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Document Version
Accepted author manuscript

Published in:
Social Choice and Welfare

DOI:
10.1007/s00355-017-1058-4

Publication date:
2017

License
Unspecified

Citation for published version (APA):
Fosgaard, M. R., Fosgaard, T. R., & Foss, N. J. (2017). Consumer or Citizen? Prosocial Behaviors in Markets and Non-markets. *Social Choice and Welfare*, *49*(2), 231–253. https://doi.org/10.1007/s00355-017-1058-4

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Journal article (Accepted version)

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This is a post-peer-review, pre-copyedit version of an article published in *Social Choice and Welfare*. The final authenticated version is available online at: https://doi.org/10.1007/s00355-017-1058-4

Uploaded to CBS Research Portal: January 2019

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CONSUMER OR CITIZEN?
PROSOCIAL BEHAVIORS IN MARKETS AND NON-MARKETS

Abstract

While much prosocial behavior has traditionally taken place in non-market contexts, such as families, clans, and social associations, it is in increasingly brought into the market context. For example, companies increasingly promote their products and services by engaging in charitable giving and policy makers increasingly push for the implementation of market-driven prosocial initiatives. However, this trend has occurred without being informed by evidence on how the market influences individuals' engagement in prosocial behavior. Using a public goods game that simulates a market and a non-market context, we analyze prosocial behavior and its psychological underpinnings across these two contexts. First, we find that prosocial behavior occurs at lower levels in markets than non-markets. Second, we find that individuals' beliefs about prosocial norms are more important for prosocial behavior in markets than non-markets, while the opposite is true for their autonomous motivation towards prosocial behavior. This suggests that decision-makers need to adjust the means to foster prosocial behavior, depending on the institutional context deemed appropriate for specific prosocial behaviors.

Keywords: Cooperation; Prosocial behavior; Markets; Psychological; Expectation
JEL codes: C92, D47, D84, H41, M31

1. Introduction

Traditionally, the market has been the arena for transacting goods and services, whereas other, non-market, domains have been the arenas for engaging in prosocial behaviors. Increasingly, however, important prosocial decisions such as charitable giving, prevention of climate change, and the enforcement of human rights are incorporated into market transactions. Companies' intensified involvement in corporate social responsibility (CSR) represents a powerful example of this trend. A specific and widely used CSR practice is cause marketing, that is, "… joining with charities or social causes to market a product or service" (Krishna & Rajan 2009:1499) . Scholars argue that such CSR practices improve firms' image and brand equity (Hoeffler & Keller, 2002) and increase customer-corporation identification and customers' purchase intentions (Arora & Henderson, 2007; Krishna & Rajan, 2009; Mohr & Webb, 2005), potentially resulting in increased profits (Servaes & Tamayo 2013). While CSR research focuses on the benefits that firms may reap from CSR initiatives such as cause marketing, it tends to take beneficial societal impact for granted. In other words, without convincing empirical evidence cause marketing is *assumed* to increase overall welfare, as firms increase sales and profits, and charities or other social causes collect more money (Arora & Henderson 2007; Hoeffler & Keller 2002; Lichtenstein, Drumwright, & Braig 2004).

The increased occurrence of market-driven prosocial behavior exemplified by the case of CSR therefore poses the important and more general question of to what extent the market is conducive to welfare-increasing prosocial behaviors. This question should be addressed in the light of research on framing which shows that the framing of decisions and decision contexts matters to individuals' engagement in prosocial behavior (Andreoni 1995; Dufwenberg, Gächter, & Hennig-Schmidt 2011; Fosgaard, Gårn Hansen, & Wengström 2016; Fosgaard, Hansen, &

Wengström 2014; Frey & Meier 2004; Isaac, Mathieu, & Zajac 1991)[1]. In this context, recent debate has revitalized and transformed the argument that a competitive market context is not a natural environment for prosocial behavior (Bowles 2008; Deck & Kimbrough 2013; Gneezy, Gneezy, Nelson, & Brown 2010; Ottone & Ponzano 2010; Sandel 2013). This implies that relying on the market to call forth prosocial behaviors may be associated with lower welfare compared to when the same behaviors are organized in non-market settings.

In this study, we link up with these points and specifically ask whether individuals' prosocial behaviors, in the shape of public good contributions, differ depending on whether they are carried in the intuitional context of a market (when purchasing a private good) or a non-market (direct contributions to a public good). Our study contributes to the understanding of prosocial behaviors in a way that has implications for understanding CSR practices, such as cause marketing. First, we explore how a market setting may influence prosocial engagement by comparing public good contributions that are organized by means linking such contributions to private goods with contributions given directly to a public good in a non-market context. Second, our study contributes to the small extant literature on the differences in the nature and intensity of the psychological mechanisms underlying prosocial behaviors in market and non-market contexts, respectively. We specifically focus on beliefs about others' level of prosocial behavior and on individuals' motivation. Both beliefs and motivation have been addressed in previous research as important psychological underpinnings of prosocial behaviors (Dufwenberg et al.

[1] It should be emphasized that the influence of framings effect is not always clear. Previous work on framing the public good game as the community game has for instance both been identified as a positive and negative influence on cooperation (Dufwenberg et al., 2011; Liberman et al., 2004).

2011; Fischbacher & Gächter 2010; Kocher, M.G., Martinsson, P., Matzat, D., and Wollbrant 2015).

Working from the baseline hypothesis that prosocial behavior occurs at lower levels in markets than non-markets, our overarching hypothesis is that the psychological mechanisms underlying prosocial behaviors differ across institutions. Specifically, we argue that a) beliefs about others' level of prosocial behavior are lower in markets than non-markets; b) these beliefs are stronger drivers of prosocial behaviors in markets than non-markets; and c) autonomous motivation[2] towards prosocial behavior is a stronger driver of prosocial behavior in non-markets than markets.

We test these hypotheses in a controlled laboratory experiment, approximating prosocial behaviors with contribution behaviors in a public goods game with a market and a non-market treatment. First, we find that prosocial behavior occurs at lower levels in markets than non-markets. Second, we find that individuals' beliefs about others' contributions are more important for prosocial behavior in markets than non-markets, while the opposite is true for their autonomous motivation to engage in prosocial behavior. These findings provide evidence regarding how markets and non-markets shape prosocial behavior and suggest that means to foster prosocial behavior needs to be adjusted according to the institutional context deemed appropriate for specific prosocial behaviors.

[2] Autonomous motivation is the type of motivation which is driven by the individual's personal values and interests. (Edward L. Deci & Ryan, 2000).

2. The Psychological Underpinnings of Prosocial Behavior in Markets and Non-markets

Under standard behavioral assumptions, economics predicts that people refrain from costly prosocial engagement and free-ride on the efforts of others, irrespective of the specific institutional context. Thus, institutional context should not matter to people's prosocial engagement, because rational agents always choose to free-ride, hoping to benefit from others' contributions without bearing the cost of contributing themselves.

However, a well-known, general finding in the public goods literature is that individuals often voluntarily contribute to public goods despite the fact that public good situations create a strong incentive to free ride (Zelmer 2003). Such pro-social behaviors have been associated with social preferences (Fehr & Falk 2002).

Provided that individuals have preferences for supporting the public good Besley & Ghatak (2007) and Kotchen (2006) show that theoretically public good provision through markets can exist in equilibrium. However, a growing number of studies also show that market mechanisms, for example, in the form of monetary incentives, can have a highly negative effect on individuals' contributions to a public good (Bowles 1998, 2008; Deck & Kimbrough 2013; Falk & Szech 2013; Fehr & Falk 2002; Frey & Jegen 2001). Moreover, pro-social behaviors are shaped by the specific context they take place in (Bowles 1998; Drouvelis, Metcalfe & Powdthavee 2015; Frey & Jegen 2001; Liberman, Samuels, & Ross 2004; Macoveanu, Ramsøy, Skov, Siebner, & Fosgaard 2016). Thus, the "rules of the game"—that is, the institution (cf. North (1990)) under which individuals interact—, influence not just the objective constraints, but also how individuals frame their interaction. The psychological underpinnings of prosocial behavior depend on the dominant logic of the specific institutional context (Bowles 1998).

With it's primary behavioral controls (prices, competition, negotiation, and monetary gains and losses) the market signals that self-interest is the appropriate behavior, making individual gains more salient than collective gains. Experimental research in the psychology literature shows that the mere reminder of money can trigger a state of self-sufficiency that in turn makes individuals less helpful towards others (Vohs, Mead, & Goode 2006). Accordingly, we expect individuals to contribute less to the public good when contributions are made through the purchase of a private good in a market context (e.g., through cause marketing) compared to when they are made directly to the public good in a non-market context. This is partly because the psychological determinants of prosocial behaviors are influenced by the institutional context and thus are context-dependent. The relevant determinants are individuals' beliefs about others' level of prosocial behavior as well as their motivation towards prosocial engagement.

Individuals' *beliefs* about others' prosocial behavior strongly reflect cognitive representations of the prevailing prosocial norm in a given context (Aarts & Dijksterhuis 2003). Early experimental psychology research (e.g., Kelley & Stahelski 1970) highlighted personality characteristics as determinants of individuals' beliefs about others' prosocial behaviors. More recent research links trait (e.g., authoritarianism) and context by showing that individual conformity to social norms is important for understanding the automaticity with which individuals form beliefs about prevailing norms in specific contexts (Aarts, Dijksterhuis, & Custers 2003). Because of these psychological mechanisms, individuals' beliefs about the prevailing norm for prosocial behavior are highly contextual.

Since markets and non-markets embody different logics of what is appropriate behavior (Bowles 1998; Sandel 2013), they differentially influence individuals' beliefs about what is the prevailing norm regarding prosocial behavior in the specific context. Thus, individuals likely

expect that others exhibit lower levels of prosocial behaviors in markets than non-markets. We therefore propose that individuals' beliefs about others level of prosocial behavior are lower in markets than non-markets. Yet, we expect that beliefs are a more important driver of prosocial behaviors in markets than non-markets. The self-interest seeking behavior induced by such a setting prompts *quid pro quo* thinking and strategizing (Bowles 1998). Because of this, beliefs about others' level of prosocial behavior enter into individuals' decision making processes with more weight in markets than non-markets[3]. In contrast, non-market contexts appeal more to individuals' civic virtues (Bowles 1998; Sandel 2013). Whereas markets direct attention towards external sources of behavioral regulation, such as money and competition, non-markets are more likely to direct attention towards internal sources, such as own moral sentiments (Bowles 2008).

Psychology research on motivation implies that this has important implications for motivation and behavior (Deci & Ryan 1985). Drawing on self-determination theory, we argue that behaviors can be engaged in for controlled or autonomous reasons. We made use of instruments based on self-determination theory (SDT), a body of motivational psychology research that is increasingly incorporated into experimental economics research (e.g., Bowles 2008) and management research (e.g., Grant 2008). SDT posits that the engagement in behaviors can vary with respect to how autonomous (or self-motivated) it is, and offers a framework of two broad types of motivation that represent opposite ends of self-determination: autonomous and controlled motivation (Deci & Ryan 2000). When an individual is autonomously motivated, the behavior engaged in is self-endorsed and congruent with own

[3] This conjecture echoes previous research on public good games which identifies context sensitivity in belief. For example, Dufwenberg et al. (2011) find that beliefs are differently linked to behavior in the public good game under different frames (give vs. take, neutral vs. community)

interests and values. In contrast, when an individual is controlled motivated, the feeling is one of pressure; either from an external source (external pressure) or from a poorly integrated external regulation (self-imposed pressure). Behaviors are therefore performed either because of some external end, such as a reward, or because the individual wants to boost feelings of worth (Ryan 1995). Much research shows that this type of motivational focus often leads individuals to put in only the minimum required effort, focus on short-term gains, and take the easiest route to attain the externally defined end (Deci & Ryan 1985). Autonomous motivation is therefore often argued to lead to more behavioral effort and persistence, which in turn results in more positive behavioral outcomes than controlled motivation. Recent studies find that this is also the case for prosocial behaviors (Weinstein & Ryan 2010). For the purpose of our study, we were therefore primarily interested in autonomous motivation and how it affects the engagement in cooperation in market versus non-market contexts. However, since controlled motivation still plays an important role for prosocial behavior, we controlled for this motivation type in our statistical analyses.

Behaviors prompted by external contingencies are controlled motivated, while actions prompted by internal values and interests are autonomously motivated (Edward L. Deci & Ryan 2000), the latter being a much stronger predictor of prosocial behaviors (Weinstein & Ryan 2010). Hence, contributing directly to a public good in a non-market context is more consistent with autonomous motivation than markets. We therefore expect autonomous motivation to be a stronger driver of prosocial behaviors in non-markets than markets.

3. Experimental Design

We tested our hypotheses in a laboratory experiment, which enabled us to fully control the decision situation, ensuring that other factors than the ones we are interested in did not interfere

with the players' decisions. Specifically, we used the public goods game, which is a stylized model of a situation where players, who have incentives to free ride, must contribute to achieve socially beneficial outcomes. While social welfare is maximized when everyone contributes everything to the public good, the dominant strategy for the selfish player is to contribute as little as possible. As such, the public goods game is a stark representation of many real-life social dilemmas and is therefore ideal for investigating prosocial behavior.

To capture behavioral and psychological differences across institutional contexts, the experiment consisted of a non-market treatment and a market treatment. In the non-market treatment, the players made direct contributions to the public good in the standard public goods game. In the market treatment the players assumed the role of buyers and made decisions on how much to contribute to the public good while purchasing a private good on a competitive market. In both treatments we elicited the players' beliefs about others' contributions and their own underlying motivation for contributing, which allowed us to tap into and compare the psychological underpinnings of prosocial behavior across the two treatments. In both treatments the players faced identical contribution decisions and played the game with real money at stake and identical incentive structures. Thus, the only intervention made was the institutional context.

3.1. The Baseline Treatment: Non-market

Our baseline treatment labeled the "Non-market" consists of a linear public goods game. Thus, direct contributions were given through the so-called voluntary contribution mechanism (Ledyard 1995; Zelmer 2003). The public goods game, which consisted of 20 periods, was played in randomly and anonymously matched groups of four. Following Fischbacher & Gächter (2010) we made use of a stranger matching design, which means that the players were randomly

re-matched into new groups for each period. We chose this design, because we wanted to avoid the effect of strategic reputation building that may occur in fixed matching designs. This enabled us to observe a cleaner effect of the institutional context on the individual player's cooperation and the psychological mechanisms underlying it.

In the beginning of each period, each player received an endowment of 10 points (≈ 1.5 Euros). Simultaneously and privately the players chose how much of the endowment (between 0 and 10 points) to contribute to the public good (referred to as the group account) and how much to keep for themselves. The sum of the public good contributions contributed by all four players was multiplied by 0.5 and the resulting amount allocated to all players, regardless of how much the individual player contributed. This means that each point a player kept earned that player 1 point and each point the player contributed to the public good earned the player and all other players in the group 0.5 point each. The selfish player, who wanted to maximize own welfare, therefore contributed nothing to the public good. That is, the purely selfish player kept his or her 10 points and received 0.5 point per point the other players contributed to the public good. However, if all players in the group chose to retain their points, they each earned 10 points, while they earned 20 points (½*40) if all of them contributed all 10 points to the public good, which illustrates the inherent social dilemma in the game. In the baseline treatment each player's monetary pay-off from the game was determined by Equation 1.

$$\pi_i = E - c_i + 0{,}5 * \sum_{l=1}^{4} c_l \qquad (1)$$

Thus, the player's income (π_i) was the endowment (E) of 10 points, minus the player's contribution to the public good (c_i), plus 50 % of all contributions made to the public good. After

each period, the individual player received feedback on own contribution, the total contribution of all the co-players, and own income.

3.2. The Experimental Treatment: Market

The contribution decision in the experimental treatment, labeled the "Market", was identical to the one in the baseline treatment, except that the players in the Market made public good contributions in connection with the purchase of a private good that was traded on a competitive market. Specifically, in each of the 20 periods the players were confronted with a private good bundled with different levels of public good contributions (henceforth, "bundles") to choose from. Whereas the public good contributions could vary between 0 and 10 points and benefitted all players equally as in the Non-market treatment, the private good benefitted the individual player exclusively and with the amount of 10 points (equivalent to the initial endowment in the Non-market treatment).

The number of individuals playing the Market game amounted to four players as in the Non-market. However, in order to mimic a competitive market as closely as possible, five anonymous human sellers were added to the group. Thus, the groups in the Market were designed as simple markets and consisted of nine individuals: 4 players in the role as buyers and 5 sellers. The markets were organized as posted-offer markets (Davis & Holt 1993). That is, all sellers made binding price offers for bundles of a private good and public good contribution to the buyers simultaneously. Thus, the sellers provided the public good (bundled with the private good), but could neither contribute to nor benefit from the public good themselves. The buyers (henceforth, the players), on the other hand, made public good contributions through the purchase of the bundles provided by the sellers. To ensure that the players in both treatments

faced the same public good contribution options, all sellers were required to offer bundles with all possible contribution levels (0-10) in all 20 periods.

The sellers could set the prices of the bundles as they wanted as long as they covered the cost of the public good contribution (1 point per point contributed as in the Non-market) and the cost of the private good (1 point per bundle)[4]. This restriction served to avoid players making public good contributions that were less costly than the ones that could be made in the Non-market. Moreover, it served to instill the feeling of a more realistic market where both sellers and buyers incur benefits and costs. Although the sellers in principle could set the prices as high as they wanted, we enforced a highly competitive market structure, by having excess supply (five sellers to supply four buyers) and a high trading bonus of 25 points. We expect that the sellers realize that setting prices over cost is pointless as there will always be an untrading seller willing to undercut the price due to the excess supply. The bonus points are furthermore a bigger benefit than the potential gain from setting a small markup (price over cost), and hence the task for the sellers become to get a transaction and don't focus on the marginal profit. All in all, we therefore had a strong mechanism to keep the prices at the cost level. Thus, for the players, the cost of contributing to the public good was exactly the same as in the Non-market[5]. The incomes of the sellers in each period are summarized in the following equation:

$$\pi^S = \sum_{k=0}^{10} \left([\mathrm{P} - \mathrm{C}] * \mathrm{T} \right) + \mathrm{Bonus} \qquad (2)$$

[4] Notice that we assume no technological advantages of letting the sellers provide the public good, as suggested by (Kotchen, 2006). Rather, we assume that the seller only faces cost when selling and has a linear cost scheme in line with the model suggested by (Besley & Ghatak, 2007).

[5] In practice, close to all players' decisions in the market treatment faced the same marginal cost of contribution as those in the non-market treatment. The median mark-up (sellers' price-cost) in the market treatment is zero and the mean mark-up is 0.14 suggesting that a positive mark-ups was an extremely limited phenomenon. See more in the result section.

Thus, the sellers' income (π^S) was the sum of the earnings made from each type of bundle (k) offered plus the trading bonus of 25 points. The earnings made from each type of bundle was calculated as the price (P) of each bundle minus the total cost (C) of each bundle (1 point for the private good and 1 point per point contributed to the public good) times the number of transactions involving the specific bundle (T).

When all sellers had made their price offers, all players were presented with a list of the sellers' offers. From this list, the players made their choice on which bundle to purchase, and thus how much to contribute to the public good. To ensure that the contribution decision was identical in the two treatments, the players were required to purchase one, and only one, bundle in each period. As in the Non-market, the players earned 10 points minus the chosen contribution plus half of all four players' public good contributions, which Equation 3 illustrates. Translated into the terminology of the Market treatment, the players' income is summarized in the following equation:

$$\pi = (\mathrm{E} + 1) - \mathrm{P} + 0{,}5 * \sum_{l=1}^{4} c_l \qquad (3)$$

The individual player's income (π) is the player's benefit of the private good (endowment (E) plus 1 point), minus the price (P) of the chosen bundle plus the benefit from the public good, i.e., $0{,}5 * \sum_{l=1}^{4} c_l$

The player's benefit from the private good is 11, which corresponds to the endowment of 10 points in the Non-market plus the sellers' cost of the private good of 1 point. Consequently, the players in the two treatments face identical incentives when making their public good contribution decisions.

After each period, both the players and the sellers received performance feedback. The players received feedback on own public good contributions, the total contribution of all the co-players, the price they paid for the bundle, and own income. The sellers were informed about their own prices, how many transactions their price offers resulted in, and own income. The feedback to the sellers also included information about the prices, number of transactions, and resulting income of the other sellers. The feedback provided to the sellers and buyers did not disclose any of the other participants' identity.

3.3. Eliciting Beliefs About Others' Contributions

In both treatments we elicited the players' beliefs about the contributions of others in each period. This was done after they had made their decision on how much to contribute to the public good, but before receiving performance feedback on the period. In line with (Fischbacher & Gächter 2010), we asked the players to indicate their belief about the average contribution of the other players in their group in the period just completed. This belief elicitation was incentivized such that the players earned an extra 5 points for providing a belief that did not deviate more than 1 point from the real average of the other players' contributions.

3.4. Eliciting Motivation to Contribute

After the completion of all 20 periods of the public goods game, we elicited the players' motivation to contribute to the public good. We chose this specific design for two reasons. First, had we asked the players to fill in the questionnaire after each period, we would run the risk that their reflections upon their motivation to contribute would interfere with their contribution decisions in the following periods. Our design avoided this risk. Second, filling in the

questionnaire 20 times would have lengthened the experiment unnecessarily, thereby risking that the players contributed differently from what they would have done otherwise.

We elicited motivation to engage in prosocial behavior by asking respondents questions about the underlying reasons for contributing to the public good. Specifically, we made use of the "Self-Regulation Questionnaire" developed by Ryan and Connell (Ryan & Connell 1989). The questionnaire assesses different types of motivation in specific behavioral domains. In line with Weinstein and Ryan (Weinstein & Ryan 2010), we adapted the scale to the prosocial domain. Specifically, we measured the motivation as answers on 7-point likert scale to the following question "why did you contribute to the group account?"

Autonomous motivation:

1. Because I cared about the other participants
2. Because I enjoyed it
3. Because I appreciated that my contributions could be useful to others
4. Because it is in accordance with my personal values to act this way

Control motivation:

1. Because I'd feel like a bad person if I didn't
2. Because others would get mad at me if I didn't
3. Because I felt I had to
4. Because I would feel ashamed if I didn't".

The constructs of autonomous motivation and controlled motivation were calculated as the averages of the four items. The Alpha values for the constructs were 0.86 for autonomous motivation and 0.73 for controlled motivation, which provides evidence for the reliability of the constructs.

3.5. Procedures

The experiment was conducted at the Laboratory of Experimental Economics, University of Copenhagen, Denmark, in the fall of 2011 and spring 2012. A total of 296 individuals participated in the experiment. Of these 176 played the public goods game while the remaining 120 acted as sellers in the Market treatment. The 176 players were distributed such that 96 participants played the public goods game in the Market treatment and 80 in the Non-market treatment. The experiment consisted of 7 sessions, which lasted around 2 hours, and the average earning was 300 DKR (corresponding roughly to 40 euros)

All participants were recruited from the database of the Laboratory, which consists of a large number of individuals who have voluntarily signed up for participation in experiments. An invitation was sent by email to a randomly selected sample from the database. The participants were mainly university students, but had no prior experience with public goods games. They came from a wide variety of study fields, for example, engineering, humanities, natural sciences, other social sciences than psychology and economics, law, religion, economics, and psychology. The average age was 24.3 and 52 % were female.

Upon arrival, the participants were first randomly seated at the computers used in the experiment. All computers were separated by screens, which helped to ensure the anonymity of the participants. The participants were welcomed and received a set of written instructions, which were the same for all participants in the same session. The assigned role as seller or buyer in the Market treatment were not revealed until the experiment had started. Participants therefore paid equal attention to the description of both roles. Participants were randomly assigned to the roles and once they had been assigned the role, they remained in that role throughout the 20 periods of the experiment.

The participants made all their decisions via the computers. There was no face-to-face interaction. Furthermore, the decisions were made anonymously and were not revealed during or after the experiment. In order to avoid social desirability biases in the decisions made, the participants were informed about their anonymity.

Income was counted in points and at the end of the experiment the points were converted into Danish Kroner (DKK), using an exchange rate of 3:1. Before the experiment began, a series of control questions tested whether the participants understood the game, including how their decisions influence the incomes of other participants. All participants answered all the questions correctly.

The experiment was programmed in the z-tree software package (Fischbacher 2007), whereas the recruitment database uses the ORSEE software (Greiner, 2015).

4. Results

Before addressing how cooperative people are in market and non-market contexts and discussing the psychological underpinnings of the relevant behaviors, we consider the sellers in the market treatment. For our main analysis, it is crucial to make sure that the conditions under which the public good contributions are being made are isomorphic. A crucial point in this respect is that the sellers set prices at cost levels. We find that the sellers are remarkably clear in their adaption of the incentives to set prices equal to cost and focus on getting the transaction bonus. Figure 1 displays the sellers' markups (price over cost level) for situations where the price offers have been accepted and when the offers are not accepted. The overwhelming majority of such markups, in particular for accepted offers, is a markup of 0, which suggest that the buyers in the market treatment face the same cost of making contributions as the subjects in the nonmarket.

Insert Figure 1 Here

The fact that the sellers did respond to the incentives and charged the cost level, is also illustrated by a probit regression explaining the likelihood of having (at least) one transaction (see table 1). We find that the higher the markup is the less likely it is to get a transaction (SE=0,0213, β=-0.198, $p<0.001$).

Insert Table 1 Here

Finally, to get an idea of how much influence the few trades with positive markups did have, we remove all instances of such trades in a random effect model explaining cooperation in the two treatments (See model 6, in table 3 below). We find that doing this does not have any effect on significance levels or coefficient magnitudes. In sum, we find that sellers behave as intended by setting prices equal to cost, which means that it is warranted to compare cooperation in the two treatments.

4.1. The Effect of the Market Treatment on Cooperation

We now turn to the main focus on cooperation. To analyze the results we ran two-sided non-parametric rank-sum tests (Mann-Whitney) and random effects linear regression (OLS) with robust standard errors and clustered at session level. We chose a random effects model to account for the fact that the same individual makes a contribution decision in each period, thereby addressing that the players' contribution level may be affected by previous contribution decisions. We clustered at the session level to ensure that factors specific to the sessions did not interfere with the results.

The non-parametric rank-sum tests was used to test for differences in prosocial behavior and beliefs across the market and non-market treatment, while the latter mainly was used to detect differences in how the psychological predictors (beliefs and autonomous motivation) influenced prosocial behavior across the two treatments. In the regression models, we used a dummy variable (market = 1 and non-market = 0) to test the effect of treatment on cooperation, while interaction terms were used to capture treatment differences in beliefs and autonomous motivation.

If the players' behavior is insensitive to the institutional context, it should not matter if they make public good contributions directly in a non-market context or through the purchase of a private good in a market context. However, our experimental results contradict this prediction, which indicates that prosocial behavior is sensitive to the institutional context. A two-sided non-parametric rank-sum test revealed a significant difference in contribution level across the two treatments (Mann-Whitney, $z = 5.954$, $p < 0.0001$, as illustrated in Figure 2. This is stacked against the odds of higher initial group contributions in the market compared to the non-market. The distributions of initial group level contributions are illustrated in the supplementary document. Dynamically, this initial higher level of group contributions in the market treatment is quickly flipped around and from period 3 groups in the market treatment on average contribution less than in the non-market. We confirmed the overall effect of the market in a random effect regression analysis using a binary treatment variable where 1=market and 0=non-market (SE = 0.338, $\beta = -1.327$ $p < 0.0001$), see table 3 model 1.

Insert Figure 2 Here

We further find that the median contribution in the non-market treatment was 50% (5 points) of the players' endowment whereas the median contribution in the market treatment only was 30% (3 points). The median choice in the non-market treatment is therefore 66.7% higher than in the market treatment. Thus, in accordance with our predictions, our first result is:

RESULT 1. *The players in the Market treatment contributed less to the public good than the players in the Non-market treatment.*

4.2. Differences in the Psychological Mechanisms Driving Cooperation in Markets Versus Non-markets

To test our hypotheses regarding how the psychological mechanisms underlying prosocial behavior differ across institutions, we first ran a two-sided non-parametric rank-sum test, which revealed a significant difference in the players' beliefs across the two treatments (Mann-Whitney, z = 8.996, p = 0.0000). This is depicted in Figure 3.

Insert Figure 3 Here

At the median level, players in the non-market treatment believed that the other players in their group contributed with 50% of their endowment whereas the players in the market treatment believed that their co-players contributed with 40%. In figure 4, the heterogeneity of the individual beliefs is presented. Assessing the belief measure at an individual level, we find in a two-sided rank-sum test that the individual average belief is significantly lower in the market treatment (Mann-Whitney, z=3.3533, p=0.0008). As predicted, our second result therefore is:

RESULT 2. *The players in the Market treatment believe that others will contribute less to the public good compared with the players in the Non-market treatment.*

Not only do contribution and belief choices per se differ across our treatments, the relation between contribution and belief within treatments also differ across the two treatments. As illustrated in Table 2, the median contribution and belief in the non-market treatment coincide – the players believed that others contributed 50 % of their endowment and they chose to contribute 50 % themselves. However, in the market treatment, the median contribution and belief differ. Specifically, while the players believed that others contributed 40 % of the endowment, they chose to only contribute 30 % of the endowment themselves. A rank sum test reveals that the difference in belief and contribution is significantly different across the two treatments (Mann-Whitney, $z = 3.916$, $p = 0.0001$). This finding suggests the following: First, players in the non-market treatment opt more frequently for a 50/50 choice and they believe that their co-players do the same, as compared to the players in the market treatment. This supports the main message of (Isaac et al. 1991) that fairness perceptions differ across institutional context. Second, players in the market treatment strategize more to ensure that they receive more than they give.

Insert Figure 4 Here

Insert Table 2 Here

Insert Table 3 Here

Furthermore, we tested for differences in the strength of the effect of beliefs on prosocial behavior across the market and non-market treatment econometrically. For this purpose, we ran a random effects regression analysis (OLS) with robust standard errors and clustered on session level, using the treatment variable and interaction terms to capture treatment differences. We find that beliefs about others' behavior is an important driver of cooperation (SE=0.0993, β=1.657, p<0.001, see table 3, model 2), but also that beliefs is a stronger driver of cooperation in the market (SE=0,102, β=0,396, p<0.001, model 3). Supporting our prediction, our third result thus is:

> **RESULT 3.** *Players' beliefs about the contributions of other players are a stronger predictor of public good contributions in the Market treatment than in the Non-market treatment.*

Using the same methods, we also tested for differences in the strength of the effect of autonomous motivation on prosocial behavior across the two treatments. We find that autonomous motivation to contribute to the public good is an important driver of cooperation (SE= 0.130, β = 0.921, p = 0.001, table 3 model 4). However, as the interaction between autonomous motivation and the market reveals, autonomous motivation is a stronger driver of prosocial behavior in the non-market (SE = 0.113, β = -0.330, p = 0.003, table 3, model 5). The heterogeneity of the metered autonomous motivation is evident from Figure 5. Our fourth result is:

> **RESULT 4.** *The players' autonomous motivation to contribute to the public good is a stronger predictor of public good contributions in the Non-market treatment than in the Market treatment.*

Insert Figure 5 Here

5. Concluding Discussion

Our experimental results suggest that the level of prosocial behavior is sensitive to the institutional context: Although prosocial behavior does take place in markets as emphasized by A. Gneezy, Gneezy, Riener, & Nelson (2012), it occurs at lower levels in markets than non-markets. The reason for this may be that the economic exchange dimension of the interaction becomes salient in markets (Bowles 1998). Thus, for a purchaser the specific characteristics of, and the personal benefits that can be derived from, the good are focal—and not how others may benefit. In other words, in markets individuals tend to see themselves as beneficiaries rather than benefactors. This, in turn, decreases the level of prosocial behavior. This is supported in a recent study, which finds that individuals are more prosocial when they see themselves as benefactors rather than beneficiaries (Grant & Dutton 2012).

The practical use of market mechanisms to foster prosocial behaviors therefore warrants careful consideration, not least in the context of corporate social responsibility. Many claims for and against CSR strategies have been put forward. In a thought-provoking article Devinney (2009) conjectured that CSR strategies may have harmful welfare effects. However, it is difficult to assess such claims and arguments, among other things because many different CSR practices exist and may have different welfare consequences. Our findings have implications for the existing discussion by focusing on a distinct CSR practice. Specifically, our experimental design may be seen as a proxy of the CSR practice of cause marketing in which firms contribute a certain percentage of their sales of specific products to a charity or social cause (Krishna & Rajan 2009). Drawing on previous behavioral economics and psychology research, we proposed that the dominant behavioral logic of the market is fundamentally different from the logic in a

non-market context and that prosocial behavior and its psychological underpinnings therefore differ across the two contexts. While research dealing with CSR argues that firms can benefit greatly from cause marketing (Arora & Henderson 2007; Krishna & Rajan 2009; Mohr & Webb 2005), especially if firms carefully consider how to design their cause marketing strategies (Gneezy et al. 2010; Porter & Kramer 2002), firms should, for ethical and credibility reasons, take the potential negative psychological and social welfare implications into consideration (DellaVigna 2010). This potentially means that firms should seek other ways to act in a socially responsible manner.

We note, however, that certain aspects of how market-driven prosocial behavior impact social welfare is not accounted for in our study. For instance, the accessibility of contribution options might be an important determinant of the final level of contributions. It is likely that contributions through markets are more easily accessible than through alternative contribution channels. Thus, while there is a low contribution level in the market for any given contributions, contributions may occur more frequently and at lower transaction costs. Hence, overall a greater level of contributions may result. Furthermore, our study does not reveal whether contributions made through market transactions crowd out contributions made in non-market contexts. Thus, it is possible that individuals both contribute directly in non-markets and through purchasing products in the market place such that the overall contribution level is higher when both options are present. However, in a theoretical paper, Ghosh and Shankar (2013) argue that market-provided contributions for a good cause might crowd out direct contributions. In particular, they conjecture that in situations where people hold sufficiently pronounced altruistic preferences, the net effect on total contribution of market-provided contributions is negative. Other studies also points to the existence of such a crowding out effect (Frey & Jegen 2001;

Mazar & Zhong 2010). Thus, Mazar and Zhong (2010) find that individuals are less likely to act prosocially and more likely to act in selfish and immoral ways in other domains after purchasing green (environmentally friendly) products compared to individuals purchasing conventional products. Hence, while it is likely that market transactions lead to a lower total contribution level, future research is needed to investigate whether this is the case.

By examining the psychological underpinnings of prosocial behaviors, our study went a step further in understanding how a market context, compared to a non-market context, influences individuals' engagement in prosocial behaviors. Our results confirmed previous arguments that beliefs are an important psychological determinant of prosocial behaviors (Fischbacher & Gächter 2010). However, we specifically argued that beliefs matter because they represent an individuals' perception of the prevailing prosocial norm in a given context and our results revealed that beliefs are a stronger driver of prosocial behaviors in markets than non-markets. We suggested that this is because such beliefs may be a useful tool for individuals' strategizing behavior, which is triggered by the dominant logic of the market. We proposed that the reverse would be true for autonomous motivation to contribute because a non-market context is more likely to cater to individuals' inner moral values and is therefore more consistent with motivation that comes from within an individual. In support of this reasoning, our results showed that autonomous motivation is a stronger driver of prosocial behaviors in non-markets than markets. These findings provide a deeper understanding of the workings of the psychological drivers of prosocial behaviors and how they differ in strength across institutional context.

Our findings therefore imply that increasing citizens' and consumers' engagement in prosocial behaviors is not straightforward - different means are needed to maximize citizens' prosocial behaviors in different institutional contexts. For instance, firms that wish to implement

CSR initiatives first and foremost need to strengthen the sense of a strong prosocial norm by enhancing customers' belief about others' contributions. While the management of beliefs (e.g. disclosing how much others contribute) may work best in markets, this lever should be used with caution in non-markets where autonomous motivation is the primary psychological driver of prosocial behavior. In such settings, a less controlling approach to belief management that enhances, rather than dampens, feelings of self-determination, competence, and relatedness should be considered. While our results do not indicate that combining beliefs and autonomous motivation is harmful, it may still not be a desirable option. First, this is because beliefs seem to be more effective than autonomous motivation in promoting prosocial behaviors in market contexts, whereas the opposite is true for non-market contexts. Thus, in market contexts resources are better invested in belief management initiatives while resources are better invested in means to enhance autonomous motivation in non-market contexts. Furthermore, although our study does not reveal a negative interaction between beliefs and autonomous motivation in markets it is likely that such an interaction may occur in situations where the customers identify more with the social cause than the product, that is, if the primary reason to purchase a specific product is to support the charity and not the product itself.

Although our study is merely an initial step towards uncovering the welfare implications of using different institutions to organize prosocial behaviors, we hope that it provides some inspiration for future studies to continue this line of research and thereby contribute with a more complete understanding of the benefits and costs of different institutional contexts.

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Figures:

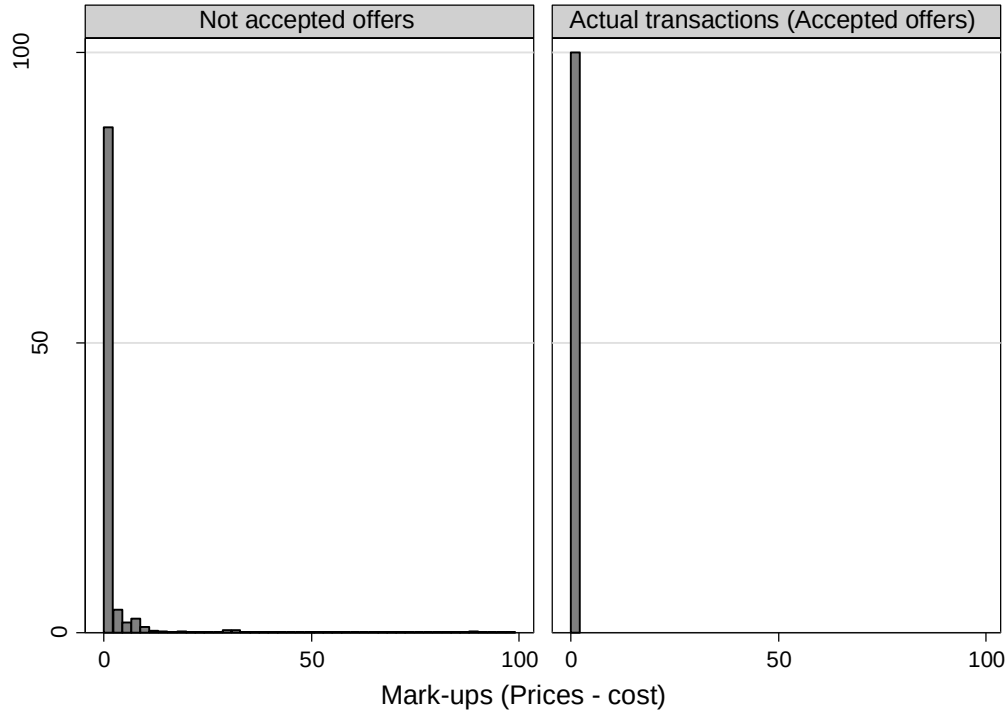

Figure 1: The sellers' mark-ups for actual transactions (right panel), and the offers which were not accepted (left panel).

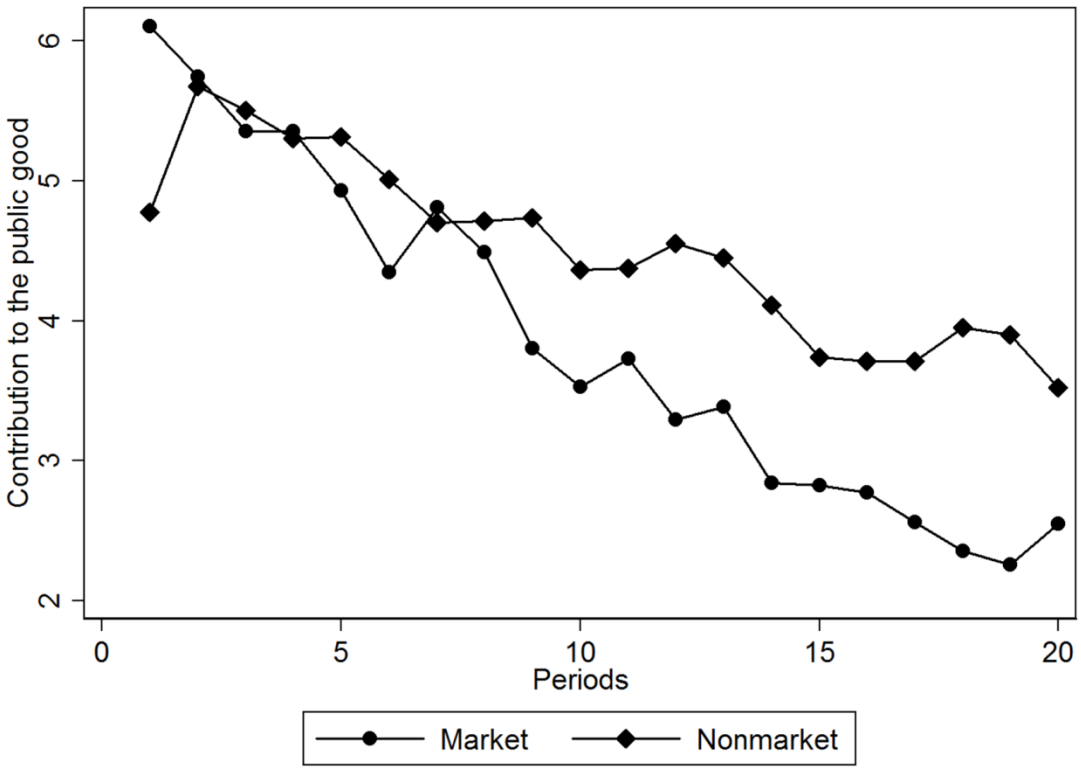

Figure 2: The treatment effect on public good contributions

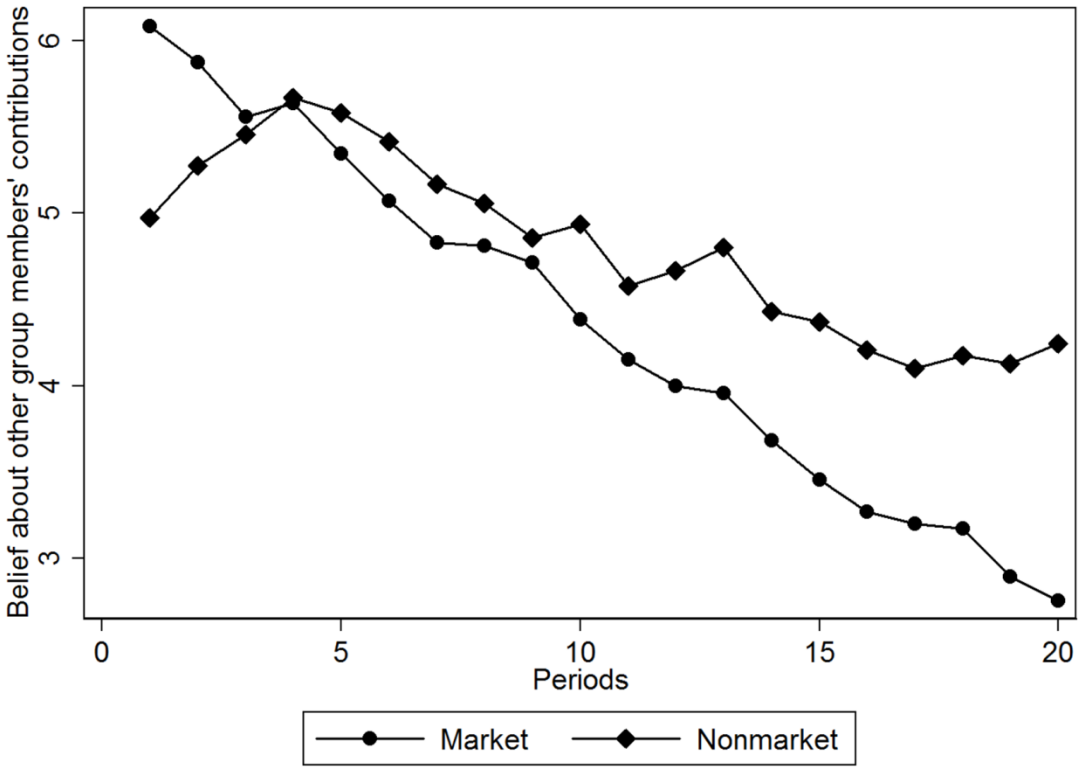

Figure 3: The treatment effect on beliefs about others' contributions

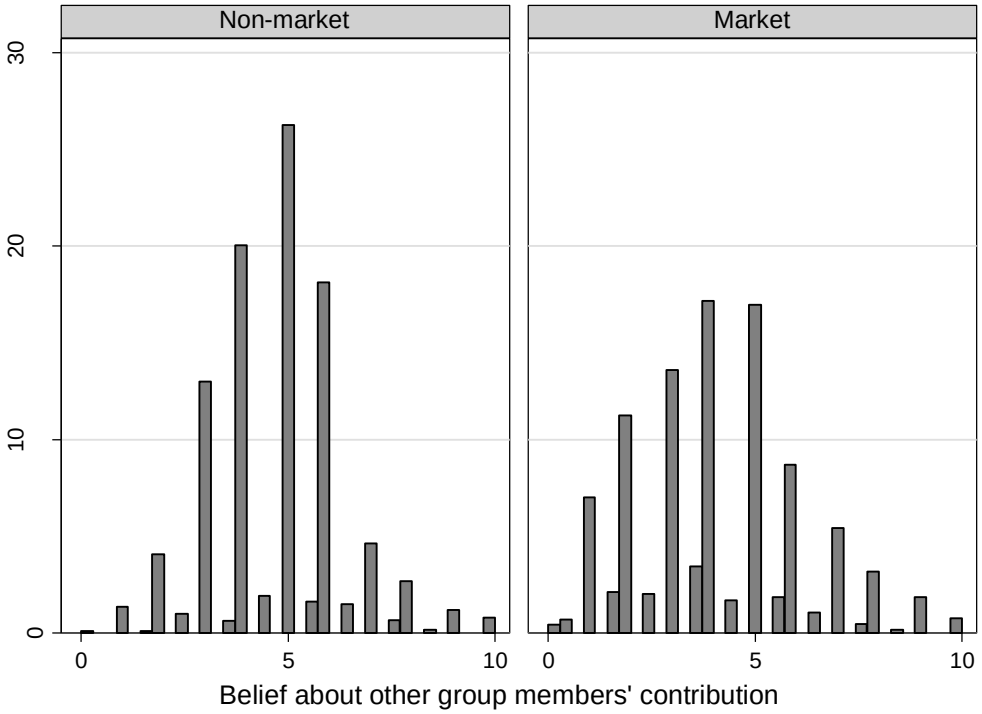

Figure 4: Distribution of individual beliefs about others' contributions across the two treatments

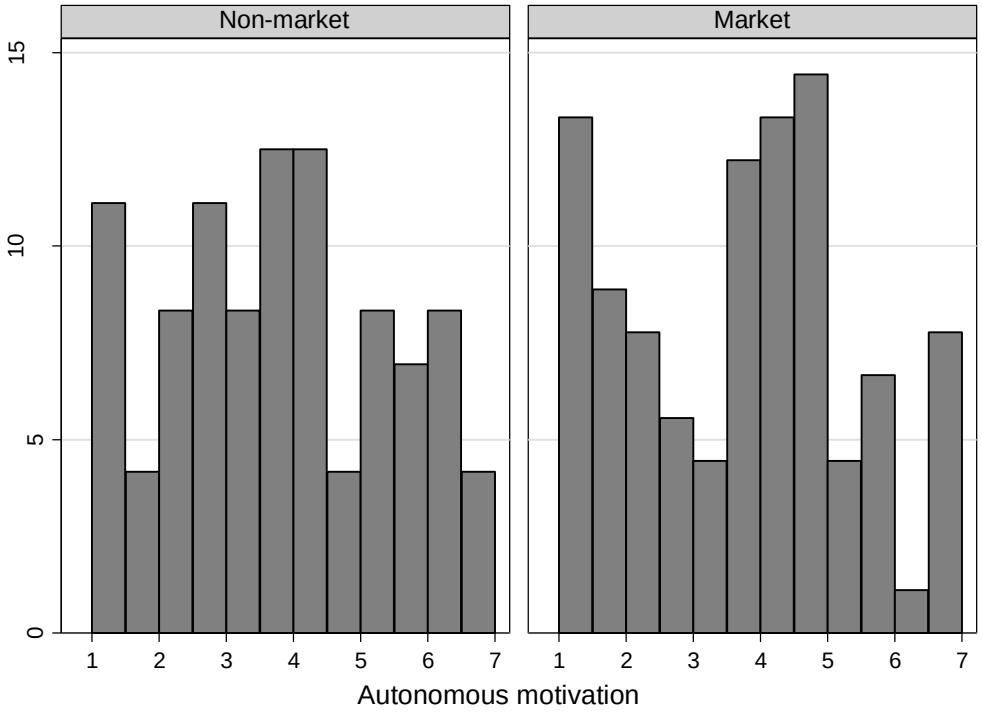

Figure 5: Distribution of autonomous motivation

Tables:

Table 1: Probit regression analyses of the sellers' price offer

Dependent variable: Transaction (=1) or not (=0)	
Markup (price-cost)	*-0.198***
	(0,0213)
Constant	*-2.448***
	(0,0263)
n	*33000*
Pseudo R2	*0.0451*

Table 2: Contribution and belief across treatments

	Contribution	**Belief**	**Difference (Contribution - Belief)**
Non-market	50% (M:45%, SD:33%)	50% (M:48%,SD:15%)	0
Market	30% (M:39%, SD:36%)	40% (M:43%, SD:19%)	-10%

Numbers show the percentages of maximum possible choice (contribution or belief) across the treatments.To get an impression of the distribution, mean (indicated by M) and standard deviation (indivated by SD) are listed in the parentheses.

Table 3: *Random effect OLS regression analyses of public good contributions*

Dependent variable: Individual contribution	(1)	(2)	(3)	(4)	(5)	(6)[6]
Market (1: Market, 0: Non-market)	-1.327***	-0.707***	-0.726***	-0.635***	-0.644***	-0.659***
	(0.338)	(0.119)	(0.115)	(0.100)	(0.0925)	(0.110)
Belief		1.657***	1.412***	1.412***	1.411***	1.411***
		(0.0993)	(0.0854)	(0.0875)	(0.0874)	(0.0873)
Market x Belief			0.396***	0.393***	0.395***	0.393***
			(0.102)	(0.104)	(0.104)	(0.109)
Autonomous Motivation				0.921***	1.115***	1.108***
				(0.130)	(0.0679)	(0.0685)
Market x Autonomous Motivation					-0.330***	-0.320***
					(0.113)	(0.123)
Control variables:						
Controlled motivation	0.139	0.120	0.118	-0.244	-0.262	-0.271*
	(0.106)	(0.131)	(0.135)	(0.164)	(0.160)	(0.154)
Female	0.00596	-0.0505	-0.0621	-0.333	-0.324	-0.340
	(0.275)	(0.265)	(0.258)	(0.207)	(0.213)	(0.244)
Economics	-0.280	0.436	0.481	0.474	0.369	0.454
	(0.701)	(0.557)	(0.543)	(1.082)	(1.033)	(1.120)
Engineering	2.839***	2.754***	2.745***	2.858**	2.800**	2.695*
	(0.524)	(0.773)	(0.793)	(1.390)	(1.339)	(1.416)
Health sciences	-0.941	0.0588	0.0817	0.192	0.0346	0.116
	(1.459)	(1.299)	(1.271)	(1.413)	(1.377)	(1.417)
Humanities	-0.416	0.176	0.244	0.270	0.106	0.138
	(0.724)	(0.830)	(0.855)	(1.407)	(1.339)	(1.484)
Law	0.110	1.019	1.041	1.323	1.172	1.263
	(0.967)	(1.003)	(1.027)	(1.449)	(1.410)	(1.476)
Life sciences	-0.444	0.190	0.254	0.201	0.0757	0.122
	(0.638)	(0.820)	(0.840)	(1.491)	(1.432)	(1.517)
Natural sciences	0.453	0.870	0.921	1.036	0.861	0.983
	(1.048)	(1.018)	(1.017)	(1.655)	(1.588)	(1.724)
Other	0.774*	1.287	1.355	0.889	0.783	0.865
	(0.468)	(0.803)	(0.835)	(1.280)	(1.234)	(1.342)
Social sciences (other than econ., business, and psy.)	-0.794	0.0935	0.179	0.484	0.343	0.342
	(0.703)	(0.792)	(0.804)	(1.336)	(1.286)	(1.375)
Psychology	-0.938	-0.112	-0.0141	0.145	0.0310	0.509
	(0.634)	(0.859)	(0.871)	(1.376)	(1.334)	(1.620)
Religion	0.889	1.491	1.479	0.888	0.611	0.965
	(1.486)	(1.942)	(1.980)	(2.237)	(2.206)	(2.077)
Technical sciences	0.774	1.252	1.321	1.186	1.026	1.087
	(0.764)	(0.839)	(0.862)	(1.325)	(1.264)	(1.357)
Constant	5.044***	4.116***	4.109***	4.196***	4.338***	4.273***
	(0.619)	(0.781)	(0.799)	(1.348)	(1.287)	(1.377)
Deleting decisions in the market treatment where price was higher than cost						X
Observations	3,240	3,240	3,240	3,240	3,240	3,087
Number of id	162	162	162	162	162	162
r2	0.0746	0.336	0.335	0.393	0.395	0.403
Chi2 (Testing the main model)	74.15	299.2	1517	1612	7088	4861
p-value	0	0	0	0	0	0

Clustered at session level, Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

[6] In model 6, we remove the transactions with a positive mark-up, but leave all transactions without a positive mark-up.