

ECON 712: Market Design Spring 2019

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The many courses on market design descend, either from Alvin Roth's course or Paul Milgrom's. So, market design is either matching or auction theory. The matching theory variants have reproduced without mutation hewing closely to interns, kidneys and school choice. The auction theory variants incorporate empirics and field experiments. Is market design no more than matching, auctions and empirical IO? Shouldn't the regulation of markets also be called market design? Roth's manifesto (The Economist as Engineer, *Econometrica* 2002) says this:

“... design involves a responsibility for detail; this creates a need to deal with complications. Dealing with complications requires not only careful attention to the institutional details of a particular market, it also requires new tools, to supplement the traditional analytical toolbox of the theorist.”

It doesn't say why the market must be designed in the first place. In this class, the justification for design arises from the non-existence of competitive equilibrium. This happens for one of five reasons:

1. Indivisibilities.
2. Non-convexities of preferences.
3. Externalities.
4. Absence of a frictionless medium of exchange.
5. Imperfectly defined property rights.

On the theoretical side, this list implies a focus on tools that extend our equilibrium existence results. The traditional theory of the first year sequence is inadequate. For this reason I will cover other tools, like total unimodularity, rounding, the Shapley-Folkman-Starr lemma and Scarf's lemma. I will illustrate the use of these tools in a variety of settings. Assessment will be based on occasional homework assignments. On the 'policy' side it means identifying which subset of the above list above drives the need to 'design' a market. Towards the tail end of the class we will focus on some of these 'policy' type questions.