

Can Markets Be Trusted?

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Introduction

One of the most hotly debated issues in economic policy is when unfettered markets can be relied on to produce 'socially good' outcomes and, in cases where they produce 'socially bad' outcomes, how they should be regulated to promote efficiency and welfare. While the general public (and many politicians) tend to be sceptical that unregulated markets ever promote welfare, economics as a scientific discipline has made much progress in understanding when this is the case – at least in theory. In fact, the theory of industrial organisation describes in great detail when markets work, when they fail and how such failures can be remedied. Unfortunately, these theories are often difficult to relate to and to implement in practice. One reason is that theory is simple and abstract while reality is inherently complex and rich. This complexity means that it is often difficult to measure exactly how efficient a particular market is or to decide if the theory can be applied to a particular case because the assumptions underlying the theory might not be met in practice or aspects of the environment that are not modelled in theory might matter.

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To bridge the sometimes large gap between simple theories and 'messy' reality, economists have over the last decades used economic experiments to investigate when markets work and when they fail – at least in the laboratory. The advantage of the experimental approach is that the markets studied can be richer and more realistic than those that simple theories deal with, yet they are also more structured and 'controlled' than in the field. Market experiments are richer because real people

(rather than abstract optimising agents) participate in these markets, and they are 'controlled' because the researcher knows the market conditions (e.g. incentives and information available to market participants), and can manipulate these conditions in a systematic manner. In addition, interaction outcomes like prices and the quantity and quality of traded goods can be measured without error. For example, one market can be implemented in which firms compete for customers and outcomes which can be compared with an otherwise identical market in which firms do not compete. Experimental control enables the researcher to hold all aspects other than competition constant. Because everything else is held constant, the researcher can argue that differences in observed market outcomes, such as higher product quality, must be caused by competition between firms. Experiments thus serve to fill the gap between abstract theory and complex practice and can provide guidance to both theory and policy practice. Of course, it should be kept in mind that laboratory economies are still comparatively simple realities. Experiments enable the researcher to draw truly causal inferences, but the extent to which the implemented environment captures the essential aspects of naturally occurring markets is always open to debate and subject to scrutiny.

Experimenting on the trust problem

In this paper, we discuss recent laboratory experiments investigating economic interactions which are beset by the 'trust problem' and we ask how 'the market' (i.e. various forms of competition) can help to solve this problem.¹ The 'trust problem' (an incarnation of the moral hazard problem) we discuss arises in markets for experience goods. Characteristic for such markets is that buyers are uncertain about the good's quality before they buy, but experience its quality after having bought and consumed it. Experience goods cover the broad

¹ See Huck, Steffen; Ruchala, Gabriele and Tyran, Jean-Robert (2006): [Competition Fosters Trust](#). CEPR Discussion Paper no. 6009, and Huck, Steffen; Ruchala, Gabriele and Tyran, Jean-Robert (2007): [Pricing and Trust](#). CEPR Discussion Paper no. 6135.

middle ground between the extremes of goods involving no quality uncertainty at all (so-called inspection goods) and goods for which quality is not fully revealed even after the consumption (credence goods). Whenever contracts for the exchange of a good are incomplete and sellers have leeway to shade its quality, about which the consumer finds out only if it is too late, the good in question is an experience good.² Hence, many are.

A key role in markets for experience goods is assumed by trust. Buyers may buy an experience good if they trust sellers to provide high quality, and will abstain if they expect the seller to shade on quality. In other words, trust induces the demand for experience goods. In contrast, lack of trust impedes mutually advantageous transactions and results in low market efficiency. Reputation mechanisms, as made famous on the internet by eBay, can improve efficiency in these markets because they can provide sellers with incentives to be trustworthy. If customers tend to shop from sellers who are known to have been reliable in the past and shun those who have not, sellers have an incentive to invest in a good reputation. In the presence of reputation mechanisms, sellers might resist the temptation of opportunistic quality shading hoping to earn rents in the future. This has been shown to work well in a number of laboratory experiments.³

We experimentally investigate how competition shapes trust and efficiency in such markets. We investigate two elements of competition – endogenous choice of trading partners (freedom of choice) and endogenous choice of price. When buyers can choose sellers there is competition for market shares. The effect of such competition depends on how sensitive consumers are to reputations and their customer loyalty. (For a theoretical sketch of this problem, see our paper.⁴) Suppose customers shun sellers with slightly worse reputations. In this case, it is very costly for sellers to besmirch their reputation, and competition might work as a highly effective discipline device. Firms will then compete for market shares via reputations.

Price competition may further improve the benefits of free choice – customers benefit from getting a given quality at a lower price – but price competition may also undermine the beneficial effects of free choice. If price competition is fierce, market prices may fall to such a low level that the sellers' benefits from maintaining a good reputation falter. Are consumers willing to pay enough to make it worthwhile for sellers to provide good quality? If not, quality might erode. Another possible outcome is market segmentation. Some firms may

offer a combination of high price and quality; others may offer low quality at low prices.

Participants in our experiments have incentives to behave opportunistically, as in the field. On the other hand, our participants are real people who are perhaps boundedly rational or socially minded. These people may, in contrast to the assumptions routinely made in economic theory, not exploit every opportunity to cheat transaction partners or be overly trustful, even when trust is ill-advised.

Experimental design

In the experimental markets we report on in this paper, four buyers and four sellers interact for 30 periods. Participants are undergraduate students who earn money depending on their decisions and on market outcomes. Each participant only participates once in the experiment (i.e. in one of the three treatments described below). For each treatment we have nine independent markets (216 participants in total).

In the treatment with endogenous pricing and partner selection, each period proceeds as follows. At the beginning of the period, sellers choose a price and prices are posted to all buyers. Buyers then accept an offer from a seller or stay out of the market (and buy a safe inspection good instead). A seller can thus be chosen by none, one or several buyers. Sellers, knowing how many buyers chose to shop from them, choose the quality of their product (which can only be high or low). At the end of the period, the buyers are informed about the quality they were provided with.

There is also a treatment with endogenous selection of trading partners but regulated prices, fixed at some intermediate level. Finally, there is a treatment without competition. This is essentially the same as the previous one, except that buyers cannot choose which seller to buy from. Instead, buyers are randomly allocated to one of the sellers. This means that sellers do not compete for market shares and a seller effectively enjoys a monopoly with respect to his buyer(s) for the current period.

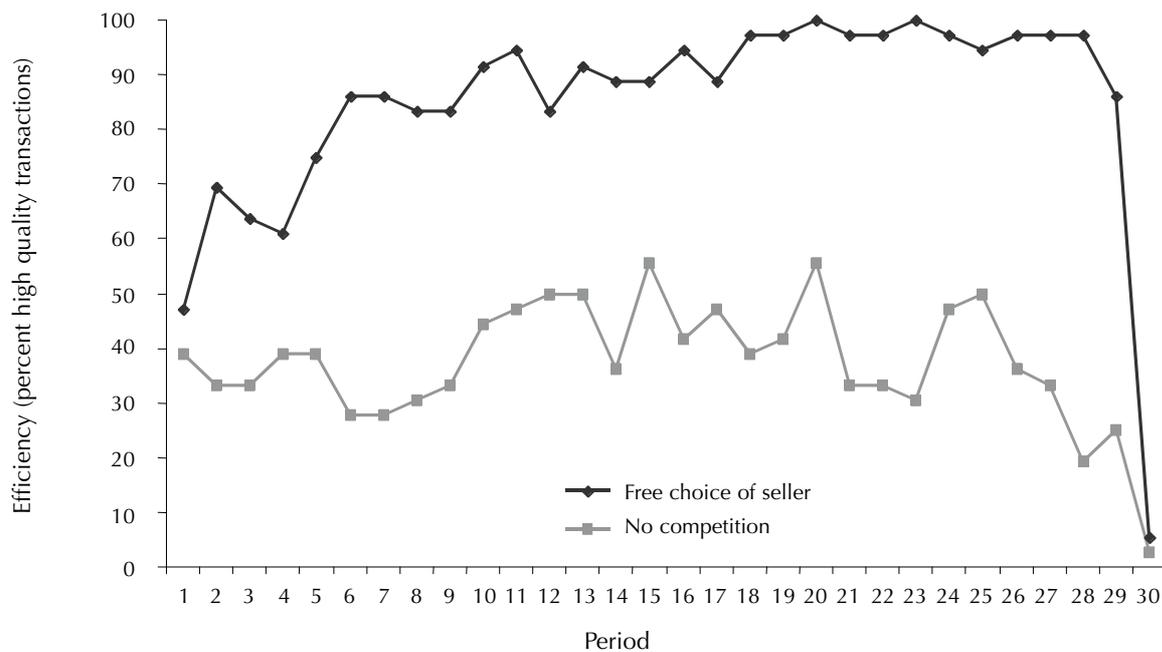
In all treatments, buyers and sellers have conflicting interests with respect to prices and quality. Buyers prefer low prices for given quality, while sellers prefer to sell at high prices. Buyers prefer high quality over low quality at any given price, but sellers prefer to sell low quality items because they are cheaper to produce (at any price). Thus, buyers would like to buy an experience good, but they know that sellers have an incentive to 'cheat' by shading on quality. The payoffs are such that sellers prefer to sell a high-quality experience good (if prices are not too low) rather than not selling, and buyers prefer not to buy at all over getting a low-quality item. Thus, the problem is that if buyers believe that sellers are not trustworthy, i.e. that sellers will provide low quality, they will not trust them, and not buy at all which is the worst outcome for sellers. Absent trust, these markets are very inefficient: buyers simply abstain. The questions then are: do markets induce buyers to trust? What elements of competition – freedom of choice and/or free pricing – works best?

These questions are studied in a situation in which sellers' reputations are perfectly known to buyers. In all

2 For an application to labour markets, see Brown, Martin; Falk, Armin and Fehr, Ernst (2004): Relational Contracts and the Nature of Market Interactions. *Econometrica* 72: 747-780. .

3 See Bohnet, Iris; Harmgart, Heike; Huck, Steffen and Tyran, Jean-Robert (2005): Learning Trust. *Journal of the European Economic Association* 3(3): 322-329. Bohnet, Iris and Huck, Steffen (2004): Reputation and Reputation: Implications for Trust and Trustworthiness when Institutions Change. *American Economic Review* 94(2): 362-366.

4 Huck, Steffen and Tyran, Jean-Robert (2007): Reciprocity, Social Ties, and Competition in Markets for Experience Goods. *Journal of Socio-Economics* 36(2): 191-203.

Figure 1 Freedom of choice improves efficiency (9 markets per treatment)

treatments the same feedback information is provided: all participants (buyers and sellers) have access to a 'history window' which summarises a seller's past quality. An [earlier study](#) showed that providing information about seller reputations (in the absence of price and quantity competition) improves efficiency. Without such information, trust and quality were found to be extremely low.

Results

Figure 1 shows how drastically free selection of trading partners improved efficiency. Specifically, the two lines show the percentage of transactions in which high quality is provided when sellers compete for customers (upper line) and when they do not. The percentage shown is an average over nine markets per treatment. Interestingly, competition takes some time to unfold its beneficial effect. In the first period, efficiency is intermediate (40-50%) and not much different in the two treatments. Without competition, efficiency rates remain relatively low around 30-50%, while they increase with competition. With competition, efficiency rates reach levels close to 100% in the last third of the experiment. Buyers apparently take some time to learn that the market can be trusted.

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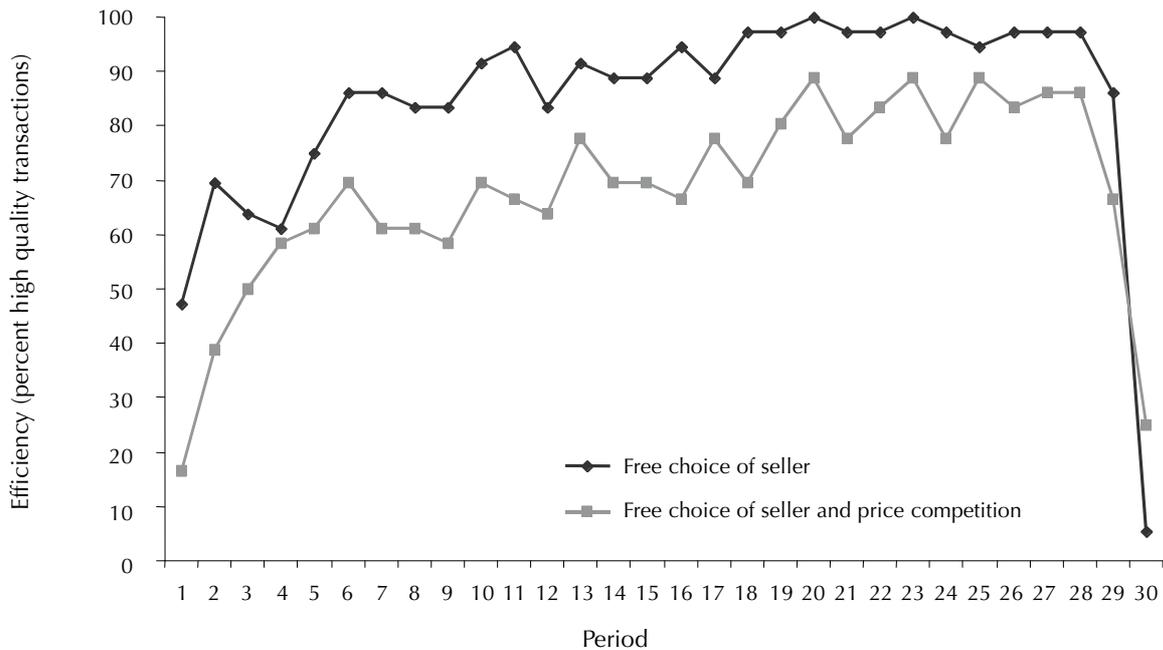
Remarkably, efficiency falls dramatically in the last few periods of the experiment and is close to 0% in the final period in both treatments. This drop happens because most customers stop trusting sellers and stay out of the market for fear of being cheated. Those buyers who continue to trust are in fact cheated in most cases. This 'end-game effect' is revealing because it shows that the prospect of long-term relations (i.e.

future interaction) is essential for these markets to perform well. The end-game effect also indicates that incentives for opportunistic behaviour were strong in our experiment and that subjects properly understood the incentive structure of the game they were playing. Sellers provided high quality in most periods of our experiment because they (correctly) anticipated that buyers flock to their stores and will remain loyal to them if they provide high quality, but shun them in the future if they cheat now. As the cost of losing customers falls close to end of the experiment, sellers started to cheat, as predicted by standard economic theory.

...Figure 2 shows that adding price competition actually reduced efficiency...

Measured over all 30 periods, free selection of trading partners boosts average efficiency from 37% to 85% compared to no competition. This substantial and highly significant improvement in market efficiency mainly results from much higher trust rates (i.e. how often buyers actually buy, 90% vs. 51%) and from increased trustworthiness of sellers (i.e. how often sellers provide high quality, conditional on having customers, 94% vs. 73%). In this sense, competition fosters trust, and the market can safely be trusted to provide high quality. Freedom of choice made everyone better off since buyer earnings are significantly higher, while seller earnings are not lower as a result of competition.

The overall message from Figure 1 is clear: competition improves efficiency because it disciplines sellers. Sellers resist the temptation to cheat customers by shading on quality because buyers sanction them by 'walking away' if they did. Given that this particular type of competition improved efficiency, is it true that more competition is even better? Will markets perform even better if price competition is added to free selection of

Figure 2 Price competition reduces efficiency (9 markets per treatment)

trading partners?

Figure 2 shows that adding price competition actually reduced efficiency. Again the figure shows the percentage of transactions with high quality in the market with free choice only (the darker line is the same as in Figure 1) and with both choice of partners and endogenous pricing (lighter line).

Efficiency is lower from the start with price competition, and remains lower throughout. The pattern over time is remarkably similar in the two markets, though. It seems that both markets crowd in trust over time, and most customers stop trusting the markets only close to the end of the experiment. Over all periods, average efficiency is lower with price competition (68% vs. 85%), a drop which is due to reduced trustworthiness of sellers (80% vs. 94%) rather than to reduced trust of buyers (85% vs. 90%). As a result, both buyer and seller incomes fall slightly. To be sure, the market with price competition performed better than the one without any competition (overall efficiency was 68% vs. 37%). While competition generates overall better outcomes than no competition, adding price competition did not improve matters.

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How can this counterproductive and perhaps counter-intuitive effect of price competition be explained? The reason why the treatment with endogenous pricing was less efficient than competition with fixed (intermediate

prices was not that price competition had no bite, but that it was too intense. With flexible prices sellers compete fiercely just as if the market was a Bertrand market (while in fact, sellers are typically differentiated by having different reputations). Sellers undercut each other, which induces prices to fall to such a low level that potential buyers are almost indifferent between buying and not buying a (bad but cheap) experience good. Consequently, buyers can somewhat carelessly enter the market for experience goods and are not forced to scrutinise sellers' reputation as carefully as when they can make losses. At the same time, sellers' profit margins on high-quality goods become dangerously low with very low prices such that providing high quality is no longer very profitable.

But why is price competition so fierce in these markets? In other words, why is there not more competition via quality? The reason is that sellers had no choice other than to cut their prices to the bottom. When sellers compete both via prices and via reputations, buyers seem to pay more attention to prices (which are not noisy) than to reputations (which are noisy in the sense that a seller who provided good quality in the past might still provide low quality in his next transaction). Buyers are apparently reluctant to trade-off higher prices against higher reputations. To illustrate, we note that buyers bought in 85% of all cases from the seller with the lowest price, while only 58% of all goods were bought from the seller with the best reputation (in 65% of the cases the seller with the lowest price also had the best reputation).

To summarise, we find that buyers' 'obsession' with low prices forces sellers to engage in cut-throat price competition. As a result, sellers cannot reap a sufficient price premium for higher quality.

Summary

Can markets be trusted? Can buyers trust sellers to provide high quality in markets for experience goods? The

answer is yes – if the incentives are right. And our experiments show that these incentives are shaped by the way competition is organised. Our research shows that markets for experience goods can achieve high levels of efficiency if sellers have incentives to build reputations for being trustworthy. This is the case if buyers know sellers' track records and if sellers have prospects for profitable future interaction. Markets that allow buyers to choose their trading partners discipline sellers not to shade on quality because transactions with trusting buyers are highly profitable, and sellers' main concern is to induce trust. Conversely, buyers have good incentives to pay attention to sellers' reputations because (with fixed prices) 'rip-offs' are costly. A key factor inducing these beneficial incentives on both sides of the market is that prices are regulated at 'reasonably high' levels, leaving sellers sufficient rents of having good reputation. The market was thus organised such that 'honesty is the best policy'.

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In contrast, the markets with free selection of trading partners and free pricing yield less efficient outcomes (but are still more efficient than markets with no competition at all). The reason for this is that price competition is so fierce that prices fall to levels where sellers find it less profitable to build and maintain a good reputation and buyers can afford to be comparatively careless.

The message from these experiments to policy-makers is a clear demonstration that competition can improve efficiency in markets in which the 'trust problem' looms large. However, these markets must be properly organised, and experiments are a valuable tool to investigate which aspects of market organisation are relevant. To improve efficiency in these markets, policy-makers should take actions to improve market transparency (making sellers' track records publicly known is a good starting point), to make sure that markets have some structural stability (such that sellers have some incentives to build long-term relations with customers), and to enable consumers to effectively switch between different sellers (for example by reducing switching costs). However, policy-makers should make sure that price competition is not too fierce, perhaps by imposing minimum prices for some services. The reason is that if price competition dissipates all rents for sellers, the disciplining effect of competition for market shares is undermined.

The trust problem in markets for experience goods can in principle be reduced by a number of policy measures. For example, policy-makers can enforce minimum standards for quality or sellers can offer 'satisfaction guaranteed or money back' contracts. A problem with quality standards is that they are notoriously difficult to administer and costly to enforce. Minimum prices might in some cases be a cheap alternative but the appropriate level of the minimum price might be difficult to determine in the field.

Application to proposed German laws on food dumping

The German government is currently preparing a new law to tighten rules against 'dumping' in food markets. This initiative follows a deep crisis that recently shook German meat markets where huge quantities of poor-quality meat (past its sell-by date, often biologically hazardous) were discovered. The public debate that ensued developed along two lines. There were those who blamed weak regulation and lax enforcement for the scandal and there were others who, essentially, blamed German consumers' obsession with low-price food – Germans do spend, on average, 25% less on food than, for example, Italians – and who demanded the introduction of minimum prices. The Government's justification for the new law explicitly mentions that it wants to combat pricing structures that render the production of high-quality food infeasible (see the protocol of the 834th session of the German Bundesrat on the 8 June 2007). Our results very much support this kind of reasoning.

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There are several interesting avenues for more detailed research into how market structures affect the quality of experience goods. For example, in our experiment higher average quality was always desirable. In practice, however, intermediate quality levels might be optimal from the perspective of consumers. This issue can easily be tested in an experiment, for example by letting sellers choose among several levels of quality. Our markets also exhibited a high degree of structural stability: there was no entry and exit in our experiment and no mergers either. Again, all these aspects can be easily studied in the laboratory. We tend to observe relatively high market concentration in markets in which buyers can choose sellers. The few successful firms tend to attract almost all customers, and the others essentially face empty stores. In our experiment, these firms were not forced to leave the market. If unsuccessful firms were selected out of the market, competition might be undermined which, in turn, might undermine incentives

for the successful firms to deliver – they have now become monopolists. Policy conclusions from our experiment thus depend on whether the issues raised above are essential characteristics in a particular market in the field. If they are, the experiment should (and easily can) be adapted to incorporate these aspects as we believe that our experiment provides an ideal workhorse to investigate these (and many other) aspects of markets which are beset by the trust problem.

Bottom line

We believe it is useful to use experiments as a 'test bed', similar to a wind tunnel in car manufacturing. Proposed policy changes can be tried out on small scale before causing upheaval in the large national economy. Experiments can thus help to avoid costly mistakes and provide a useful indication on which policy changes might improve market efficiency.

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