The impact of group identity on experimental markets with externalities

Drouvelis, Michalis; Gomez-Martinez, Francisco

DOI:
10.1016/j.euroecorev.2023.104544

Document Version
Publisher's PDF, also known as Version of record

Citation for published version (Harvard):
Drouvelis, M & Gomez-Martinez, F 2023, 'The impact of group identity on experimental markets with externalities', *European Economic Review*, vol. 158, 104544. https://doi.org/10.1016/j.euroecorev.2023.104544

European Economic Review 158 (2023) 104544

Contents lists available at ScienceDirect

European Economic Review

journal homepage: www.elsevier.com/locate/eer

The impact of group identity on experimental markets with externalities

Michalis Drouvelis [a,b,*], Francisco Gomez-Martinez [c]

[a] Department of Economics, University of Birmingham, United Kingdom
[b] CESifo, Munich, Germany
[c] Department of Economics, University of Fribourg, Switzerland

ARTICLE INFO

JEL classification:
C92
D03
D62
M14
Z13

Keywords:
Social responsibility
Group identity
Markets
Inequality
Laboratory experiment

ABSTRACT

Existing evidence demonstrates that the degree of social homogeneity in a society correlates with various economic indicators. Using experimental techniques, we establish the causal impact of social distance on socially responsible behavior, market prices, market efficiency and income inequality. We develop an experimental market where low-cost production generates a negative externality to a third party, while high-cost production eliminates the externality. We compare behavior in groups varying whether the third party shares a common identity with buyers and sellers (in-group condition) or not (out-group condition). Our findings indicate that socially responsible behavior is generally robust across our treatments. However, boosting group identity improves economic welfare indicators, as it leads to a striking reduction of economic inequality through changes in market price levels and improves market efficiency. Overall, our experiment shows that the social environment of market interactions matters a great deal and has significant implications for the design of institutions.

1. Introduction

There is widespread evidence that the degree of cultural diversity among members of a society affect economic outcomes (for an overview of the literature, see Alesina and La Ferrara (2005)). For example, countries with culturally homogeneous societies tend to present a more egalitarian income distribution. Using the fractionalization index developed by Alesina et al. (2003)[1] as a measure of cultural diversity within a country and the World Bank Estimate for the GINI index (2014–2020) as a measure of income inequality, we find a positive and significant correlation between both indicators (Pearson correlation coefficient $r = 0.336$, $p < 0.001$). This positive relationship is equally strong both for developed and developing societies. Other related variables to cultural diversity, like the levels of trust within a society (using data from the World Values Survey (WVS), wave 7 (2017–2020)), present even stronger (negatively) correlation with income inequality (Pearson correlation coefficient $r = -0.453$, $p < 0.001$).[2]

Socially responsible attitudes displayed by consumers and producers might be another factor that correlates with cultural diversity

* Corresponding author at: Department of Economics, University of Birmingham, United Kingdom.
E-mail address: m.drouvelis@bham.ac.uk (M. Drouvelis).

[1] See Alesina (2003) for more details about how the measure is constructed. A similar index was developed by Fearon (2003) and updated with data up to 2013 by Drazanova (2019). Variations from the original databases are minimal.

[2] The exact question was: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" Data contains 81 observations from countries of all continents.

https://doi.org/10.1016/j.euroecorev.2023.104544
Received 28 July 2022; Received in revised form 18 July 2023; Accepted 19 July 2023
Available online 20 July 2023

and trust. It is reasonable to think that consumers are more willing to buy local products to favor local producers when they have a strong feeling of common belonging. Products produced locally typically cause less global negative impacts, due to less pollution derived from transportation or the use of less chemicals in the food industry. They may also avoid behaviors or actions that can be harmful for their community. In addition, consumers may be willing to pay more for a product with an environmental label if they think they are helping to reduce a negative impact in their own society. This might affect market prices in equilibrium. These decisions have as well an impact on income distribution among the different agents in that society. We have limited observational data that supports this hypothesis. Using data from 28 countries from the EU Statistics on Income and Living Conditions (EU-SILC) from 2013, we observe that countries with high levels of trust are more willing to buy more environmentally friendly products (Pearson correlation coefficient $r = 0.506$, $p < 0.001$).[3]

We cannot conclude any causal relation by looking at the relationships from the available observational data. The more evident example is the correlation between market responsible attitudes and trust. Consumers in wealthier countries generally can afford to choose more responsible purchasing options. Measures of trust are highly correlated with the GDP per capita of a country, that in turn affects the degree of social responsibility displayed by consumers and producers in markets. Therefore, GDP per capita may partially (or totally) explain the strong correlation between trust and responsible attitudes in markets. In sum, real world is complex with many interconnected variables, which makes any causal statement challenging and controversial. To provide evidence of causal implications, we take advantage of the experimental methodology by exogenously varying social distance, by which we mean the degree of similarity among individuals induced by the situation. Research in social psychology has shown that interpersonal similarity can increase attraction and liking, which can in turn increase compliance (e.g., Cialdini, 2001). Moreover, in line with the predictions of social identity theory, membership and identification with social groups may affect behavior, as individuals adapt their choices to conform with the perceived group norms (Tajfel and Turner, 1979; 1986). Specifically, a well-established literature shows that individuals act more favorably towards their own social group ("in-group") than towards "out-groups" (e.g., Tajfel et al., 1971). In this paper, following standard techniques in the literature (e.g., Chen and Li, 2009), we use a "minimal group" procedure to induce group identification by randomly assigning participants to groups labeled "red" or "orange". This approach allows us to maintain the highest degree of control over the formation of group identities, thus facilitating the identification of the causal effects of group identity on behavior.

Our study is also motivated by existing literature showing that experimental markets erode pro-social behavior.[4] Early findings from bargaining market experiments with proposers' competition offers evidence that the self-interest assumption provides a good description for most people's behavior, which comes in stark contrast to the pro-social outcomes observed in non-market settings such as the ultimatum game (e.g., see Roth et al., 1991). One proposed explanation for this result is social distance. Interactions in competitive market environments are characterized by higher social distance among individuals, leading to more selfish behavior. In contrast, social distance in non-market interactions is lower which, in turn, leads to more pro-social outcomes. This observation has found empirical support by subsequent literature exploring the impact of social distance on behavior in non-market settings (for early results, see Hoffman et al., 1996; Bohnet and Frey, 1999; Cherry et al., 2002). In fact, existing studies document a negative causal relationship between social distance and pro-sociality in non-market environments: reducing social distance increases pro-social behavior (for an overview, see Ch.2 in Drouvelis, 2021). Yet, we know little about the causal impact of social distance on pro-social behavior in market environments. Our study contributes to this literature and asks: does reducing social distance (induced through exogenously manipulating group identities) among individuals in a market environment affect behavior and if so, how?

In particular, the primary aim of our paper is to experimentally uncover whether there is a causal impact of induced group identities on (i) socially responsible behavior in markets, (ii) price levels and (iii) income inequality and efficiency. To achieve this, we develop an experimental market framework following closely the Bartling et al. (2015) design, in which sellers [buyers] choose between offering [buying] a 'fair' and an 'unfair' product. When the unfair good is traded, a negative externality is imposed on a third-party present in the lab. The buyer can also reject all the offers in order to avoid the negative impact. We consider two identity treatments: i) buyers, sellers and third parties share a common group identity (*ID Treatment*) and ii) buyers and sellers share a common group identity different than the identity of the third parties (*IDout Treatment*). We also include a baseline treatment where identities are not introduced (*NoID Treatment*).

We decided to vary the identity of the third parties with respect to the common identity of buyers and sellers because we thought it closely resembles situations of consuming decisions in the real world. For example, our *ID Treatment* captures situations where buyers and sellers exchange a product produced within a society which also bears the negative externality.[5] In contrast, our *IDout Treatment* captures situations where buyers and sellers exchange a product produced in another society which bears the negative externality. We expect that a common group identity between buyers, sellers and third parties *(ID treatment)* boosts socially responsible outcomes. On the contrary, we expect buyers and sellers exhibit less socially responsible behavior when the third party belongs to a different identity group (*IDOut treatment*).

We find that inducing group identities does not affect the aggregate level of social responsibility in our experimental markets. This holds true for both identity treatments. This result supports some of the previous literature (reviewed in Section 2) that finds socially responsible behavior to be quite stable when varying market characteristics when the externality is artificially induced in the lab. However, group identities have a clear impact on market prices which cause important repercussions for income inequality among the

[3] Scatterplots displaying the correlations mentioned above can be found in Appendix A.

[4] See literature review in Section 2.

[5] We use the terms 'society' and 'group' interchangeably.

economic agents. In particular, the introduction of a common group identity among buyers and sellers (independent of whether they share the same identity with the third parties) causes an increase in market prices for both the fair and the unfair product. Sellers ask for a higher price for both product types and buyers do not respond to this increase changing their purchasing behavior. Buyers and sellers are able to reduce income inequality among them through a change in price levels. In addition, inducing common group identities has an additional beneficial consequence: the aggregate income of buyers and sellers is increased. This is explained by the reduction of offers rejected by the buyers in the identity treatments. In other words, we find an improvement in the efficiency of the transactions between buyers and sellers when they share a common group identity. Finally, in contrast with the reduction in inequality among buyers and sellers, income inequality between buyers and sellers versus third parties is higher in the *IDout treatment*. This is because aggregate income for buyers and sellers increases (due to the increase in the efficiency of the transactions) but group identities do not positively impact the income of the third parties through a change in socially responsible attitudes. In sum, our main take aways from our study are two. Socially responsible behavior in markets is mainly an intrinsic component of individual preferences, hardly influenced by external factors. However, group identity influences the distribution of gains from the trade between those agents directly participating in the exchange through changes in market prices.

The remainder of this paper is organized as follows. The next section reviews the related literature. In Section 3, we describe the experimental design and procedures. Section 4 formulates our behavioural hypotheses. Section 5 contains the experimental results and Section 6 concludes.

2. Literature review

We contribute to the recent experimental literature that studies the determinants of socially responsible behavior of consumers and producers in markets. The first papers that study social responsibility in markets using laboratory methods are due to Falk and Szech (2013) and Bartling et al. (2015). Falk and Szech (2013) find that the interaction in a market environment causes less socially responsible behavior than equivalent non-market decisions.[6] Their design implies that if the exchange occurs, the negative externality necessarily emerge. Bartling et al. (2015) introduces a richer repeated posted-offer market environment, where products with negative externality and externality free (with higher production costs) can be produced and exchanged. In addition, the negative externality is imposed to another person present in the lab. They find significant levels of socially responsible attitudes in their market environment and that responsible behavior is quite stable to varying market characteristics. They vary the degree of competition by introducing more sellers in the market, they introduce different treatments with limited information to the consumer and find no impact on the level of social responsibility. They only find a change in socially responsible outcomes when increasing the cost of production of the externality-free product to 80% the value of the externality. Gomez-Martinez et al. (2019) finds no effect on the level of socially responsible production or consumption when allowing sellers to coordinate on the type of product offered to the consumers. Bartling et al. (2019) finds no significant differences when the externality is diffused among many subjects in the lab. Fernandes and Valente (2021) find a marginal decrease on SR when sellers can make false advertisements about the nature of the product. Finally, the strongest effect on social responsibility is found in Bartling et al. (2022): it increases when subjects are allowed to engage in a guided chat communication about what is “morally right” or “socially appropriate”.

Other experimental studies design markets where the negative externality is diffused and imposed to parties not being present in the lab.[7] In these experiments, behavior is more sensible to varying market characteristics and institutional regimes. Kirchler et al. (2016) finds a positive effect if the action is observed and can be punished by others. Similarly, Irlenbusch and Saxler (2019) find that social information about behavior of others affect the level of social responsibility. Pigors and Rockenbach (2016) finds a positive effect measured by the salary of a worker decided by the manager when the worker can inform about her salary to the consumers. They also find that increased competition is beneficial. Ziegler (2021) finds full erosion of SR in multi-units markets where sellers and buyers can trade more than one unit. Etile and Teyssier (2016) finds that a certified label given by an external party boost social responsibility compared to unsubstantiated claims by the sellers.

We also contribute to the strand of literature that studies the effect of group identity on individual behavior and its implications on economic outcomes. A broad literature in social psychology documents that group membership significantly affects behavior (Tajfel and Turner, 1979). In economics, Akerlof and Kranton (2000) have highlighted that the feeling of belonging to a certain social group is a key factor that influences economic decisions. Recent laboratory experiments show that subjects tend to favor their own group members and discriminate against members from other groups in different strategic settings (see Charness et al., 2007; Chen and Li, 2009; Chen and Chen, 2011). There is also experimental literature studying the connection between group identity and prosocial behavior. The main conclusion is that groups with strong common sense of belonging are more cooperative compared to those with weaker identities. This has been shown both in the laboratory (e.g., Eckel and Grossman, 2005; Drouvelis and Nosenzo, 2013) as well as in the field (e.g., Solow and Kirkwood, 2002; Bernhard et al., 2006; Falk and Zehnder, 2013). We add to this broad literature by studying the impact of the introduction of induced group identities in a market environment with negative externalities.

Surprisingly, the experimental literature that studies the impact of social identity in market settings is limited. Li et al. (2011) reports on a laboratory oligopoly experiment with three buyers and three sellers trading a single homogeneous good. They find that

[6] Recently, Bartling et al. (2023) calls this result into question. In their experiment, they find that it is the repetition of the game what causes the crowding out in social concerns, not the market environment itself.

[7] The most common example of these negative externalities is losing the opportunity to donate to UNICEF measles vaccines or other charity donation.

sellers tend to offer the product to in-group members and sellers tend to accept more often the product offered for the in-group member. In consequence, out-group sellers have to charge a lower price for the good if they decide to make an offer to an out-group member. Müller and Paetzel (2021) study the impact of group identity in a repeated market game with a single product and no externalities. They show that markets reduce the importance of group membership, decreasing discrimination and altruism towards the in-group members. To the best of our knowledge, we are the first paper to study the impact of group identity on markets with externalities and product differentiation.

3. Experimental design and procedures

Our experiment consists of three treatments designed to test the impact of group identities on socially responsible behavior in markets, price levels and the implications for income inequality and efficiency. All treatments consisted of two parts. Prior to discussing how treatments in our experiment differed to each other, we describe our main experimental framework consisting of a repeated posted-offer market game similar to Bartling et al. (2015).

3.1. The market game

We first describe part 2 of the experiment, where participants interacted in a market game for 12 rounds.[8] Markets were formed by groups of ten participants. Four participants played the role of a seller, three participants played the role of a buyer, and the remaining three participants were third parties. The role of each participant was kept fixed for all the rounds of the market game.[9] Buyers and sellers could trade two types of products: an "unfair" product, which imposes a negative externality to the third party, and a "fair" product, which has no impact on the income for the third party. Buyers could also choose not to buy any product, in which case the externality to the third party was also avoided. More specifically, buyers and sellers interact in the following two-stage game:

1 Sellers simultaneously and independently choose the type of product and the price at which they want to offer the product. Each seller can only sell one unit of the product. All the offers become common knowledge for the sellers.
2 Buyers enter the market sequentially in a random order that is determined in every round. They observe the offers (price and type of product) that remain available (from four to two offers) and make a purchasing decision.[10] They can buy one of the remaining products offered or not buy at all.[11]

All participants start with an endowment of 100 points in each round. The production costs for the sellers are $c^u = 0$ for the unfair product and $c^f = 10$ for the fair product. The costs are only paid if the good is purchased by the buyer. Both product types have the same value for the buyer, $v = 50$. The payoffs for each of the three third parties are determined by one of the three potential market exchanges. Each third party is randomly matched to the purchasing decision realized by a particular buyer in each round. The third party's payoff is reduced by $e = 60$ if this particular buyer purchases the unfair good. Summarizing, the resulting payoffs are:[12]

$$\Pi^{Seller} = \begin{cases} 100 + p - c^u & \text{if sells the unfair good at price } p \\ 100 + p - c^f & \text{if sells the fair good at price } p \\ 100 & \text{if she does not sell} \end{cases}$$

$$\Pi^{Buyer} = \begin{cases} 100 + v - p & \text{if buys a good at price } p \\ 100 & \text{if does not buy} \end{cases}$$

$$\Pi^{third\ party} = \begin{cases} 100 - e & \text{if the buyer purchases the unfair good} \\ 100 & \text{otherwise} \end{cases}$$

3.2. Treatments: group identities

We observe behavior in three treatments. The market game of part 2 was preceded by a group identity-building task in the two identity treatments. In part 1 of the treatments where group identities were induced, we employed the procedure proposed by Chen and Li (2009). In each session subjects were divided into two "teams" depending on the color (either Orange or Red) they were randomly assigned to. Ten subjects were assigned to each team.[13] To strengthen identities, subjects then participated in a

[8] One round was randomly chosen for payment at the end of the experiment.
[9] Markets in Bartling et al. (2015) have more buyers and sellers. We considered four sellers enough to induce competition and avoid tacit collusion. Tacit collusion is rarely observed in the lab when oligopolies consist of three or more sellers (see Huck et al. (2004)).
[10] The offers are displayed in a random order determined every round.
[11] Sellers are also informed about the accepted offers and the order.
[12] We use an explicit market context in the instructions. In particular, we use the terms "sellers'', "buyers'', "purchase", "prices'' and "types of products''. The third party is neutrally described as Player C. We do not use the terms "fair" or "unfair" but "Products with no effect on participant C" and "Products with a loss for participant C".
[13] Each session consisted of 20 subjects.

problem-solving task together. They were given 3 min to communicate with their fellow team members via a computer chat program before submitting their answers.[14] In part 1 of the control treatment (where no group identity was induced), subjects also participated in the problem-solving task individually, but they were not divided into teams and could not communicate with any other participant before submitting an answer.

The treatments inducing group identity vary with respect to whether buyers, sellers and third parties in the market game belong to the same team from Part 1 or whether buyers and sellers belong to the same team, but third parties belong to a different team from Part 1. We refer to the resulting treatments as *ID* treatment and *IDout* treatment, respectively. The treatment where there is no group identity induced is referred to as *NoID* treatment. Before participating in the market game, subjects were informed about the team they belong to as well as the team of the other subjects that they were matched with. Table 1 presents an overview of the experimental design and treatments.

3.3. Procedures

We ran 12 sessions with 240 participants recruited at the University of Birmingham. All subjects were recruited at the University of Birmingham, using the SONA software and the experiment was computerized and programmed with the software z-Tree (Fischbacher, 2007). At the end of each session, subjects were privately paid according to their total amount of points collected in the experiment, using an exchange rate of £0.07 per point. Average earnings (including a show-up fee of £2.50) were £10.32. Sessions lasted 70 min, on average. Before subjects played the game, they received the instructions reproduced in Appendix B. As we wanted to ensure that subjects understood the decision situation and the mechanics of payoff calculations, all participants answered several control questions. The experiment did not proceed until every subject had answered these questions correctly.

4. Hypotheses

We now state our hypotheses concerning the effect of inducing group identities on socially responsible behavior, market prices, efficiency and income inequality. First, we hypothesize how social responsibility measured by the share of outcomes where the negative externality is avoided may change when introducing our identity treatments. If we assume that individuals are exclusively self-interested, we would expect that buyers will select the lowest price in the market and sellers will offer the unfair product which has the lowest cost. This implies that selfish buyers and sellers will not care about outcomes avoiding the negative externality. However, there is by now a well-established literature (as surveyed in Drouvelis, 2021) showing that individuals deviate from what standard economic theory – assuming selfishness and rationality – would predict. In addition to this, existing evidence shows that subjects have group specific preferences (for evidence with minimal groups, see, e.g., Chen and Li, 2009). To understand the role of group identity for socially responsible behavior, we draw on the social identity theory (Tajfel and Turner, 1979), which has spawned a large literature in psychology and sociology. In economics, social identity was introduced and formalized more recently by Akerlof and Kranton (2000). Experimental evidence indicates that individuals have group-specific preferences in their economic behavior when either "minimal groups" or naturally occurring social groups. Specifically, it has been shown that groups with common identities exhibit higher levels of pro-sociality compared to groups without identity (for an overview of the literature, see Charness and Chen, 2020). In our context, we expect market exchanging participants to care more about third parties when they share a common identity with them compared to the case where no identities are induced. In consequence, we expect less unfair trades in ID than in *NoID*. In contrast, when the identity of the third party is different from the common identity between buyers and sellers, we expect market participants to care more about the participant from the other side of the market than the third party. In consequence, we expect more unfair trades (where gains from trade are higher) in *IDout* than in *NoID*. This leads us to formulate our first hypothesis.

Hypothesis 1. *Social responsibility, measured by the share of outcomes where the negative externality is avoided, is higher in ID than in NoID and lower in IDout than in NoID.*

We next turn to Hypothesis 2 which looks at the effect of group identity on market prices. In our market context, prices can be seen as a mechanism through which buyers and sellers can make redistribution decisions. Given that there are more sellers than buyers in our experiment and that each seller and buyer can trade at most one product, we expect competition to put a downward pressure on prices. For instance, in Bartling et al. (2015) baseline treatment which employs a similar market structure as in our *NoID* treatment, market prices lead to higher profits for buyers than sellers. Previous literature on experimental oligopolies also supports this prediction (see Huck et al. (2004)). However, in the identity treatments, we would expect that buyers and sellers may want to obtain a more egalitarian distribution of incomes between them. Recent evidence by Fischbacher et al. (2023) finds support for this hypothesis. In a laboratory experiment, they find most choices of the decision-makers involve redistribution that leads to a reduction of inequality among ingroup members. In consequence, we expect that, compared to the NoID treatment, market prices will increase in our identity treatments, allowing buyers and sellers to redistribute earnings. This leads us to formulate our second hypothesis.

[14] In the task, subjects reviewed six paintings by Paul Klee and Wassily Kandinsky and could discuss for 3 minutes the features of the paintings with members of their own group. Communication via the chat program was unrestricted except that subjects were forbidden to reveal their identity and to use obscene language. Then, another two paintings showed up and subjects had to guess individually the artist who made each painting. They received 5 points (= £0.35) per correct guess. Subjects did not learn whether their guesses were correct until the end of the experiment.

Table 1
Overview of experimental design.

Part 1	Part 2	Part 2, Group identity composition	Treatment	Markets
Individual problem-solving task	Market game	–	*NoID*	8
Group problem-solving task, preceded by random assignment to teams	Market game	Buyers, sellers and third parties were in same team in part 1	*ID*	8
		Buyers and sellers were in the same team and third parties were in a different team in part 1	*IDout*	8

Hypothesis 2. *Market prices for the fair and unfair product will be higher in ID and IDout compared to NoID.*

Our Hypothesis 3 refers to the impact of group identities on the sum of incomes of buyers, sellers and third parties, which can be seen as a measure of overall efficiency in our market setting. There are two components that may affect the aggregate income of buyers, sellers and third parties. First, avoiding the negative externality increases aggregate income since it is the efficient outcome (the cost of producing the fair good is lower than the negative impact imposed to the third party). Therefore, following Hypothesis 1, a positive effect on aggregate income is expected in *ID* and a negative effect is expected in *IDout.* Second, aggregate income may be affected by offer rejections. In particular, in the identity treatments, buyers may reject offers made by sellers less often; thus, avoiding the loss of gains of trade caused by an offer rejection. This effect will increase aggregate income in both *ID* and *IDout* (where buyers and sellers share a common group identity). In sum, both components will have a positive effect on aggregate income in *ID* but opposite effects in *IDout,* leading to an ambiguous effect in the latter case. This leads us to formulate our third hypothesis.

Hypothesis 3. *The aggregate income of buyers, sellers and third parties will be higher in ID but may be higher, lower or remain unchanged in IDout, compared to NoID.*

Last, our Hypothesis 4 is on the effect of group identities on income inequality among buyers, sellers and third parties and emerges as a consequence of Hypotheses 1 and 2. We expect that changes in socially responsible outcomes will imply lower inequality in *ID* compared to *NoID*, since third parties will benefit from the avoidance of the negative externality (following Hypothesis 1). On the other hand, income inequality will be higher in *IDOut* compared to *NoID.* Following Hypothesis 2, an increase in prices is expected to reduce income inequality between buyers and sellers in both identity treatments. Overall, this implies that income inequality will be lower in *ID* than in *NoID,* but the effect will be ambiguous effect in *IDout.* This leads us to formulate our fourth hypothesis.

Hypothesis 4. *Inequality among buyers, sellers and third parties will be lower in ID but may be higher, lower or remain unchanged in IDout, compared to NoID.*

5. Results

In this section, we present our experimental results. In subSections 5.1 and 5.2 we focus on how induced group identities affect our two main aggregate market outcomes: share of socially responsible outcomes and market prices. In subSection 5.3. We analyze how changes in the previous aggregate measures affect income inequality across different agents. We also provide an efficiency analysis.

Throughout the paper, we follow Bartling et al. (2015) by basing our statistical analysis on individual-level random-effects panel data regressions with robust standard errors clustered by subject, unless indicated otherwise.

5.1. Social responsibility in markets

Result 1. Socially *responsible outcomes are not affected by the introduction of group identities in our market setting. This holds true in the ID and IDOut treatment.*

Support. As a starting point of our analysis, we uncover the effect that induced group identities may have in the agents' decisions of acting responsibly in markets. In our design, sellers act responsibly when offering the fair good to the buyers. Buyers act responsibly when buying the fair good or when not accepting any offer from the sellers (both actions imply that the third party does not bear the negative externality). Also, notice that buyers ultimately determine whether the market outcome is socially responsible or not, i.e. whether the negative externality is imposed to the third party.[15] Therefore, when analyzing *socially responsible outcomes* we are in fact analyzing buyers' behavior.[16]

Fig. 1 shows the share of socially responsible outcomes over periods across treatments. We display the data in four blocks of three periods each. The vertical axis shows the share of socially responsible outcomes across treatments. A clear observation that is apparent from Fig. 1 is that the share of socially responsible outcomes is fairly constant over time in NoID and decreases over time in *ID* and *IDOut* (as shown by the "Period*ID" and "Period*IDout" coefficients; for supporting evidence, see Model (3) in Table 2*)*.[17] In

[15] Obviously, buyers' decision may also depend on the set of prices and products' types offered by the sellers.

[16] Results from sellers' actions are briefly described in footnotes when analyzing analogous decisions from buyers in the main text. In general, aggregate sellers' data is in line with the results found from buyers' decisions.

[17] The variable *Period* is not included in the specification without interaction terms since the trend is not significantly different than 0 in the NoID treatment ($p = 0.91$). This makes easier to illustrate in the table the decreasing trend in the identity treatments.

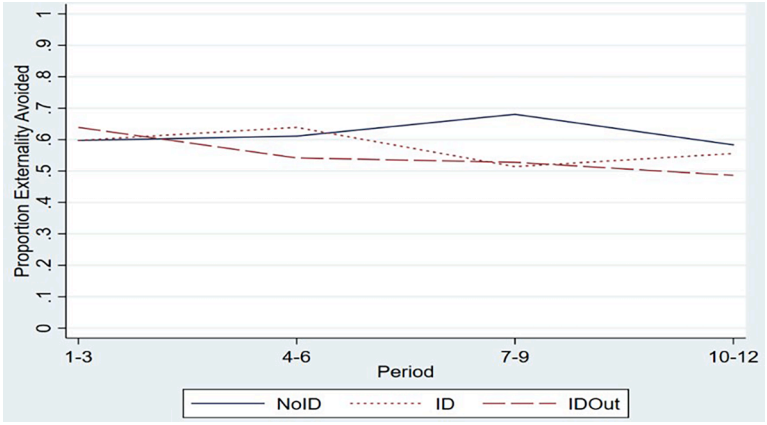

Fig. 1. Evolution of the share of socially responsible outcomes across treatments.

particular, we observe that, on average, the negative externality is avoided in 61.81%, 57.64% and 54.86% of the potential market transactions in *NoID, ID* and *IDOut,* respectively. These figures are not significantly different, as shown by Model (1) in Table 2, where we only include dummy treatment variables.[18]

Model (2) in Table 2 controls for the minimum price that the buyer observes of each product type. These are the only prices that rational buyers should consider when making a purchasing decision.[19] We observe that buyers are responsive to minimum prices: they are more likely to buy the (un)fair product the lower the minimum price for the (un)fair product is. We find that while *ID Treatment* has a positive effect *on socially responsible outcomes* and *IDOut Treatment* a negative effect, however, this effect remains statistically insignificant in both identity treatments. This leads us to our first main result contradicting our Hypothesis 1. Inducing a common group identity between buyers, sellers and third parties does not affect social responsibility in our experimental markets. Responsible behavior is not affected either when third parties belong to a different group than the common group induced for buyers and sellers.[20] This is in line with previous literature (see Section 2) suggesting that socially responsible behavior is generally quite stable to varying market characteristics when the externality is imposed to someone in the lab, suggesting that socially responsible behavior in markets is an intrinsic component of individual preferences, hardly influenced by external factors.

5.2. Market prices

Result 2. *Market prices are significantly higher in both ID and IDout compared to NoID, regardless of the type of product. The price premium does not significantly vary across treatments.*

Support. We next analyze the effect that the introduction of group identities may have on transaction prices for both types of products. The prices at which products are exchanged are relevant for two reasons. First, market prices affect the income distribution between buyers and sellers. For example, a market price of 25 [30] for the unfair [fair] product would yield the same income for both the buyer and the seller in that transaction. Therefore, the further the average market prices from those numbers, the higher the income inequality between buyers and sellers. Second, the relative price of the fair product with respect to the unfair product affects buyers' decisions on whether (or not) acting responsibly, that at the end determines the income of the third party. Therefore, relative prices might affect both the share of *socially responsible outcomes* and the income distribution between buyers, sellers and third parties. The effect that prices and group identities have on income distribution and inequality among agents is analyzed in the next subsection. Fig. 2 shows the evolution of market prices for the fair and unfair products across treatments.

We observe a clear downward trend in prices over time in all treatments. In addition, we observe a clear treatment effect on prices for the fair good in both identity treatments: the average price for the fair product is higher in *ID* and *IDOut* than in *NoID* for all periods. A similar pattern can be seen for the unfair product. These remarks are corroborated by our regression analysis. Table 3 presents six regression models, in which the dependent variable in models (1) to (3) refer to the price paid by the buyer when purchasing the fair good, and models (4) to (6) refer to the price paid by the buyer when purchasing the unfair good. Models (1) and (4) only include dummy variables capturing treatment effects, while Models (2) and (5) additionally consider a common trend effect across treatments and models (3) and (6) allow for different trends across treatments.

The average market price for the fair product is 22.97 in the *NoID* treatment, 27.56 in the *ID* treatment and 27.18 in the *IDout*

[18] Sellers offer the fair product 55.99%, 50.26% and 51.04% of the times in *NoID, ID* and *IDOut* respectively. These figures are not significantly different from each other either.

[19] Buyers choose the product with the lowest price (among the products of the same type) in more than 98% of the times in all treatments.

[20] When we control for the buyer order and the number of offers faced, our main results remain the same (see Table C.1 in the Appendix).

Table 2
Share of socially responsible behavior across treatments.

Variables	(1) PROBIT externality avoided	(2) PROBIT externality avoided	(3) PROBIT externality avoided
ID	-0.054	0.1352	0.255
	(0.418)	(0.531)	(0.422)
IDout	-0.188	-0.161	0.227
	(0.409)	(0.494)	(0.417)
MinPriceFair		-0.0816***	
		(0.025)	
MinPriceUnfair		0.1033***	
		(0.027)	
Period*ID			-0.048*
			(0.028)
Period*IDOut			-0.065**
			(0.033)
Constant	0.516*	0.521*	0.521*
	(0.270)	(0.272)	(0.272)
Observations	864	534	864

Notes: The dependent variable in Models (1) and (2) takes value 0 if the unfair good is traded and 1 otherwise (fair good traded or no transaction). The dummy variable ID takes value 1 for the ID treatment. The dummy variable IDout takes value 1 for the IDout treatment. Period takes values from 1 to 12.

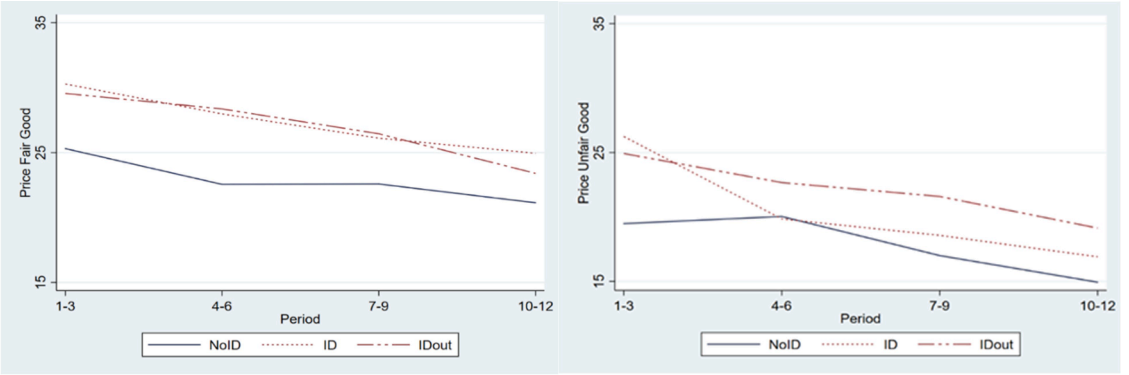

Fig. 2. Evolution of the market price for the fair and unfair goods across treatments.

treatment. Market prices for the fair product are significantly higher in both identity treatments compared to the *NoID* treatment ($p = 0.026$ for *NoID* vs. *ID* and $p = 0.013$ for *NoID* vs. *IDout*).[21] No significant price differences for the fair product are found between *ID* and *IDout* treatments ($p = 0.820$). Similarly, the average market price for the unfair product is 17.86 in the absence of any identity. The average market price for the unfair product increases to 20.23 and 21.83 in *ID* and *IDout* ($p = 0.095$ and $p = 0.009$ respectively).[22] No significant differences are observed in the average market price for the unfair product between *ID* and *IDout* are found ($p = 0.376$).[23] Similar market price increases for the fair and unfair good suggests inequality aversion preferences among buyers and sellers: they are trying to reduce the inequality between them through the change on price levels. Finally, we find a downward trend in prices for the fair and unfair products in all treatments. The trend is not significantly different across treatments for the fair product. In contrast, for the unfair product, we observe that the price downward trend is significantly steeper in *ID* than in *NoID* and *IDOut*. This might indicate a higher demand for the fair product in the *ID* treatment, with sellers responding to it by decreasing the unfair product price over time.

As a final step in our analysis of market prices, we compare whether the price difference between the fair and the unfair product

[21] The average price for the fair product offered by the sellers is 24.4, 28.61 and 27.96 for *NoID, ID* and *IDOut* respectively. The average offered price for the fair product is higher in both identity treatments ($p = 0.009$ and $p = 0.012$).

[22] The average price for the unfair product offered by the sellers is 19.33, 23.05 and 23.41 for *NoID, ID* and *IDOut* respectively. The average price offered is significantly higher in both identity treatments as compared with the *NoID* treatment ($p = 0.017$ for the *ID* comparison and $p = 0.001$ for the *IDout* comparison).

[23] When we control for the buyer order and the number of offers faced, the identity effect on prices remain robust (see Table C.2 in the Appendix). Our analysis also shows that buyers pay a higher price for both types of products the less offers they face and the later they enter the market.

Table 3
Market prices for the fair good and unfair good across treatments.

Variables	(1) Price Fair good	(2) Price Fair good	(3) Price Fair good	(4) Price Unfair good	(5) Price Unfair good	(6) Price Unfair good
ID	4.589**	4.178**	4.178**	2.737*	2.962*	6.973***
	(2.065)	(2.021)	(2.365)	(1.740)	(1.686)	(2.384)
IDout	4.211**	3.719**	4.859**	4.241***	4.469***	5.094**
	(1.699)	(1.698)	(2.036)	(1.558)	(1.483)	(2.072)
Period		-0.589***	-0.525***		-0.727***	-0.480**
		(0.079)	(0.131)		(0.113)	(0.230)
ID*Period			0.008			-0.611**
			(0.202)			(0.285)
IDout*Period			-0.195			-0.105
			(0.172)			(0.266)
Constant	22.971***	26.736***	26.326***	17.410***	22.020***	20.436***
	(1.528)	(1.620)	(1.746)	(1.133)	(1.169)	(1.598)
Observations	464	464	464	362	362	362

Notes: The dependent variable in Models (1) to (3) is the price paid by the buyer for the fair product. The dependent variable in Models (4) to (6) is the price paid by the buyer for the unfair product. The dummy variable ID takes value 1 for the ID treatment. The dummy variable IDout takes value 1 for the IDout treatment. Period takes values from 1 to 12.

varies across treatments. Model (1) in Table C.3 in Appendix C shows the overall market price premium considering all the experimental markets. We observe that the magnitude of the price premium is very close and not significantly different from the price at which buyers and sellers share the extra cost of producing the fair product ($p = 0.934$).[24] Prices for both products decrease at a similar pace and therefore the average price premium remains constant over time. In Model (2), we examine potential price premium differences across treatments. We find that the price premium is not significantly different across treatments as shown by the interaction terms in Model (2). Consequently, there is no difference in the price premium paid for the fair good in either of the two identity treatments. This confirms that the magnitude of the price increase caused by identity is similar for both types of products.

In conclusion, the introduction of a common group identity between buyers and sellers (regardless of whether they share the same identity with the third parties) causes a significant increase in market prices both for the fair and the unfair product. The magnitude of the increase is the same across product types and treatments. Sellers ask for a higher price both for the fair and the unfair product and buyers do not respond to this increase changing their purchasing behavior. In the next subsection, we will see a potential explanation of why market prices are higher in the identity treatments: buyers and sellers are trying to reduce the inequality between them through the change on price levels.

5.3. Income, inequality and efficiency in markets

Result 3. Average sellers' income is significantly higher in ID and IDout compared to NoID. Average buyers' income does not significantly differ across treatments, due to the reduction of offers' rejections. In consequence, total income of buyers and sellers is significantly higher in ID and IDout compared to NoID.

Support. We start our analysis by looking at the earnings of buyers and sellers. Buyers earn 126.78 in *NoID,* 124.85 in *ID* and 124.95 in *IDout*. By contrast, sellers earn 110.28 in *NoID*, 113.50 in *ID* and 114.25 in *Idout*. When testing for income differences within a treatment, we find that buyers earn significantly more than sellers ($p < 0.001$ for all treatments).[25] Fig. 3 shows the evolution of the average income for buyers and sellers over time across treatments. We observe that sellers' average income decreases over time, whereas buyers' average income increases over time, this relationship holding across all treatments. This is explained by the nature of price competition among sellers in our experimental markets.

To assess whether buyers' and sellers' income differ across treatments, we report five regression models in Table 4. Model (1) shows that sellers' income is significantly higher when common group identities between buyers and sellers are induced. This is because average market prices were found to be higher in both identity treatments (see Result 2). On the other hand, looking at Model (2), we find that buyers' income does not significantly decrease when common identities are introduced as compared to the *NoID* treatment ($p = 0.36$ for the *ID* treatment and $p = 0.33$ for the *Idout* treatment). This might be surprising at first sight because we would expect a decrease in buyers' income due to the increase in market prices. However, this is balanced by a reduction in the proportion of offers rejected by the buyers in the identity treatments. In the *NoID* treatment, buyers reject all offers in 8.3% of the potential transactions. This number decreases to less than 2% for both identity treatments ($p = 0.028$).[26] Therefore, both opposite forces yield to a non-significant change in buyers' income (see late rounds in Fig. 3 left panel). Finally, from Model (3) and in line with result 1, we

[24] Recall that the extra cost of producing the fair product is 10.
[25] See Table C.4 in Appendix C.
[26] Rejecting all offers causes a loss to the buyer as soon as the price of one of the products is lower than 50. This is always the case during all rounds of the experiment.

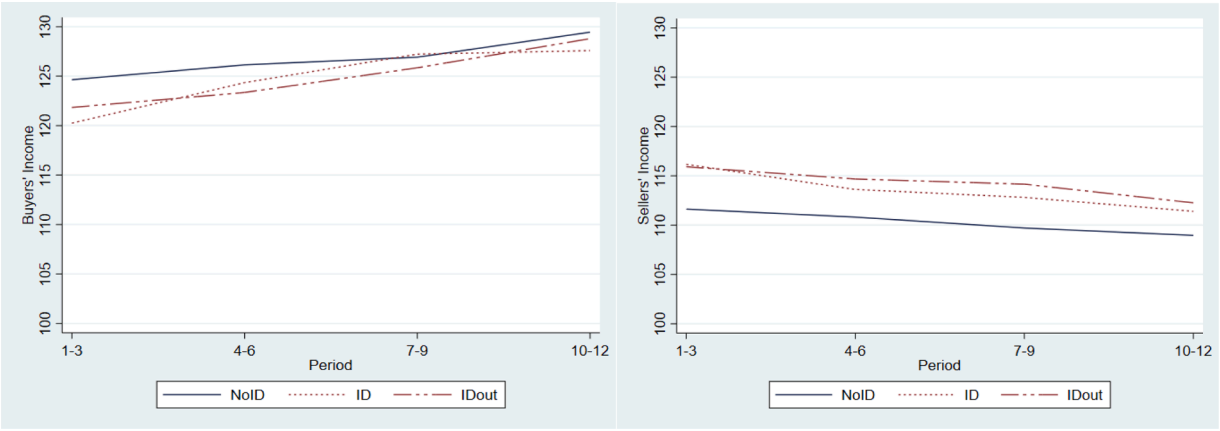

Fig. 3. Evolution of average sellers' and buyers' income over time across treatments.

Table 4
Sellers' and buyers' income across treatments.

Variables	(1) Seller's income	(2) Buyer's income	(3) Third party's income	(4) Total average income (buyer+seller)	(5) Total average income (buyer+seller+third party)
ID	3.221***	-1.934	-2.500	1.012***	-0.042
	(1.162)	(2.094)	(6.017)	(0.363)	(0.474)
	3.977***	-1.830	-4.167	1.488***	-0.208
IDout					
	(1.149)	(1.867)	(6.002)	(0.369)	(0.741)
Period	-0.395***	0.722***	-0.495*	0.084*	-0.090***
	(0.078)	(0.088)	(0.277)	(0.015)	(0.023)
Constant		122.090***	80.303***	116.807***	105.8***
	112.846***				
	(1.030)	(0.014)	(4.134)	(0.327)	(0.427)
Observations	1152	864	864	288	288

Notes: The dependent variable in (1) measures the income of a particular seller in a certain round. The dependent variable in (2) measures the income of a particular buyer in a certain round. The dependent variable in (3) measures the average total income for buyers and sellers in a certain round. The dependent variable in (4) measures the average total income for buyers, sellers and third parties in a certain round. The dummy variable ID takes value 1 for the ID treatment. The dummy variable IDout takes value 1 for the IDout treatment. Period takes values from 1 to 12.

conclude that third parties' income is not affected by the introduction of induced identities.

Understanding the motives behind buyers rejecting all offers and why smaller rejection rates arise in the identity treatments is important to understand the efficiency results discussed below. We conjecture two motives behind buyers' rejection behavior: Buyers dislike facing only unfair offers and/or prices are considered unfairly high.[27] In the *NoID treatment*, 63% of the rejections occur although subjects face both types of products, suggesting that prices are the reason of rejection in these cases. In fact, the average price for the fair good when offers are rejected is 6.43 units higher compared to the case where an offer is accepted ($p = 0.000$). In contrast, the average price for the unfair good is not significantly different between these two cases ($p = 0.378$): only the price for the fair products matters for rejecting offers in the *NoID treatment.* The price motivation seems *to* fade out in the identity treatments. In fact, the proportion of rejections where both products are offered significantly decreases to 20% and 25% in *ID* and *IDout treatments* compared to 63% in *NoID treatment* (two-sided Kolmogorov-Smirnov test $p = 0.000$ and $p = 0.042$ respectively*).* Only facing unfair offers is the main reason of rejecting all offers in the identity treatments: 80% and 75% of the rejecting cases for *ID* and *IDOut treatments* respectively, compared to 25% in *NoID treatment* (two-sided Kolmogorov-Smirnov test $p = 0.000$ and $p = 0.042$ respectively*)*. In summary, the unfairly high prices for the fair product appear to be the main cause of offers' rejections in the *NoID Treatment*. This reason fades out on the identity treatments, where offers are mainly rejected when no fair products are offered.

Next, we analyze how the total income of our economic agents is affected by inducing group identity. Total income can be seen as

[27] We thank an anonymous referee for proposing this analysis and (accurately) guessing the motives of offer rejections.

an efficiency measure of our experimental markets. Notice that higher levels of social responsibility[28] and lower shares of offers rejected by the buyers have a positive impact on aggregate income.[29] We first look at the total income earned by buyers and sellers.[30] From Model (4), we observe an increase in the total income of buyers and sellers in both identity treatments. This is attributed to the increase in sellers' income and the preservation of buyers' income thanks to offer rejections reduction in the identity treatments. We also notice that this increase in the efficiency of the transactions improves over time. Model (5) considers the overall income earned by all three economic agents and shows that overall income is not affected by group identities. Specifically, the introduction of group identities does not have a positive effect in the income earned by the third parties and, as a result, the increase in the efficiency of the transactions is not sufficient to increase the overall income. In conclusion, contrary to Hypothesis 3, induced identities have a positive impact on the total income of the active market participants, but this is not sufficient to increase aggregate income.[31]

Result 4. Income inequality among buyers and sellers is significantly lower in both the ID and IDout treatments. The reduction on inequality among buyers and sellers is stronger in IDout than in ID. In contrast, income inequality between buyers and sellers versus third parties is significantly higher in IDOut than in NoID.

Support. Here, we analyze the impact of group identity on i) *inequality among buyers and sellers* and ii) *inequality between buyers and sellers* vs. *third parties*. We start by looking at inequality among buyers and sellers, as defined by their difference in income earned. The difference in incomes between buyers and sellers is 16.51 in the *NoID* treatment. This difference significantly reduces to 11.35 and 10.70 in *ID* and *IDout* (see Table C.4 in Appendix C). We proceed now to use the coefficient of variation as a measure of income inequality.[32]

Table 5 performs the regression analysis.[33] The coefficient of variation in Models (1) and (2) is calculated by dividing the standard deviation of the individual incomes of the four buyers and the three sellers with their mean income in a given round.[34] From Model (1), we can see that inequality among buyers and sellers increases over time. This is again caused by the reduction of market prices over time due to competition. More importantly, inequality among buyers and sellers is reduced when introducing a common group identity among them. This reduction holds for both identity treatments. In addition, Model (2) compares the magnitude of the inequality reduction among buyers and sellers between *ID* and *IDout*. Interestingly, inequality among buyers and sellers is significantly reduced more in *IDout* than in *ID*. We discuss two potential explanations (not mutually exclusive) for this result. First, we can observe from Fig. 2 and Model (6) in Table 3 from previous section, that the price of the unfair good in *ID* and *IDout* increases by approximately the same amount in early rounds but decreases faster over time in *ID* than in *IDout*. This indicates that sellers cannot increase the price for the unfair product as much in *ID* as in *IDOut*: The higher demand for the fair product in *ID* compared to *IDOut* forces sellers to decrease the price for the unfair product in *ID*. In consequence, inequality is reduced less in *ID* than in *IDout*. Additionally, we may argue that the common induced identity among buyers and sellers might be stronger in *IDout* than in *ID*. Previous literature showed that common sense of belonging among agents is stronger when facing an out-group with a different identity (see Lane (2016) for a meta-analysis). This would be an additional mechanism through which inequality is reduced more in *ID* than *IDout*.

Finally, we analyze inequality between *buyers and sellers* vs. *third parties*. We decided to consider buyers and sellers as a single entity in opposition to third parties. We thought it resembles the real-world situations where buyers and sellers from the same society exchange a product with a potential negative externality imposed to another society. The coefficient of variation in Model (3) is calculated by dividing the standard deviation of the average income of buyers and sellers vs. the average income of the third parties with respect to the aggregate mean income in a given round. First, we can see that inequality increases over time. We can also observe that overall inequality is not affected in the *ID* treatment. However, inequality between buyers and sellers vs. third parties is significantly higher in *IDout* compared to *NoID*. Recall that the aggregate income of buyers and sellers is significantly higher in the identity treatments due to the decrease in the number of rejected offers. However, this positive effect of identity does not affect third parties, and this is specially true in *IDout.* Results about income inequality offers evidence in favor of our Hypothesis 4. While we do not find support in our data suggesting that overall income inequality is reduced in the *ID* treatment, we observe that income inequality between buyers and sellers is reduced. On the other hand, we find evidence for an increase in inequality in the *IDout* treatment compared to the *NoID* treatment.

In summary, the introduction of common group identities reduces inequality between buyers and sellers through the increase of market prices. Sellers ask for higher prices and buyers accept them in order to reduce inequality. In other words, buyers and sellers who share a common group identity are trying to reduce the inequality between them through the change in price levels. We also observe an increase in the efficiency of the transactions (less offers' rejections) between buyers and sellers when a common group identity is introduced. This causes an increase in the aggregate income of buyers and sellers. Together with the fact that third parties do not

[28] Since the extra costs of production for the fair product are lower to the loss imposed to the third party when the unfair is traded.

[29] The gains of trade for both sellers and buyers would be lost.

[30] Models (3) and (4) report OLS regressions with robust standard errors clustered at market level, as the dependent variable is averaging the total income of different agents in a single measure.

[31] When we add interaction terms between periods and treatment dummies in Table 4, our treatment results remain the same (see Appendix C, Table C.5).

[32] This measure satisfies the basic properties expected when analyzing economic inequality: mean or scale independence, population size independence and the Pigou-Dalton condition.

[33] Table 5 reports OLS regressions with robust standard errors clustered at market level as the dependent variable is the coefficient of variation that considers the incomes of different agents in a single measure.

[34] As a robustness check, Gini coefficient is used as a measure for income inequality in Table C.6. in Appendix C. Results are qualitatively the same.

Table 5
Income inequality across treatments.

Variables	(1) Coefficient variation seller buyer	(2) Coefficient variation seller buyer	(3) Coefficient variation (B-S vs. third party)
ID	-0.010***		0.014
	(0.004)		(0.014)
IDout	-0.023***	-0.013***	0.028**
	(0.004)	(0.002)	(0.014)
Period	0.001***	0.0004	0.003*
	(0.000)	(0.000)	(0.002)
Constant	0.106***	0.097***	0.170***
	(0.004)	(0.001)	(0.008)
Observations	288	192	288

Notes: The dependent variable in (1) and (2) is the coefficient of variation of the individual incomes of buyers and sellers. The dependent variable in (3) is the coefficient of variation of the mean income of buyers and sellers versus the mean income of the third parties. Period takes values from 1 to 12. The dummy variable ID takes value 1 for the ID treatment. The dummy variable IDout takes value 1 for the IDout treatment.

benefit from the introduction of group identities, we find an increase in income inequality of buyers and sellers compared to third parties in the *IDout* treatment.

6. Conclusions

This paper adds to the literature that uses experimental methods to uncover the determinants of prosocial behavior within market environments. In particular, our contribution focuses on studying the causal impact of inducing group identities in markets where negative externalities may arise. We study the impact on socially responsible outcomes and provide important implications in terms of social welfare, both for income inequality among the economic agents and about overall efficiency. To address our research question, we developed an experimental market framework where low-cost production generates a negative externality to a third party, while high-cost production eliminates the externality. We compared economic outcomes in groups varying whether the third party shares a common identity with buyers and sellers (in-group condition) or not (out-group condition). As a baseline condition, we induced no group identity.

We find that, overall, inducing group identities does not affect the aggregate level of social responsibility in our experimental markets. Group identities have a greater and persistent impact on market prices and important implications for income inequality and efficiency. Buyers and sellers are able to reduce income inequality between them through a change in price levels. In addition, we find an increase in the aggregate income of buyers and sellers due to the increase in the efficiency of the transactions. Finally, income inequality between buyers and sellers versus third parties is higher in the identity treatment where third parties belong to a different group identity. Overall, we can conclude from our experiment that societies with low social distance experience higher levels of economic welfare as measured by income inequality and efficiency.

Finally, we discuss List's (2020) SANS conditions (selection, attrition, naturalness and scaling) to address concerns about external validity. In terms of selection, our laboratory experiment used a student sample. Treatments were randomized to subjects and there was no attrition as all participants completed the experiment until the very end. The decision-making task that subjects participated was a standard market laboratory experiment with externalities (also previously employed by others in the laboratory); thus, our experimental setting is less natural to the decisions that subjects may make outside the laboratory. Last, in terms of scaling, our market experiment has been considered previously in the literature (e.g. Bartling et al., 2015, 2019, 2020). The evidence from these studies shows that socially responsible behavior in these experiments is not sensitive to elements of the decision-making environment and in this respect, our results further contribute to this direction, in particular, when induced group identities are considered. Our study calls for further need to conduct more systematic research testing for the generalizability of the impact of group identity effects on market behavior in wider populations.

Data availability

Data will be made available on request.

Acknowledgements

Financial support from BI Norwegian Business School and the University of Birmingham is gratefully acknowledged. We thank Antonio Cabrales and Bertil Tungodden for useful comments. The study was approved by the University of Birmingham IRB ERN-12-0624AP.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at 10.1016/j.euroecorev.2023.104544.

References

Akerlof, G.A., Kranton, R.E., 2000. Economics and identity. Q. J. Econ. 115 (3), 715–753.
Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., Wacziarg, R., 2003. Fractionalization. J. Econ. Growth 8 (2), 155–194.
Alesina, A., Ferrara, E.L., 2005. Ethnic diversity and economic performance. J. Econ. Lit. 43 (3), 762–800.
Bartling, B., Weber, R.A., Yao, L., 2015. Do markets erode social responsibility? Q. J. Econ. 130 (1), 219–266.
Bartling, B., Valero, V., Weber, R., 2019. On the scope of externalities in experimental markets. Experim. Econ. 22 (3), 610–624.
Bartling, B., Valero, V., Weber, R.A. and Yao, L., 2022. Public discourse and socially responsible market behavior. Available at SSRN: https://dx.doi.org/10.2139/ssrn.3677968.
Bartling, B., Fehr, E., Özdemir, Y., 2023. Does market interaction erode moral values? Rev. Econ. Stat. 105 (1), 226–235.
Bernhard, H., Fehr, E., Fischbacher, U., 2006. Group affiliation and altruistic norm enforcement. Am. Econ. Rev. 96 (2), 217–221.
Bohnet, I., Frey, B.S., 1999. Social distance and other-regarding behavior in dictator games: comment. Am. Econ. Rev. 89, 335–339.
Charness, G., Chen, Y., 2020. Social Identity, Group Behavior, and Teams. Annu Rev Econom 12, 691–713.
Charness, G., Rigotti, L., Rustichini, A., 2007. Individual behavior and group membership. Am. Econ. Rev. 97 (4), 1340–1352.
Chen, Y., Li, S.X., 2009. Group identity and social preferences. Am. Econ. Rev. 99 (1), 431–457.
Chen, R., Chen, Y., 2011. The potential of social identity for equilibrium selection. Am. Econ. Rev. 101 (6), 2562–2589.
Cherry, T.L., Frykblom, P., Shogren, J.F., 2002. Hardnose the dictator. Am. Econ. Rev. 92 (4), 1218–1221.
Cialdini, R.B., 2001. Influence: Science and Practice. Allin & Bacon, MA. Vol. 4th.
Drazanova, L., 2019. Historical index of ethnic fractionalization dataset (HIEF). Harvard Dataverse 1.
Drouvelis, M., Nosenzo, D., 2013. Group identity and leading-by-example. J. Econ. Psychol. 39, 414–425.
Drouvelis, M., 2021. Social Preferences. An Introduction to Behavioural Economics and Experimental Research (Newcastle: Agenda Publishing).
Eckel, C.C., Grossman, P.J., 2005. Managing diversity by creating team identity. J. Econ. Behav. Organ. 58 (3), 371–392.
Etilé, F., Teyssier, S., 2016. Signaling corporate social responsibility: third-party certification versus brands. Scand. J. Econ. 118 (3), 397–432.
Falk, A., Zehnder, C., 2013. Discrimination and in-group favoritism in a citywide trust experiment. J. Public Econ. 100, 15–27.
Falk, A., Szech, N., 2013. Morals and markets. Science 340 (6133), 707–711.
Fearon, J.D., 2003. Ethnic and cultural diversity by country. J. Econ. Growth 8 (2), 195–222.
Fernandes, M.E., Valente, M., 2021. What you get is not what you paid for: new evidence from a lab experiment on negative externalities and information asymmetries. J. Behav. Experim. Econ. 93, 101712.
Fischbacher, U., Grammling, D., Hausfeld, J., Zíka, V., 2023. Identity breeds inequality: evidence from a laboratory experiment on redistribution. J. Public Econ. 222, 104866.
Gomez-Martinez, F., Onderstal, S., Schinkel, M.P., 2019. Can collusion promote corporate social responsibility? Evid. Lab (No. TI 2019-034/VII). Tinbergen Institute Discussion Paper.
Huck, S., Normann, H.T., Oechssler, J., 2004. Two are few and four are many: number effects in experimental oligopolies. J. Econ. Behav. Organ. 53 (4), 435–446.
Hoffman, E., McCabe, K., Smith, V.L., 1996. Social distance and other-regarding behavior in dictator games. Am. Econ. Rev. 86 (3), 653–660.
Irlenbusch, B., Saxler, D.J., 2019. The role of social information, market framing, and diffusion of responsibility as determinants of socially responsible behavior. J. Behav. Experim. Econ.s 80, 141–161.
Kirchler, M., Huber, J., Stefan, M., Sutter, M., 2016. Market design and moral behavior. Manage. Sci. 62 (9), 2615–2625.
Lane, T., 2016. Discrimination in the laboratory: a meta-analysis of economics experiments. Eur. Econ. Rev. 90, 375–402.
Li, S.X., Dogan, K., Haruvy, E., 2011. Group identity in markets. Int. J. Ind. Organiz. 29 (1), 104–115.
List, J.A., 2020. Non est Disputandum de Generalizability? A glimpse into the external validity trial. NBER Working Paper No. 27535.
Müller, D. and Paetzel, F., 2021. Markets reduce discrimination. Available at SSRN 3785255.
Pigors, M., Rockenbach, B., 2016. Consumer social responsibility. Manage. Sci. 62 (11), 3123–3137.
Roth, A.E., Prasnikar, V., Okuno-Fujiwara, M., Zamir, S., 1991. Bargaining and market behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: an experimental study. Am. Econ. Rev. 1068–1095.
Solow, J.L., Kirkwood, N., 2002. Group identity and gender in public goods experiments. J. Econ. Behav. Organ. 48 (4), 403–412.
Tajfel, H., Billig, M.G., Bundy, R.P., Flament, C., 1971. Social categorization and intergroup behaviour. Eur. J. Soc. Psychol. 1 (2), 149–178.
Tajfel, H., Turner, J.C., 1979. An Integrative Theory of Intergroup Conflict. In: Austin, W.G., Worchel, & S. (Eds.), The Social Psychology of Intergroup Relations. Brooks/Cole, Monterey, CA, pp. 33–47.
by Tajfel, H., Turner, J.C., 1986. The social identity theory of intergroup behavior. In: Worchel, S., Austin, W. (Eds.), Psychology of Intergroup Relations. Nelson Hall, Chicago. IL, pp. 7–24. by.
Ziegler, A., Romagnoli, G. and Offerman, T., 2021. Morals in multi-unit markets. Tinbergen Institute Discussion Paper 2020-072/I. Available at SSRN: https://ssrn.com/abstract=3710813.