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BOOK REVIEW

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Book review of: Who Gets What — and Why: The New Economics of Matchmaking and Market Design by Alvin E. Roth. An Eamon Dolan Book Houghton Mifflin Harcourt. Boston New York, 2015. 248pp. ISBN: 978-0-544-29113-3

JEL Classification: D47

The price is the key determinant of the allocation on many markets, in particular on commodity markets, where essentially “the price does all the work” (Roth, 2015, p.19). However, there are also markets where the role of prices is limited, or where prices may even be completely absent. An obvious example is the marriage market: The allocation does not (only) depend on the market participants’ willingness to pay for the available alternatives, but on the attractiveness of the transaction partners for each other on both sides of the market. Alvin E. Roth who won the Nobel Prize in economics in 2012, in the book, *Who Gets What — and Why: The New Economics of Matchmaking and Market Design* shows how matchmaking and market design could contribute to enhance the efficiency of market processes and market allocations. Roth demonstrates how practical problems that occur in the establishment of matches in everyday life, like matchmaking between medicine students and hospitals, between students and schools, and between patients and organ donors, can be mitigated by a clever design of the algorithm that underlies the matching process.

The book covers the theoretical base of the market design, but also its applications in particular markets. The book consists of four parts: 1) Markets are Everywhere, 2) Thwarted Desires: How Marketplaces Fail, 3) Design Inventions to make markets smarter, thicker, and faster and 4) Forbidden Markets and Free Markets. The following issues are explored: how markets operate, why some markets operate well, while others fail, what pre-conditions for the successful market are there and how *repugnant* transactions can influence the market design.

The issue of this book is matching markets, i.e., market design and the matching process. On matching markets, prices have little (if any) impact on who gets what. Instead, recourses are allocated by a particular matching process. According to Roth (2015, p.18) “matching is economist-speak for how we get many things we choose in life that also must choose us”. The design of the matching process contributes to the efficiency of the allocation of scarce resources.

Monitoring the existing state of the market, “we start to understand better how markets and marketplaces work, we realize that we *can* intervene in them, redesign them, fix them when they’re broken, start new ones where they will be useful” (Roth, 2015, p.201). According to Roth, the marketplace is successful and has optimal outcomes if it is *thick, uncongested, safe and simple*. In order to make a market work, many participants are needed. However, a lot of participants make a market *thick*, which is followed by *congestion*. *Congestion* raises competition, which may trigger early “exploding” offers, by actors on the one side of the market (for example, colleges), and signalling activities by the participants on the other side of the market (for example, students). It is a way to deal with competition. In such a situation, participants make strategic decisions that depend on what others do. They do not have enough time for carefully evaluating offers and making an informed decision. Also, they are often not safe to reveal their true preferences. As a consequence, bad matches are reached if the decision on a transaction is made too soon, too fast and too risky. Besides, *repugnancy of transactions* (“transactions that some people don’t want others to engage in” (Roth, 2015, p.23)) influence the market design, because they limit the scope for prices to coordinate supply and demand.

Market design “helps to solve market issues that could not be solved naturally” (Roth, 2015, p.20). It observes market failures and finds solutions how to fix them. Furthermore, it modifies and adjusts market rules from time to time in order to make the market operate better. The applicability of the theory is demonstrated by a number of real-life examples. As examples, how market forces push the market participants to successfully deal

with issues of thickness, congestion and safety of doing business, the cases of Amazon, the internet, smart phones, computers, and credit cards are illustrated. Furthermore, the examples of Airbnb, Uber, eBay and PayPal show how markets change while business evolves and how these companies solve problems of thickness, congestion and safety.

The problem of matching and market design are exemplified by the school choice systems in New York City and Boston (children to public/high schools, students to colleges), labour market (students/interns to hospitals, and US new Ph.D. economists to US colleges and university), dating and marriage, and organs transplantation (kidney donors to patients). The deferred acceptance algorithm and clearinghouses are used for making the match. It collects the preferences from both, demand and supply side, and stepwise establishes a stable matching. The complex theory and the working of the algorithm are explained in an accessible, non-formal way, and their usefulness is apparent through the discussion of real problems. Based on the characteristics of the particular market and its development, the algorithm has been modified in many directions. For example, the deferred acceptance algorithm has been applied for decades for the Medical Match. However, when women have started to enter into the market, and couples cared not only for their match, but also for the one of the partners, the algorithm needed to be adjusted in order to provide better matching. Roth and his colleagues have done an important job, helping to install a market design that should overcome market failures and obtain better market operation.

One particularly problematic case of matching and market design is kidney exchange. Exchanging a kidney for transplant concerns many people and societies because it saves lives. Despite (or maybe because of) the market participants' high willingness to pay for a kidney donation, the exchange of money in this context is illegal (and considered repugnant) in most parts of the world. A kidney could only be given as a gift. However, often a willing donor and the designated patient are incompatible, such that a possibility for the exchange of willing donors' kidneys arises. However, the enforcement of a contract is not possible, so that simultaneity of the exchange becomes a crucial feature of the transaction to establish trust. Roth and his colleagues have created a long-running kidney chain starting with a single kidney donation. They made possible 2-paired and 3-paired kidney exchange, i.e., donations.

The book is interesting and easy to read and understand. It provides an insight into how the market works. It can be a useful resource for participants in matching markets. Moreover, the design developed for the explored case studies in the book shows that matching processes can bring benefits to both sides of the market and to society as a whole.

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