Motivation, preference and willingness to pay for selected credence food attributes

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„Der Kopf ist rund,
damit das Denken die Richtung ändern kann."
(Francis Picabia)

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TIME TO SAY…

… THANK YOU!

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List of abbreviations

DCE	Discrete Choice Experiment
FCQ	Food Choice Questionnaire
MNL	Multinomial Logit Model
SCM	Structural Choice Modelling
RUT	Random Utility Theory
RPL	Random Parameters Logit Model
WTP	Willingness to pay

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The present thesis is submitted as a cumulative dissertation based on the following three publications:

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1 Introduction

1.1 Problem statement

The international food market has experienced continuous change during the past decades. The ongoing process of globalisation has changed the food market fundamentally. In this context, ethical consumerism has repeatedly been reported as a critical response to the increasing industrialisation and globalisation of agricultural production (Annunziata et al 2011, Lockie et al 2004, Lotz et al 2013, Zander and Hamm 2010). Ethical consumerism thereby describes consumption decisions in line with social and environmental concern. As such, ethical consumption does not only relate to the well-known concept fair-trade but to a range of alternative food concepts, which have developed over the last decades. These food concepts are summarised as alternative food concepts, because they have in common that they differentiate themselves from the mainstream globalised food production. One point of differentiation are short supply chains. Thus, local food production is regarded as the representative countermovement to the process of globalisation, sometimes even referred to as glocalisation (Hinrichs 2003). Besides local food marketing, organic food production is named as a popular alternative food concept. Further, the certification of improved animal husbandry is rather new but also of increasing relevance. In the present dissertation, these three alternative food concepts, local, organic and improved animal welfare, are studied.

Besides others, consumers' interest in these alternative food concepts is found to be driven by food scandals. To give an example, 59% of German consumers report protection against food scandals as a reason to buy organic food (Ökobarometer 2013). In line with this, Costanigro et al (2014) understand preference for local or organic as a polarization against conventional food production, driven by distrust in the government agencies in terms of food safety monitoring. Further the studied alternative food concepts are built upon

"domestic fair trade aspects", e.g., support of local farmers, animal welfare, or preservation of biodiversity (Zander and Hamm 2010). As such, these food concepts relate to credence characteristics, which the consumer cannot experience at any point but have to believe in (Caswell and Padberg 1992, Darby and Karni 1973, Gottschalk and Leistner 2013).

Looking at the topic from the supply side, the market of food products differentiated by credence attributes has in line with a rising interest in alternative food concepts proliferated. The organic food market is regarded as one of the fastest growing food sectors over the last decades. Thereby, in terms of turnover, the German organic food market is the biggest organic food market in Europe and, behind the USA, the second biggest food market worldwide (AMI 2015a). Concretely, turnover for organic food in Germany has increased from 3.9 billion Euro in 2005 to 6.6 billion Euro in 2011 and 7.9 billion Euro in 2014 (AMI 2011, AMI 2015b). Related to the provision of local food, several studies report an increasing number of famers markets and direct sales, as an indication of a growing local food market (Adams and Salois 2010, Hu et al 2012). Further evidence regarding the German market, gives a look at the high number of regional initiatives promoting the concept of local food. Currently over 200 of these initiatives, associations and organisations can be found all over Germany, with a certainly high concentration in the south of Germany (Bundesverband der Regionalbewegung). Last but not least, taking a look at the development of animal welfare labelled products, a growing, highly globalised market for meat and meat products can be observed (Efken et al 2015). This fact, together with several meat scandals, has led the meat sector to acknowledge that action is required to maintain consumers' trust. One possibility to do so, is seen in the communication of farm animal welfare (Efken et al 2012). Thus, within the last years, different initiatives and labels, communicating higher animal welfare, have been introduced on the German market (Efken et al 2013, Efken et al 2014).

As a consequence of the multitude of food concepts consumers constantly have the choice

between a range of different products and product alternatives. These choices in turn constitute of several inter-related choices, and might be consciously or unconsciously performed. From a marketers perspective, it is therefore of high interest to understand consumers' choices for the alternative food concepts, not least because marketers aim at forecasting future choice behavior. Against this background, the research objectives of the current dissertation are outlined in the following.

1.2 Research objectives

Looking at the alternative food concepts available in the market, like organic or local food, the overarching research objective of the present thesis was to look into the motivation behind choosing credence labelled food products and the resulting willingness to pay (WTP) for these food products.

In detail, the following three main objectives are addressed in this dissertation:

- Analyse, based on selected food choice motives, the motivation behind a preference for organic food or local food by consumers and analyse differences in the food choice motives between consumer stating a preference for organic versus local food.

- Understand the underlying preference structure behind purchase decisions for food products labelled with credence attributes and which role values (altruistic versus egoistic) play as determinants for the underlying preferences behind food choices.

- Analyse whether price premiums can be achieved for food products with claims referring to organic production, local production or animal welfare issues.

Thereby the food concepts are not analysed isolated from each other but in interrelation, with the aim of analysing the complementary or competitive character of the different food concepts. Further, by choosing different food products, it was also aimed at analysing whether preferences for specific credence attributes are consistent over products.

An overview of the realisation of these research objectives in the three papers is given in figure 1. The figure also visualises how the three papers complement each other in answering the research questions.
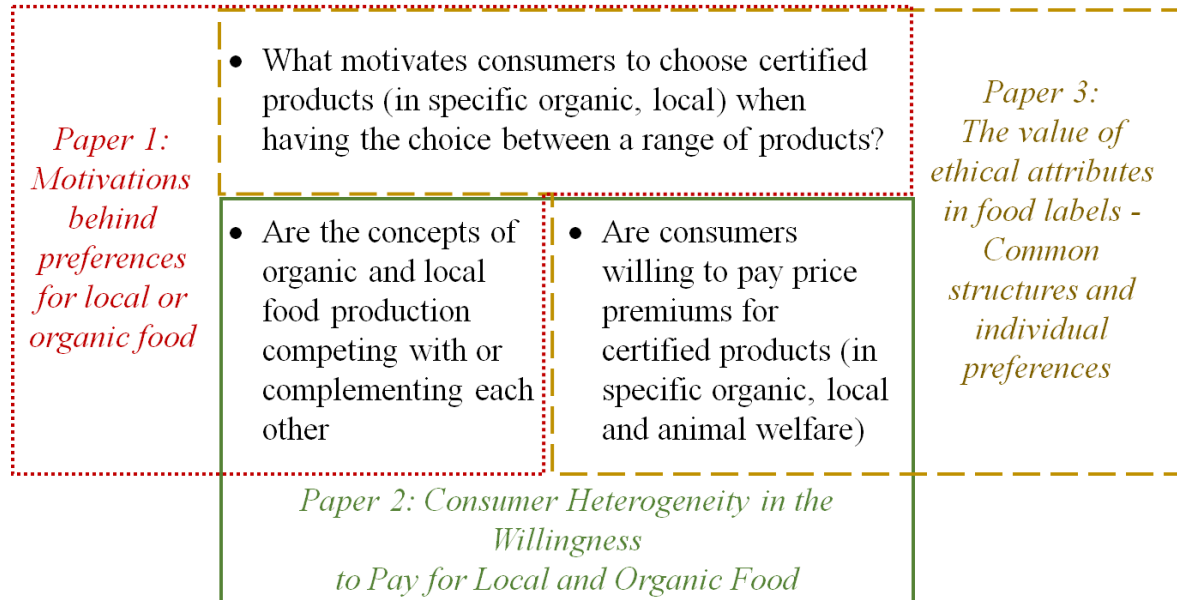
FIGURE 1. Overview of the realisation of the research questions in the three papers
Source: own illustration

The outlined research objectives are all content related, aiming at contributing empirical evidence on the choice process behind alternative food products. Besides, this dissertation applies structural choice modelling (SCM), a relatively new modelling approach for discrete choice data. Doing so, this dissertation also aims at providing theoretical, as well as, empirical evidence on the advantages of SCM.

1.3 Structure of the dissertation

To address these objectives, this thesis is structured as follows:

Following the introduction, the topic is first embedded into a theoretical framework on consumer decision making, considering the decision process from a behaviouristic perspective, as well as from an economic perspective.

Chapter 3 then gives more information on the key concept of credence attributes in food

labelling. Specifically the food production and -marketing concepts 'organic', 'local' and 'animal welfare', the responding definitions and regulations, as well as the literature on consumers' perceptions, motivations and WTP, are described.

As two of the papers use the methodology of discrete choice modelling, this methodology, in specific the random parameters logit model (RPL) and SCM, is explained in detail in chapter 4. Following this, the data are described including each study's research designs and the methods and concepts used for data collection and data analysis. Chapter 6 then summarises the main findings of the three underlying papers, before the thesis concludes on a discussion of the research results, as well as of the material and methods. Figure 2 illustrates the structure of the thesis.

1. Introduction		
Problem statement	Research objectives	Structure of the dissertation

2. Consumer decision making	
Motivation	Preferences and Consumer Choice

3. Food product attributes		
Organic	Local	Animal Welfare

4. Discrete Choice Modelling		7. Discussion and Conclusion
RPL	SCM	

5. Data collection	
Study 1	Study 2

6. Results		
Paper I	Paper II	Paper III

FIGURE 2. Structure of the dissertation
Source: own illustration

2   Consumer decision making

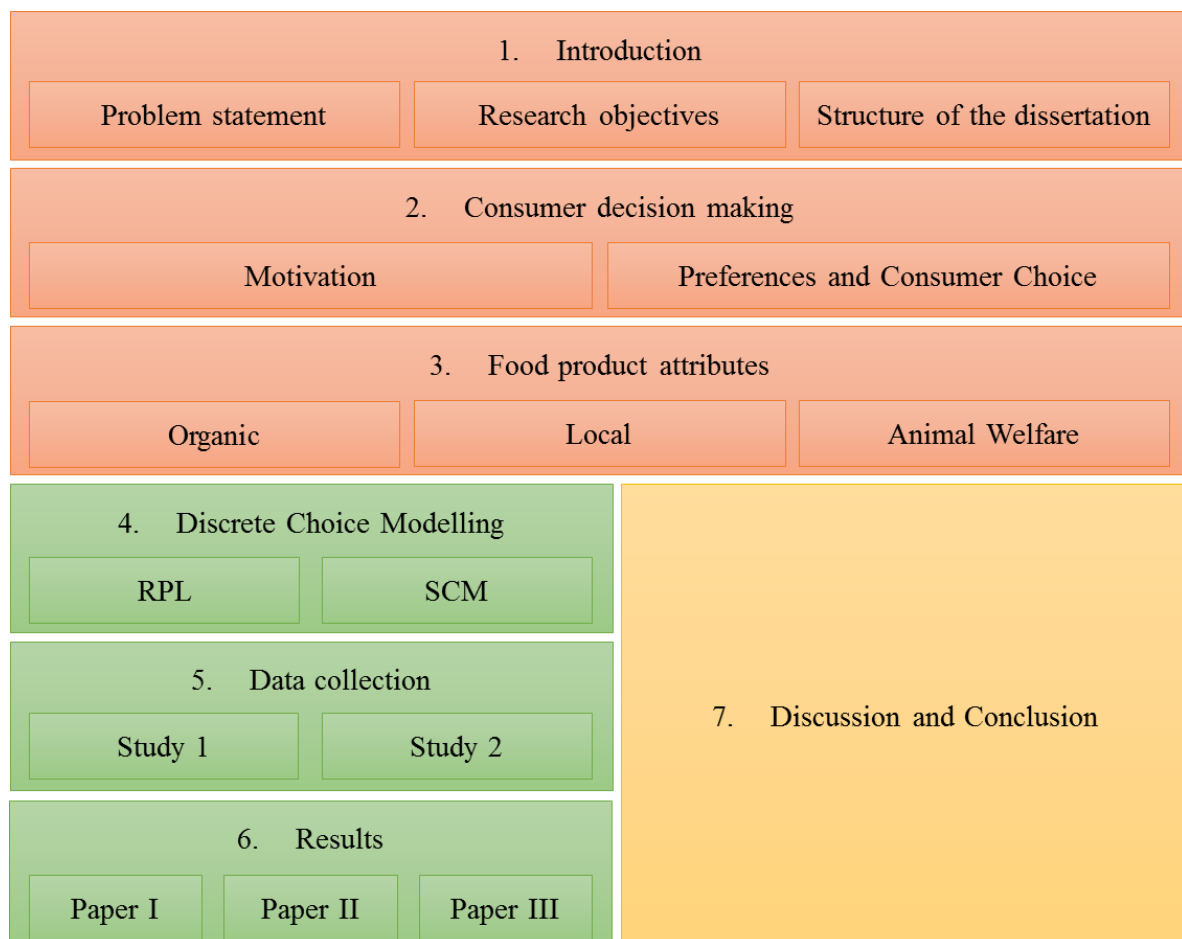Consumer decision making is commonly explained as a multistage process, starting with the recognition of a problem or need, followed by the search for information, the evaluation of alternatives and the purchase or choice of a product (Kroeber-Riel et al 2009:416, Blackwell et al 2006:70, Solomon et al 2013:332). The extent to which a consumer actually goes through each stage depends on the characteristic of the decision (Blackwell et al 2006:88, Solomon et al 2013:335,372,373). Decisions for food products are regarded to be characterised by limited problem-solving, or even as routinized or habitual decisions (Gottschalk and Leistner 2013, Grunert 2005, Schiffman et al 2008:71, Solomon et al 2013:341). Consequently, the stage of information search is expected to be skipped in the decision process for food products, leaving the stages of recognising a need and evaluating the alternatives, before actually making the choice.

In line with this, when studying consumer choices, researchers aim at finding out e.g., which product people choose when having the choice between a range of products, whether people differ in the evaluation of alternatives and therefore in their choices, or how much people are willing to pay. These analyses however, are based on an understanding why people act the way they do. The theories behind consumers' behaviour in turn are manifold.

One way of thinking is the behaviouristic approach, which understands behaviour simply as a response (R) to an external stimulus (S). The neobehaviouristic approach additionally considers the organism (O), as a mediator between the stimulus (S) and the response (R). The organism (O) thereby represents non-observable stimuli and reactions, such as attitudes, beliefs, and values. Applying the S(O)R-model to choice decisions for food products, all visible characteristics, like packaging and labelling, of the product, plus environmental factors represent the stimuli, that are consciously experienced. These stimuli

are processed and evaluated by an individual, resulting in a response, in this case either the choice or non-choice of the product.

Most consumer behaviour theories look at consumer behaviour from the neobehaviouristic angle, assuming that subconscious processes (e.g. perception, motivation, memory and learning) that cannot be directly observed and measured, mediate the process. These internal processes involved in consumer behaviour are a combination of activating and cognitive processes (Kroeber-Riel et al 2009:51). Motivation and attitudes are regarded as important activating components, while perception, learning, and memory are identified as important cognitive processes (Kroeber-Riel et al 2009:51, Tromsdorff 2009:78).

2.1   Motivation

As especially the activating processes play a prevalent role in the literature on consumer behaviour, we take a deeper look at these concepts. Among these, motivation can be identified as the key concept, where motivation is thought to occur out of unsatisfied needs. In turn, these unsatisfied needs are a result of a complex interplay of attitudes, values and beliefs (Schiffman et al 2008:127) and result in states of tension. Once the tension reaches a certain level, the need is activated and transformed into a motive, causing people to behave the way they do (Schiffman et al 2008:105, Solomon et al 2013:187).

Researchers have been studying motivation based on several theories, e.g., humanistic or cognitive theories. One of the most popular humanistic motivation theories is Maslow's hierarchy of needs, a five-level pyramid of human needs (Schiffman et al 2008:pp122). According to this theory, people have a hierarchy of needs starting with physiological needs, followed by the need for safety, social needs, self-esteem and finally self-actualisation. Higher levels of needs are only activated once lower-level needs are satiated (Schiffman et al 2008:123).

Applying Maslow's hierarchy of needs to food choices, people first act for settling hunger

and providing the body with nutrients. Once they can satisfy these physiological needs, they aim at safe food products. Thereby not only food safety, but also health motivation, which is certainly prevalent for organic food choices, is embodied in this level. Relating the higher levels of needs, love and belonging, self-esteem and self-actualising, to food choices, seems more difficult. Still, several links can be found between these levels of needs and food choices. Taking organic food as an example, in the beginning of the organic food movement the purchase of organic food was seen as part of a lifestyle and a political statement and thus can be considered to be related to the need of love and belonging. While this relationship decreased, social identification is still reported to be a powerful factor influencing organic food purchase (Bartels and Reinders, 2010). Similarly, in semi-structured interviews consumers stated that "buying local was like belonging to a family" (Zepeda and Deal 2009). On top, Pino et al (2012) find an effect of ethical self-identity on organic food purchase intention, embodying the highest level of need, self-actualisation.

Similar yet different, the cognitive motivation theory assumes consumers to behave with the aim of accomplishing a goal. Focusing on intrinsic motivation, cognitive motivation theories emphasise the role of individuals' beliefs and expectations, with motivation being regarded as the perceived probability of achieving the goal.

While the different theories make it not possible to give a general definition, attitudes, beliefs and values are seen as underlying concepts of motivation in general and in specific as important determinants of consumers' food purchase behaviour, e.g., regarding organic or local food purchase behaviour (Dreezens et al 2005, Zepeda and Deal 2009). Therefore these concepts will be outlined in the following.

Looking first at attitudes, attitudes have always played an important role in consumer behaviour research (Kroeber-Riel et al 2009:210). Picking out two common definitions, attitudes are defined as *a person's overall evaluation of a concept* and *as a learned*

predisposition to behave in a consistently favourable or unfavourable way with respect to a given object (Peter and Olson 2008:130, Schiffman et al 2008:248). Especially the first of these definitions shows that attitudes are of subjective nature. Extending the first definition, in the context of motivation, attitudes are described as the reflection of consumers' perceived suitability of an object to satisfy a motive (Dreezens et al 2005).

Further, in accordance with the latter definition, attitudes can be assumed to be based on past experiences, with the favourableness of consequences of past experiences affecting the attitude towards the respective object or behaviour of interest (Wiswede 1973:83). Consequently, attitudes can change over time. An attitude change, however, still depends on some kind of trigger. In this context marketing campaigns can be regarded as an active attempt to influence and change consumers' attitudes (Solomon et al 2013:313). Applying the definitions of attitudes to the topic of people making food choices, consumers are thought to differ in their attitudes towards product alternatives due to differences in the favourableness of consequences they associate with specific product attributes.

Attitudes are described as having an affective, a cognitive and a conative dimension (Kroeber-Riel 2009:211). The cognitive dimension describes the evaluation of the object based on the consumer's knowledge and beliefs about the object, with beliefs in turn being based on consumer's subjective perception of the object. The affective dimension is constructed by consumer's emotions towards the object. Relating the topic again to food choices, the affective dimension has been discussed in the context of local food choices, where, e.g., von Alvensleben (2000) finds emotions, in form of pride and sympathy for the region, leading to positive attitudes towards local food products. Finally, the conative dimension describes the behavioural component, the intention to behave according to the attitudes. Despite several theories, as the theory of reasoned action or the theory of planned behaviour highlight the role of attitudes (Ajzen 2005:118), in habitual buying situations like food purchases, attitudes have been found to play a minor role (Kroeber-Riel et al

2009:226). Still, this characterisation of attitudes shows how the different concepts of consumer behaviour are interrelated, with attitudes on the one hand being part of the broader concept motivation and, on the other hand, being built upon beliefs, knowledge and affective responses.

As mentioned before, besides attitudes, motivation is also thought to be based on consumers' personal values and beliefs. While beliefs have already been shown to be closely related to attitudes, the same is found for the relation of values and beliefs, with values being defined as *beliefs about some desirable end-state that transcend specific situations and guides selection of behaviour and events, and are ordered by relative importance* (Schwartz and Bilsky 1987, Solomon et al 2013:209).

This definition highlights the role of beliefs in choice behaviour, as consumers can be assumed to buy products because they believe that the consumption of these products will help to attain a value-related goal (Solomon et al 2013:209). This has been found to be certainly the case for food choices in general and in relation to alternative food concepts. The choice of organic food products, for example has repeatedly been shown to be motivated by health beliefs, independent of conflicting findings about actual health benefits of organic food (Pearson et al 2010). In addition Zepeda and Deal (2009) find consumers to believe that organic foods are of higher quality or taste better. A finding, which can be confirmed by Guilabert and Wood (2012) who showed that consumers rated products as tasting better when being labelled as organic. These findings show that, for food decisions, beliefs play a central role. However, as outlined above, the three concepts beliefs, attitudes and values are thought to be hierarchically structured, with beliefs being of subordinated nature, used to achieve values.

Values, in turn, are understood as desirable end-states. Thus, the role of values in the decision process is described as consumers making decisions with the aim to achieve value-related goals. Corresponding to this, the means-end theory considers consumers' to

use product attributes, to achieve associated consequences, which lead to desired end-states in form of values (Gutman 1982). Compared to attitudes, values are relatively few in numbers, more stable and consequently relatively enduring (Karp 1996, Tromsdorff 2009:175). Similar to attitudes, values are a much examined topic, wherefore several well-developed instruments for measuring values exist. Thereby, the research of Shalom H. Schwartz received great attention in the field of consumer behaviour and has constantly been used for measuring values underlying choice behaviour, also food choice behaviour.

One of the pioneers in this field of research, however, was Milton Rokeach, whose work can be regarded as the initiation for research on values. According to Rokeach (1973:3), all people are driven by the same values, but to different degrees. This means that the values are universal, but people differ in the importance assigned to these values (Rokeach 1973:27). Concretely, Rokeach identified a set of terminal values, representing preferred end-states of existence, and a set of instrumental values, representing ways of being needed to achieve the terminal values. Through the interrelation between the different types of values a value system is build up. Thereby, differences in the value systems between people are expected to be due to differences in culture and society, as well as differences in personality.

Elaborating the work of Rokeach, Schwartz (1992) derives a list of 56 values, which are organised into the ten motivational domains *self-direction, stimulation, hedonism*, *achievement*, *power*, *security*, *conformity*, *tradition*, *benevolence* and *universalism*. Further the values are organised in a circular way, along the two dimensions *openness to change* versus *conservation* and *self-transcendence* versus *self-enhancement*, with those values emerging in opposing directions being of greatest conflict (Schwartz 1992:14,54). In difference to Rokeasch's work on values, Schwartz's value survey proved to be relatively stable and valid across cultures (Dreezens et al 2005, Schwartz 1992, Solomon et al 2013:216).

Applying Schwartz's value system to organic food choices, Dreezen et al (2005) find the value power to be negatively related to attitudes towards organic food products and the value universalism to be positively related to organic food products. These findings confirm the result obtained by Thøgersen and Ölander (2002), who find universalism to be positively related to environment-friendly behaviour, with environment-friendly behaviour including organic food shopping. In their study, however, not power, but the values benevolence and hedonism were found to be negatively related to environment-friendly behaviour. Vermeir and Verbeke (2008), on the other hand, confirm the negative relationship between the value power and the purchase intention for sustainable food products. They, however, find a positive relationship between traditional values and purchase intention for sustainable food products.

Thereby, values are expected to play a bigger role when they are activated by altruistic concerns (Karp 1996). This assumption can be explained by incorporating Schwartz's (1977) norm-activation model into the theory on values. The norm-activation model is built upon the proposition that norms and values are activated by feelings of moral obligations, if a particular action leads to unfavourable consequences for other people and the individual could have prevented those consequences (Schwartz 1977:227,247). This model has further been extended, assuming people not only to hold feelings of moral obligation towards other people, but more generally towards any valued object (Stern et al 1993). Thus, because the alternative food concepts studied in this dissertation can be assumed to be related to altruistic concerns, values can be expected to play an important role in the choice of these products.

Working further on the idea that consumers' food preferences are based on values and values therefore guide certain food choices, Lusk and Briggeman (2009) propose that food values are more stable than preferences. Hence, they define, based on previous literature on human values and food preferences, a set of food values, which can be described as meta-

attributes. As a result, they find the values of safety, nutrition, taste and price, which can, according to Rokeach (1973), be classified as terminal personal values to be the most important ones, while the terminal social values of fairness, tradition and origin were among the least important motives (Lusk and Briggeman 2009).

Similar to the concept of food values, there have been different approaches for measuring consumers' motives with regard to food choices. While these approaches, by name, do not distinguish between attitudes, beliefs and values, they access motives in a way similar to value measurements, asking respondents to rate the importance of different factors for making a food choice. The probably most popular example for this is the Food Choice Questionnaire, developed by Steptoe et al (1995), which has been used in the present dissertation and will therefore be outlined at a later point.

Independent of the measurement instrument, it should be noted that, although values, just as attitudes, play a crucial role in several consumer theories, they are unlikely to directly predict behaviour (Peter and Olson 2008:147). Motivational aspects, as values or attitudes, can rather be regarded as guiding stimuli evaluation and consequently guiding behaviour (Schwartz and Bilsky 1987, Brunsø et al 2004). Therefore, consumer choice decisions shall not only be viewed from a motivational perspective. Consumer preferences, in form of purchase intentions, and the resulting WTP are regarded as better indications for the prediction of consumer behaviour (Kroeber Riel et al 2009:221).

2.2 Preference and Consumer Choice

In the context of consumer behaviour, Blackwell et al (2006:400) state that *preferences represent attitudes toward one object in relation to another*. This definition traces preferences back to attitudes and therefore indirectly back to motivation. However, in difference to the concepts of attitudes and motivation, the topic of consumer preferences, independent of beliefs, is not prevalent in literature on consumer behaviour, but rather in

the discipline of economics.

Within economics, one leading way of thinking is the neoclassic economic consumer theory. In this school of thought, consumers are assumed to have complete and transitive preferences, based on which they make rational choices (Ben-Akiva and Lerman 1985:38). Thereby, to be able to make a choice, the consumer is thought to consider at least two alternatives, where one of these alternatives can also be not to choose any of the alternatives (Hensher et al 2005:3). The choice, in turn, is understood to be based on some kind of decision rule (Ben-Akiva and Lerman 1985:35,37). One possible and widely postulated decision rule is utility maximisation. Thus, according to random utility theory (Thurstone 1927), consumers are assumed to act with the aim of utility maximisation. Concretely this means, that, when having the choice between two or more alternatives, consumers' choose the alternative, which they expect to deliver them the highest utility. While earlier it was proposed that a product as a whole delivers utility to the consumer, Lancaster (1966) made a change to consumer theory, by stating that not the product itself gives utility, but that the product consists of characteristics, which yield utility. Thus, the utility of a product can be regarded as an aggregate of the utility of the single product characteristics.

Utility itself represents a latent construct. According to theory this latent construct consists of a systematic (explainable) component and a random (unexplainable) component. Looking deeper, the systematic component can be explained by attributes and covariates, while the random component can be explained by individual or psychological factors. With regard to utility, WTP can be defined as the maximum an individual is willing to pay, in order to keep the utility constant. In other words, WTP reflects the perceived value individuals assign to product characteristics. Thus, preferences as well as WTP are subjective constructs, and likely to be dependent on consumers' attitudes, values and beliefs, which has, e.g., been shown by Janssen and Hamm (2012) regarding WTP for

organic certification logos.

As the measurement of preferences and WTP for different food product attributes, by the use of discrete choice modelling, is one research objective of the present dissertation, the underlying econometric specification will, in line with the methodology, be outlined in detail in chapter 4. What can however be retained is that preferences and WTP are identified on an attribute level. With regard to the content of the present dissertation this means that each individual has a certain preference and a certain WTP for organic production, local production or animal treatment. These preferences in turn are regarded as determining consumer choices, wherefore researchers aim at understanding consumers' preferences.

To sum up, this shows that the thoughts behind consumer behaviour theories and economic theories are not as contradictory as they seem on the first view. The present dissertation touches both research strings, by analysing, on the one hand, motives underlying food choices, as well as the role of values in purchase decisions and, on the other hand, consumer preferences and WTP for different food attributes. Focussing on the choice decision for alternative food concepts, like organic or local food, the next chapter of this dissertation outlines these food concepts in detail.

3 Food product attributes

Studying consumers' food choices, the products are, according to Lancaster's (1966) consumer theory, evaluated on an attribute level. Food product attributes, in turn, can be characterised in different ways. One possibility is distinguishing the product attributes based on their quality dimension into search, experience or credence attributes (Caswell and Padberg 1992, Darby and Karni 1973, Nelson 1970). As the names suggest, the distinction is thereby based on when and whether the consumer can evaluate the quality of the attribute. While search attributes, such as price or colour, can be assessed prior to purchase and consumption, experience attributes, such as taste or tenderness, can be assessed after consumption. Credence attributes, such as organic production, local production or animal welfare, in turn, cannot be experienced at any point and therefore have to believed in (Caswell and Padberg 1992, Darby and Karni 1973, Gottschalk and Leistner 2013).

Despite the fact that an increasing number of products is labelled with cues on credence attributes, the findings about the relative importance of search versus credence attributes, for making food choices, are diverse (Lagerkvist et al 2014). While Wirth et al (2011) report food choices to be highly influenced by experience attributes, i.e. quality, but not by credence attributes, Fernqvist and Ekelund (2014) report consumers' food choices to be increasingly influenced by credence cues.

In terms of food choices, credence attributes are often related to process attributes, e.g., organic, fair trade, locally grown, or animal welfare. However, as outlined above, the consumer can at no time of purchase or consumption know with certainty whether the product has been produced accordingly (Gottschalk and Leistner 2013, Janssen and Hamm 2012, Wirth et al 2011). To give some example regarding animal welfare, Nocella et al (2010) state that products produced under improved animal welfare conditions will not

differ in their physical characteristics compared to conventional products. Similarly, for organic food products this has been shown by Zepeda and Deal (2009), who found consumers to report a lack of trust as well as a lack of knowledge of benefits, explained by the fact that consumers cannot objectively experience the production process, e.g., in terms of taste, through consumption of the product. While this credence characteristic is a challenge for marketers, it is for marketers and researchers alike of high interest to understand why consumers' buy a product, whose benefit they cannot experience.

Besides the quality dimension, attributes can be characterised as private versus public valued attributes (Bougherara and Combris 2009, Gracia et al 2011; Lusk et al 2007, Wier et al 2005). By definition, public good attributes are, in opposition to private good attributes, characterised by non-rivalry and non-excludability. Because this is usually not the case for goods provided in a free market, consumer goods are generally characterised by private good attributes. Products from alternative food production methods, however, are understood as additionally bearing non-rival and non-excludable consequences for the public (e.g. related to the environment). Thus, attributes related to these alternative food concepts are regarded as public or quasi-public good attributes.

This distinction of food product attributes is closely related to the topic of values, whether consumers are egoistically motivated or altruistically motivated, considering also the public good aspect, e.g., by considering the environment and respecting animal welfare. In the current dissertation, dealing with alternative food concepts, both topics are covered: the topic of preferences for public versus private good attributes and the related values, as well as the credence characteristic of the process attributes.

3.1 The role of food labels

The role of food labels can be explained as a possibility to highlight product or company characteristics with the aim to differentiate the product from competing products (Hu et al

2012). The information communicated through labelling are manifold, besides others this might be production methods or production origin.

Reconsidering consumers' decision process, the extent to which consumers' go through the different steps of the decision making process depends on the type of purchase. In terms of food choices, decisions are, unless made under exceptional circumstances, expected to be routine processes (Gottschalk and Leistner 2013, Grunert 2005, Zepeda and Deal 2009). Consequently, like outlined before, the degree of information consumers search prior to the decision-making is limited. In turn, consumers are thought to either act based on previous, learned, experiences or to use some other 'short cut' (Solomon et al 2013:335). One possible short cut or simplification in turn is the usage of labelling. Due to the fact that credence attributes cannot be experienced, neither at the point of purchase nor after consumption, the purchase decision for products characterised by credence attributes cannot be based on experiences. Further, the degree of information asymmetry between producers and consumers is certainly high for goods incorporating credence characteristics. Thus, the topic of labelling is regarded as extremely relevant for products characterised by credence attributes. On the one hand, labelling can be used as a simplifying cue to incorporate other aspects such as health, pleasure or status into their decision-making process (Gottschalk and Leistner 2013, Fernqvist and Ekelund 2014, Wier et al 2008). Concretely, this has e.g., been found for organic labelling, which simplifies, according to Vega-Zamora et al (2013), the purchase process, because consumers are found to use the information that the product is produced organically as a heuristic for health, safety, quality, authenticity and naturalness in food. On the other hand, labelling can be used as an information cue to overcome information asymmetry (Janssen and Hamm 2012).

In any way, labelling is thought to transform the credence attributes into quasi-search attributes (Annunziata et al 2011, Gottschalk and Leistner 2013, Fernqvist and Ekelund 2014). Whether the label, in turn, is understood and used in the way intended by the

producer, however, depends on the awareness of the meaning, or in other words on the consumers' perception of the label. Therefore the three concepts used in this dissertation, organic, local and animal welfare, will be outlined more detailed in the following.

3.2   Organic

3.2.1   Definition and regulation

Organic food has not only been one of the first alternative food concepts, but can also be regarded as one of the best-regulated alternative food concepts. Within the European Union, the regulatory activity defining the production process and labelling of organic food products started in 1991. Since then, food sold as organic has to be produced in accordance with the EU regulation, currently Council Regulation 834/2007.

According to this regulation, organic production is defined as "an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes. The organic production method thus plays a dual societal role, where it on the one hand provides for a specific market responding to a consumer demand for organic products, and on the other hand delivers public goods contributing to the protection of the environment and animal welfare, as well as to rural development". While this definition shows the aspired holistic character of the food concept, the key aspect regulated seems to be the production process without the use of external inputs, specifically without the use of chemically synthesised inputs, such as pesticides and fertilizers.

Aiming at avoiding consumer deception, the regulation also regulates the usage of the EU organic label as well as of claims derivatives or diminutives referring to organic production, e.g., the usage of "bio" and "eco". According to the regulation, these terms

suggest to the purchaser that the respective product, its ingredients or feed materials, has been produced in accordance with the rules laid down in the Council Regulation. Consequently, to maintain consumer confidence in organic products, these products have to be produced in accordance with the EU regulation as well. For the same reason, the regulation also defines a control system for organically produced products.

Independent of the clear definition and control system, however, consumers' have been reported to hold uncertainties about whether products are really organically produced (Padel and Foster 2005, Zepeda and Deal 2009). This is certainly the case for imported organic food products (Padel and Foster 2005) and can, in turn, be traced back to the before mentioned credence characteristic (Janssen and Hamm 2012).

3.2.2   Consumers' perception and purchase motivation

As described above, organic food is regulated as being produced without the use of synthetic chemicals, such as pesticides and fertilizers. This production process in turn, is found to be the basis for consumers' main motivation to buy organic food products: personal health.

While there are contradictory findings whether organic food consumption actually is more nutritious, inflicted by lower levels of residues and leads to health benefits (see for example, Smith-Spangler et al 2012), health is repeatedly found to be a driving factor behind organic food purchases (Bruhn 2002, Hughner et al 2007, Lockie et al 2002, Pearson et al 2010).

Some studies differentiate between the production process, expressed in the motive natural content, and the motive health. Doing so, Lockie et al (2002) find, in an analysis of the food choice motives of organic food consumers in Australia, both of these motives, health and natural content, to be of highest importance. However, using semi-structured interviews, Zepeda and Deal (2009) could show consumers' to use the production process,

in form of the avoidance of pesticides and hormones, only as a heuristic cue for the motive of health protection. This leads to the conclusion that, independent of separating these motives or not, natural content and health are closely related in consumers' mind. Similar to this, concern over food safety, which is also likely to be embedded in the before mentioned health concern has been reported to be an important motive for choosing organic food products (Hughner et al 2007, Pearson et al 2010, Schleenbecker and Hamm 2013). Despite the health motivation, Pearson et al (2010) find in a review on organic food consumption quality to be the second most important motive for buying organic. Thereby consumers' are found to primarily relate the quality parameters superior taste and freshness to organic food products.

While health and quality are two egoistically driven values, organic food purchase has further been found to be motivated by altruistic values. First and foremost, concern for the environment is named as an altruistic reason for organic food purchases (Hughner et al 2007, Pearson et al 2010, Schleenbecker and Hamm 2013, Zepeda and Deal 2009). Initially concern for the environment was thought to be the driving force behind organic food consumption, where organic not only referred to an alternative production system, but also to a political statement and lifestyle. Nowadays, however, concern for the environment is found to be of lower importance compared to health or quality concerns (Vega-Zamora et al 2013).

In line with the consideration of altruistic motives, Zander and Hamm (2010) find the motives animal welfare, regional production and fair prices for farmers to be the most important motives when making a choice for organic food products. However, it has to be denoted that they only considered ethical attributes and consequently did not consider the motives health, natural content or quality, which have before shown to be most important. Still, the importance of the factors animal welfare and regional production is confirmed by other studies (Hughner et al 2007, Lockie et al 2002, Pearson et al 2010, Roininen et al

2006). Last but not least, there are other, less often mentioned motives, such as being reminiscent of the past, or being fashionable (Hughner et al 2007).

Looking at the relevance of the motives in the choice process, Wier et al (2005) find a positive relation between the declared importance of private good attributes (health, taste and freshness) and the propensity of organic food purchases. For the importance of public good attributes (environmental and animal welfare attributes) and organic food purchases, they fail to find this direct relationship. In difference, Kareklas et al (2014) find beliefs about organic food, influencing attitudes and consequently purchase intention, to constitute of egoistic (nutritional value and natural content) as well as altruistic (effect on environment) factors. Further, they find a direct effect of a proenvironmental lifestyle on attitudes and purchase intention.

These findings assume differences among organic food purchasers and go in line with the findings of Pino et al (2012). In a comparison of regular and occasional organic food purchasers, they find the first group to be affected by ethical motives, while the latter group, the occasional purchasers were found to be mainly driven by food safety concerns.

A different result, however, is found by Lockie et al (2002) who did not look at purchase behavior, but at the relative importance of the underlying motives. Firstly, they confirm health, natural content, animal welfare and concern for the environment to be motivating factors behind organic food choice. Secondly, when comparing organic and non-organic consumers, they find a similar motive structure for the two consumer groups. Thus, they conclude that consumers do not differ in their motives, but in the strength of the motives, with organic consumers being slightly more motivated by these factors compared to non-organic consumers.

For German consumers, Baker et al (2004) analysed the most frequently mentioned values driving organic food choice, using the laddering technique, and report health and enjoyment, followed by belief in nature and animal welfare to be most important. Further

evidence regarding Germany can be found in the Ökobarometer, a regular, representative, consumer survey on organic food purchase in Germany. Accordingly, for German consumers, the most important reasons to buy organic are local origin and support of local farmers (87%), animal welfare (85%) and low charge with contaminants/residues (83%), relating to health concern. However, when being asked about the actual buying situation, consumers named primarily the egoistic aspects, namely avoidance of contaminants/residues, freshness and quality (Ökobarometer 2013). Still, after years of decline, they also find aspects related to environmental benefits to increase again in importance for the buying situation.

The aspect that local production is repeatedly named as a choice motive behind organic food might be a consequence of changes in the structure of the organic food market. Consumers' are found to be concerned about the organic food market becoming similar to the conventional food market, in terms of large supply chains, an increasing degree of processing or the introduction of quality assurance systems (Gottwald and Steinbach 2011, Wier et al 2008). This is regarded as an ongoing conventionalisation of the organic food market, wherefore organic food is, after periods of sustained growth, thought to loose authenticity and faces increasing competition from conventional products labelled with other value claims, primarily related to sustainable production (Adams and Salois 2010, Lockie et al 2004, Schleenbecker and Hamm 2013, Zander and Hamm 2010, Zepeda and Deal 2009). This is especially the case for organic products being marketed in supermarkets and discounters, where they directly compete with their conventional counterparts (Schleenbecker and Hamm 2013). In this context, adding further values, in specific related to local sourcing and short supply chains, is widely regarded as a chance to protect the authenticity of organic food production. However, the question arises, to which degree local production of organic products is possible. In turn, marketing conventional food as local is seen as potentially threatening organic food production, a topic which will

be addressed in the current dissertation.

3.2.3 Consumers' willingness to pay

Although price is often mentioned as a constraint for buying organic, most studies find consumers to be willing to pay price premiums for organic food products (Mesias Dìaz et al 2012, Napolitano et al 2010, Rödiger and Hamm 2015, Rousseau and Vranken 2013, Yiridoe et al 2005, Zanoli et al 2012). The obtained results, however, are diverse, ranging up to price premiums of more than 100% (Van Loo et al 2011, Yiridoe et al 2005). Most studies, however, find consumers to be willing to pay a maximum premium of 10 to 20 % (Olesen et al 2010, Yiridoe et al 2005). Additionally, surveying consumers' WTP for organic salmon, Olesen et al (2010) show that consumers' are only willing to pay a premium if the product is visually alike the conventional product.

Taking a deeper look at consumers' WTP for organic food products, differences in the WTP are not only found between different studies, but also for different organic certifications within the same study (Janssen and Hamm 2012, Meas et al 2014, Van Loo et al 2011). Huge differences are e.g. found by Van Loo et al (2011), with consumers being willing to pay a premium of 34.8% for chicken breast labeled with the generic claim 'organic', but a premium of 103.5% for chicken breast labelled with the organic label from the United States Department of Agriculture.

Further, heterogeneity in consumers' WTP for organic food products can be observed. Krystallis and Chryssohoidis (2005) e.g., identify three consumer groups, with 36.9% of consumers not being willing to pay any price premium, 25.9% being willing to pay a premium of up to 30% and the resulting 37.2% being willing to pay premiums of 30% or higher. Explanations for differences in the WTP for organic food are found in consumer characteristics, such as sociodemographics, attitudes towards organic food and consumers' lifestyle, as well as in purchase frequencies of organic foods (Rödiger and Hamm 2015,

Rousseau and Vranken 2013, Ureña et al 2008, Van Loo et al 2011). These relationships, however, are not universally found. Zanoli et al (2012) e.g., do not find differences in the WTP for organic beef due to sociodemographic factors.

Last but not least, product related differences in consumers' maximum WTP for organic food products are found (Krystallis and Chryssohoidis 2005, Rödiger and Hamm 2015, Ureña et al 2008). E.g., Ureña et al (2008) report the highest WTP for fresh fruits and the lowest WTP for dried fruits, while Rödiger and Hamm (2015) report high WTP for fruits, vegetables, meat, cheese or bread and lower WTP for milk, cereals and potatoes.

3.3 Local

3.3.1 Definition and regulation

In contrast to organic food production, there is no uniform definition or governmental regulation for the term 'local food' in Germany or the European Union. As a result, it is difficult for consumers to identify local products. On top, it leads to the fact that consumers and producers may have different perceptions of what the term 'local food' implies, possibly leading to a failure of fulfilling consumers' expectations (Feldmann and Hamm 2015, Selfa and Qazi 2005). While a standardised label for local food products could help to overcome the differing perceptions, this would also require a definition of localness. As this is a repeatedly recognised problem, there have been several attempts to fill the gap, to define the term local.

To set the stage, 'local food' has to be distinguished from food products related to localities, for which the brand or product name is associated with a region. Those products use the production in a defined region as a value claim, but are marketed in a broader area or even globally. In contrast, the term 'local food' implies a low geographic distance between production and consumption. In line with this, most attempts to define 'local food' use distances (miles or kilometers), driving hours or political boundaries as

determinants (Feldmann and Hamm 2015).

Using a distance measure, Khan and Prior (2010) report 76% of UK respondents to understand local food as being grown and/or produced within less than 30 miles from where they live. In difference, the United States Department of Agriculture defines 'local food' in the USA as food products having a travelling distance below 400 miles. Comparing producers and consumers, Selfa and Qazi (2005) revealed slight differences in the understanding of what constitutes local. While the producers mainly define a local market based on political boundaries, i.e. county or state, the highest share of consumers define local as being grown or produced in their county, followed by a tightened definition of being grown or produced in their proximity.

Looking at the German market, the German government has, in 2014, introduced a nationally unified label for local food products, but declined to advance a nationally agreed definition of what constitutes localness. Instead, they require that the locality of the raw products needs to be named precisely and verifiably, in form of a political boundary, such as county or state boundary or in form of a distance in kilometers (Regionalfenster 2014-2015).

3.3.2   Consumers' perception and purchase motivation

Initially, the concept of local food developed rather out of governmental activity aiming at strengthening the local economy, than out of consumer demand. In line with the increased supply, however, also an increased interest in information on food origin is reported, resulting in increased consumer demands for local food products (Hu et al 2012). Due to the missing general regulation of what constitutes local food, consumers' motivation to buy local food products is likely to be primarily based on consumers' perceptions, attitudes and beliefs.

Analysing these, similarities to the motives and beliefs underlying organic food purchases

can be found. Concretely, freshness, taste and personal health have been reported to be the most important motives for local food purchases (Feldmann and Hamm, 2015, Khan and Prior 2010, Roininen et al 2006, Wirth et al 2011, Zepeda and Deal 2009). Thereby, consumers' constitute the belief of freshness and better taste in the short transportation distances (Feldmann and Hamm, 2015, Roininen et al 2006, Wirth et al 2011). Further, like for organic food decisions consumers' are found to be driven by food safety concerns (Dorandt 2005, Roininen et al 2006). In this context, consumers are found to have high trust in local farmers and related to this in the quality and safety of local products (Onozaka and Thilmany McFadden 2011, Zepeda and Deal 2009).

Based on these primary motives, the purchase of local food has to be regarded as egoistically driven. Contradictory to this, however, economic support for the local economy and support of local farmers are reported as highly important motives for local food purchases (Dorandt 2005, Roininen et al 2006, Zepeda and Deal 2009). Further, the before mentioned short transportation distances, are also related to an altruistically driven advantage seen in local production, namely care for the environment (Dorandt 2005, Roininen et al 2006, Wirth et al 2011).

3.3.3 Consumers' willingness to pay

As for organic food consumers have been found to be willing to pay price premiums for local food products (Adams and Salois 2010, Feldmann and Hamm 2015, Hu et al 2012, Onozaka and Thilmany McFadden 2011). Comparing different findings, variation in the WTP due to the products studied as well as the local label chosen can be observed (Darby et al 2008, Feldmann and Hamm 2015, Meas et al 2014, Onozaka and Thilmany McFadden 2011).

Taking a deeper look at the latter aspect, local labels do not only differ in regard to the certifying agency, but also in the definition of localness. Studying preferences for different

indications of localness for strawberries, Darby et al (2008) find consumers to be willing to pay a premium for local products, compared to the base level 'grown in the US'. However, they find consumers to show equal preference for a local indication referring to the state (Ohio) or for the indication grown 'nearby'.

As for organic food, consumer heterogeneity in the WTP for local food can be observed. To give an example, Weatherell et al (2003) find different consumer segments, with around 20% of respondents not being willing to pay a premium for local food, 25% of respondents being willing to pay 5% more, 30% of respondents being willing to pay 10% more and the rest being willing to pay more than 10% premium. However, they do not find differences in the sociodemographics between the consumer segments.

3.4   Animal welfare

3.4.1   Definition and regulation

The topic of farm animal welfare aroused public awareness after World War II, in line with the adoption of intensive breeding practices in the agricultural sector (Nocella et al 2010). Since then, farm animal welfare has repetitively been subject to policy, with the European Union defining a regulation for every step in the meat production process.

The regulatory frame for the protection of animals kept for farming purposes is given by the council directive 98/58/EC. This regulation is complemented by several council directives, defining the minimum standards for the protection of single species, concretely council directives 2007/43/EC for chicken, 1999/74/EC for laying hens, 2008/119/EEC for calves and 2008/120/EC for pigs. All of these directives are, through the 'Tierschutz-Nutztierhaltungsverordnung', jointly implemented in the German law. Further, on top of the regulation of husbandry conditions, the European council has defined directives for the transport of animals (EG No 1/2005) as well as for slaughtering (EG No 1099/2009).

This multitude of regulations shows that animal welfare has repeatedly been subject to

policy. Still, in line with several meat scandals, consumers have been found to regard the regulations as insufficient (Fernqvist and Ekelund 2014, María 2006, Te Velde et al 2002, Verbeke and Vackier 2004). Thus, there have been different attempts to implement and communicate higher animal welfare standards (Efken et al 2013). To name one of these farm animal welfare certification systems, the label 'Für mehr Tierschutz' (Improved animal welfare), is a voluntary animal welfare label introduced to the German market by the German Animal Welfare Federation in January 2013. The label is thought as a possibility for producers, to communicate animal husbandry conditions that go beyond the legal requirements, and as a possibility for consumers, to identify products produced under improved husbandry conditions. Thereby the label uses a two-star approach, distinguishing an entry level (1 star) and a premium level (2 stars).

Further movement on the German market represents the 'Initiative Tierwohl' (initiative animal welfare), which is not per se a certification system, but an initiative of different actors along the supply chain to achieve higher animal welfare standards, a more sustainable meat production and higher awareness of animal welfare in consumers' buying decision. To do so, production criteria that go beyond the legal animal welfare requirements have been implemented. Products produced in accordance with these higher criteria are then paid a defined premium, independent of the market price. The extra costs for this are taken over by the retailers, participating in the initiative. So far however, this is rather theory, with still a lot to work on, e.g., on the communication to consumers, as in practice the consumer can, up to now, not identify the products on the market.

3.4.2 Consumers' perception and purchase motivation

Starting with the factors influencing consumers' meat purchase decision in general, Schnettler et al (2009) find origin and information regarding animal treatment to be the driving factors behind consumer choice. This finding goes in line with the before outlined

consumer demand for higher farm animal welfare. A demand, which is assumed to be activated by several food scandals related to animal food, as well as rising media coverage, leading to a higher awareness of the topic farm animal welfare (Fernqvist and Ekelund, 2014; Verbeke and Vackier, 2004). In line with this, several studies have been undertaken to analyse consumers' preferences for animal welfare and the underlying motivation. A lot of studies dealing with consumers' motivation are, as studies on organic and local food production, concerned with the discussion about whether consumers' are altruistically or egoistically driven. In this context, Verbeke and Vackier (2004) identified different consumer segments. While they find one consumer segment to focus mainly on taste and one consumer segment to focus mainly on price, they find two-thirds of consumers to be influenced by concern about meat risks. This is expected to be at least partially a consequence of food scandals. Resulting out of these, consumers are expected to search for some indication that the products they purchase are safe (Gottschalk and Leistner 2013, Grunert 2005, Hughner et al 2007). This expectation is confirmed by Napolitano et al (2008), who find consumers to use animal welfare as an indicator for food quality, food safety and consequently healthiness.

In a meta-analysis, Lagerkvist and Hess (2011) find egoistic, as well as altruistic aspects to be prevalent for consumers' WTP. They discuss this aspect on the example of linking farm animal welfare to food safety, concretely the usage of antibiotics. While on the one hand, consumers are altruistically concerned, approving antibiotics because they help the animal to be better off, consumers are also found to be driven by health concerns, wherefore they want the usage of antibiotics to be limited.

Slightly different, other studies differentiate the influences of the different attributes as either private or public. Thereby, on the first view, animal welfare can be considered as an externality, with uninvolved individuals possibly experiencing a disutility if animals are not well treated, and thus as a public good (Gracia et al 2011). Lusk et al (2007) analyse

this somewhat more differentiated, splitting the aspects into two attributes, in their case into two labels. They argue that animal welfare in general is a public good attribute, but that the usage of antibiotics, as discussed by Lagerkvist and Hess (2011), embodies a private good aspect. Thus, they use 'certified free of antibiotics' as a private good labelling and 'certified for animal wellbeing' as a public good labelling.

3.4.3 Consumers' willingness to pay

Like for the other alternative food concepts, the findings regarding consumers' WTP are diverse. While most studies find consumers' to be willing to pay price premiums, Schnettler et al (2009) find consumers' to be interested in information about animal treatment, but not to be willing to pay significantly more for these kind of products.

A hurdle in comparing different studies analysing consumers' preferences and WTP for animal welfare, is that they highly differ, dependent on the degree of detail regarding animal welfare, surveying consumers either only regarding their overall evaluation, using generic claims, or regarding specific animal husbandry practices.

Looking at specific animal husbandry practices, Lagerkvist et al (2006) find Swedish consumers to value outdoor housing, no fixation, prevented tail biting and immunocastration. However, these types of studies are criticised, because consumers are found to generally lack the necessary knowledge on farm animal welfare (Lagerkvist and Hess 2011). Without the knowledge about livestock farming and farm animal welfare, consumers' responses on these kind of questions have to be regarded as little meaningful.

In difference, Gracia et al (2011) analyse consumers' WTP for an animal welfare label, by the means of experimental auctions. Doing so, they find consumers, on average, to be willing to pay 19% to 23% more for the animal-welfare labelled ham compared to unlabelled cured ham available in supermarkets.

Dividing animal welfare into an antibiotics-free certification and a general animal welfare

labelling, Lusk et al (2007) find higher WTP for the first mentioned. However, like other researchers, they also identify differences among the respondents, with more altruistically driven respondents showing considerably higher WTP for the general animal welfare label. Last but not least, Nocella et al (2010) find segments of consumers who are willing to pay more for production processes respecting or increasing animal welfare. Thereby, consumers' WTP was positively affected by trust towards farmers. This in turn, leads back to the credence characteristic, which all three alternative food concepts, covered in this dissertation, have in common.

3.5   Interplay of different credence attributes

A lot of research on food attributes is undertaken with regard to single food concepts, separated from other product characteristics. Research findings, however, indicate an overlapping perception between the different attributes. As outlined above, this is specifically the case for the credence attributes this dissertation focusses on, with e.g., organic production being related to local production or animal welfare (e.g. Hjelmar 2011, Hughner et al 2007, Zander and Hamm 2010).

One reason for this might be the similarities between the food concepts. First, the different alternative food concepts can all be regarded as a countermovement to the process of globalisation of agricultural production. Second, consumer demand for all of the analysed alternative food concepts is reported to be driven by food scandals, which are expected to have heightened consumers' concern about health, safety and quality. In fact, all three motives have been shown to be driving forces for all three studied food concepts. Due to this, it seems like a logic finding that respondents showing a positive attitude towards one alternative food concept were also found to favour other alternative food concepts (Feldmann and Hamm 2015, Weatherell et al 2003, Zanoli et al 2012). Consequently, in recent years more and more research has been undertaken to analyse the complementary or

competitive character between different alternative food concepts, in specific between organic and local production.

In a literature review on consumer preferences and WTP for local versus organic food, Adams and Salois (2010) observe a shift in preferences away from organic and toward local food. Among other reasons, the authors explain this change by a greater concern about industrialised organic agriculture. This confirms previous findings from qualitative interviews in which consumers state to prefer buying local over organic, as a response to the increasing commercialisation and industrialisation of organic food production (Zepeda and Deal 2009). Thereby, also the increased number of imports of organic products might play a role. Consumers are found to have strong distrust in imported organic food products and, on the other side, to pay increasing importance on direct contact to producers, aiming at a transparent supply chain (Ökobarometer 2013, Padel and Foster 2005).

Corresponding to these findings, local sourcing is regarded as complementing organic production, to maintain consumer confidence (Schleenbecker and Hamm 2013). Meanwhile, other studies do not find any interaction between the two concepts and regard them as competitors, with consumers' liking, in terms of WTP, being higher for local food compared to organic food production (Onozaka and Thilmany McFadden 2011).

While these findings look contradictory on the first view, Denver and Jensen (2014) show that it depends on the perspective. Consumers perceiving organic food as more desirable, show a preference for organic, as well as for local food, while consumers perceiving local food as more desirable show a preference for domestically and locally produced food, but not for organic food per se.

Besides the interplay between organic and local food marketing, a strong relation has also been reported between organic production and perceived animal welfare (Zanoli et al 2012). Animal welfare, and through animal welfare improved quality, have been found to motivate consumers to buy organic meat (Hjelmar 2011, Padel and Foster 2005, Roininen

et al 2006, Zanoli et al 2012). In this context, Hjelmar (2011) could show an overlapping perception of organic food production and animal welfare, as a result of consumers not being aware about the regulations behind the different concepts.

Last but not least, local production and animal welfare treatment have been found to be interrelated. Like reported before, consumers are found to have high trust in local producers and thus also trust in local farmers that they treat their animals well (Zepeda and Deal 2009).

Summing up, different interrelations, and even overlapping perceptions, between the alternative food concepts studied in this dissertation are found. Due to this, in this dissertation, preferences or WTP are not accessed separately for the single food concepts, but jointly e.g. for local and organic food production.

4 Discrete Choice Modelling

The before outlined random utility theory (RUT), introduced by Thurstone (1927), suggests that individuals act with the aim of maximizing utility. However, as utility is a latent construct, it has to be inferred from observed choice behaviour. One method for doing so, are discrete choice experiments (DCE), where respondents are asked to make a choice between two or more discrete product alternatives. According to RUT, consumers are thereby expected to choose the product alternative, which delivers them the highest utility. As, according to Lancaster's (1966) consumer theory, the utility of a product stems from the products attributes, in choice experiments, the product alternatives are described by different attributes and attribute levels, which are systematically altered over the alternatives.

Thus, in practical terms, choice experiments are fairly flexible. The researcher determines the attributes and attribute levels, which are systematically combined into product alternatives, which in turn are combined into choice sets. While the definition of relevant attributes and attribute levels by the researcher embodies several advantages, not least that also alternatives that are not existing or physically unavailable can be analysed, it is also a crucial task, which determines whether all relevant information can be attained through the choice model or not (Gao and Schroeder 2009, Hensher et al 2005:4,5). Further, the researcher can determine the number of alternatives in a choice set, also called choice set size, as well as whether the choice is forced or an option to choose none of the alternatives is included in the choice set (Hensher et al 2005:167,176; Street & Burgess 2007:2).

For answering the choice experiment, each respondent is shown a series of choice sets and asked to decide for one of the options presented in the choice set. Thereby the choice can be hypothetical or non-hypothetical. In this dissertation, hypothetical choice experiments have been used. These belong to the stated preference methods, because, in difference to revealed preference methods, the choice does not represent real observed behaviour but

rather a hypothetical statement. Due to this, these choice experiments are often criticised as being not incentive compatible and therefore too hypothetical. On the other side, choice experiments are regarded as comparably little prone to strategic response behavior, because the research procedure, where the respondent consecutively has to decide between a definite number of alternatives differing in characteristics, makes it very difficult for respondents to behave strategically. In line with this, due to the multi-attribute approach, DCEs are supposed to reveal preferences that reflect real market choices (Louviere, Flynn and Carson, 2010). A further advantage of hypothetical choice experiments is that preferences and WTP can be deduced even for products or labels that have not been introduced to the market, yet. Finally, an advantage of choice experiments is seen in the procedure that respondents have to decide for one alternative over the other, and thereby have to trade-off the product attributes against each other.

As choice experiments usually include price as one product characteristic, WTP can indirectly be inferred from the stated choices, as the trade-off between the product characteristic price and other product characteristics. This way, the WTP can be estimated for each attribute level and represents the maximum amount a person is willing to pay for the specific attribute level, or in other words, how specific attribute levels contribute to the value of the product as a whole.

Coming back to the actual choice situation, choice experiments deliver binary data, in form of choice or non-choice of an alternative. According to the RUT the decision is thereby driven by a utility maximising behaviour, with each alternative i having, for individual n, in choice situation t, a certain utility U_{nit}. The individual n is thought to evaluate each of the $j = 1, ..., i, ... J$ alternatives in a choice set and to choose the alternative which delivers the highest utility.

As displayed in equation (1) this utility consists of two components, a systematic and a random component. The systematic term $\eta' x_{nit}$ in turn consists of x_{nit}, the row vector of k

observed product attributes describing choice alternative i and of η, a column vector of covariates relating to the individuals' taste. The error term ε_{nit} represents the random, unexplainable, component, which includes unidentified factors that impact the choice.

$$U_{nit} = \eta' x_{nit} + \varepsilon_{nit} \tag{1}$$

Under the common assumption of the random component being an independent and identically distributed extreme value type 1, the probability of respondent n, choosing alternative i in choice situation t can then be estimated using maximum likelihood estimation. Thereby, the choice probability for alternative i is given by the ratio of the exponential of the explainable systematic component of utility for alternative i to the exponentials of the explainable systematic component of utility for all J alternatives. This is specified in the basic, multinomial logit model (MNL), outlined in equation (2) for a single choice situation t and in equation (3) for the sequence of choices, where $i(n,t)$ denotes the alternative chosen by individual n in choice situation t.

$$Prob_{nit}(\eta) = \frac{e^{(\eta' x_{nit})}}{\sum_{j=1}^{J} e^{(\eta' x_{njt})}} \tag{2}$$

$$S_n(\eta) = \prod_{t=1}^{T} Prob_{ni(n,t)t}(\eta) \tag{3}$$

The fixed parameter models, such as the MNL, are build up on simplifying assumptions. Concretely, due to the assumption of the error term being IID distributed, the MNL exhibits three possible weaknesses (Rigby and Burton, 2005).

First, the IID assumption implies the random component to be independent distributed and thus does not allow for correlations between the error terms of different alternatives (Hensher et al 2005:606). As a consequence, the MNL assumes independence of observations, meaning that it cannot account for correlation in responses made by the same individual, but treats each choice as being made by another individual (Hensher et al 2005:617, Rigby and Burton, 2005). An assumption, which has to be regarded problematic in survey designs where each respondent answers more than one choice set.

Second, the assumption of the random component being independent distributed, leads to the assumption of independence of irrelevant alternatives (IIA). The predication of the IIA assumption is that the relative choice probability of existing alternatives is independent of the introduction of a new alternative (Rigby and Burton, 2005). Whether this assumption is realistic or not depends on the similarity of the choice options. As Hausman and Wise (1978) outline, an individual assigning above-average value to one alternative is likely to do the same for a similar alternative, in which case the IIA assumption has to be rejected.

Third, the IID assumption implies the random component to be identically distributed, wherefore it cannot account for heterogeneity in preference over unobserved variables. In other words, preference heterogeneity is only considered for the observed alternatives, in form of the error term (Rigby and Burton, 2005). In DCEs, where the researcher defines a definite number of attributes, this can be regarded unrealistic, as several not considered attributes are likely to have an influence on preference.

Further, the MNL implies that respondents' observed taste, in form of the η vector, is homogeneous. In other words, it is assumed that all respondents show the same preferences, a simplifying assumption which is from a behaviourally standpoint difficult to hold. In other words, based on fixed parameters logit models such as the MNL, an individual's preference parameters can only be inferred, if just this one individual is survey. The aim of choice modelling however is not to explain choices made by one individual, but to explain aggregated individual behaviour, or in other words choices made by a population of individuals (Hensher et al 2005:72). Therefore, several more flexible approaches, allowing for heterogeneity in taste, have been introduced over the years (Ben-Akiva et al 2002). Corresponding to the theoretical framework of this dissertation, these models, also referred to as hybrid choice models, aim at bridging the gap between the economics of choice modelling and behavioural theories (Abou-Zeid and Ben-Akiva 2014:383). Two of these modelling approaches, the RPL model and the structural choice

model, have been applied in the present dissertation and will therefore be explained in more detail.

4.1   Random Parameters Logit Model

A popular discrete choice model, allowing for consumer heterogeneity, is the random parameters logit model, also called mixed logit model, mixed multinomial logit model, kernel logit model, or hybrid logit model (Hensher and Greene 2003).

The RPL allows for (unobservable) heterogeneity in tastes, exhibits the IIA assumption by allowing different substitution patterns and is able to account for repeated choices by allowing correlations in unobserved factors over time (Hensher et al 2005:608, Rigby and Burton 2005, Train 2003). Taking together, the RPL thus obviates the three before mentioned weaknesses of fixed coefficient models. Econometrically, this is realised through the vector of parameters representing respondents' taste η_n being defined as individual specific, thus relaxing the assumption of preference homogeneity (equation 4).

$$U_{nit} = \eta_n'x_{nit} + \varepsilon_{nit} \tag{4}$$

Concretely, the RPL assumes that the functional form and the arguments of utility are common across respondents, but that the parameters vary across individuals (Rigby and Burton 2005). The parameter η_n is thus an individual specific, unobserved coefficient vector which varies in the population with density $f(\eta_n|\theta^*)$, with θ^* being the parameters of this distribution. In other words, the individual coefficient vector consists of a fixed parameter displaying the population mean, and of the individual specific deviation from that mean. Under the assumption of normal distribution the individual specific deviation from the mean is expressed in the standard deviation.

Through the consideration of taste heterogeneity, the RPL displays a behaviourally more realistic approach to measure consumer preferences. At the same time, due to the fact, that η_n is an unobserved, unknown vector, the choice probability can no longer be estimated

through the standard logit formula, but the unconditional choice probability has to be estimated. This is given by the integral of the conditional choice probability, outlined in equation (2) and (3), over all possible values of η weighted by the density $f(\eta_n|\theta^*)$ (equation 5).

$$Prob_n\left(\theta^*\right) = \int \frac{e^{(\eta_n' x_{nit})}}{\sum_{j=1}^{J} e^{(\eta_n' x_{njt})}} f(\eta_n|\theta^*) d\eta_n \tag{5}$$

Because of the integral, the unconditional choice probability has no closed form. Hence it cannot be estimated using a conventional maximum likelihood estimation. Instead, the integral is approximated through simulation, using simulated log likelihood (Train 2009). Not least due to advances in the development of simulation methods and the respective software options, the RPL is nowadays widespread used for analyzing consumer preferences in different areas, amongst others in agricultural and food economics (Hensher and Greene 2003, Hole 2007, Hu et al 2012).

4.2 Structural Choice Modelling

In difference to the RPL, structural choice modelling (SCM) aims at incorporating psychological factors into the analysis to understand the preference structure underlying choice behaviour. To do so SCM adds a structure of latent variables, which are thought to represent psychological factors or meta-attributes, to discrete choice models. In other words, SCM is a modelling approach, which integrates discrete choice modelling and structural equation modelling (Rungie et al 2011, Rungie et al 2014).

Thereby, SCM builds up on work on hybrid choice models by Elrod (1988), Elrod and Keane (1995), Walker (2001), Ashok et al (2002), and Morikawa et al (2002). Aplications can be found in two respects. First, using revealed preference data, these models have been used to study unobserved attributes of objects, such as unobserved attributes of brands underlying taste heterogeneity for brands (Elrod 1988, Elrod and Keane 1995, Walker 2001). Second, these models have been used to incorporate, through indicator variables,

respondents' characteristics, such as attitudes and satisfaction, into the analysis (Ashok et al 2002, Morikawa et al 2002, Walker 2001).

Like all discrete choice models, structural choice models builds upon RUT. Therefore, like for the RPL, the parameters can be defined to be random. The difference to the before mentioned specifications is that SCM adds a structure of factors, which directly act on the taste coefficients, to the models. These factors, in turn, represent a second source of random variation. Whether to analyse both possible sources of variation, or only one, depends on the researcher's econometric specification of each model.

Econometrically speaking, in SCM, for each attribute k the taste parameter η is specified in a first order structure as a linear function of m latent variables ξ and a random component ε (Elrod 1988, Elrod and Keane 1995, Walker 2001). This is stated in equation (6), showing, how the random coefficients relating to the individuals' taste η are a function of a higher order preference structure.

$$\eta_k = \gamma_{k,1}\xi_1 + \cdots + \gamma_{k,M}\xi_M + \varepsilon_k \tag{6}$$

In a second order structure the latent variables ξ may be correlated or regressed upon one another. Hence, the latent variables ξ are a function of each other and a second random component δ. This is shown in equation (7) and denotes further latent structure.

$$\xi_m = \beta_{m,1}\xi_1 + \cdots + \beta_{m,M}\xi_M + \delta_m \tag{7}$$

In other words, equation (6) and (7) specify the structure of the variance-covariance matrix of the random coefficients η, for the covariates x. Behaviourally, the higher order preference structure allows individuals to act heterogeneously, while each individual's preferences for certain attributes, attribute levels and attribute combinations is considered to be persistent (Rungie et al 2011).

Based on these specifications the choice probability can be stated as follows. Out of choice sets C_1 to C_T, individual n chooses one alternative a_1 to a_T from each of the choice sets. Then the joint probability of all choices by individual n is given by equation (8), where E is

the (1 x k) column vector of random components $\{\varepsilon_k\}$ and Δ is the (1 x m) column vector of random components $\{\delta_m\}$.

$$Prob\{a_1, a_2, \dots, a_T | C_1, C_2, \dots, C_T\} = \iint \prod_{t=1}^{T} \frac{\exp(\eta' x_{nit}(\text{E},\Delta))}{\sum_{j \in C_t} \exp(\eta' x_{njt}(\text{E},\Delta))} f(\text{E}, \Delta) d\text{E} \, d\Delta \quad (8)$$

For clarity vector E and vector Δ are in the following collectively represented by θ. The log likelihood function is then specified by summing over all individuals. Thereby, the choice probability has, as in the RPL, no closed form, wherefore the unconditional choice probability is approximated using simulated maximum log likelihood (equation 9):

$$SLL\,(\theta) = \sum_{n=1}^{N} \ln \left\{ \frac{1}{R} \sum_{r=1}^{R} Prob\{a_1, a_2, \dots, a_T | C_1, C_2, \dots, C_T\} \right\}) \quad (9)$$

A new software, DisCoS, has been developed for the analysis of structural choice models. Following the econometric specification, this software allows the researcher to incorporate latent factors into the analysis of choice processes. Besides this, the software has an additional advantage, as it enables the simultaneous analysis of separate choice experiments from the same respondent (Rungie et al 2012). This way the consistency within respondents over discrete choices can be tested, or in other words this allows the researcher to determine whether preferences for certain attributes are constant over choice situations, i.e. over products or time. While preference consistency has previously been analysed within revealed preference data, e.g., brand consistency across categories (Hansen et al 2006), this is new to the choice experimental context.

5 Data collection

This chapter describes the methodology behind the data collections providing empirical data for this dissertation. The dissertation is based on two data collection efforts, with the first data collection being the basis for paper I and paper II, while a second data collection was carried out for paper III.

5.1 Data collection 1

The first data collection was part of a research project, funded by the Bavarian State Ministry for Agriculture, Nutrition and Forestry, to assess the potential of local organic products, in terms of purchase motivation, purchase constraints and WTP. To do so, data from 720 grocery shoppers was collected via face-to-face interviews, throughout February and March 2012. The study used a convenience sample, but tried to enhance the quality of the sample in the following ways.

First, the research design used a stratification strategy by region, as well as by food outlet. In terms of region, the interviews took place in four cities throughout Bavaria: Munich, Nuremberg, Freising and Neumarkt i.d.Opf.. These cities differ in population and can therefore be regarded as urban (Munich and Nuremberg) versus rural (Freising and Neumarkt i.d.Opf.). Also, the four cities represent a geographical coverage of Bavaria, with Munich and Freising rather representing the south of Bavaria and Nuremberg and Neumarkt i.d.Opf. representing the north of Bavaria, Franconia. An equal number of 180 interviews was performed in each of the four cities. In terms of food outlet, the interviews took, again in equal numbers of 180, place at four different food outlets: supermarkets, discounters, organic food shops, and organic bakeries. This procedure ensured that a diversity of consumers is included in the sample.

Second, by intercepting respondents near the shopping outlets, before or after food shopping, the sample is refined to respondents, who are at least partly responsible for food

shopping. Last but not least, to limit the target group to plausible organic food shoppers, the questionnaire started with a filter question, ensuring that respondents have bought organic products at least once before. Still, this includes most consumers, as, according to the German consumer research association GfK, the customer reach for organic food products in Germany is 94% (GfK, 2010). The resulted sample was predominantly female (63.2%) and relatively wealthy and well educated and thus corresponds to the profile of German organic food consumers (Bruhn 2002, Jonas and Roosen 2008).

In the following, the questionnaire included questions on the buying behaviour, in terms of buying local and organic, the importance of localness for organic food purchases, or the definition of localness, as well as questions on the advantages to buy local organic food products and constraints to do so. For some of the questions, e.g., the definition of localness, the purchase constraints and especially the WTP, the answers were expected to be dependent on the surveyed product. To account for these product specific differences, it was therefore decided to include more than one product, specifically the three products beer, bread and milk. The product selection is based on the following considerations. First, all three products are fast moving consumer goods, which can be expected to be regularly bought. Still, the chosen products have different degrees of processing and accordingly different distribution networks. Second, the products are all available from local, as well as from organic production. Concretely, they are important products in the German organic food market, as well as in the Bavarian food market. Using a two-third split design, the sample size for the parts of the questionnaire referring to the three products decreased to 480 respondents per product. Last but not least, the questionnaire inquired sociodemographic information on respondents' gender, age, education, occupation, household size, household type and income.

This multitude of questions was, not at least, consequence of the survey being part of a broader research project. The questions which are of main interest for this dissertation,

however, are the motives behind making a food choice and the preference for organic versus local food production for the first paper and the DCE, which delivers the empirical data for the second paper, the analysis of consumers' WTP for local and organic claims. Therefore these questions are outlined in detail in the following subchapters.

5.1.1   Food Choice Motives

As mentioned before, the survey aimed at examining the motivating factors behind making food choices. A common approach to assess these motivating factors is the Food Choice Questionnaire (FCQ) developed by Steptoe et al (1995). The FCQ consists of 36 items which respondents have to be rate on a 4-point scale regarding the importance of the item in a daily food choice. Their research resulted in nine food choice motives: health, mood, convenience, sensory appeal, natural content, price, weight control, familiarity and ethical concern. Since the publication of the FCQ, it has been used and validated, as well as complemented, by several researchers. Just recently, Markovina et al (2015) analysed the validity and reliability of the FCQ across several European countries. Based on their research, they conclude the FCQ to be a suitable method for determining the importance of motives underlying food choices.

However, Steptoe et al (1995) already grant at the time of publication an increasing environmental awareness, which is not represented in the FCQ. Addressing this aspect, Lindeman and Väänänen (2000) differentiate the motive of ethical concern into animal welfare, environmental protection, political values and religion. This way, they add 13 new items to the FCQ. As they put high emphasis on ethical motivation, the work of Lindeman and Väänänen (2000) is also of particular interest in the context of the present survey.

Following this research, we base the investigation of the motivating factors behind making a food choice in this survey on the work from Steptoe et al (1995) and Lindeman and Väänänen (2000). However, due to time constraints of the survey, a content relevant

selection out of the proposed 49 items was taken. Concretely the five food choice motives health, natural content, price, animal welfare, and sensory appeal were selected for the survey. The decision was based on previous research by Lockie et al (2002), who analysed the importance of 13 food choice motives for organic and non-organic consumers and who found these five food motives to be the most important ones. Further, for German consumers, health, natural content and animal welfare have been shown to belong to the main reasons behind purchasing organic food (Oekobarometer, 2012). In difference to this, price is the main constraint mentioned for buying organic. Last but not least, sensory appeal is a food choice motive, which can, in difference to the credence attributes health, natural content and animal welfare, be actively experienced by the consumer.

To assess the importance of the selected food choice motives, the participants were asked to rate the 19 underlying statements regarding their importance in daily food choices – e.g., *It is important for me that the food I eat on a typical day contains a lot of vitamins and minerals*. While the original FCQ used a 4-point scale, we follow more recent studies by using a 5-point scale from 1 (*not at all important*) to 5 (*extremely important*) (Markovina et al 2015).

Following the data collection, a confirmatory principle component analysis was performed, to confirm the finding of the expected five food choice motives health, natural content, price, animal welfare, and sensory appeal. Varimax orthogonal rotation, which aims at maximising the variance of the loadings within factors and thus increases interpretability of the results, has been chosen as the extraction method.

5.1.2 Preference for organic versus local food production

To address the research question of the first paper, whether consumers with a preference for either organic or local food differ in their food choice motives, the preference for organic or local food had to be determined. To do so, respondents were asked to state their

agreement to the statement *Local food production is more important than organic production*, with the answering options:

- *Yes, I agree. Local food production is (somewhat) more important to me than organic production.*

- *No, I don't agree. Organic food production is (somewhat) more important to me than local production.*

- *Local and organic production of food products is equally important to me.*

- *It is impossible to generalize. The decision is product dependent.*

Based on the respondent's answer, a preference for either local or organic production is defined. The latter two answering options, that local and organic production is equally important or that it is product dependent, are combined into a third group, which is labelled 'indifferent'. For the final data analysis in paper I, examining differences in the food choice motives between the consumer groups, only the respondents stating a clear preference for either organic or local production are taken into account. This approach leads to a reduced sample of 415 respondents for the final estimation, comparing the consumer groups by means of an independent-samples *t*-test

5.1.3 Choice experiment

Like outlined before, a choice experiment was included in the survey to estimate consumers' WTP. To be able to compare product specific differences in the WTP, the choice experiment is designed in the before mentioned two-third split on the choice of bread, beer, and milk. All three products were described by the same four attributes: price, local label, organic label and brand. The selected attributes and attribute levels are presented in Table 1, with the selection being based on the following considerations. The attributes organic and local were included in the choice experiment, to be able to address the research question in how far the WTP price premiums for organic food products can be

supported by claims of localness and vice versa.

Two attribute levels were defined for both of the attributes, plus a third level with the attribute not being applicable. Local was either described by the generic claim "from the region" or by the existing label "Quality certified Bavaria", a label for local products that takes the state as the geographical reference and, at the same time, gives a quality assurance according to EU regulation 1151/2012. In parallel, organic was described either by the generic claim "organic", or by the label "Organic certified Bavaria". Latter one is an existing label, which requires organic production of the agricultural ingredients to 95% and Bavarian sourcing to 80%. The claim "organic" was expected to be referred to the organic label according to the EU organic food regulation 834/2007. Still, this cannot be guaranteed, as all labels chosen for this choice experiment were presented only in written words, not graphically. To be able to better analyse the competitive or complementary character of local and organic labelling, an interactive variable for the coexistence of the generic claims "from the region" and "organic" has additionally been generated prior to the analysis.

TABLE 1. Attributes and Attribute Levels of the DCE (Data collection 1)

	Beer (0.5 l bottle)	**Bread (kg)**	**Milk (l)**
Price (€)	0.79, 1.09, 1.39	2.40, 3.60, 4.80	0.49, 0.99, 1.49
Local label	'From the region', 'Quality certified Bavaria', None (blank)	'From the region', 'Quality certified Bavaria', None (blank)	'From the region', 'Quality certified Bavaria', None (blank)
Organic	'Organic', 'Organic certified Bavaria', None (blank)	'Organic', 'Organic certified Bavaria', None (blank)	'Organic', 'Organic certified Bavaria', None (blank)
Brand	Conceived Brand, National Brand	Conceived Brand, National Brand	Conceived Brand, National Brand

Source: own illustration

Brand was chosen as an additional attribute for the experiment, based on the consideration that especially some traditional organic brands communicate localness as part of their brand identity. While these brands have used local sourcing and short supply chains as a unique selling proposition for a long time, they might now be threatened by global and private brands' marketing initiatives advertising localness of their products. Therefore, for each of the products, a well-known, local organic brand is chosen as one attribute level and a similar, but conceived brand name is chosen as the second attribute level.

Finally yet importantly, to be able to estimate consumers' WTP, a price parameter has to be included in the design. Three price levels were defined based on a small research at different food outlets (discounter, whole food stores, and supermarkets), by taking the mean price and a standard deviation above and below the mean price.

The questionnaire used a fractional factorial design maximizing D-efficiency for 16 choice sets. Using a block design, these 16 choice sets were split across four questionnaire versions for each product. This way each respondent answered four choice sets, for two of the three products, so all in all 8 choice sets. In each choice set the respondent had the choice between two alternatives, varying in the before mentioned attributes, and a third alternative not to buy any of the products.

Following the data collection, a MNL and a RPL were estimated. Based on the latter one, consumers' WTP for the attributes is estimated as the negative ratio of the attribute parameter to the price parameter (Train, 2005), whereby significance of the WTPs is assessed using the Krinsky and Robb (1986) procedure.

5.2   Data collection 2

The second data collection builds upon the first one, addressing the research question of consumers' WTP for different credence attributes. As in the first study, the attributes of interest were related to organic and local production, but additionally the topics of animal

welfare and antibiotics-free certification were taken into consideration.

The study was designed as a German-wide Online survey and used a quota sampling, to be representative for the German population in terms of gender, age, education, occupation and income. For the data collection, which took place throughout June 2014, 2331 respondents from a panel were invited to take part, of which 936 successfully finished the survey. The final sample shows a deviation of $\leq 2\%$ from the quota for all criteria, besides 'no graduation' (education) and 'school students' (occupation) which were underrepresented by 4.5% and respectively 3.2% compared to the German population. Further, the target group was defined as consumers being at least partly responsible for food shopping in their household, which was assured by a filter question at the beginning of the survey.

Again, the questionnaire included a multitude of questions related to different fields of research. Besides others, respondents were surveyed on the importance of different food values, food risk perception, conscious consumption practices, responsibilities in the household and political participation. Core of the survey, however, was the hypothetical choice experiment on the three products pork minute steaks[1], eggs and pasta containing egg. The selection of these three products is based on the following considerations. First of all, the research aimed at assessing WTP for animal welfare labelling, wherefore the chosen products had to be all animal products. Still, to test for consistency over products, the aim was to include a diversity of products. The three chosen products fulfil this, as they firstly come from different farm animals (hens versus pigs), secondly have different effects on the animal and lastly have different degrees of processing (pasta versus raw eggs). Using processed versus unprocessed products has been discussed in previous research. Thereby, a potential effect of animal welfare on the perception of organoleptic characteristics is regarded less likely for processed compared to unprocessed animal food

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[1] 'pork minute steaks' refers to thinly sliced pork cutlets and can be commonly found in the German market

products (Gracia et al 2011). Further, for highly processed food, other aspects than the animal origin might be in the foreground of consumers' awareness, wherefore consumers might be less concerned about animal welfare for these products, compared to the unprocessed product. Choosing raw eggs and pasta containing eggs enables the direct comparison between an unprocessed product and the same product, but as part of a processed product. Further reason for choosing pasta containing egg as the processed food product was that, as for pork and raw eggs, the product choice is not expected to be highly influenced by brands, in contrast to yoghurt or pizza.

The attributes and attribute levels selected for the choice experiment are presented in Table 2, with the selection being based on the following considerations. The attributes organic production, local origin, animal welfare and use of antibiotics were chosen according to the research question, to evaluate different credence claims and labels. Further, they represent private good attributes (use of antibiotics), as well public good attributes (organic, local, animal welfare). As shown in the literature review, it is a highly discussed topic whether consumers' preferences and WTP are driven by private or public concerns. Including both kinds of attributes makes it possible to address this research question. As the interest was not on the evaluation of specific attribute characteristics, but rather on the overall evaluation and interplay of the selected credence attributes, the attributes were dichotomous defined, either being present in form of a claim or absent from the choice alternative. Lastly, to be able to estimate WTP, the attribute price was included in the choice experiment. To determine meaningful price levels, market prices for the three products were researched in different food outlets (supermarkets, discount supermarkets and a local butchery). Four price levels were defined for each of the products, with the lowest available market price representing the lowest price level and the highest available market price representing the highest price level. Finally, the margin between these price anchors was divided in equal steps.

TABLE 2. Attributes and Attribute Levels of the DCE (Data collection 2)

Attribute	Definition	Attribute Level		
		Pasta containing egg (500g)	**10 eggs**	**Pork minute steaks (400g)**
Organic production	The food has been produce in accordance with EU organic food regulation 834/2007; no information means the food has been produced conventionally	Organic None		
Local origin	The food has been produced locally; no information means that the origin is not indicated	From your region None		
Animal welfare	Additional measures for animal welfare are taken, that exceed the legal standards; no information means that legal standards are satisfied	Improved animal welfare (2 stars) None		
Use of Antibiotics	The animals have received no antibiotics through feed or injections during their life; no information means that legal standards are satisfied, which means that antibiotics are allowed in cases of illness	Certified 'Free of Antibiotics' None		
Price	The price in Euros for 400g pork minute steaks/ 10 eggs/ 500g pasta containing egg	0.69 € 1.29 € 1.89 € 2.49 €	0.99 € 1.79 € 2.59 € 3.39 €	2.89 € 4.59 € 6.29 € 7.99 €

Source: own illustration

The choice experiment design was defined as an orthogonal optimal in the difference fractional factorial design which resulted in 16 choice sets per product. These 16 choice sets were blocked into four groups, with each block containing four choice sets. Using a within-subjects design, each respondent consequently answered four choice sets per product, so all in all twelve choice sets. Thereby, the order of the three products, as well as the order of the choice sets within one block was randomised to reduce order effects.

Before answering the choice experiment questions, filter questions ensured that respondents buy the respective products pork, eggs and egg pasta. This way, absolute hypothetical and therefore irrelevant answers were avoided. Consequently, the sample size

decreased to 802 respondents that participated in all three choice experiments.

The often criticised hypothetical bias of choice experiments is further reduced through the incorporation of a cheap talk. Using a cheap talk script similar to the one used by Lusk (2003), respondents were made aware of their binding budget constraint, as well as of over reporting of WTP, prior to answering the choice experiment questions. Following this, the respondent was told that (s)he will now be asked to make several choice decisions for the respective products and for each product, the definition of the attributes, as given in table 1, was outlined once before the actual choice experiment started.

In each choice set, respondents had the choice between three alternatives presented with a picture and a table of the attributes or to buy none of the alternatives of the choice set.

With the aim of applying SCM, the collected data was analysed using the software DisCoS (Rungie et al 2011; Rungie et al 2012). To do so, effects coding has been applied to all variables besides price, with no claim for the respective attribute, and correspondingly the opt out option, being the reference level and therefore coded as -1. The price attribute has been continuous coded.

As explained before, the SCM approach, enabled to analyse the choice data for the three products simultaneously and to consider the underlying latent preference structure. Before doing so, however, a conditional logit model, as well as RPL, was estimated. For the conditional logit model the means of ε are defined to be free and variances are fixed to zero. In difference, the RPL allows for consumers' heterogeneity, by assuming all parameters to be random, besides the price parameter, which is fixed. For both of these models, no higher order preferences are defined.

In the next step, four models incorporating higher-order factors are analysed. Thereby all parameters are specified to be fixed, while the means of the higher order preferences are specified to be fixed to zero, with the variances fixed to one. This means that (1) only the heterogeneity explained by the latent structure is analysed, with 100% of the variation for

the ηs being attributable to the factors, and (2) the only impact of the higher order preferences on the primary preferences is to contribute variation.

Defining higher-order preference models, we hypothesise certain underlying structures, based on prior knowledge and theoretical considerations. Estimating the models as exploratory models, allows testing these hypothesis. Doing so, in a first step, the following three competitive hypotheses, dealing with preferences consistency for certain attributes over products, are tested:

H1: There is only one source of heterogeneity, which is common across products, meaning that it accounts for all attributes of all products.

This hypothesis is tested in a common factor model, defining one factor (ξ_1) for all attributes of all products.

H2: There is one source of heterogeneity per product, which accounts for all attributes of the specific product.

In other words, this model assumes three latent variables, representing sources of preference heterogeneity that are unique to each of the three food products. Consequently, the hypothesis is tested in a three-factor model, having one independent factor ($\xi_{egg}, \xi_{pasta}, \xi_{pork}$) per product.

H3: There is one source of heterogeneity per attribute, which is common across products.

In other words, this model assumes that, independent of the researched product, there is a unique source of preference heterogeneity for each attribute. To test this hypothesis, a four-factor model, having one independent factor per attribute ($\xi_{org}, \xi_{loc}, \xi_{aw}, \xi_{ant}$) is defined.

Summing up, in this first step, it is tested whether consumers' heterogeneity is common across products (Model 1 and Model 3) versus product dependent (Model 2). In addition to this, in a second step, the attributes roles, as public or private good attributes, is tested, like stated in hypothesis 4.

H4: There is one source of heterogeneity for public good attributes (ξ_{pub}) and one source

of heterogeneity for private good attributes (ξ_{priv}).

To do so, the attributes are defined either as quasi-public good attributes (certified 'free of antibiotics') or as public good attributes (organic, local, animal welfare), with the classification being based on Lusk et al (2007). Hypothesis 4 is then tested in a model with two higher order factors, where the private good attributes are expected to load on one factor and the quasi-public good attributes are expected to load on the other factor.

SCM aims at analysing the underlying preference structure. As this preference structure is unknown, all estimated models are of exploratory nature. Therefore, first, in terms of the analysis, all four models are run with a resample size of 10,000. Second, in terms of the results, the goodness of fit, in form of the Log Likelihood (LL), the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC), and the subsequent comparison of the models in terms of model fit, are the main results.

However, as the interest is also on the results of preferences for certain credence attributes, the parameter estimates and WTP estimates for selected models, in specific for the model showing the best model fit, are discussed. To do so, WTP is estimated as the the negative ratio of the attribute parameter to the price parameter (Train, 2005). To account for correlations in the estimates, the delta method, using the Hessian matrix for the approximation of the covariance matrix, has been used to assess significance of the WTP estimates.

6 Results

6.1 Paper I: Motivations behind Preferences for Local or Organic Food

This chapter summarises the paper 'Motivations behind Preferences for Local or Organic Food' published by Johanna Lena Hasselbach and Jutta Roosen in the Journal of International Consumer Marketing. The doctoral candidate is the primary author of the paper and was responsible for most of the work, including data collection and data analysis, as well as writing the manuscript. The co-author was responsible for the research idea, as well as for the research design and the questionnaire development, and provided background knowledge, expert advice and edition of the paper. The paper was, on 22 February 2015, accepted for publication in the Journal of International Consumer Marketing.

Hasselbach, J.L. and Roosen, J. (2015). Motivations behind Preferences for Local or Organic Food. Journal of International Consumer Marketing, 27(4): 295-306.

Through the introduction of several alternative food concepts, such as organic or local food, the food sector has become more and more diverse. Consequently, consumers have the choice between a multitude of product alternatives. Thus, it is of special interest, to understand the motivation behind certain food choices, such as the motivation behind choosing organic or local food. At first sight, the choice of local and organic food seems to be based on similar motives (Feldmann and Hamm 2015, Pearson et al 2010), with local production often being mentioned as an important motive behind organic food purchases. Against the background of organic food products loosing authenticity and local food products facing a growing market, the question arises whether organic and local food rather support or threaten each other in consumer's choice.

Based on these considerations, the aim of this study is to identify similarities or differences in the food choice motives between consumers stating a preference for either organic or

local food production. Doing so, we address on the one hand what drives people to choose alternative food products, which are often more expensive, compared to their conventional counterparts. On the other hand we gain insight into whether local food should be seen as a rival or complementary concept to organic production.

A confirmatory principal component analysis reveals the expected five factors: natural content, animal welfare, sensory appeal, health and price. Thereby natural content is the most important motive, with a mean of 4.47 on a five-point Likert-scale[2], followed by animal welfare (4.34), sensory appeal (3.99), health (3.80) and finally price (3.71). Even when splitting the sample into the two consumer groups, stating a preference for either organic or local food, this relative order of the motives remains almost the same. Only the motives health and price are interchanged in order of importance, for the consumers preferring local over organic food production.

Performing an independent samples t-test to test for differences between the consumer groups, significant differences between the consumer groups for all food choice motives but health can be reported. The motives natural content and animal welfare are more important to consumers focusing on organic production, whereas sensory appeal and price are found to be more important to consumers focusing on local food production.

The results emphasize a high importance of both, organic and local production, with only slight differences in the motivation between consumers preferring one over the other. Thus, a conclusion on the supportive or competitive character of the organic and local food concept cannot be drawn. However, the results emphasise that local marketing can be seen as a chance for organic, as well as conventional farming, as a value claim in the competition with imported products.

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[2] measured on a five-point Likert scale with 1 = not at all important and 5 = highly important

6.2 Paper II: Consumer Heterogeneity in the Willingness to Pay for Local and Organic Food

This chapter summarises the paper 'Consumer Heterogeneity in the Willingness to Pay for Local and Organic Food' published by Johanna Lena Hasselbach and Jutta Roosen in the Journal of Food Products Marketing. The doctoral candidate is the primary author of the paper and was responsible for most of the work, including data collection and data analysis, as well as writing the manuscript. The co-author was responsible for the research idea, as well as for the research design and provided background knowledge and expert advice, especially on the data analysis, and edition of the paper. This paper was, on 19 September 2013, accepted for publication in the Journal of Food Products Marketing.

Hasselbach, J.L. and Roosen, J. (2015). Consumer Heterogeneity in the Willingness to Pay for Local and Organic Food. Journal of Food Products Marketing, 21(6): 608-625.

Organic and local are two growing food concepts, for which consumers have been shown to be willing to pay price premiums (Meas et al 2014, Onozaka and Thilmany McFadden 2011). However, due to changes in the organization of the market for organic food, organic food expenditures in Germany grow much faster than domestic organic production (AMI 2015b) and the amount of imported organic food products rises. This in addition to the entrance of discounters into the organic food market and an increasing price pressure can be seen as a reason why organic food products lose authenticity (Adams and Salois 2010, Gottwald and Steinbach, 2011). In contrast, local food production and short supply chains face a growing market in many countries and particularly in Germany. In line with these market developments, a shift in consumers' preferences away from organic and towards local is assumed (Meas et al 2014, Onozaka and Thilmany McFadden 2011, Zepeda and Deal 2009).

Against this background, this study aims to identify WTP for organic and/or local food products in Bavaria, focussing on consumers' heterogeneity by the estimation of a RPL. To

address this research objective hypothetical choice experiments for the three products bread, beer and milk are conducted, on the attributes price, local production, organic production and brand. Further, through the joint consideration of organic and local production, as well as an interaction of these two attributes, the question whether organic brands can be supported by claims of localness is address.

Results of a RPL show significant parameter estimate for most of the attributes, with consumers preferring lower prices over higher prices, a local or organic labelling over no labelling, and a national well-known brand over a conceived brand. Further, all standard deviation estimates are significant, besides the estimate for 'Quality certified Bavaria' for milk and the interaction of organic and local for beer and milk. Thus the homogeneity assumption in the sample can be rejected, or in other words consumer heterogeneity in the preference for organic and local food products can be confirmed.

WTP estimations confirm the importance of local production in interaction with organic production to the surveyed consumers. Compared to this, the local claim as well as the organic claim carries lower value. This leads to the conclusion that the two production methods can support each other in achieving price premiums. Thereby the label "organic certified Bavaria" shows a lower effectiveness than the combination of the two generic claims "organic" and "from the region". This finding might be explained by the lacking definition of the term local. While the label defines local as originating from Bavaria, the generic claim allows the consumer to apply a personal definition of localness to the product. While this sounds positive at first, it should be regarded problematic because it also opens the door for consumer deception and false marketing claims.

6.3 Paper III: The value of ethical attributes in food labels - Common structures and individual preferences

This chapter summarises the paper 'The value of ethical attributes in food labels -

Common structures and individual preferences' authored by Johanna Lena Dahlhausen, Cam Rungie and Jutta Roosen. The doctoral candidate is the primary author of the paper and was responsible for most of the work, including the research idea, the research design and the data analysis, as well as writing the manuscript. The co-authors provided background knowledge and expert advice, especially on the research design, the methodology and the data analysis, as well as edition of the paper. This paper was, on 21 July 2015, submitted to the European Review of Agricultural Economics.

Dahlhausen, J.L., Rungie, C. and Roosen, J. (submitted). The value of ethical attributes in food labels - Common structures and individual preferences.

Entering today's supermarkets, consumers have the choice between a seemingly endless number of products and product alternatives, which again are advertised with a seemingly endless number of claims and labels. Thereby, credence attributes, which can at no point be experienced and are based on value claims, play an increasingly important role (Fernqvist and Ekelund, 2014). Popular examples for credence attributes in the food sector are organic or local production, but also claims of animal welfare have gained importance in recent years.

Regarding consumers' motivations to purchase products affiliated with credence attributes, contradictory findings have been reported. While some studies regard consumers to be altruistically motivated and the purchase decision to be driven by ethical concern, other studies assume consumers to be purely egoistically driven, trying to achieve personal benefits through the consumption of products with affiliated credence attributes.

Besides addressing the topic of credence attributes in food labelling and the role of egoistic versus altruistic values as the determining factors underlying food preferences, this paper

methodologically aims to show the possibilities of SCM (Rungie et al 2011; Rungie et al 2012). This factor analytic modelling approach examines underlying preference structure in the choice data, through the incorporation of latent constructs. Further, it allows to model data of multiple choice experiments simultaneously, in this case multiple food products, and by doing so, to examine whether preferences for certain credence attributes are consistent over products.

To cover both aims, this paper is set up as an empirical application of SCM to choice data on credence food attributes. Three hypothetical choice experiments, for minute pork steaks, eggs and pasta containing egg, were conducted on the attributes: organic production, local origin and animal welfare, use of antibiotics and price. Doing so, preferences and WTP for similar claims on different products are analysed.

Using the software DisCoS (Rungie et al 2011; Rungie et al 2012), a fixed and a random coefficients model was estimated, followed by different higher-order-preference models. Doing so, first the consistency of preferences over products is analysed and second the role of values as the underlying factors behind preferences for public versus private good attributes is tested. The models are finally compared in terms of model fit through the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC) and the Likelihood-Ratio test.

The comparison of the models in terms of model fit reveals that the factor analytic models fit the data significantly better than the traditional fixed and random coefficient models. The best model fit is achieved with an attribute dependent four-factor-model, assuming one source of heterogeneity per attribute (organic, local, animal welfare and certified 'free of antibiotics'), which is common across products.

WTP estimates show a high value for "antibiotics free" claims across all three products, while the WTP results for the other claims are mixed. Preferences are stronger for organic than local and animal welfare for eggs. For pasta, claims are higher for animal welfare than

for local and organic, and for pork, the order is local, animal welfare and organic.

The mixed results for these attributes might be explained by overlapping motivations behind, and meanings of organic production, local production and animal welfare for consumers. Independent of this, however, consumers WTP seems to be primarily egoistically motivated.

7 Discussion and conclusions

This chapter takes the results of all three papers into consideration, to discuss the findings of the dissertation and draw conclusions. Before doing so, however, a couple of limitations of the current research, primarily with respect to the research design and the methods applied, shall shortly be discussed.

Starting with the first paper, respondents were asked to rate selected food choice motives according to their importance. Looking back, two limitations have to be drawn with respect to this question. First, due to time constraints within the survey, only 19 out of the original 49 food choice motives were analysed. Although it would have revealed a more complete picture if all items were analysed, the selection can be well justified, as it is based on previous findings. However, one motive, concern for the environment, has not been analysed, although previous studies have identified it as an important factor behind organic and local food purchases. Second, the way of posing the question in the FCQ does not require the respondent to trade-off between the different motives. Thus, everything is found to be important, leading to the fact that the differences in importance between the food choice motives are, even if significant, very small. Using Best-Worst Scaling, like Lusk and Briggeman (2009) do for the evaluation of food values, might reveal a more distinct picture of which factors motivate consumers.

Coming to paper II and III, method wise, in both papers, hypothetical DCEs have been used to determine consumers' preferences and WTP. Hypothetical choice experiments are often criticised as being not incentive based, ignoring consumers' budget constraint, and therefore delivering unrealistic WTP estimates. It is acknowledged that there might be a hypothetical bias, leading to an overestimation of consumers' WTP. However, this bias is equally given for all attributes. This means, that the absolute WTP estimates might be overestimated, but that the attributes can be compared in terms of the relative WTPs.

Comparing the results from the first and from the second choice experiment, the latter one reveals much more realistic WTP estimates. On the one hand, this might be a consequence of the cheap talk, included in the research design of paper III, but not in the research design of paper II. On the other hand, this might be a consequence of the sampling technique. While for the first study a convenience sample has been used, resulting in a fairly wealthy sample, for the second study a quota sampling has been chosen.

With regard to the stimuli used in the choice experiments, the limitation has to be drawn that only a finite number of attributes and attribute levels can be included in the choice experiment. The choice of product attributes and attribute levels considered in DCEs therefore does not necessarily represent a realistic market. Concretely, in both choice experiments the focus was on the credence attributes. Search and experience attributes were, besides brand in the first choice experiment and price in both choice experiments, not included in the choice designs. Some previous studies however found these search and experience attributes to be more important than credence attributes (Wirth et al 2011). Thus, the results have to be interpreted with care, considering that there might be other, not included attributes influencing consumers' preferences and WTP.

Last but not least, it has to be mentioned that the first data collection, on which paper I and II are based, took place shortly after a food scandal in a Bavarian bakery got public. The results, especially for the product bread, might be influenced by this.

Now coming to the discussion of the results, the findings will be discussed based on the research objectives outlined in the beginning. Thus, first the motivational aspects behind a preference for organic or local food are evaluated. Based on the theoretical framework, motives are understood to consist of attitudes, beliefs and values. Based on previous literature it is known that respondents believe organic and local food is healthier and more nutritious (Feldmann and Hamm 2015, Pearson et al 2010). This corresponds with the findings of the first paper, where consumers' food choices are found to be in first line

motivated by concern about the natural content. Rousseau and Vranken (2013) could show that providing the information that this belief is scientifically not confirmed did not change preferences and consequently WTP of consumers holding this belief. Similarly, Bougherara and Combris (2009) analyse preferences and WTP for eco-labelled products and find no changes in WTP after providing information that it is not guaranteed that the product is tastier or healthier. These findings underline the strength of beliefs, as well as the subjective nature of credence quality cues.

The finding that price is of minor importance compared to the other motives is surprising at first, as it is contradictory to previous findings (Lindeman and Väänänen 2000, Lockie et al 2002, Steptoe et al 1995). Possible explanations might be (1) the sample employed, (2) country specific differences and (3) a difference between the importance of low price and good value for money. Regarding the sample employed, most previous studies, which found price to be one of the most important motives, used a student sample. In difference, the present study used a convenience sample, which was characterised by an above average income. Further, there might be country specific differences in the importance of price. Concretely, studies, which found price to be one of the most important motives, surveyed Australian, British or Finnish consumers (Lindeman and Väänänen 2000, Lockie et al 2002, Steptoe et al 1995). In difference, price has also previously been found to be of minor importance for German consumers (Renner et al 2012), which corresponds to the findings of the present study. Last but not least, it seems as if there is a divergence in the importance of the items behind the price motive. It seems as if the motive price in terms of lowest price is of little importance, while the motive price in terms of good value for money is of high importance. At least this ambivalence in the responses to these two items has been found in the current study. This finding can be confirmed e.g., for animal-food products, where good value for money has been found to be of higher importance than cheap prices (Napolitano et al 2008).

Complementing the first research objective, differences in the food choice motives between consumers showing a preference for either organic or local food production have been examined. To the authors knowledge there are no previous studies drawing a comparison between the choice motives of consumers showing a preference for organic and local food production. Taking the studies which only consider one of the two food concepts into consideration, the food choices are expected to be based on similar motives (Feldmann and Hamm 2015, Pearson et al 2010). This expectation can be confirmed by the current findings, as the relative importance of the selected motives is almost the same for both consumer groups. However, in absolute importance slight differences between the two consumer groups can be found, with consumers preferring organic over local food putting comparably higher value on natural content and animal welfare and less on sensory appeal and price. This finding could be of interest for effective marketing communication.

Another research objective was to analyse whether price premiums can be achieved for food products with claims referring to organic production, local production or animal welfare issues. Based on paper II and III it can be clearly stated that consumers are willing to pay price premiums for products labelled with these credence attributes. The estimated price premiums however varied strongly.

Taking the respective mean price out of the different price levels as a reference, the price premiums in the first study varied between 4% for local beer and 402% for local and organic milk. As outlined before, this WTP estimates are expected to be overestimated, wherefore only the relative WTP for the different attributes will be discussed. First, product related differences are found, with the WTP for milk being much higher compared to the WTP for bread or beer. These product-specific differences have been found in previous studies (Feldmann and Hamm 2015) and implicate that findings for one product cannot be generalised.

Second, differences in the WTP between the attribute levels are found. Over all three

products, the highest WTPs are found for the interaction of organic and local production compared to which the WTPs for the single claims are relatively low.

Taking a more detailed look, the WTP for well-known organic brands is high throughout all three products. This means that well established organic brands, using local sourcing and short supply chains as a unique selling proposition do carry a high value. However, the WTP for the label 'Organic certified Bavaria' is in a similar dimension to those of organic local brands. Thus, it is likely that traditional organic local brands are now threatened by marketing or certification initiatives advertising localness of organic products. This expectation can be underlined, as the WTP for a combination of the generic claims for organic and local production is even higher compared to the local organic brands or the label 'Organic certified Bavaria', although all three attributes convey a similar content. The explanations for this finding might be manifold, with the simplest possible explanation being that consumers prefer two claims over one.

The relatively low WTP for the claim organic might be explained by the structural changes in marketing organic food. To name two, rising amounts of imported organic food and the entrance of discounters into the organic food market have possibly lowered credibility and therewith WTP for organic food.

The relatively low WTP for local food was unexpected. In difference, it was expected that consumers highly value local produce, which has previously been found and might be explained by higher trust in local producers (Adams and Salois 2010, Hu et al 2012, Onozaka and Thilmany McFadden 2011). This trust in turn, might be based on perceived value similarity, which has been found to lead to an increase in perceived benefits and a decrease in perceived risk (Siegrist et al 2000). In line with this assumption, Onozaka and Thilmany McFadden (2011) explain low WTP for the claim organic on domestic products with a greater overall confidence, in terms of quality and safety, in products from domestic sources. However, in line with missing definitions and marketing activities for local food

in big supermarket chains, trust in local producers might as well get lost over time, which would then most likely lead to local food products loosing authenticity. Trustworthy communication thus seems to play a key role, for marketing organic, as well as local food.

The results of paper III show consumers to be willing to pay premiums between 13% for the claim organic on egg pasta and 32% for the certification 'free of antibiotics' on pork. The high WTP for the certification 'free of antibiotics' is confirmed across all three products, while the results for the other attributes are mixed across products.

Taking a deeper look at this finding, related to the topic of animal welfare, it can be discussed whether an antibiotic free production harms the animal and thus displays a worse animal treatment. Looking at it like this, the finding of high WTP for the certification 'free of antibiotics' stands in contrast to the finding of the first paper, where animal welfare was found to be the second most important factor when making a food choice. It is unclear whether the consumers simply do not reflect the contradiction of an antibiotic free production and animal welfare, whether this finding displays the attitude-behaviour gap or whether they are simply driven by health beliefs.

This in turn leads to the research question which role values play as determinants for the underlying preference behind food choices. Taking previous findings into consideration, it seems as if the high WTP for the certification 'free of antibiotics' can be explained by consumers being, on first side, egoistically motivated, trying to satisfy their need for safe food (Lusk et al 2007, Lusk and Briggeman 2009, Wier et al 2008). This, however, should not be taken as a direct implication for marketers, as Kareklas et al (2014) find advertisements featuring altruistic, or egoistic and altruistic claims, to be more effective than advertisements featuring only egoistic claims. What should be taken into consideration for the marketing of altruistic values is that according to Schwartz (1977:229) acting influenced by norms and values is dependent on the awareness of consequences. This theoretical finding can be underlined by studies which find

conventional food buyers to be characterised by a lack of knowledge (Lockie et al 2002, Zepeda and Deal 2009). In turn this means that one possibility for marketing public goods might be to make the consumer aware of consequences.

However, while some evidence is found that consumers' preferences and WTP differ for private good attributes, compared to public good attributes, this does not seem to display the underlying preference structure best. It rather seems to be the preference for the single credence attributes which embeds preference heterogeneity and best displays the underlying preference structure behind choices for food products labelled with credence attributes. While this has been assumed previously by Lusk and Briggeman (2009), who argue that preferences behind food choices are based on stable food values or meta-attributes, it would be interesting to test the reliability of the finding for choice situation where the attributes do not equal the meta-attributes.

Last but not least, a look at the question whether the interplay of the different alternative food concepts is of complementary or competitive nature shall be taken. In the first paper similarities in the food choice motives but also slight differences in the importance assigned to the single motives are found, based on which we fail to draw a conclusion about the complementary or competitive character of organic and local food. In the second paper by far the highest WTP is found for the combination of the generic claims 'organic' and 'from the region' and at the same time comparably low WTPs are found for the single claims. These findings indicate a complementary character of the two food concepts and confirm previous findings, which report consumers to aim for local production of organic food products (Ökobarometer 2013, Schleenbecker and Hamm 2013). The third paper, did not directly analyse interaction effects between the alternative food concepts, but still studied the food concepts in parallel to each other and, what is of higher interest, analysed possible latent structures underlying consumers' preferences. As outlined before, these analyses revealed that the preference structure can be best explained by the single

attributes. Correlations are found between some of the attributes, which are mainly negative and thus confirm a competitive relationship. Similarly, the alternative, value dependent model, revealed some structure in consumers' preferences between the attributes. This time, however, the results are mixed. A negative relationship is found between organic production and local sourcing, which again indicates a competitive relationship. Meanwhile, a positive relationship is found between organic production and animal welfare, as well as between organic production and use of antibiotics. This confirms previous findings about consumers being unclear about the differences in the regulations, e.g., in terms of the usage of antibiotics, and regarding organic production and higher animal welfare standards as the same (Hjelmar 2011). However, taking into consideration that the latter model did not fit the data as good as the attribute dependent model, the results indicate that consumers rather show a preference for the single food concepts. Because the analysed models were of exploratory nature and other models and thus preference structures would be conceivable, these results have to be treated with care. Taking together, indications for a competitive as well as for a complementary interplay of the different alternative food concepts are found. Because consumer heterogeneity in the WTP is found in paper II and III, consumer segmentation might be a powerful tool to obtain more insight into the interplay between the different food concepts and consumers' preferences for these. At least consumer segmentation has been found to help for a better understanding of consumers' preferences for the single food concepts.

After all, the question remains what the market of alternative food concepts will look like in the future. Will the current food concepts coexist? Will one concept take over the others? Will there be a new trend? Due to the fact that research on the interplay of different alternative food concepts are limited and that the findings are even contradictory, it seems impossible to predict the future development.

However, the conclusion which can be drawn out of this dissertation is that there is a

market and WTP for the different food concepts working with credence characteristics. In the competition for consumers, however, one key role for the producers and marketers will be to preserve trust and authenticity. Moreover, for effective marketing, it seems important to further understand consumers' choice motives and beliefs, and the interplay between the motives, beliefs and resulting preferences.

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