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Jumping the queue: An experiment on procedural preferences



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ABSTRACT

We present a three-player queuing game to study procedural preferences in a laboratory experiment. Together with markets, queues and waiting lists are universal procedures for allocating goods and services. We designed our queuing game to disentangle motivations of outcome-oriented egoistic preferences, outcome-oriented distributional (inequality aversion) preferences and outcome-independent procedural preferences. In a series of treatments, we introduce a market element and allow two of the three players to bargain over a queue jump, thus violating the queuing procedure. A third player is able to engage in peer punishment to sanction queue jumping. We provide evidence that a simple model of procedural preferences is able to explain the behavior of a share of the subjects in our experiment.

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1. Introduction

Economics recognizes the advantages of competitive markets as a procedure to organize the allocation of scarce resources. It is common practice for many resources to be traded and allocated via markets, thus achieving Pareto improvements when a seller and a buyer of a resource agree on a price and then engage in voluntary exchange. This practice however is not observed for scarce resources with excess demand for which the price is below the market clearing level due to external price constraints, transaction costs of trading, or simply due to bans of market infrastructure. Here, consumer queues and waiting lists evolve with waiting time as the means that rations the respective resource (Lindsay and Feigenbaum, 1984). Queuing scenarios are ubiquitous: standing in line to buy tickets for concerts or train rides, entering airplanes or theme park rides, receiving medical aid, allocating seats in popular university courses and waiting in traffic jams.

Yet, queuing scenarios often lead to inefficient allocations of resources as the position of an individual in the queue typically does not reflect her opportunity costs of time (Gilbert and Klemperer, 2000). Given that the social costs from waiting and queuing can be enormous² and trade could facilitate Pareto improvements, why does the procedural organization of such services not change towards market mechanisms? Mann (1969), Schmitt et al. (1992) and Sandel (2012) provide insights into how queues may establish themselves as social systems with the specific cultural values of egalitarianism and

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² Schrank et al. (2012) estimate the costs from traffic congestion to 121 billion USD in the United States in 2011.

orderliness. Elster (1992) and Konow (2003) argue that queuing may be regarded as a just procedure, especially when the good or service is a basic need. The willingness to wait can be regarded as the valuation of the resource absent monetary income and queuing may be favored when the allocation of a service depends on factors that individuals cannot directly influence (for instance, some forms of medical aid).³ In this context, queuing might be perceived as a fair allocation procedure since ex ante everyone has a similar chance of getting the good or service. Consequently, jumping the queue may be seen as a violation of the fairness character of the procedure that secures equal opportunities.⁴

Compared to distributional preferences and intention-based preferences like reciprocity, procedural preferences have not received widespread attention in the (behavioral) economic literature so far (Chlaß et al., 2009). Even when economists study procedures, they define individuals' procedural preferences by some operator on an outcome (Frey et al., 2004). However, recent research suggests that individual decision making and especially moral evaluation of economic situations is not only outcome dependent, but also depends on the procedure that generates the outcomes (Bolton et al., 2005; Gneezy, 2005; Shor, 2007; Chlaß et al., 2009; Trautmann, 2009; Dasgupta, 2011; Krawczyk, 2011; Eliaz and Rubinstein, 2014).

This paper contributes to this recent strand of literature on procedural preferences. We provide a novel game that is able to disentangle procedural preferences from outcome-oriented distributional preferences (Fehr and Schmidt, 1999) and purely egoistic preferences. To this end, we design our game in accordance with ubiquitous queuing scenarios. We conduct a laboratory experiment with treatments that trace out determinants of the procedural violation of jumping a queue, both from the perspective of the individual who jumps the queue and of the individual who permits jumping. While these two individuals bargain over an exchange of time for money, a third party represents the intermediate segment of the queue. Importantly, the third party's outcome is invariant but only procedural properties change, i.e., we consider a scenario in which jumping a queue induces no externalities in outcomes. The third party may however oppose queue jumping as a violation of procedural or distributional preferences. In order to be able to measure the magnitude of violation, we let the third party engage in peer punishment similar to Fehr and Gächter (2000), only that punishment is done in additional waiting time.⁵

Our experiment consists of four treatments all depicting different queuing scenarios, with and without queue jumping. In the first three treatments we have the two bargaining players and the third party, in the fourth treatment the third party is absent. In two of the treatments we allow for peer punishment by the third party.

In all of our treatments, we observe individuals behaving differently from what models of outcome-oriented egoistic preferences would predict. Some individuals who are first in line do not engage in bargaining although they could achieve a Pareto improvement in monetary terms. Likewise, some individuals who could substantially reduce their waiting time through queue jumping do not enter bargaining with the first player. Both of these phenomena can neither be explained by modeling agents as egoistic payoff maximizers nor inequality aversion, but by the hypothesis of individuals holding procedural preferences.

Our results also suggest that subjects in queues care not only about procedures but also about inequality in outcomes. Therefore, we hypothesize that individuals hold two different kinds of moral codes when reasoning about queues: procedural and distributional preferences. We find evidence for the claim that these two codes are non-additive in nature, i.e., when only distributional preferences are addressed (we use Fehr–Schmidt preferences, Fehr and Schmidt, 1999) the resulting peer punishment is more severe than when both of the codes are active.

We are not the first to analyze procedural preferences using the example of queuing. Milgram et al. (1986) study waiting lines in a field experiment in order to characterize the underlying social system. Varying the spatial proximity and the extent to which intruders are surrounded by confederates who act as 'buffers', their treatments show that the opposition of an individual inside the queue increases with spatial proximity to the intrusion. More recently, Oberholzer-Gee (2006) provides evidence from a field experiment in which the experimenter asked subjects standing in line to let him into the queue in front of them for a monetary payment. The author finds that the likelihood of permission increases with the offered payment, but that a great majority does not accept the payment. Rather, the payment appears to act as a signal concerning the urgency of the request. While Milgram et al. (1986) and Oberholzer-Gee (2006) foster the understanding of the procedure of queuing, our study differs from their approaches by controlling for a number of features, most importantly the negative externality of queue jumping. In both of the studies the violation of the queuing procedure generates negative

³ For instance, it is often a random process (i.e., one that is not directly controllable by the affected individuals) when one will be in need for calling an ambulance. Here, the incoming ambulance calls are queued up and the allocation procedure of sending the ambulance is a first-come, first-served one.

⁴ Of course, queuing in the real world is not necessarily random and effort-based allocations of positions might also be considered fair when it facilitates the allocation of a good according to the value people place on it. However, in other circumstances, as in the case of an ambulance call, individuals accept the random assignment. A random allocation of queuing positions reflects equality of opportunity in a very broad sense. In contrast, effort-based assignments usually favor some attributes of individuals, e.g. time, money or fitness. Our hypothesis is that random queues are perceived as fair when the assessment and comparability of the individual value of a good is difficult or an effort-based allocation would unequally favor some attributes of individuals (e.g., money or status) that should not play any decisive role.

⁵ There is also a methodological twist to this research that may lead to new insights on the relationship between money and time as payment vehicles in economic experiments. The seminal work of Becker (1965) discusses how individuals optimize the use of time and monetary income. Berger et al. (2012), Neugebauer and Traub (2012) and Noussair and Stoop (2015) introduce time as a payment vehicle in laboratory experiments. Noussair and Stoop (2015) find that pro-social behavior in the dictator, ultimatum and trust game with time is similar to behavior in the games with money. In some treatments of our experiment subjects are able to impose peer punishment in time, a feature we first observed in Noussair et al. (2015).

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