

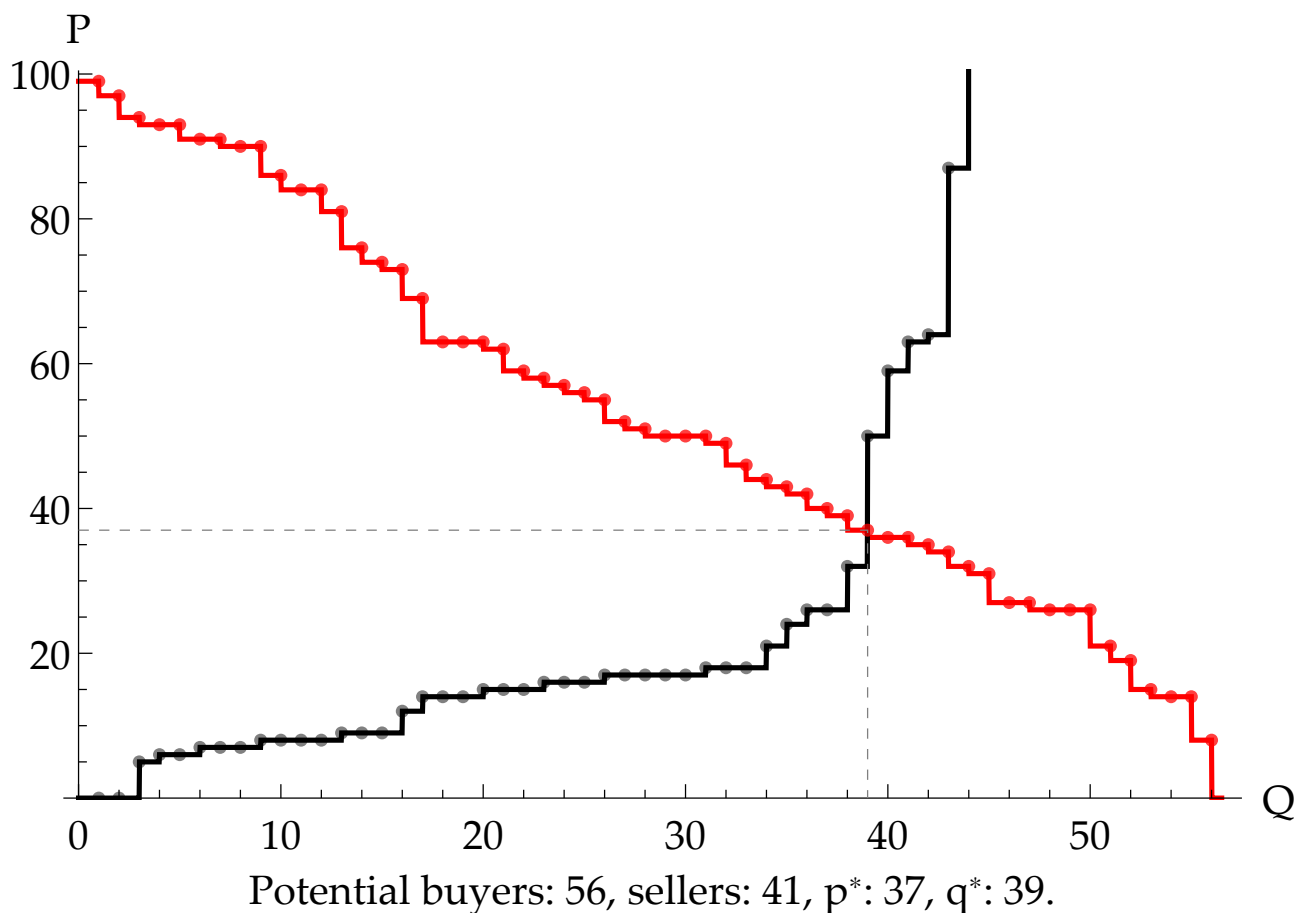
Pit market simulation

Classroom experiment (Sep 10th).

Round 1

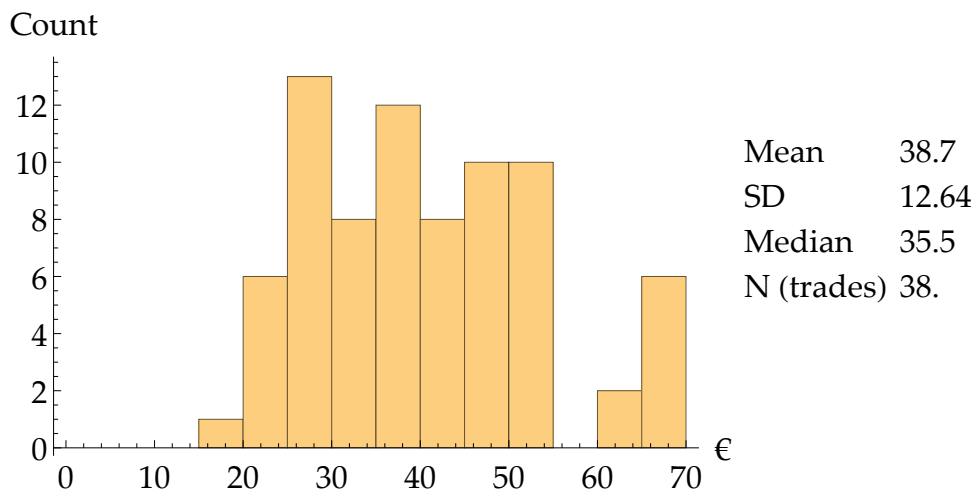
There were 101 participants in the market. The reported buyer and seller valuations are plotted below as the demand and supply curves. Given the reported valuations, in a frictionless market the equilibrium number of trades would have been 39 and the price 37 euros.

Supply and Demand (Pit market 1)

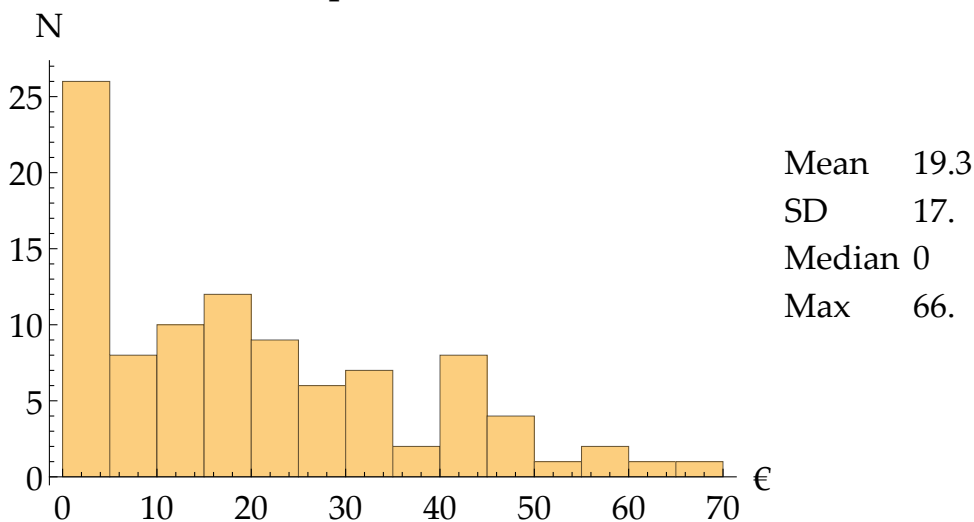


The realized number of trades in the pit market turned out to be 38, and the average price 38.7 euros. In a frictionless market every trade would be made at the same price (or within the same range of prices, if the demand and supply curves overlap). In this type of markets without public price information the realized prices will vary depending on who happened to trade with whom and in what order. In this pit market the standard deviation of trading prices was 12.6 euros. The distributions of reported prices and participant surpluses are shown in the histograms below.

Prices in Pit Market 1



Realized surplus in Pit market 1

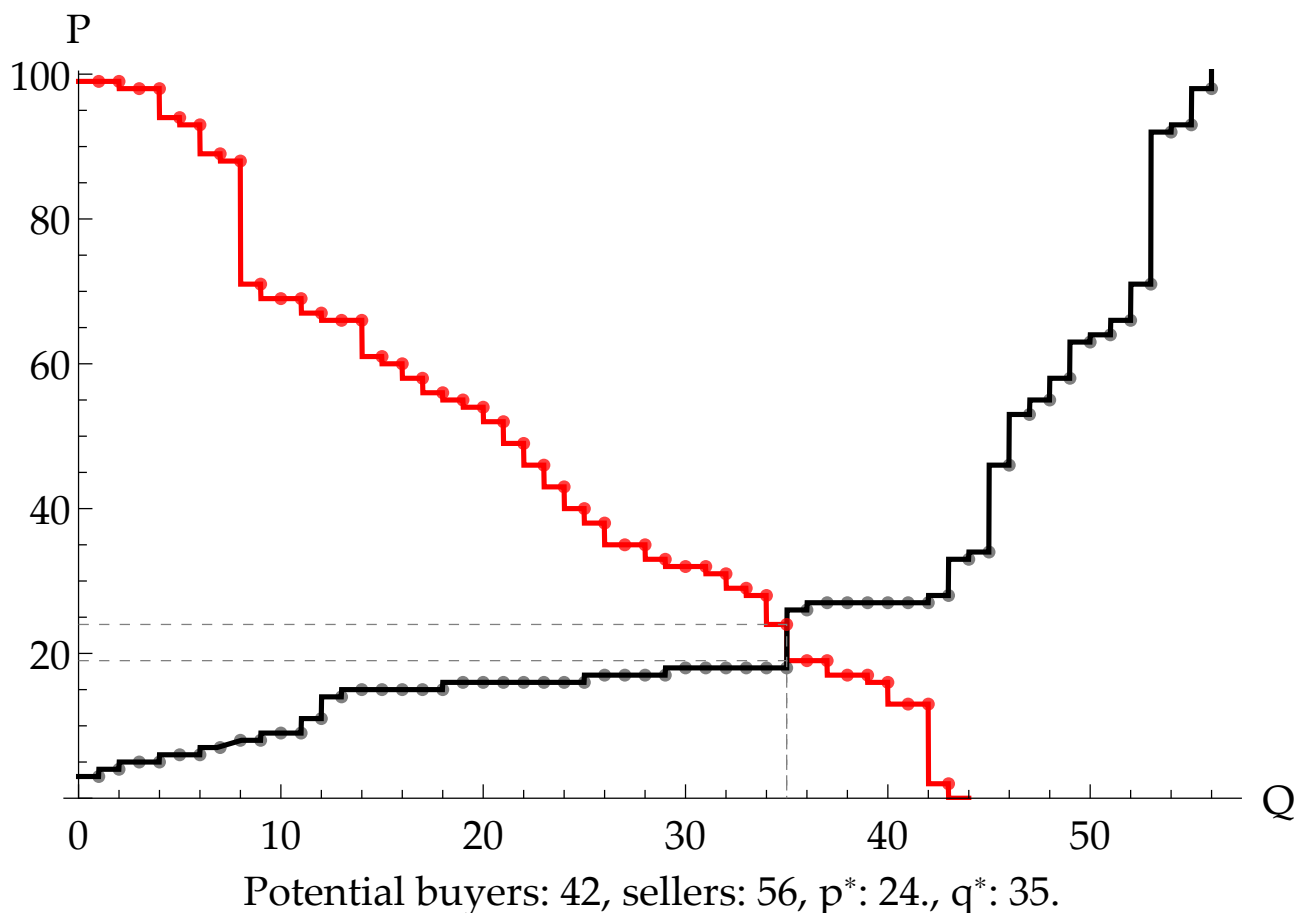


Round 2

In round 2, the buyer/seller roles were reversed. Also, prior to trading, a rough estimate of the median price from round 1 was revealed (or at least, could be inferred by those who were paying attention). Another change also happened, which could not be inferred at the time. The number of buyers and sellers turned out to quite unbalanced, so the role reversal also resulted in a negative demand shock and a positive supply shock compared to round 1.

The reported buyer and seller valuations in round 2 are plotted below as the demand and supply curves. Given the reported valuations, in a frictionless market the equilibrium number of trades would have been 35 and the price between 19 and 24 euros.

Supply and Demand (Pit market 2)

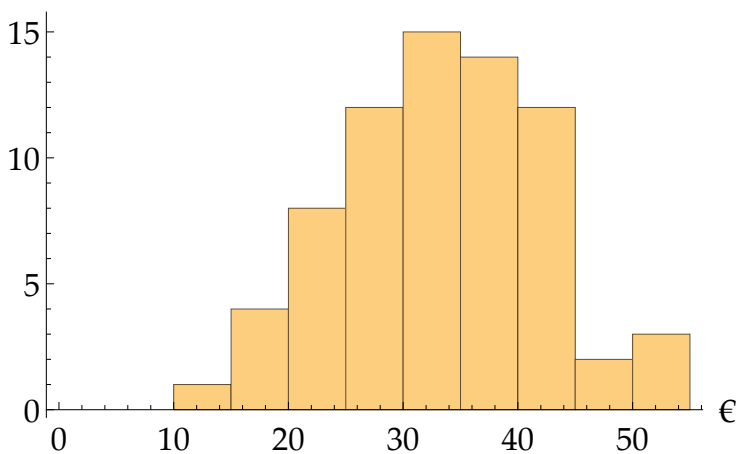


The realized number of trades in the pit market turned out to be 35, and the average price 32 euros.¹ The purpose of the public price information that was revealed at the end of round 1 was to improve the efficiency of trading. In an efficient market the standard deviation of prices is low (as long as demand and supply are held fixed). And indeed, the standard deviation of prices was reduced by about 40%, to 8.6 euros. However, the 1st round price turned out to be an overestimate of the 2nd round equilibrium price, due to the unannounced demand and supply shocks. The second round average price turned out to be about halfway between the 1st round reported prices and the 2nd round frictionless equilibrium price.

¹The reported number of trades was 35.5 because an odd number of participants, 71, reported a trade, which is of course impossible in pairwise trade. This may not be the only reporting error.

Prices in Pit Market 2

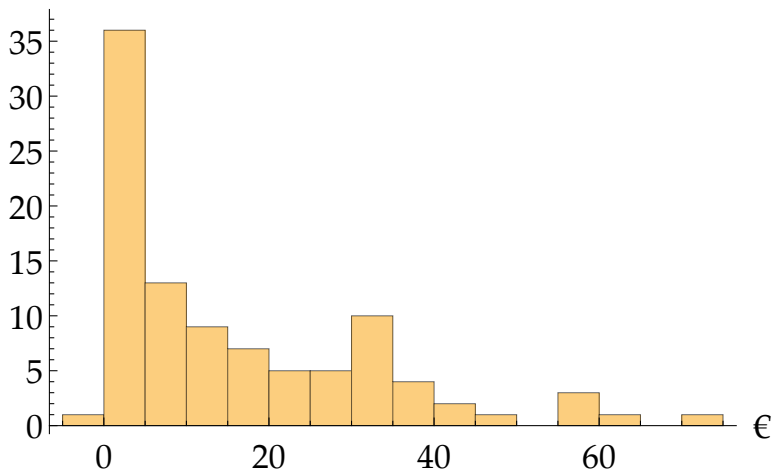
Count



Mean 32.
SD 8.61
Median 32.
N (trades) 35.5

Realized surplus in Pit market 2

N



Mean 15.1
SD 9.
Median -5.
Max 70.