Abdulkadiroğlu, Atila and Tayfun Sönmez (2003): “School Choice: A Mechanism Design Approach.” *American Economic Review*, 93(3): 729-747.

*Pathak, Parag and Tayfun Sönmez (2008): “Leveling the Playing Field: Sincere and Sophisticated Players in the Boston Mechanism.” *American Economic Review*, 98(4): 1636-1652.

*Pathak, Parag and Tayfun Sönmez (2013): “School Admissions Reform in Chicago and England: Comparing Mechanisms by their Vulnerability to Manipulation.” *American Economic Review*, 103(1): 80-106.

Dur, Umut, Scott Kominers, Parag Pathak, and Tayfun Sönmez (2014): “The Demise of Walk Zones in Boston: Priorities vs. Precedence in School Choice.” NBER Working Paper 18901.

Avery, Christopher and Parag Pathak (2015): “The Distributional Consequences of School Choice.” NBER Working Paper 21525.

Pathak, Parag (2015): “What Really Matters in Designing School Choice Mechanisms.” 11th World Congress of the Econometric Society, Montreal.

Dur, Umut, Parag Pathak, and Tayfun Sönmez (2016): “Explicit vs. Statistical Preferential Treatment in Affirmative Action: Theory and Evidence from Chicago’s Exam Schools.” NBER Working Paper 22109.

Abdulkadiroğlu, Atila, Yeon-Koo Che, Parag Pathak, Alvin E. Roth, and Olivier Tercieux (2016): “Minimal-Envy Efficiency Assignment Mechanisms: The Design of New Orleans OneApp.” Working paper.

*Kelso, Alexander S. and Vincent Crawford (1982): “Job Matching, Coalition Formation, and Gross Substitutes.” *Econometrica*, 50: 1483-1504.

Hatfield, John and Paul Milgrom (2005): “Matching with Contracts.” *American Economic Review*, 95: 913-935.

Research Design Meets Market Design [Abdulkadiroğlu]

*Abdulkadiroğlu, Atila, Joshua D. Angrist, Yusuke Narita, Parag A. Pathak (2015): “Research Design Meets Market Design: Using Centralized Assignment for Impact Evaluation”, NBER Working Paper 21705.

*Abdulkadiroğlu, Atila, Joshua D. Angrist, and Parag Pathak (2014): The Elite Illusion: Achievement Effects at Boston and New York Exam Schools, *Econometrica*, 82(1), 137196.

*Azevedo, Eduardo and Jacob Leshno (2016): “A Supply and Demand Framework for Two-Sided Matching Markets.” *Journal of Political Economy*, forthcoming.

*Abdulkadiroğlu, Atila, Parag A. Pathak, and Christopher R. Walters (2015): “School Vouchers and Student Achievement: Evidence from the Louisiana Scholarship Program.” NBER Working Paper 21839.

Abdulkadiroğlu, Atila, Joshua D. Angrist, Susan M. Dynarski, Thomas J. Kane, and Parag A. Pathak (2011): “Accountability and Flexibility in Public Schools: Evidence from Boston’s Charters and Pilots,” *Quarterly Journal of Economics*, 126(2), 699748.

Abdulkadiroğlu, Atila, Weiwei Hu, and Parag Pathak (2013): “Small High Schools and Student Achievement: Lottery-Based Evidence from New York City, NBER Working paper 19576.

Deming, David (2011): “Better Schools, Less Crime?,” *Quarterly Journal of Economics*, 126(4), 20632115.

Pop-Eleches, Cristian and Miguel Urquiola (2013): “Going to a Better School: Effects and Behavioral Responses” *American Economic Review*, 103(4), 1289-1324.

Deming, David, Justine Hastings, Thomas Kane, and Douglas Staiger (2014): “School Choice, School Quality and Postsecondary Attainment,” *American Economic Review*, 104(3), 991-1013.

Lucas, Adrienne and Isaac Mbiti (2014): “Effects of School Quality on Student Achievement: Discontinuity Evidence from Kenya,” *American Economic Journal: Applied Economics*, 6(3), 234-63.

Hastings, Justine, Chris Neilson, and Seth Zimmerman (2013): “Are Some Degrees Worth More than Others? Evidence from College Admissions Cutoffs.” NBER Working Paper 19241.

L. Kirkeboen, Edwin Leuven, and Magne Mogstad (2016): “Fields of Study, Earnings, and Self-Selection.” *Quarterly Journal of Economics*, forthcoming.

Revealed Preference Analysis in Matching Markets [Agarwal]

*Abdulkadiroğlu, Atila, Nikhil Agarwal and Parag A. Pathak (2015): “The Welfare Effects of Coordinated Assignment: Evidence from the NYC HS Match.” NBER Working Paper 21046.

*Agarwal, Nikhil and Paulo Somaini (2015): “Demand Analysis Using Strategic Reports: An Application to a School Choice Mechanism.” NBER Working Paper 20775.

*Agarwal, Nikhil (2015): “An Empirical Model of the Medical Match.” *American Economic Review*, 105(7): 1939-1978.

Hastings, Justine, Thomas J. Kane, and Douglas O. Staiger (2009): Heterogenous Preferences and the Efficacy of Public School Choice, 2009. Working paper, Yale University.

He, Yinghua (2014): “Gaming the Boston Mechanism in Beijing.” Toulouse School of Economics.

Calsamiglia, Caterina, Chao Fu, and Maia Guell (2016): “Structural Estimation of a Model of School Choices: The Boston Mechanism vs. Its Alternatives.” Working paper, University of Wisconsin.

Menzel, Konrad (2015): “Large Matching Markets as Two-Sided Demand Systems.” *Econometrica*, 83(3): 897-941.

Choo, Eugene and Aloysious Siow (2006): “Who Marries Whom and Why?” *Journal of Political Economy*, 114(1): 175-201.

Diamond, William and Nikhil Agarwal (2016): “Latent Indices in Assortative Matching Models.” MIT Working Paper.

Narita, Yusuke (2016): “Match or Mismatch: Learning and Inertia in School Choice.” MIT Working Paper.

Matching Dynamics and Computation [Ashlagi]

Roth, Alvin E., Tayfun Sönmez, and M. Ütku Ünver (2007): “Efficient kidney exchange: Coincidence of wants in markets with compatibility-based preferences.” *American Economic Review*, 97(3): 828-851.

Ünver, M. Utku (2010): “Dynamic kidney exchange.” *The Review of Economic Studies*, 77(1): 372-414.

Anderson, Ross, Itai Ashlagi, Yash Kanoria, and David Gamarnik (2013): “Efficient dynamic barter exchange.” Stanford University, working paper.

Ashlagi, Itai, Maximilien Burq, Patrick Jalliet, and Vahideh Manshadi (2016): “On Matching and Thickness in Heterogeneous Dynamic Markets.” Stanford University, working paper.

Anderson, Ross, Itai Ashlagi, David Gamarnik, and Alvin Roth (2015): “Finding long chains in kidney exchange using the traveling salesman problem.” *Proceedings of the National Academy of Sciences* 112(3): 663-668.

Akbarpour, Mohammad, Shengwu Li, and Oveis Gharan (2015): “Dynamic Matching Market Design.” Stanford University, working paper.

Baccara, Mariagiovanna, SangMok Lee, and Leeat Yariv (2015): “Optimal Dynamic Matching.” University of Pennsylvania, working paper.