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## **How to Treat Farmers Fairly? Results of a Farmer Survey**

Anneke Hellberg-Bahr<sup>a</sup> and Achim Spiller<sup>b</sup>

<sup>a</sup>*Research Assistant, Department of Agricultural Economics and Rural Development,  
Georg-August-University Goettingen, Platz der Göttinger Sieben 5, 37073 Göttingen, Germany*

<sup>b</sup>*Chair, Marketing for Food and Agricultural Products, Department of Agricultural Economics and  
Rural Development, Georg-August-University Goettingen, Platz der Göttinger Sieben 5, 37073 Göttingen, Germany*

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### **Abstract**

With growing price volatilities on agricultural markets, the question of fair prices for agricultural products is becoming increasingly important. One major aspect of this is fair treatment of farmers by supply chain partners. Fairness has been discussed in studies in the literature for some time now, but there is little evidence concerning farmers' perceptions of fairness. This paper addresses this gap, using empirical data from a farm survey and regression analysis of farmer attitudes. The results clearly reveal that besides the overall price satisfaction, the reliability of the supply chain partners and solidarity between farmers influence perceived fairness.

**Keywords:** fairness, solidarity, agricultural supply chain, price volatilities, multiple regression analysis

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<sup>ⓐ</sup>Corresponding author: Tel: +49 551 39 22399  
Email: [abahr@gwdg.de](mailto:abahr@gwdg.de)  
A. Spiller: [a.spiller@agr.uni-goettingen.de](mailto:a.spiller@agr.uni-goettingen.de)

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## **Introduction**

With the increasing liberalization of the EU Common Agricultural Policy and growing dependency on global agricultural commodity markets, farmers face greater price volatility leading to a number of frictions in agri-food supply chains. For example, the increasing volatility and the imminent abolition of milk quotas led to a growing dissatisfaction among dairy farmers, which inter alia resulted in the “milk strike” in Germany and some other European countries in 2008. This initiated a discussion about fair prices in agricultural supply chains. The strike and the increasing complaints by German farmers led agricultural organizations and politicians to the conclusion that farmers felt unfairly treated, due to dissatisfaction with agricultural product prices. In the context of this discussion, the question arose of what fair prices are and what fairness in agricultural supply chains actually means.

Fairness concepts are widely discussed in the marketing literature from a consumer point of view (Toler et al. 2009; Chang and Lusk 2009; Diller 2000). Economists research the question of why people behave fairly, and not like “Homo economicus” (Kahneman et al. 1986; Charness and Rabin 2000; Fehr and Schmidt 1999; Fischbacher et al. 2009). Sociologists research the question of what fair wages are (Jasso 1978; Liebig et al. 2009). However, this issue has not yet been approached from the suppliers’ – in our case the farmers’ – point of view. The main research question of this paper is to examine what farmers perceive as fair, given that the existence of fairness improves strong supplier relationships (Kahneman et al. 1986; Kumar et al. 1995; Wagner et al. 2011). Our objective is thus to determine relevant factors that might affect the perceived fairness of farmers concerning the below-mentioned hypotheses. Moreover, we give suggestions for successful supplier relationship management based on the results. To answer this question we proceed as follows. After a short overview of the relevance of fairness in supply chains and of different fairness definitions, we use a survey of 533 German farmers to examine their perceptions of fairness. By means of exploratory factor analysis and multiple regression analysis, we show different influences on fair treatment in agricultural supply chains. The results can be used to enhance fairness between trade partners in agricultural supply chains.

## **Fairness in Supply Chains**

For supply chain researchers, the most important question is whether and how fairness influences relationships. A strong influence of the perceived fairness on long-term relationships has indeed been found (Lind 2001; Kumar et al. 1995; Gu and Wang 2011; Wagner et al. 2011). However, the argument that actors in a supply chain collaborate in order to realize economic benefits and that these benefits positively influence the relationship (Williamson 1983) cannot be universally accepted (Kahneman et al. 1986). In most cases, it is impossible to determine the outcome of a transaction beforehand. Hence, other aspects should be taken into account when discussing motivational aspects for cooperation (Wagner et al. 2011; Gu and Wang 2011). Kahneman et al. (1986) introduced the role of perceived fairness for the willingness to collaborate in their research. Furthermore, perceptions of fair treatment in relationships differ according to the degree of uncertainty of fairness (van den Bos and Lind 2002; van den Bos 2001) and to individual fairness perceptions (Lind et al. 1993) but have substantial effects on attitudes towards and behavior in these relationships (Lind 2001).

Kumar et al. (1995) highlighted the importance of supplier fairness in buyer-seller relationships. They state that there is a difference between fairness of the outcomes and fairness in supply chain processes. Hence, it may also be assumed that there is a difference for farmers. The overall assumption that a high price satisfaction may lead the farmers to feel treated fairly could be supplemented by attitudes of the farmer towards supply chain processes which deal with trade in a supply chain. Whilst fairness in supply chains is one important factor for functioning relationships, most research has focused on fairness in organizations. However, there is a difference between fairness in organizations (Kumar et al. 1995; van Knippenberg et al. 2007) and fairness between supply chain partners. To the best of our knowledge, there has as yet been no research on farmers' evaluation and view of important aspects of fairness in agricultural supply chains. This study tries to fill this research gap and sheds light on how farmers can be treated fairly.

## **Fairness in Research and Hypotheses**

The question of fair treatment has been discussed for some time by both economists (Kahneman et al. 1986) and sociologists (Jasso 1978), and has also been adapted to price psychology in marketing (Diller 2000) on which we will focus in this context as well. We will give a short introduction to fairness research in sociology, experimental economics and price psychology to describe how fairness can be evaluated and perceived by people. Additionally, we will provide a link to the assumed influences of interactions between business partners on farmers' perception of fairness.

Before starting, we will focus on the actual evaluation of fairness by European farmers. As we have mentioned above, it can be assumed that perceived fairness has been reduced as a result of market liberalization. Liberalized markets, so the hope, will increase efficiency in the agricultural sector. Many researchers have focused on the question whether efficiency in agriculture and fairness are mutually exclusive (Colman 1994). They come to the conclusion that the degrees of effectiveness and fairness have to be weighed up to allocate an optimal trade-off (Colman 1994; Weise 2002; Suchanek 2002). Thus, our first research question focuses on how high the perceived fairness is.

Sociological approaches often discuss fairness in the context of justice of payments (Jasso 1978) or the justice of political forces (Breyer 2008). Justice of payments can be differentiated into basic human needs and the needs for luxury goods which one actor can fulfill with his/her own work. In addition, a just compensation of performance is discussed (Liebig et al. 2009). In supply chains this may mean that a just compensation of performance is needed to think that one is treated fairly. If farmers' revenues do not cover their production costs they will not be satisfied with their product prices. This will reduce their perceived fair treatment. From this, we hypothesize that a high price satisfaction will increase farmers' perception of fairness (H1).

Sociologists also talk about the recognition of work (Liebig et al. 2009; Schoefer 2005). For farmers, this can be in terms of monetary value, but also in social recognition. If the work of the farmer is not recognized by the buyer or by the consumers, this may lead to a perception of unfairness. For German consumers prices are very important, due to the fact that discounters have a high market share (Spiller et al. 2010). Thus we hypothesize that their high price-consciousness will lead farmers to feel treated unfairly (H2).

In experimental economics, fair and just actions of human beings have been evaluated using game theory with experimental research designs. The most common models discussed in this context are those of Fehr and Schmidt (1999) and Bolton and Ockenfels (2000), which addressed the question why people behave fairly and altruistically and do not act like “Homo economicus” (Fischbacher et al. 2009). In these models, the actors draw conclusions about whether each other’s actions were fair (consequence). Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) argued that people’s aversion to inequality leads them to behave fairly. Other researchers state that people consider whether they will be treated fairly (intention-based approach) (Rabin 1993; Charness and Rabin 2000). Thus, experimental economics concludes that people’s perception of fairness is contingent on individual social preferences for fairness. These preferences refer to people’s reciprocity, aversion to inequality and pure altruism (Fehr and Fischbacher 2002). Nevertheless, Bauernschuster et al. (2010) found that competition reduces reciprocity. Hence, a competitive market environment reduces the perception of fairness. In our research, we use this assumption to investigate the question of solidarity between farmers. An increase in competition, as assumed with higher market liberalization, may result in a loss in solidarity between farmers, which may have a negative influence on perceived fair treatment. We hypothesize that there is an influence of solidarity between farmers on farmers’ perception of fairness (H3), meaning that farmers who perceive solidarity as important are less satisfied with fairness in the increasingly competitive agribusiness environment.

In psychological disciplines, price fairness is important. Aspects of price fairness for the consumer include transparency, honesty, reliability, influence and a say in decisions, consideration, respectfulness and consistent behavior (Diller 2000). For actors in supply chains (farmers, in this context) these aspects could be important too. For example, if the price for agricultural products is clear and transparent to the farmer, he may feel treated fairly. Diller (2000) argued that reliability plays an important role in fairness. If the farmer relies on his supply chain partner and trusts him, he will feel treated fairly. Hence we hypothesize that a high reliability of supply chain partners will positively influence the farmer’s perceived fairness (H4).

## **Data and Empirical Methods**

A standardized questionnaire was developed. Questions were mainly answered in 5-point Likert scales (-2= I fully disagree, 0= partly, +2= I fully agree). The questionnaire can be divided into three different topics; we refer to the second and last one in this context. The questionnaire begins with questions referring to the current political situation and attitudes towards market processes. Additionally, one part refers to values like solidarity between farmers. The second part of the survey asked the farmers about attitudes towards fair treatment and prices in supply chains, which we will deal with in this context. At the end, farmers were asked about their sociodemographic and business organisational situation. Some items were taken from the literature, and some were newly developed if no earlier studies and scales could be found or an adaption did not seem to be appropriate for farmers. The questionnaire was pre-tested online with a software tool for comments by research assistants and students. Thereafter students asked farmers to answer the online questionnaire (snowball sampling). In addition, we promoted the survey online on the website of an agricultural magazine.

The online sample consists of 533 farmers and was conducted between December 2010 and January 2011. The respondents were mainly located in the North-West of Germany and were on average 41 years of age. Respondents were mainly well educated (master, university or college education in 62 % of cases; German average = 10 % (DBV 2011)), male (92.7 %) and managers of professional farms (89.8 %). The farms cultivate 198 (sd=266) hectares on average (German average = 56.5 hectares (DBV 2011)), with different concentrations: 38.6 % were mainly engaged in arable farming, 33.1 % produced milk, 22.8 % produced pork, 2 % fruit and vegetables, and 3.5 % bioenergy. Although the sample is not representative of German farmers, this study can give indications for further research. Moreover it is interesting for agribusiness because the sample is based on future-oriented farmers. However, it is not universally valid.

Data analysis is divided into three parts. First we present results of descriptive analyses followed by an exploratory factor analysis, which extracted four reliable factors. We then investigate the impact of the extracted factors on fair treatment perception of farmers by means of multiple regression analyses. Principal component analysis with orthogonal rotation (varimax) was used to reduce the number of attitudinal items in the data set (Table 1). The Kaiser-Meyer-Olkin value (0.777) verifies the adequacy of the sampling for this analysis. Additionally the Bartlett's test of sphericity  $\chi^2(91) = 1926.23$ ,  $p < 0.001$  indicates high correlations between the used items in the analysis. According to the Scree-Plot and Eigenvalue criteria, four factors with Eigenvalues higher than one were extracted and explained 60.53 % of the variance. The reliability of each factor was measured with the Cronbach's Alpha value, where values higher than 0.6 (for scales used for the first time) / 0.7 (for scales used for a second or multiple times) indicate a reliable factor (Field 2009; Nunally 1978).

In the next step, a multiple regression analysis was used to predict the perceived fair treatment of farmers. The overall model quality criteria - the adjusted  $R^2$  - displayed with 57.3 % and F-Value of 179.44\*\*\* a good fit of the model (Field 2009). The appropriateness of the individual predictors for farmers' perceived fairness is shown in the table below for each factor (Table 2).

## **Results**

The farmers agree to some extent with the statement "I feel treated fairly by my buyer" (mean: 0.56, sd: 0.838). 61 % of the respondents agree with this statement, whereas 10 % feel treated unfairly and 29 % have indifferent feelings about their actual treatment of the buyer. These results generally agree with the assumption of Suchanek (2002) and Weise (2002). Nevertheless, we do not examine the reasons of actual fairness perceptions, but question how fairness can be accomplished in agricultural supply chains. Taking into account that nearly 40 % of farmers feel unfairly treated or have indifferent feelings towards their supply chain partners, it is an essential goal to investigate how farmers can be treated fairly. For this our results show the opportunities for increasing the farmers' perceptions of fairness.

Four factors displaying different aspects of possible fairness patterns were examined by means of an exploratory factor analysis (Table 1). The first factor refers to the price satisfaction of farmers. The mean values display indifferent attitudes towards price satisfaction. Additionally, this factor includes items concerning just compensation for the effort of the farmer. The second factor comprises the reliability and the relationship quality in the supply chain. The respondents generally confirm that they can rely on their buyer and nearly all have good relationships with

them. The statements representing the solidarity factor were answered positively, except price differences between small and large scale farmers which was given a cautiously positive evaluation. For this statement, the respondents have very different attitudes indicated by a high standard deviation. The fourth factor displays the perceived price-consciousness of consumers. Overall, farmers evaluate the willingness of consumers to pay enough money for their produced goods negatively. The relatively large standard deviations of the used items suggest that in several cases it can be assumed that the farmers in our sample differ in their attitudes towards the relational factors. In the next step we use regression analysis with “I feel treated fairly by my buyer” as dependent variable to investigate influences on the fairness perception of farmers.

**Table 1.** Results and Items of Factor Analysis

<b>Factor and Items</b>	<b>Mean (sd)</b>	<b>Factor Loading</b>
<i>Factor 1: Price satisfaction, CA: 0.773, % of variance: 19.43</i>		
In general I am satisfied with the product prices.	0.08 (0.848)	0.786
My product prices correspond to my effort.	-0.18 (0.858)	0.774
Most products I sell do not generate enough profit.	0.08 (0.860)	-0.711
I am satisfied with the product prices my supplier has paid me in the last ten years.	-0.04 (0.871)	0.652
I am satisfied with the current product prices.	0.49 (1.081)	0.639
<i>Factor 2: Reliability and relationship quality, CA: 0.775, % of variance: 17.41</i>		
With my buyer you have to be careful not to be short-changed.	-0.64 (0.899)	-0.840
My buyer changes product prices too frequently.	-0.75 (0.822)	-0.778
I can trust my buyer.	0.48 (0.817)	0.777
I feel committed to my buyer.	0.30 (0.926)	0.647
<i>Factor 3: Solidarity, CA: 0.644, % of variance: 13.12</i>		
Solidarity in agricultural farming is important.	0.85 (0.840)	0.849
Farmers should help each other.	1.10 (0.683)	0.735
Product price differences between small-scale and large-scale farmers should not be too big.	0.33 (1.064)	0.690
<i>Factor 4: Price-conscious consumers, CA: 0.625, % of variance: 10.57</i>		
In our society, food is not supposed to be expensive.	1.03 (0.944)	0.848
German consumers are only concerned with prices when buying food.	0.77 (0.930)	0.847

**Source.** authors' calculation, sd = standard deviation, CA = Cronbach's Alpha

As can be seen in Table 2, the most important aspects for fairness in the food supply chain are relational subjects such as price satisfaction, reliability and relationship quality. This corresponds to the results of Liebig et al. (2009) and Diller (2000) who evaluate these relational factors as important for the perception of fair treatment. A high stated price satisfaction increases the perceived fairness of the farmer. Therefore the sociological point of view that a just compensation of the farmers' work is important for fair treatment in supply chains is confirmed, and we accept H1. Concerning the social recognition of farmers in a supply chain, the results show that a perceived high price-consciousness of consumers does not improve the perceived fairness. Thus H2 is rejected.

**Table 2.** Regression Analysis of Fairness

<b>Independent Variables</b>	<b>Regression Beta</b>	<b>Standardized Beta</b>	<b>t</b>
Constant	0.559		23.577 ***
Price satisfaction	0.224	0.291	10.274 ***
Reliability / relationship quality	0.581	0.694	24.489 ***
Solidarity	-0.078	-0.093	-3.270 **
Price-conscious consumers	0.032	0.038	1.337 <sup>n.s.</sup>

**Source.** Authors' calculation, \*\*\*  $p \leq 0.001$ , \*\*  $p \leq 0.01$ , <sup>n.s.</sup> = not significant, dependent variable="I feel treated fairly by my buyer"

The solidarity factor between farmers leads to a negative influence on farmers' feelings of fair treatment. This corresponds to the results of Bauernschuster et al. (2010). The higher farmers value solidarity with their colleagues, the more unfairly treated they feel, thus H3 can be accepted.

The more positive the farmers' relationship with their buyer and the more they can rely on them, the greater the feeling of fairness. Concerning the results of Chang and Lusk (2009) and Diller (2000) this was expected, and gives an indication of further relationship assumptions. From this we accept H4.

Additionally we examined the evaluation of price differences between small-scale and large-scale farmers into consideration, i.e., if the size of the farm has an influence on the feeling of being fairly treated. Large-scale farmers may feel treated more fairly if they get better product prices. Nevertheless, there was no influence of this business related item on the perceived fairness. We also tested other sociodemographic factors, but did not measure any influences on the fair treatment of farmers.

## Discussion and Conclusions

Fairness in food supply chains is one important aspect for functioning relationships and has been discussed from different points of view. With the increasing liberalization of the CAP, fairness patterns in agricultural supply chains have been moved into the spotlight. First of all, the actual perceived fairness between farmer and buyer leads us to the conclusion that buyers have to work to achieve fairer relationships. If farmers have good relationships with producers the likelihood of switching the buyer is low (Schulze et al. 2006). Nearly 40 % of our respondents did not feel treated fairly. Further, our study has shown that key success factors for fair treatment in supply chains are relational factors, such as reliability and relationship quality between the partners and

additionally the overall price satisfaction. So the main assumption that fairness in supply chains can be reached with a high price satisfaction can partly be confirmed. For consumers Chang and Lusk (2009), Toler et al. (2009) and Diller (2000) suggest several aspects that may be important in supply chains as well from a price fairness point of view. For example, this implies that buyers should not change prices frequently, and maintain prices which have been agreed upon. Price fairness is, however, not the most important variable, other aspects have to be taken into account as well.

Concerning sociological aspects, our conclusions are somewhat divergent. The monetary part of price satisfaction and just compensation of work improves the perceived fairness, whereas perceived price-consciousness of consumers does not play a role. Taking into account that the respondents are more indifferent to the actual stated price than satisfied with it, buyers have a point of reference for further action. This includes a good communication of prices and an acceptance and commitment to the farmer's work. First of all the relational aspect relationship quality and reliability is more important than the monetary aspect price satisfaction. Second, consumers do not deal directly with farmers. Farmers mostly sell their products to a processor, and contact to end-consumers is rare. This may be one reason why these items have no influence on the perceived fairness. Further research should take this into account by measuring the mutual respect between direct market partners. Additionally it could be useful to investigate the different marketing channels for agricultural products. Farmers who sell their products to processors do not deal with consumers whereas farmers who sell their products via direct marketing may have different fairness perceptions.

Our results lead us to the conclusion that farmers who place a great importance on values such as solidarity are not easily satisfied concerning fair treatment. The attitude of all respondents towards overall solidarity between farmers is surprising. Therefore, a reliable communication of solidarity patterns may be a useful tool for agribusiness companies to increase perceived fairness. From a financial point of view, solidarity is valued more or less indifferently with high standard deviations. So not all farmers judge the same product prices for all as a "must have" of solidarity. Quantity premiums for large-scale farms will not necessarily decrease the perceived fairness and vice versa. Buyers should take this into account.

Concerning the results of reliability and relationship quality, we have seen that these are the most important aspects for fair treatment in supply chains. Surprisingly it is not price satisfaction that is exclusively responsible for fairness perceptions. Therefore, factors for improving the relationship quality are crucial (Schulze et al. 2006). Schulze et al. (2006) and Weibler and Feldmann (2012) emphasized the importance of trustful communication between farmers and buyers. This may improve the farmers' feeling of being treated fairly even if the prices are low for short periods.

### **Limitations and Further Research**

The study focused on farmers in one country. It is not representative, but nevertheless provides indications for fair treatment of farmers and a basis for further research. The R<sup>2</sup> of 57.3 % indicates that there are more aspects of fairness that were not fully explored in this research. Further research should, e.g., consider more aspects from price psychology (Diller 2000). It should also

be taken into account that some sectors have specific organizational structures (e.g., cooperatives). Therefore research in only one production sector is advised. Here we have considered the fairness relevance for the agribusiness in general, but particularly for questions of solidarity and fair treatment, differences between sectors could be important as well. Further studies could also take the whole supply chain into account as it can be assumed that not all parts of the supply chain have the same fairness perceptions. For fairness in the whole supply chain an investigation of the status quo and possible impacts for fairness concepts is necessary. Nevertheless, the goal is to cope with heterogeneous preferences of fairness between farmers and in the supply chain as well.

Additionally the discussion about fairness in supply chains has shown that beyond fair treatment it could be interesting to investigate what could be meant by fair prices. Liberalization will lead to agricultural prices which reflect market conditions. Hence, the question is whether liberalized and highly volatile prices are perceived as unfair in general or if other aspects should be taken into account when evaluating the fairness of prices in agricultural markets.

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