

Markets, trust and cultural biases evidence from eBay<sup>☆</sup>Ricardo Perez-Truglia<sup>\*</sup>

University of California, Los Angeles, Anderson School of Management, Office C515, 110 Westwood Plaza, Los Angeles, CA, 90403, United States

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## ABSTRACT

A body of research argues that cultural biases in trust may be responsible for economic backwardness. This paper studies the role of cultural biases in a real-world market, eBay, with well-designed features intended to facilitate cooperation. We analyze the buyer's decision to leave negative feedback as an act of mistrust towards the seller. To identify the effects of buyer characteristics on feedback choices, we exploit an identification strategy that leverages high-volume data from millions of transactions. We find that negative feedback decreases as buyers gain experience on the market. Also, we show that measures of pro-social beliefs and behavior do not explain feedback choices. Our favorite interpretation is that cultural biases in trust may have limited importance in markets with effective reputation-building mechanisms.

## 1. Introduction

Economists have long acknowledged that trust is key to economic development. Arrow (1972) famously stated that much of the economic backwardness in the world can be explained by a lack of mutual confidence. Various measures of trust have been shown to be correlated to economic choices (Knack and Keefer, 1997; Guiso et al., 2004, 2010; Algan and Cahuc, 2010). Furthermore, a body of research argues that many differences in trust can be attributed to cultural biases (Putnam, 2000; Tabellini, 2010; Algan and Cahuc, 2010; Nunn and Wantchekon, 2011). In other words, individuals from different cultures differ in key beliefs and preferences that result in different propensities to trust others.<sup>1</sup>

Assuming that such cultural biases exist,<sup>2</sup> it remains unclear how these biases interact with formal institutions, such as markets. Some argue that trust is complementary to institutions, because it can facilitate the jobs of government officials and support proper functioning of markets (Putnam, 2000). Others argue that institutions and trust are substitutes for each other, because formal institutions are most needed in low-trust environments (Knack and Keefer, 1997). This paper contributes to this debate by studying the role of cultural biases in trust in the context of a real-world market, eBay, with well-designed features that are intended to facilitate cooperation.

As the most popular online auction site in the United States, eBay reported a commerce volume of nearly \$150 billion in 2011 (eBay's

Annual Report, 2011). Its success is commonly attributed to its feedback mechanism, which facilitates cooperation through reputation building (Klein et al., 2009). Shortly after buying a product, a buyer can choose to leave positive or nonpositive feedback about the seller. In this paper, we study trust by analyzing the feedback choices made by eBay buyers.

We provide a simple model of negative feedback based on two key principles from behavioral economics: betrayal aversion and spite (Berg et al., 1995; Fehr, 2009; Bohnet et al., 2008; Sapienza et al., 2013). If the buyer feels that the seller has cheated in the transaction, for instance by sending a defective product, the buyer incurs a psychological cost from betrayal. The buyer can reduce this psychological cost by retaliating against the seller with nonpositive feedback, which imposes a pecuniary cost on the seller (Cabral and Hortaçsu, 2010). The decision to leave negative feedback thus depends on the buyer's willingness to trust the seller.

To study the buyer characteristics that are associated with the buyers' feedback choices, we collected data on feedback left by buyers for more than 20 million eBay transactions from 2009–2012. When comparing feedback across buyers, however, there is an identification challenge. In addition to different buyer characteristics, buyers also may leave different feedback because they acquire different products, at different prices, and from different sellers. To address this challenge, we introduce an identification strategy that leverages high-volume data from millions of transactions. We compare feedback choices across pairs of buyers who made purchases under the exact same circumstances (i.e., they bought the same

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<sup>\*</sup> Corresponding author.

E-mail address: [ricardo.truglia@anderson.ucla.edu](mailto:ricardo.truglia@anderson.ucla.edu).

<sup>1</sup> For example, these cultural biases may arise because of decision making heuristics (Nunn, 2012).

<sup>2</sup> It is still unclear whether the differences in trust attributed to cultural biases are actually a byproduct of institutional factors (Fehr, 2009).

product, from the same seller, at the same price). Observing the same information ensures that any differences in feedback choices can be plausibly attributed to differences in buyer characteristics.

We find that feedback choices are significantly associated with several buyer characteristics and with the expected sign. For example, buyers are more likely to leave nonpositive feedback if they live further away from rather than closer to the seller, most likely because the probability of shipping problems increases with distance. We also find that more educated buyers are more likely than less educated buyers to leave nonpositive feedback, which is consistent with the evidence that educated individuals are more likely to detect if the seller cheats (Jin and Kato, 2006).

First, we investigate the role of market experience in buyers' trusting behavior. As discussed in Guiso et al. (2008), buyers may become more confident about the seller's trustworthiness as they gain experience in the market. We test this prediction by using two measures of the buyer's experience on eBay: the time elapsed since the buyer joined eBay and the buyer's own feedback score. We find that these two measures of buyer experience have large negative effects on the likelihood of nonpositive feedback. Our favorite interpretation is that, as buyers gain experience on eBay, they become more confident about the trustworthiness of sellers.

Second, we investigate the role of cultural biases in trust. Given that eBay offers detailed information about the past behavior of the seller, usually for thousands of previous transactions, it is possible that buyers use this information to form a belief about the trustworthiness of the seller and therefore are unaffected by their cultural biases regarding trust when deciding to leave negative or positive feedback. If buyers' beliefs about trust are affected by cultural biases, then their feedback decisions will be affected by these cultural biases.

We proxy for buyers' cultural biases in trust using measures of pro-social beliefs and pro-social behavior in the buyers' locations. According to the literature on social capital, these measures reflect cultural biases in trust (Algan and Cahuc, 2010; Nunn, 2012). For example, one widely used measure of pro-social beliefs corresponds to the following question from the General Social Survey: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" If cultural biases were important, we would expect individuals scoring higher in this survey measure to be less likely to choose nonpositive feedback. On the contrary, we find correlations that are close to zero and precisely estimated. If anything, the evidence suggests that individuals from more pro-social areas are slightly more likely to leave nonpositive feedback.

Moreover, we show that the buyer's county of residence explains only a small fraction of the variation in nonpositive feedback. This finding suggests that spatial differences in formal and informal institutions, including but not limited to cultural biases, may not be important factors in feedback behavior on eBay. One interpretation for this evidence is that, even if cultural biases in trust are important for other economic transactions, they have limited importance in presence-of-good institutions such as electronic markets with effective reputation-building mechanisms. For instance, Minnesota residents tend to score higher than residents from Louisiana in measures of social capital. If two individuals were offered to buy a given product on the street, it is possible that the individual from Minnesota would be more willing to buy this product than an individual from Louisiana. However, if the same product was offered on eBay, both individuals would have access to the same detailed information about the seller's past behavior<sup>3</sup> and

thus would be equally confident about the trustworthiness of the seller, regardless of their cultural biases. This interpretation suggests that market institutions and trust are substitutes. From a policy perspective, these findings imply that technological innovations aimed at encouraging cooperation (e.g., reputation-building mechanisms) may be effective in overcoming cultural barriers to economic development.

This paper relates to various strands of literature. First, it is related to a literature that studies the relationship between cultural biases in trust and market behavior. Guiso et al. (2010) provide unique evidence using data on bilateral trust between European countries. They find that low bilateral trust between countries leads to decreased trade, portfolio investment, and direct investment, even after controlling for various country characteristics. Our findings are not inconsistent with their evidence, as arguably most of the transactions that they study do not benefit from the same quality of reputation-building mechanisms available to eBay users. Also, our findings support the model proposed by Guiso et al. (2008), according to which individuals become more trusting when they participate in markets.

Second, this paper is related to a literature that studies the validity of survey measures of trust by comparing the responses to these questions with behavior in laboratory experiments. These papers find a weak relationship between survey measures of trust and behavior in the lab (e.g., Glaeser et al., 2000; Fehr et al., 2003; Ermisch et al., 2009). However, there are concerns about the external validity of laboratory experiments, especially regarding social preferences (Levitt and List, 2007). This paper contributes to this literature by showing that these same survey measures of trust do not correlate with behavior in a naturally occurring market either.

The paper proceeds as follows. Section 2 introduces a stylized model of the buyer's decision to leave feedback about the seller. Section 3 presents the econometric model. Section 4 presents the data. Section 5 discusses the results. The final section concludes.

## 2. A model Of trust and negative feedback

This section presents a model to explain why buyers leave negative feedback on eBay and how that decision depends on beliefs about trustworthiness. This model proposes that buyers use negative feedback to punish sellers whom they think have cheated them in the transaction.

### 2.1. Motivation

Our model of negative feedback is based on two key principles from behavioral economics: betrayal aversion and spite. The trust game (Berg et al., 1995) provides a unique test of betrayal aversion. In this game, a sender chooses how much money to send to a receiver, and the receiver can send some of that amount back to the sender. For each dollar sent back by the receiver, the sender gets a multiple of that amount (greater than one). Several factors influence the decisions of both senders and receivers. Some researchers have tried to isolate these factors by using variants of the trust game. Whether the sender sends money depends crucially on whether the sender thinks that the receiver will send some money back (Chaudhuri and Gangadharan, 2007).

Part of the reason why the sender cares about the amount sent back by the receiver is material. The other part is due to betrayal-aversion: the sender may not send money because of the anticipated disutility from being betrayed by another human being. Bohnet et al. (2008) conducted an experiment that illustrates this principle. Senders in their game faced two equivalent scenarios in terms of expected payoffs for both players. In one scenario, the outcome was determined by the choice of a human receiver. In the alternative scenario, the outcome was determined by a random number generator that behaved exactly like the human receivers. Bohnet et al. (2008) showed that senders are less willing to send money to the receiver when the receiver is another human being. They interpreted this finding as evidence that, in addition to any material payoffs, individuals face a psychological cost when

<sup>3</sup> Next to the seller's name, eBay shows the feedback score (roughly equal to the difference between the number of positive and negative feedback ratings) and the percentage of positive feedback. Clicking on the seller's name directs the user to the seller's page, which contains more information about the seller (e.g., the date when the seller became member). Clicking on the seller's feedback score directs the user to the complete record of the feedback received by the seller, starting with the most recent ones, along with a summary of the most recent feedback received.

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