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Animal welfare versus food quality: Factors influencing organic consumers' preferences for alternatives to piglet castration without anaesthesia

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ABSTRACT

Surgical piglet castration without pain relief has been banned in organic farming in the EU since the beginning of 2012. Alternative methods therefore need to be implemented that improve animal welfare and solve the underlying problem of boar taint. This paper explores German organic consumers' preferences for piglet castration without pain relief and three alternative methods. In an innovative approach using a multi-criteria decision making procedure, qualitative data from focus group discussions were compared with quantitative results from Vickrey auctions. Overall, participants preferred all alternatives to castration without pain relief. Different aspects influenced willingness-to-pay for the methods. Animal welfare was important for the evaluation of castration without pain relief and castration with anaesthesia. Food safety played a major role for willingness-to-pay for immunocastration, while taste and, to some extent, animal welfare were dominant factors for fattening of boars. These differences should be considered when communicating the alternatives.

1. Introduction

The surgical castration of piglets is a standard method used to prevent the occurrence of boar taint. Boar taint is an odour and flavour of pork which is perceived as unpleasant by many consumers (see for example Bañon, Gil, & Garrido, 2003; Font i Furnols, Gispert, Diestre, & Oliver, 2003; Font i Furnols et al., 2008; Lunde, Skuterud, Hersleth, & Egelandsdal, 2010). Surgical castration is usually conducted without pain relief, but this practice has been increasingly criticized over recent years. It is an extremely painful procedure and there is no scientific evidence that it is less painful for young piglets than it is for older pigs (European Food Safety Authority, 2004), an argument which has been used to justify the practice. While regulations concerning piglet castration without pain relief in conventional pig production differ between European countries, there has been an EU-wide ban of piglet castration without pain relief in organic farming since the beginning of 2012.

Alternative methods therefore need to be implemented which improve animal welfare and also offer solutions to the boar taint issue. Three alternatives are likely to be relevant for future pig production. Firstly, castration can be conducted using anaesthesia and/or analgesia, with different options for sedating the piglets, for example, gas or injection (Prunier et al., 2006). Secondly, there is a vaccination against boar taint (immunocastration) which temporarily inhibits the sexual development of male pigs and thereby prevents the occurrence of boar taint. Thirdly, entire male pigs can be raised (fattening of boars), combined with measures to reduce and detect boar taint in meat (Giersing, Ladewig, & Forkman, 2006).

Each of these alternatives has different advantages and disadvantages for producers, processors, retailers and consumers, and these influence their respective preferences for alternatives. As it is the consumers who finally eat the pork that is produced, their preferences and willingness-to-pay may be a decisive factor in the successful implementation of alternatives to castration without pain relief. As animal welfare organisations played a major role in driving the recent debate and developments regarding piglet castration it can be expected that they will undertake efforts to inform consumers if they feel the need to do so. Therefore, consumers' preferences should not too easily be discounted by the pork sector on the ground that consumers do not seem to be aware of piglet castration without pain relief.

A number of studies show that consumers indicate a higher willingness-to-pay for improved animal welfare (Andersen, 2011; Carlsson, Frykblom, & Lagerkvist, 2007; Dransfield et al., 2005; Lusk, Nilsson, & Foster, 2007; Napolitano, Pacelli, Girolami, & Braghieri, 2008; TNS Opinion & Social, 2005; Tonsor, Olynk, & Wolf, 2009; Zander & Hamm, 2010). However, there are also results that suggest that willingness-to-pay depends on specific animal welfare attributes, or species of animal, and that negative willingness-to-pay might occur (Carlsson et al., 2007; Lagerkvist, Carlsson, & Viske, 2006; Liljenstolpe, 2008). In particular, product attributes that have other dimensions besides animal welfare, such as food quality or safety, which is obviously true for some alternatives to piglet castration without pain relief, can lead to heterogeneous consumer preferences (Liljenstolpe, 2008). Such heterogeneous consumer preferences might

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also explain why other studies examining consumers' attitudes and preferences regarding alternatives to piglet castration differ in their results (e.g. Huber-Eicher & Spring, 2008; Vanhonacker & Verbeke, 2011). Hence, consumers' preferences and willingness-to-pay for alternatives are likely to depend on how the different aspects or attributes of alternatives to piglet castration are perceived and weighted. Although animal welfare is very important to organic consumers, aspects of food safety and taste are also relevant when buying organic products (fischerAppelt relations, 2012).

The objectives of this paper are to explore organic consumers' preferences and willingness-to-pay for the three alternatives to piglet castration without pain relief and to identify the factors that might possibly influence such preferences and willingness-to-pay. Participants' willingness-to-pay, which was measured using Vickrey auctions, is compared with findings from focus group discussions exploring consumers' attitudes and opinions. Additionally, the influence of information about piglet castration and its effects on willingness-to-pay is examined.

2. Methods and study design

2.1. Data collection

The explorative study comprised nine focus group discussions combined with Vickrey auctions. Focus group discussions are moderated groups of six to twelve persons discussing a specific topic in order to gain information on participants' attitudes and opinions (Burns & Bush, 2010). A qualitative approach was chosen because it could be assumed that consumers had hardly any prior knowledge about the issue of piglet castration, and very little was known about organic consumers' preferences for alternatives. The objective of the focus groups was to explore participants' opinions, attitudes and perceptions of piglet castration without pain relief, and the three alternative methods and which aspects were particularly important for consumers' acceptance of alternatives to piglet castration without pain relief. At the commencement of each focus group, participants received standardised information about piglet castration as a basis for discussion because of the low level of public awareness of the issue.[1] Information provision varied between groups (Table 1). Three groups received information on the common practice of piglet castration without pain relief, the reasons for it and basic descriptions of castration with anaesthesia and/or analgesia, immunocastration and fattening of boars as alternative methods (Variant 1 = minimal information). For Variant 2, the descriptions of castration without pain relief and the three alternatives were extended into the pros and cons of each method (full information). In Variant 3, only the wording of the description of immunocastration changed. The term 'hormone' was included (full information incl. 'hormone'). The rationale for introducing Variant 3 was that European consumers seem to be very sensitive with regard to risks from residues in meat like antibiotics and hormones (TNS Opinion & Social, 2006; Verbeke, Frewer, Scholderer, & De Brabander, 2007). So it was expected that explicitly mentioning the word 'hormone' would lead to more negative attitudes towards immunocastration, even though the information given did not state that hormones were used: "the vaccine is similar to a hormone produced naturally in the body. The pig generates antibodies against the vaccine and the hormone". For castration without pain relief, castration with anaesthesia and analgesia, and fattening of boars, the information given in Variants 2 and 3 was the same.

Table 1
Variation of the given information across the focus groups.

Information		Focus group
Variant 1	Basic information about piglet castration and alternative methods (minimal information)	1 4 7
Variant 2	Variant 1 plus pros and cons of each alternative (full information)	2 5 8
Variant 3	Variant 2, description of immunocastration includes the word 'hormone' (full information incl. 'hormone')	3 6 9

After receiving information participants discussed castration without pain relief in organic farming and the three alternatives. The moderator prompted topics when necessary using a topic guide. Key questions were

- "What do you think about the fact that piglets are castrated without anaesthesia also in organic farming in order to avoid the occurrence of boar taint?"
- If you look at the information on (alternative): In your personal opinion, what are important reasons for or against the implementation of (alternative) in organic farming?
- Under which conditions would you be willing to eat meat produced with (alternative)?

Vickrey auctions were conducted at the end of each focus group discussion, thereby introducing a quantitative method to the study. In a Vickrey auction, all participants place their bids simultaneously and covertly. The highest bid 'wins', but the price payable is determined by the second highest bid (Lusk & Shogren, 2007). Vickrey auctions are also known as "sealed-bid second-price auctions" (McAfee & McMillan, 1987). As the price is not directly set by the highest bid, Vickrey auctions are considered as 'incentive compatible', which means that the mechanism provides an incentive to the participants to reveal their true willingness-to-pay (Vickrey, 1961; Völckner, 2006). A weakness of this auction mechanism, however, is that the best bidding strategy is not always obvious to participants. Therefore, it is necessary to explain the best bidding strategy, indicating one's true willingness-to-pay, with an example (Skiera & Revenstorff, 1999). Hypothetical bias can be avoided if participants are required to actually pay the price determined by the Vickrey auction (Völckner, 2006). In contrast to other auction mechanisms, Vickrey auctions collect the willingness-to-pay measures of all participants (Skiera & Revenstorff, 1999).

Consumers were asked to participate in a Vickrey auction of smoked organic salami. Initially, the moderator explained the procedure of the auction and illustrated the optimal bidding strategy with an example (following Skiera & Revenstorff, 1999). It was emphasized that the 'winner' of an auction must buy the product. The respective price would be set off against the allowance for participating in the study. Each person could only obtain one package of salami. If one participant placed the highest bid in several auctions, one auction would be determined as binding by drawing lots. Then, the products were presented: four 80 g packages of smoked organic salami. The only difference in the salamis was method of piglet castration or, alternatively, non-castration: castration without pain relief, castration with anaesthesia and analgesia, immunocastration and fattening of boars. Participants placed their bids simultaneously on a prepared form for all four salami variants.

[1] As an example for the wording of the information, the description of castration without pain relief is given: "For surgical castration, which is conducted in the first seven days of life, the farmer takes the piglet, cuts the skin above the testicles with a scalpel, extracts the testicles and cuts the spermatic cords. Afterwards, the wounds are disinfected, in order to prevent inflammation. The castration is very painful, the strongest pain occurs when the spermatic cords are cut. After the castration the piglets suffer from post-operative pain for several days." The following pros and cons were only added in Variants 2 and 3: "It is advantageous that there is no boar taint. It is a disadvantageous that the castration is very painful for the piglets and they suffer from post-operative pain." Information about the alternatives was structured accordingly.