The anatomy of bargaining over seed

Bjorn Van Campenhout*

March 2023

Abstract

We offer farmers the opportunity to buy an improved seed variety during a sequential bargaining process. We introduce exogenous variation by randomizing the first offer price.

1 Motivation

In many societies, it is customary to bargain over prices in economic transactions. In this paper, we use a simple lab-in-the-field experiment to study this bargaining process,with a particular focus on how the initial price determines various characteristics of the bargaining process like number of rounds, initial counter bid and final price.

In the experiment, farmers get the opportunity to buy one kilogram of an improved maize seed variety.

The experiment was timed to coincide with the start of the harvest season, so demand is likely to be high.

We developed a computer program to guide the bargaining process.

Our experiment allows us to investigate anchoring of the bargaining process to the initial ask price. For instance, we test if there is a relationship between the level of the initial ask price and (1) the final price at which the transaction is concluded, (2) the level of first bid price as a response to the initial ask price, (3) the number of rounds before a transaction is concluded.

We can also investigate how some of the characteristics of the actors involved affect outcomes such as final price and change in bid price. For instance, it is often argued that women are worse negotiators than men, although these studies often involve bargaining over wage.

2 Bargaining Experiment

Farmers are offered the opportunity to buy a bag of seed from an enumerator in a way that is as close as possible as how this happens in a real life setting where

*Development Strategy and Governance Division, IFPRI, Belgium - corresponding author: bjorn.vancampenhout@cgiar.org

bargaining is the norm. The enumerator follows a standard script. An initial offer price is randomly drawn, ranging from 12,000 to 9,000, and this price is then presented to the farmer as the price of the bag of seed. The enumerator then explains what kind of seed it is and what the advantages are. The farmer has the option to accept this price or not. If the farmer does not accept the ask price, then the farmer is encouraged to name his/her first bid price.

A computer algorithm then determines a counter-offer that the enumerator asks in a second round of negotiation. This new ask price is determined as the farmer's bid price plus 80 percent of the difference between the (initial) ask price and the farmer's bid price, and this is rounded to the nearest multiple of 500. This updated (lower) ask price is then presented to the farmer and the farmer gets another opportunity to accept or not. If the farmer does not accept, he or she is encouraged to make a second bid and a third ask price is determined as the farmer's last bid price plus 80 percent of the difference between the last ask price and the farmer's last bid price. Bargaining continues until the farmer accepts an ask price, or the price difference between the bid and ask price is smaller than 500 ugandan shilling, in which case the computer instructs the enumerator sell at the last price the farmer bids.

To make the bargaining also incentive compatible for the enumerators, we tell them in advance that the money that is collected from farmers during this first stage will be divided and distributed equally among all the enumerators.

A popular alternative way to measure willingness to pay is a Becker-DeGroot-Marschak (BDM) auction. In it simplest version, the subject formulates a bid and this bid is compared to a price determined by a random number generator. If the subject's bid is greater than the price, they pay the price and receives the item being auctioned. If the subject's bid is lower than the price, they pay nothing and receive nothing. However, after testing in the field, we found that too many farmers had problems comprehending the procedure, struggling especially with the fact that they could not bargain over the price.

Bargaining outcomes

The final price, which comes closest to willingness to pay, was the last offer price before the farmer accepts or the last bid price before the computer decided to abort the negotiation (ie. the difference between last offer and bid prices is smaller than UGX 500). Using this definition, we find that the average final price is UGX 7012. For reference, we obtained the seed at UGX 12,000.

Figure 1 shows price distributions. In addition to the final price at which the transaction was concluded, we also plot distributions of the initial bid price (in case the initial offer price was not accepted). The average initial bid price was UGX 5840. The figure shows there is clear pull from round prices, 5000 and 10000 in particular.

Figure 2 shows price distributions conditional on the initial (randomized) offer price.

Definintion of negotiation round. A complete round includes the seller makes a price offer that the buyer can accept or not. If not, buyer makes a counter offer

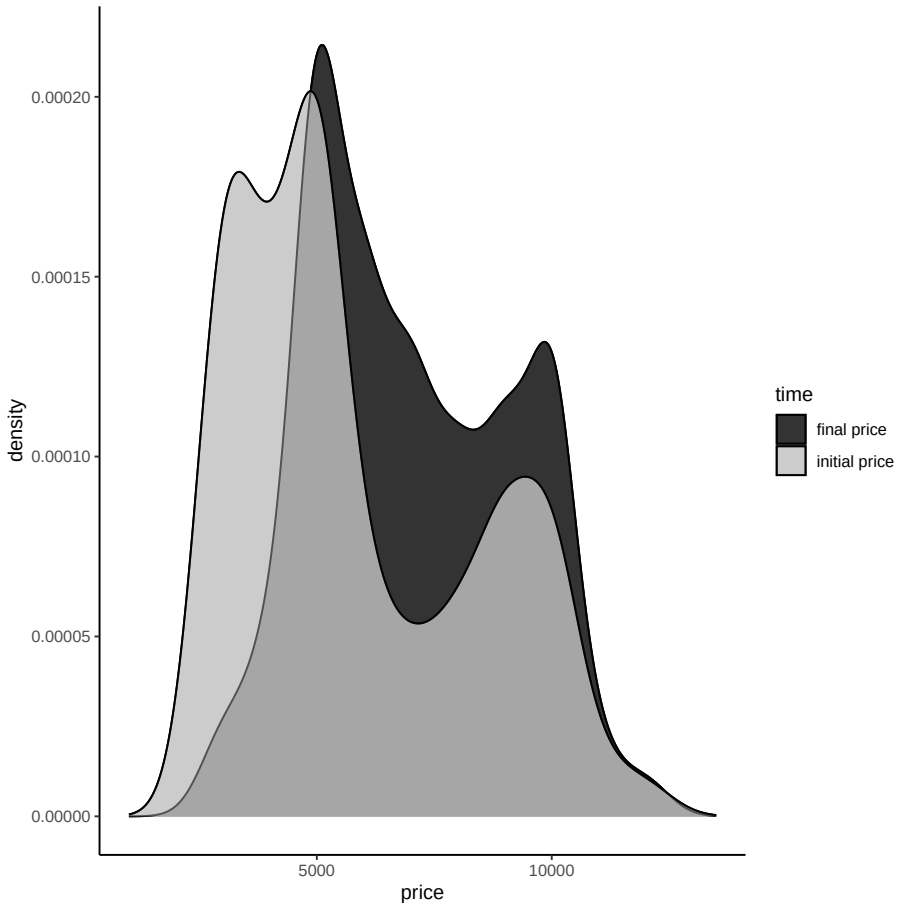

Figure 1: Price distribution

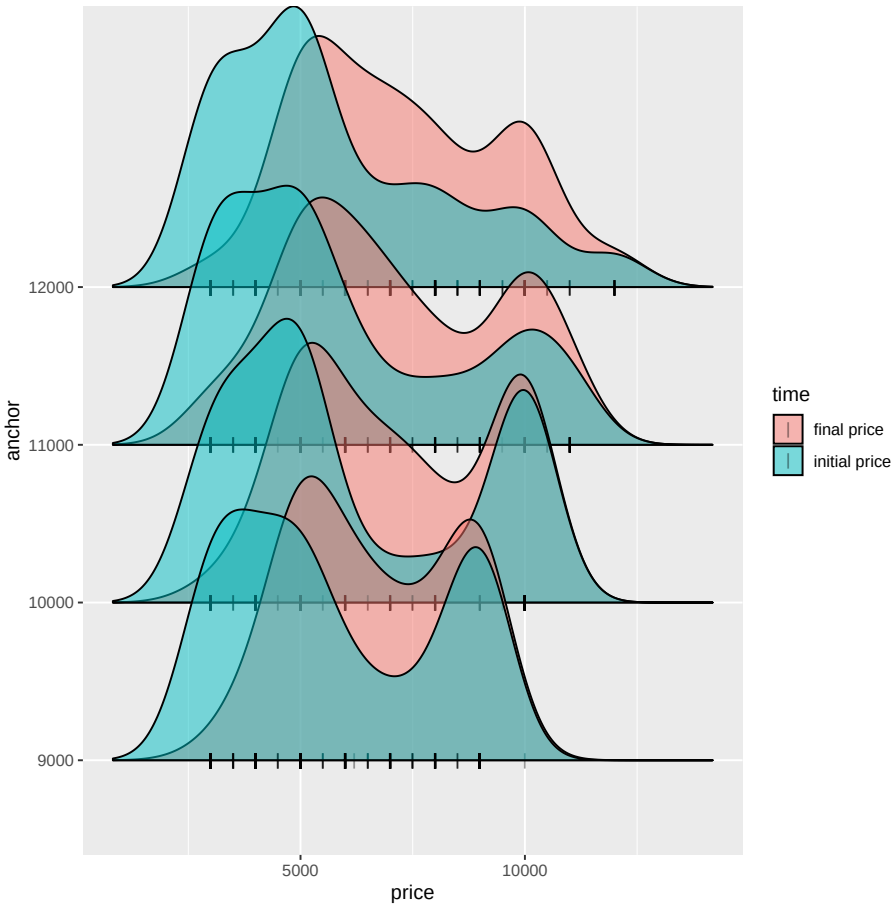

Figure 2: Price distribution

Table 1: results

	(1)	(2)	(3)	(4)	(5)
10000	461.851*	346.282	0.441+	-0.006	-0.033
	(221.733)	(262.511)	(0.243)	(0.036)	(0.057)
11000	389.281+	94.040	1.474**	-0.182**	0.053
	(220.883)	(262.010)	(0.243)	(0.036)	(0.053)
12000	590.972**	-2.222	1.999**	-0.207**	-0.118*
	(199.148)	(236.228)	(0.219)	(0.032)	(0.048)
10000 = 11000	0.763	0.377	0	0	0.144
10000 = 12000	0.559	0.183	0	0	0.116
11000 = 12000	0.36	0.712	0.03	0.484	0.001
nobs	758	759	759	759	648
Adj R^2	0.009	-0.001	0.112	0.073	0.015
Reference	6662	5751	3.565	0.247	0.375

3 Analysis

3.1 no negotiation

A small share of farmers (15 percent) does not negotiate, but readily accept the first offer. Table

3.2 sticky prices

Another interesting group of farmers are those that stick to their first counter bid. In our data, we find that on average

4 Conclusion

The results suggest that one should be wary when using bargaining experiments like this to measure willingness to pay. When testing different methods to elicit willingness to pay, we found that farmers found the standard Becker–DeGroot–Marschak method (BDM) challenging to understand. Particularly the one-shot nature of the experiment was confusing, as this is not how farmers usually do business. A the same time, the anchoring effects inherent to bargaining experiments may make them less useful in uncovering true willingness to pay.