1 Experimental design and research hypothesis

The basic design of the experiment builds on the competitive market treatment in Pigors and Rockenbach (2016). Participants play in groups of four. Each group consists of two producers and two consumers. One session will have 16 participants. There are thus four groups k with overall eight producers s and eight consumers x. The groups are randomly rematched in every period. The experiment is conducted over 20 periods.

In every period, producers receive an initial endowment of 10 Taler and decide on the price $p \in [0, 30]$ Taler and the total production cost $c \in [0, 10]$ Taler of two units of a homogeneous good. The production costs are sunk costs (i.e. independent of the amount of goods sold) and determine the size of the external effect of production. The externality is modeled by decreasing an initial amount of 20 Taler (40 €) for every group intended for donation to Médecins sans Frontières. Production costs of 10 Taler do not cause externalities and thus do not decrease the donation. Every Taler of production cost saved reduces the donation by one Taler. Production costs of 0 Taler thus decrease the value of the donation by 10 Taler. The donation of a group D_k in Taler remaining at the end of a period is thus calculated as

$$D_k = 20 - \sum_{s_k=1}^{2} 10 - c_s,$$

where s_k is the index for the producers of a group. If in one period both producers of a group choose production costs of 0 Taler the donation will be 0 Taler at the end of the period.

After the producers have made their decisions, the consumers of their group are offered the products and decide whether to buy a product and if so of which producer. In the baseline treatment (NTI), consumers know the price of the products but not the production costs. The value of all products for the consumer is 30 Taler. A consumer can only buy one product per period, thus his buying decision $b \in \{0, 1\}$. Consequently, the number of goods sold by a single producer $n \in \{0, 1, 2\}$. The payoffs in Taler at the end of each period are calculated as follows:

$$\pi_s = 10 - c + n * p \qquad \text{... payoff for producers}$$

$$\pi_x = \begin{cases} 0 & \text{if } b = 0 \\ 30 - p & \text{if } b = 1 \end{cases} \qquad \text{... payoff for consumers}$$

A producer's payoff π_s in every period is the initial endowment of 10 Taler minus production cost c plus number of products sold n times the price p. The payoff for a consumer π_x is 0 when she does not buy a product ($b = 0$) and the value of the product of 30 Taler minus price p when she buys a product ($b = 1$). After making their buying decision consumers are asked about their expectations of the other consumer's buying decision. If their expectation is correct they receive one additional Taler.

At the end of the experiment, one out of the twenty periods is randomly selected. The payoffs of this period for every consumer and producer are transferred into real money at a rate of 2:1 (2 Taler = 1 €) and paid out to the participants. The donation amount left at the end of this period is donated to Médecins sans Frontières.

Three additional treatments alter the baseline experiment (NTI) in two dimensions. Firstly, transparency is added, which means that consumers know about the production

costs of the products on offer. This is similar to the full information treatment in Pigors and Rockenbach (2016). Consumers in the transparency treatments thus are informed about the ethical impact of the products when they make their buying decision. Secondly, collective buying decision making is added. This means both consumers of a group simultaneously make a suggestion for a collective buying decision. This includes choosing whether to collectively buy zero, one or two products and from which producer to buy products. The suggestion can also be to buy one product from each producer. After both consumers have made their suggestions one of their suggestions is randomly picked and put into practice as their collective buying decision. Both consumers share the payoff from the collective decision equally. All possible combinations result in four treatments, shown in table 1.

	Individual buying decisions	Collective buying decisions
No transparency	NTI (baseline)	NTC
Transparency	TI	TC

Table 1: Treatment matrix

Under standard assumptions of rational payoff maximization, producers are expected to maximize their profit with production costs of 0 Taler, thus decreasing the donation by 10 Taler in all periods in all treatments. Furthermore, in light of excess supply, competition between producers should drive prices down, leaving producers with no surplus and maximizing consumers' welfare. However, the existing evidence for social preferences alters the expectation of producer and consumer behavior. People are usually not completely indifferent to other people's welfare and tend to share a given amount of money, as results from dictator games show (Camerer, 2003, p. 57). Etilé and Teyssier (2016) have shown that this is also true if the second party is not another participant in an experiment but a charity organization. I thus expect the production costs to be larger than zero. Moreover, in alignment with Fischbacher et al. (2009), competition is not expected to drive prices down to zero but to remain on a higher level because of fairness aspects.

Again, under standard assumptions, rational consumer behavior should not be influenced by their knowledge that producers face a trade-off between production costs and the amount of the donation. On the contrary, extensive research on ethical consumption behavior suggests that consumers are sensitive towards ethical issues (e.g. Vitell, 2003; Belk et al., 2005; Green and Peloza, 2011; Vitell, 2015). However, without information on production costs, they can only make a guess about the social impact of the goods on offer by using the price level as a signal for the height of production costs. Consumers might interpret a high price as a signal for ethical production, because they believe producers charge a more or less constant surplus on top of their production costs. This could reduce consumers' price sensitivity in the NTI treatment as compared to expectations under rational payoff maximization and thus lower the price pressure for producers. On the other hand, consumers risk getting tricked because producers know that they might think that way. If consumers are aware of that, they might simply buy the cheapest product despite their ethical concerns.

This reasoning also applies to the NTC treatment. Collective consumer decisions do not alter the expected outcome even if fairness preferences are taken into account because consumers do not know how ethically products on offer have been produced. Nevertheless,

I consider the NTC treatment important to control whether adding collective consumer decisions without transparency makes any difference.

When consumers know the production costs of offered products, they can compare the offers not only by price but also by their ethical impact. Compared to the NTI treatment, this should first of all lead to higher sensitivity to production cost differences between the goods offered. Under competition, the increased consumer sensitivity to production cost differences should force producers to take on higher production costs in the transparency treatments.

Hypothesis 1 *Production costs in the TI and TC treatment are, on average, higher than in the NTI and NTC treatment.*

Consumers' decisions do not have any direct impact on the donation amount. Nevertheless, consumers might feel responsible to reward or to punish producers' choice of production cost with their buying decision. This behavior has been described best with the notion of social reciprocity by Carpenter et al. (2004). They state that people are willing to demonstrate their disapproval, at personal cost, for the violation of widely-held norms. In other words, they might be willing to forgo some monetary profit and eventually buy the more expensive good (given that the more expensive good was produced with higher production cost) or even refrain from buying a product for the sake of punishing unethical production. This would also be in line with the findings of Fehr and Fischbacher (2004) on third-party punishment. Compared to the NTI and NTC treatment, this should lead to an increased willingness to pay higher prices if production costs are higher. Therefore, because I expect production costs to be higher in the transparency treatments, I also expect prices to be higher.

Hypothesis 2 *Prices in the TI and TC treatment are, on average, higher than in the NTI and NTC treatment.*

The model of inequality aversion ERC (equity, reciprocity and competition) by Bolton and Ockenfels (2000) assumes that individuals' utility does not only depend on their absolute payoff but also on their relative payoff within the group. Applied to my experiment, the ERC model predicts a decreasing motivation for a consumer to refrain from consumption, if she expects the other consumer to buy any product.

Another prominent model, the inequity aversion model by Fehr and Schmidt (1999), calculates a disutility for individuals from their payoff being different from other people's payoff. It allows for a separate evaluation of positive and negative differences. If a consumer buys a product, she and the producer whose product she buys will have a positive payoff. This possibility increases the incentive for the second consumer to also buy a product because of inequality aversion. However, there is a chance that one producer makes two sales and the other producer makes no sale. Then, one producer might have a high payoff ($\pi_s = 10 - c + 2 * p$) and the other producer a very low payoff ($\pi_s = 10 - c$). This could theoretically decrease the incentive for a consumer to buy a product if she expects the other consumer to buy a product. Yet, this is very unlikely for two reasons. First, applying the model of Fehr and Schmidt (1999) to results from ultimatum games suggests that negative differences (i.e. own payoff is lower than other people's payoff) loom much larger than positive differences. Therefore, the low payoff of one producer should not much affect a consumer's utility. Second, competition should result in low prices. The payoff of a producer will be moderate even if she makes two sales. Therefore, a producer making two sales will probably not earn much more than a consumer who buys a product. Hence,

the willingness of a consumer to refrain from buying a product might be deteriorated by both inequality and inequity aversion.

In the ERC model (Bolton and Ockenfels, 2000), it does not make a difference for a consumer's utility whether one producer makes two sales or each producer makes one sale. Therefore, the model can also make a prediction of how inequality aversion might influence the decision of which product to buy. The prospect of the other consumer buying the cheap product and thus earning more will decrease the incentive of a consumer to buy the expensive product.

In the collective buying decision treatments, these effects are ruled out, because consumers know that the decision of one of them will be binding for both. In other words, consumers vote for a collective buying decision to be put in practice. Here, inequality in the payoffs of consumers is not possible and the payoffs of producers are under the control of the consumer. Inequality/inequity aversion thus cannot decrease the willingness to refrain from buying a product or to buy an expensive product instead of a cheap one. As the willingness to refrain from buying or to buy the expensive product originally stems from concerns about ethical production, I do not expect the collective buying decision to have any impact in the no transparency treatments, in which consumers do not know the production costs. Under transparency, on the other hand, the collective buying decision should increase the tendency to buy expensive and ethically produced products and the tendency to buy no product at all if production costs of both products offered are too low. This should lead to higher prices and higher production costs.

Hypothesis 3 *Prices and production costs in the TC treatment are, on average, higher than in the TI treatment.*

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