

## Game theory in practice: Controlling queues in shops

### When customers flee from the queue

Even for well-equipped retailers, queues clearly mean a loss of sales. This could be seen in a current survey in which around 5,000 retailers and customers were questioned. 29 percent of respondents stated that they have at least once left a shop because of a queue [...]. By their own admission, a quarter of respondents do not even enter a shop if they see a queue from outside.

Quick service at the till and simple payment systems are among the retailer's most important services for almost all respondents (90 percent). Problems in the waiting area lead not only to a loss of sales, but also to anger and often even disputes between customers.

(Excerpt from: <http://www.crn.de/markt/artikel-105927.html>, 2015)

### Case 1:

A bakery has a long sales counter. Customers repeatedly queue up in a disorderly manner. Customers quarrel, argue and are angry almost every day.

### Case 2:

A pharmacy has 4 small sales counters. The pharmacist had hoped that the customers would queue up and the people at the front would then go to the free counter. In reality, however, people push forward or form several queues in front of the individual sales counters. All of this leads to constant arguments and disputes between the customers and the sales staff.

## Exercises:

1. A variant of game theory deals with the attempt to design control systems in a way so that the voluntary action of the actors leads to a desired end result. Shapley and Roth received the Nobel Prize for their work on market design in 2012.

The “Game theory” video mentions an insurance company that wants to stop its customers making false claims in their insurance applications.

[www.mediatheque.lindau-nobel.org/videos/34653/2015-mini-lecture-game-theory-en](http://www.mediatheque.lindau-nobel.org/videos/34653/2015-mini-lecture-game-theory-en)

In reality, these kinds of design tasks frequently pop up in reality. However, you can often achieve a “voluntary” change in the behaviour of people with simple rules, hints, signs or visual design.

Develop a proposal on how to solve the problems with the customers’ queuing behaviour in the two case studies.

2. Develop a sketch in which you represent the queuing problem and its solution.
3. What solution does Alvin Roth suggest in the “game theory” video for improving donor supply?
4. Which scientists introduced the consideration of human feelings, such as pride or envy, into game theory?