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Different sales channels for different farmers: Local and mainstream marketing of organic fruits and vegetables in Norway

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Abstract

Most food in developed countries, including organic fruits and vegetables, is sold through supply chains run by large wholesalers and supermarket chains. A certain share is sold through local marketing channels such as speciality stores, food box schemes, farmers' markets, and community-supported agriculture (CSA). This study uses qualitative interviews and a quantitative survey to expose the differences between mainstream and local marketing of organic fruits and vegetables in Norway, why and to what extent farmers selling through these two sales channels are different. We find that the supermarket chains' requirements to provide large quantities of uniform product are burdensome for smaller farmers to match. Farmers supplying the mainstream supermarkets tend to be larger and more rurally located. Farmers selling through local marketing are likely to be smaller, closer to urban areas and more diversified in their production. For local marketing farmers, it is more feasible to produce according to organic principles, using local resources and crop rotation. Survey

results also show that local marketing farmers are less motivated to produce fruits and vegetables by income and more motivated to produce organically to achieve better quality and sustainability. At the same time, there are also many similarities between the two groups, and we do not find evidence of a general “conventionalisation” of organic agriculture in Norway.

Keywords: Marketing | Local food | Organic fruits and vegetables | Norway

1. Introduction

Today, most of the organic food in Norway is sold through large wholesalers and supermarket chains (Willer and Lernoud, 2019). But over recent years there has been a growth in sales of food, organic as well as conventional, through alternative, local marketing sales channels such as speciality stores, food box schemes, Farmers Markets and community supported agriculture (CSA) (Regjeringen 2019; Organic Norway 2019).

Organic agriculture requires no use of chemical pesticides and therefore implies less risk of local pollution and potential damage to biodiversity and health (Stolze and Lampkin, 2009). Local marketing has the potential to contribute to rural development through added value activities, increasing the scope of on-farm business activities and avoiding the price squeeze from large-scale conventional production (Asheim et al., 2020; Bjørkhaug et al., 2017; Forbord and Vik, 2017). Because of these positive attributes, the Norwegian Government aims for a growth in both organic agriculture (Norwegian Ministry of Agriculture and Food, 2018) and local food marketing (Regjeringen, 2015), as well as the consumption of fruits and vegetables for health reasons. A deeper understanding of mechanisms behind production and supply of these products can contribute to achieving these aims. In this paper we seek to increase our understanding of the local and mainstream marketing sales channels for organic fruits and vegetables. Through qualitative

interviews we identify differences between the two types of sales systems, their advantages and disadvantages and how they influence the different farmers and their farming systems. With quantitative survey analysis we also identify factors that are characteristic of the farmers who sell through the two types of marketing channels. An increased understanding of how these systems work is important to identify which policy measures can be implemented to achieve increased sales of organic and local food. Our work contributes to the already extensive literature on organic and local food by giving empirical insight to the situation in a country like Norway, which has particular features such as a market structure that is to a large extent controlled by large producer owned marketing cooperatives and government organisations.

1.1. Organic and local food: alternatives to conventional food systems

Most of the food production in developed countries is produced with conventional, non-organic production methods and takes place on large, specialised farms selling through mainstream supermarket chains. The main advantage of these production, marketing and distribution methods is that they bring down costs, and thereby consumer prices. However, this food system, which we will term mainstream conventional, also has drawbacks. Conventional food is often based on monoculture production, and use of chemical fertilisers and pesticides can have adverse effects on the environment and the health of producers as well as consumers (Reganold and Wachter, 2016). As a response to this, certification of food produced without chemical inputs has been developed by organic labelling organisations, making it possible for consumers concerned with food safety and environmental issues to select organically labelled products. Furthermore, it has been claimed that in globalised, mainstream food systems competition forces farmers to continuously lower their costs and make new investments to benefit from new technologies and economies of scale, resulting in structurally decreasing economic margins (Renting et al., 2003; van der Ploeg et al., 2019; Forbord and Vik 2017, Bjørhaug et al., 2017). There is a view of the agricultural sector as being dominated by large, industrialised farms and multinational corporations, and where small scale farmers are put

under economic pressure as a large part of the final price paid by consumers goes to retail and other levels of the value chain (Kneafsey et al., 2013; Marsden and Smith, 2005). According to McMichael (2012) this is a “corporate food regime” where agricultural products are solely valued as commodities, and crops go from being food to becoming exchange-value. But in contrast to this agro-industrialisation where there is “food from nowhere”, there is a place-based form of agro-ecology, where there is “food from somewhere” (McMichael 2012). In other words, there are sales channels that can be seen as alternatives to the mainstream food systems, as they provide opportunities for consumers to purchase from and pay directly to the farmers who produce the food they eat. With these sales channels consumers can also get in closer contact with the farmers and know more about how production takes place, including how sustainably managed it is in terms of social and environmental aspects (Cleveland et al., 2014; Kirwan, 2004). This type of marketing is variably termed local or direct marketing (Low and Vogel 2011; Silva et al., 2015; Seyfang 2006), short supply chain marketing (Renting et al., 2003), alternative marketing channels (Hardesty and Leff, 2010; LeRoux et al., 2010) and alternative food networks (Renting et al., 2003), but they all refer to the same phenomenon: Selling farm products outside of the mainstream marketing channels, meaning large wholesalers and supermarkets (Bos and Owen, 2016; Kerton and Sinclair, 2010). Here we have chosen to mainly use the term “local marketing” since this is a term which captures both a geographical closeness, and a direct link between producers and consumers, bypassing the anonymity of the global food system (Woods, 2020).

As a very rough simplification we can contend that food in most developed countries can be divided into different categories according to how it is produced and sold: It can be produced as either organically certified or conventional, and it can be sold either locally or mainstream. In Fig. 1 we have drawn circles representing these categories, where mainstream and conventional are merged into one category, describing food which is produced as conventional, non-certified, and sold as mainstream through supermarket chains. As this is where the main share of the food production and sales takes place, the circle is bigger than the others (but not proportionate with the

reality). The purpose of the figure is to illustrate where these categories overlap with each other and where they do not: Food which is organically certified can be sold either mainstream or locally, and food which is sold locally can be produced as either organically certified or conventional.

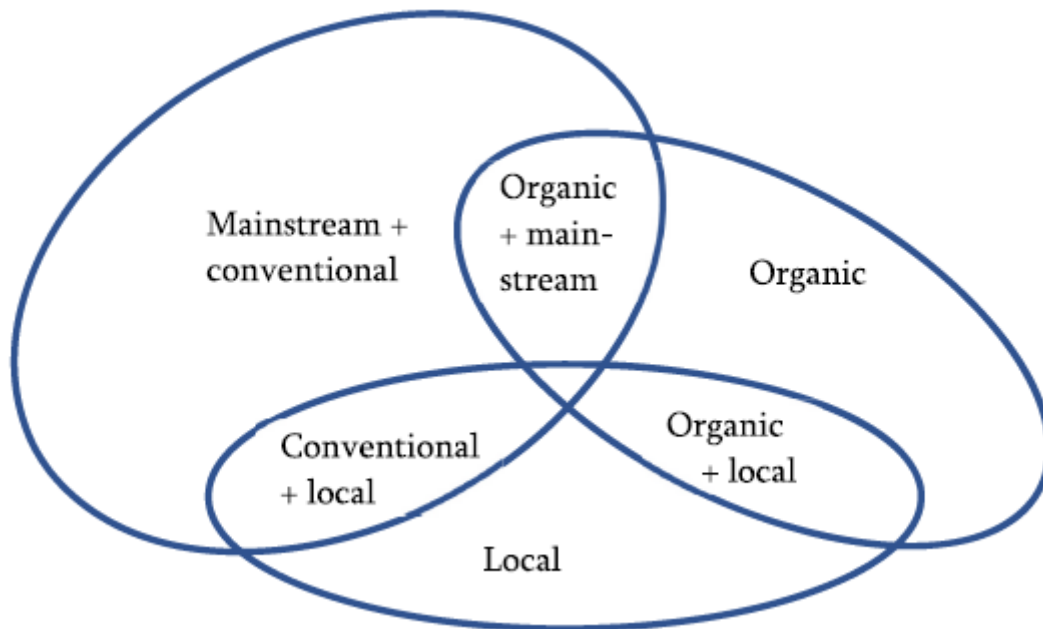


Figure 1 Mainstream conventional, organic and local food systems.

To some extent food which is sold locally have some of the same credence attributes as organic food. Local and organic food both appeal to consumers concerned with sustainability and quality (Seyfang, 2006), but there are some substantial differences (Goodwin-Hawkins et al., 2020; Lobley et al., 2009a). While organic production must meet the requirements for organic certification, there is no third-party certification of local food in the same way. It is the way it is sold which defines local food, not the way it is produced (Low et al., 2015). While consumer preferences for organic food may rise from a concern about chemical pesticide residues and pollution, local food consumers may be more concerned with reducing food miles and supporting local communities and small farms (Low et al., 2015; Migliore, 2015). But previous studies have also found that some motivating factors, such as quality, are the same for consumers of both organic and local food: the organic

production methods are believed to give a higher quality of the product, as is the shorter delivery time for local food, which gives more freshness to the products (Kim et al., 2014; Moser et al., 2011).

In horticulture, being an organic producer implies primarily to abstain from using chemical input factors. This could lower productivity and increase the risk of crop losses, especially for growers with insufficient agronomic knowledge on alternative methods to prevent for instance crop pest. In addition, organic production generally requires more employment of people than conventional (Lobley et al., 2009a). These factors increase costs of production, for which higher consumer prices can compensate, but these premium markets are smaller due to low demand. Hence, organic horticulture presents a different set of risks compared to conventional production.

The early organic movement was to a larger extent associated with small farms, community support and marketing through local food sales channels, which means that the link between the two concepts, local and organic, was strong (Adams and Salois, 2010; Obach, 2015; Reed, 2010). In 2007 still nearly half of the organic fruits and vegetables in the US were sold in local or regional marketing channels (Greene et al., 2009), but organic food is today to a large extent produced on large farms recruited from conventional agriculture, selling through mainstream wholesalers and retailers. It has been claimed that there has been a “conventionalisation” of organic agriculture and a creation of an “organic lite” category, with less positive impact on social and environmental sustainability (Guthman, 2004).

1.2. Local and mainstream marketing farmers

Which marketing opportunities a farmer has for his or her produce is limited by who is willing to purchase within a certain radius, and what their purchasing criteria are. Examples of different purchasers are producer owned marketing cooperatives, supermarkets, exporting companies and local schools or restaurants wanting to source locally. Often local sales opportunities are the result of consumer-led movements or public policies (Wood, 2020; Lever et al., 2019). Hence, there are structural constraints which determine not only which marketing options farmers may

choose from, but also which farm characteristics are most suitable for the different sales channels. In mainstream, modern agri-food systems the pressure to provide low prices increases the necessity for economies of scale, which can exclude small-scale farmers (Richards et al., 2013). Furthermore, farms located in the hinterlands or that are focused on large-scale production have less opportunity to sell into local markets and are therefore more likely to sell to large wholesalers, food processors and retailers (Woods, 2020; Monson et al., 2008). Monson et al. (2008) also find that farms with high value products more often use local marketing.

Previous studies have found that there are different advantages and drawbacks for farmers who sell through mainstream and local sales channels. According to Kim et al. (2014) the attractiveness of selling to a mainstream wholesaler are lower marketing costs, transparent pricing, and less risk overall. In another study (Hardesty and Leff, 2010) found that marketing costs were lower with sales through a wholesaler. On the other hand, LeRoux et al. (2010) found that sales through wholesalers typically will increase the labour costs, as more time is required for field sorting and bunching of products than with other types of marketing. In their research, based on case-studies, they compare the profitability of different types of sales channels and found that selling through CSA and Farmers Markets gave a higher net sales income than selling through a wholesaler.

Studies have also found that mainstream marketing, which is based on industrial coordination, does not give economic rewards for quality aspects which are hard to measure on the products (Verhaegen and Van Huylenbroeck, 2001). One of the advantages of local marketing is the possibility to achieve premiums for freshness or high value or speciality crops (Kim et al., 2014). The higher turnover costs of local marketing can be compensated for by higher prices and reduced insecurity, and the possibilities to get a better price for products that large wholesalers will classify as second class (Verhaegen and Van Huylenbroeck, 2001). The various sales channels also each have their specific advantages: Selling at farmers' markets is a way of broadening the network and getting access to other marketing channels, while CSA, once established, gives a regular income without requiring continued efforts in marketing (Hardesty and Leff, 2010). A Norwegian study also found

that an advantage with farmers' markets is the direct contact with consumers, so that producers can test out new products and get more knowledge of consumers' preferences (Veidal and Flaten, 2011).

Although the likelihood of a farmer selling mainstream or local is affected by structural constraints, the personal characteristics of the farmer may also influence which type of farm she or he chooses to purchase or build up, and which marketing channel is chosen. Low and Vogel (2011) found that local marketing farmers on average are older, but with a higher level of education than mainstream marketing farmers. Monson et al. (2008) hypothesised that the reason why local marketing farmers have a higher level of education is because of the tendency of educated people to "get back to the land" as hobby farmers, selling through local marketing. But with their logit estimation they do not detect any association between education level and form of marketing. They also did not find any statistically significant effect of age.

Selling through different sales channels may also have different impacts on feelings of satisfaction. A study from Wisconsin found that producers selling through farmers' markets and CSA were more dissatisfied with their profitability than producers selling to wholesalers and restaurants, but they were more satisfied with their quality of life (Silva et al., 2015).

1.3. The Norwegian context

Productivity challenges due to cold and unstable climate and short seasons, as well as high labour wages, make agricultural production costs in Norway high (Flaten et al., 2011). However, food self-sufficiency is highly valued by Norwegian citizens (Mittenzwei et al., 2016), and the agricultural sector is protected by both import tariffs and high subsidy levels (Almås and Gjerdåker, 2004; Kvakkestad et al., 2018). Possibilities for import protection are strengthened as the country is not part of the European Union. It is estimated that the country supplies itself with approximately 42 % of the food consumed (NIBIO, 2020). Rural employment in remote areas has been another political aim in Norway, and owing to a subsidy system prioritising peripheral farming, farm sizes are smaller in Norway than in the EU and neighbouring Scandinavian countries. In 2013 only 1,5 % of the farms

in Norway had more than 100 ha, compared to the EU average of 7 % and the average of Sweden, Denmark, and Finland of 14 % (Eurostat, 2013).

Norwegian consumers generally have a strong level of trust in Norwegian agricultural producers, and many prefer food products from Norway (Roos et al., 2016). Higher priced local or regional speciality food has over the years become increasingly important (Gustavsen and Hegnes, 2020). But price consciousness amongst consumers is also prevalent, manifested for instance by the fact that many Norwegians regularly take long car trips across the border to Sweden to buy cheaper food stuff (Bazzani et al., 2018).

In 2020 the organic area in Norway was 4,2 % of the total agricultural area (SSB, 2021). The organic share of total food supply is lower in Norway than in the neighbouring countries of Sweden and Denmark (Willer and Lernoud, 2019). The reason for this is not known, but a possible explanation could be that Norwegian consumers in general have a high level of trust in domestic agricultural producers and their compliance with food safety and animal welfare requirements (Storstad and Bjørkhaug, 2003). A more recent study by Kvakkestad et al. (2018) found that low preference for organic food can be explained by a lack of perceived superiority regarding its taste, health benefits, safety and environmental impact.

As in many other countries in Europe, the retail market in Norway is dominated by a few large supermarket chains. But in Norway also the wholesale market for most food sectors can be characterised as oligopolies or duopolies, often with large producer run marketing cooperatives taking the role as both wholesalers and processors (Richards et al., 2012). For fruit and vegetable producers, mainstream marketing implies being a member of one of the two large producer organisations (Gartnerhallen and Nordgrønt), who in turn sell to one of the two main wholesalers in Norway: BAMA and COOP, the latter being also a supermarket chain. The mainstream fruit and vegetable market in the country is strongly dominated by these two supply chains, which cater for 96 % of the grocery market in Norway (Wifstad et al., 2018). In these chains the quantities the producers deliver each year is regulated through agreements made in the autumn between

producer organisations and wholesalers. Regulating supply to avoid overproduction has important benefits, as high production costs levels makes profitable export of any surplus products difficult. The agreements are non-binding, but although there are sometimes deviations from both sides, most of the time both parties comply: the producers deliver as much as agreed upon, and the wholesalers buy it (Milford et al., 2016). This “regulation” of the market means that producer members cannot decide themselves the quantity they want to sell through their organisation. Furthermore, as already existing members have priority, new members are only accepted when there is market demand for products that already existing members cannot provide. Organic fruits and vegetables are sold through the same channels as the conventional, whether it is mainstream or local. Fruit and vegetable producers can sometimes get access to a higher quota for organic deliveries than what they can for conventional, which means that organic certification can be an advantage. But there is also a risk of not being able to sell this at a higher organic price if consumer demand fails (Milford, 2014).

2. Methodology

The plan for the study was to first get an overview of the situation for organic horticultural producers and their marketing options, by interviewing stakeholders working in the fields of organic production and marketing. The next step was to gain knowledge on local marketing and how it functions, by interviewing actors in the local marketing sector. From this we moved on to interviewing producers about their experience with local and mainstream marketing. Finally, we developed a questionnaire and performed an online survey with producers, to be able to test to what extent our qualitative findings can be generalised.

Thus, our study started with qualitative, semi structured interviews with four stakeholders from various organisations working with organic fruit and vegetable production in Norway: Debio (organic certification agency), Oikos – Organic Norway, and two long-term County Governor projects

working on organic fruits and vegetables (“Foregangsfylket for økologiske grønnsaker”, and “Foregangsfylket for økologisk frukt og bær”). These were people who had been working in this field for many years and could provide background information about the situation for producers and the market. Three interviews were conducted by phone and one in person, and notes were taken. A literature review was conducted in parallel. From this we developed an interview guide which was used for in-depth interviews with people working directly with local marketing of organic fruits and vegetables in Norway. The aim was to gain insight to how local marketing works, the different challenges, and possibilities, from the point of view of these purchasers. The interviewees came from a wholesale company, an internet-based retailer of locally produced food, two speciality shops, two consumer cooperatives selling locally produced food, and two restaurants using organic and locally produced food. Three of the interviews were in person, the others by phone. Two of these interviews were recorded and transcribed. Next, we developed an interview guide for producers and used this in semi structured interviews with seven organic fruit and vegetable producers located near two of the largest cities in Norway. Some were selling through mainstream, some through local marketing and some were doing both. Three of the interviews were made during visits at the farm, the others by phone. The in-person interviews were recorded and transcribed. Altogether 19 qualitative interviews were conducted, and this material was transferred to the software NVivo and analysed with coding, hence structured into different themes.

We next developed a questionnaire to be sent to all farmers in Norway who in 2017 had received agricultural support for organic fruit and vegetable production from the Norwegian Agricultural Agency. Pilots of the questionnaire were tested on five producers, as well as on six scholars working on organic food production in Norway. The questionnaires were adjusted according to the inputs received. The survey was sent via e-mail, using addresses provided by the Norwegian Agricultural Agency. Some of the recipients replied that they were not in the target group for the survey, for instance because their operation was aimed towards education or research, and not sales. Three reminders were sent. Of the 330 recipients who did not report back that they were not

in the target group, we received 141 answers, which gives a response rate of 43 %. Some of the respondents did not complete the full questionnaire, so the response rate is lower for some questions.

The survey data were merged with data from the Norwegian Agricultural Agency for the year 2017. These data contain information on the different agricultural areas of each farm: size, production type, and whether it is organic or not. They also contain information about types of livestock on each farm.

The average organic agricultural area of those who answered the survey was 23,7 ha, and for those who did not answer it was 21. The median value was 8 ha against 5 ha. The smaller average area for those who did not answer suggests that they may have chosen not to reply because they had very small organic areas and were therefore not interested in the topic or did not see themselves as in the target group for the survey. This could explain the low response rate.

To evaluate the differences between farmers selling mainly (50 % or more) through mainstream marketing and those selling mainly through local marketing, we used a mean comparison test and compared average values between these two groups for a range of variables. The variables were chosen based on the literature review and the qualitative interviews and depict the farmers in terms of both characteristics of their farms and personal viewpoints (see Table 1). The answers to the questions about whether farmers were motivated to produce organically because of better quality and more sustainability are highly correlated. We therefore constructed a new composite score variable from the two variables, using principal component analysis. We also included age squared to check for concave or convex effects.

To evaluate the influence of farm/farmers factors and characteristics on the main marketing method of the farmers we used two different regression approaches (also for a robustness check). The first approach was a fractional regression where the dependent variable was the share of a farm's total sale sold through local marketing channels, hence a ratio ranging between 0 and 1 (or 0 and 100). In that case, the fractional regression model by (Papke and Wooldridge, 1996) accounts for

Table 1 Summary statistics and mean comparison t-test between the groups of farms with mainstream marketing (MM) and local marketing (LM).

Variable	Label	Obs.	Mean	Min	Max	Mean LM	Mean MM	Sign. ^a
Organic area (hectare)	Area	129	23.7	1	402	13.2	61.5	***
Central-periphery index (from 1 (central) to 6 (peripheral))	Centrality	129	3.85	1	6	3.83	3.93	
Have livestock (1 = yes, 0 else)	Livestock	129	0.63	0	1	0.69	0.39	***
Have non-organic production (1 = yes, 0 else)	Non-organic	129	0.40	0	1	0.35	0.61	**
Do substantial processing of F & V (1 = yes, 0 else)	Own processing	126	0.19	0	1	0.22	0.07	*
Satisfied with customer relations (scale from 1 to 5) ^b	Cust.-rel	116	3.84	1	5	3.96	3.42	**
Motivated to produce F & V by income (scale from 1 to 5) ^c	Income motive	116	3.08	1	5	2.83	3.92	***
Motivated to grow organic because of quality and sustainability (score from pca analysis) ^d	Qual. & sust.	111	0.04	-8.66	1.35	0.43	-1.25	***
Growing F & V gives higher life quality (scale from 1 to 4) ^e	Life quality	115	1.60	1	4	1.50	1.93	**
Education (1 = primary school, ... 4 = university)	Education	126	3.10	1	4	3.19	2.79	*
Gender (1 = woman, 0 = men)	Gender	128	0.28	0	1	0.29	0.25	
Age (years)	Age	129	52.1	23	75	52.9	49.1	*

^a Mean comparison t-test, significance levels: '***' denotes $p < 0.001$, '**' < 0.01 , '*' < 0.05 , '.' < 0.1 .

^b Answer to question "How pleased are you with your relation with customers?"

^c Answer to question "To what extent was income a motivation to produce fruit and vegetables?"

^d Answer to question "To what extent are the following a reason for you to cultivate organically", with two of the alternatives being "more sustainable" and "better product quality".

^e Answer to question "To what degree do you feel that growing fruits and vegetables give you increased quality of life".

the above described bounded nature of the dependent variable. The merit of fractional regression analysis is that it uses all information of farmers' answers regarding sales through local marketing. In a second approach we used probit regression, where the dependent variable was specified as binary, with value 0 if 50 % or less was sold through local marketing and value 1 if more than 50 % was sold through local marketing. The regressions were done using the software Stata.

3. Differences between mainstream and local marketing

Of those who answered the survey, 22 % sold half or more of their product through mainstream marketing, meaning through the two large producer organisations and the two main wholesalers in Norway. Marketing outside the mainstream supply chains involves many different options. Fig. 2 shows the survey results regarding where the farmers sell their fruits and vegetables. The respondents could give multiple answers, and many have replied "directly to consumers" in addition to other answers. The distribution of answers was found to be rather equal but selling to speciality stores outside the supermarket chains is more common than, for instance, Farmers Markets.

To some extent each farmer is free to choose where to sell the harvested fruits and vegetables, but the choice between mainstream and local marketing cannot only be based on personal preferences. The two sales channels require different production methods and business models and have different implications for the farmers and their farms. Hence certain characteristics of a farm, including location, make it more likely that they will choose one sales option and not another.

In the following we will use qualitative data material to describe three sales aspects which are different for mainstream and local marketing: The quantity sold, the uniformity requirement and the shorter distance between farmer and end user.



Figure 2 Use of different sales channels, in percentage. Multiple answers allowed. N = 135.

3.1. Quantity requirements

Farmers selling through mainstream sales channels are required to produce a certain quantity. This is particularly the case for vegetables, where the producer organisation or wholesaler often comes to pick up the produce directly from the farm, which will only be worthwhile if the amount is large enough. For planning and logistic purposes, the wholesalers prefer farmers to produce a large quantity of one or a few varieties, instead of smaller quantities of many different varieties. This means that to sell through the mainstream sales channels the farm needs to be of a certain size and have the necessary equipment and buildings to produce and store produce efficiently. For farmers in the establishing phase this may require taking loans for investments, which entails making enough profits each year to repay the loans, and to produce large enough quantities to benefit from economies of scale and to take full advantage of the investments. The fact that the unit prices paid to producers are generally lower than for local marketing also makes scaling up necessary with mainstream marketing.

The situation is different for farmers using local sales channels. Some purchasers interviewed, particularly consumer cooperatives, claimed that they did not buy from large producers because they wanted to give opportunities and support to small producers, as this was their

philosophy. But in general the reason why restaurants, speciality stores, food box schemes and so on usually buy smaller quantities than large supermarket chains, is because their market is smaller. Hence, local marketing is generally not an option for farmers with large volumes. One exception is selling organic apples to local apple juice producers, where demand is large.

In line with this, the results of our survey show that local marketing farmers on average have a smaller farm size than farmers selling through the mainstream channels (Table 1). This corresponds with previous studies from the USA (Monson et al., 2008; Low and Vogel, 2011).

Since local purchasers do not require large quantities of each product, local marketing makes it possible for farmers to cultivate a larger diversity of fruits and vegetables, in small quantities. In fact, in many local marketing channels, product diversity is an advantage: Food box scheme subscribers and CSA members prefer a mix of different vegetables, and independent specialty stores and restaurants want to offer their customers a varied range of products. When asked to what extent they take in new products and varieties, one wholesale purchaser in the alternative market segment answered: *“That’s the kind of thing we love. If someone has something to offer, we take everything; things like organic fava beans, welcome! We take it immediately, the typical small-scale products.”* In line with this, the survey revealed that the organic vegetable farmers selling to alternative markets have on average 5.2 different types of vegetables, while farmers selling to mainstream markets only have 2.8, despite the latter having a larger area on average.

3.2. Requirement for uniformity

Selling mainstream not only requires providing large quantities, but the main supermarket chains also have strict requirements for aesthetic uniformity concerning the size and colour of each product. This is due to industrial coordination and to simplify logistics and sales, as well as responding to the expectations of retailers and consumers. These requirements entail specific

production methods and put restrictions on the choice of varieties that organic fruit and vegetable producers can use. A vegetable producer selling to the mainstream market explains:

“I don’t dare to use those heirloom varieties, because the market is so particular, they want white cauliflower, they want a dark green broccoli, the taste does not enter the picture. If the broccoli has the wrong colour you can just toss it, it has to be “British raising green”, that is so important, and it has to be even, and that evenness I get through f1-hybrids. (...) And if you think about heirloom varieties of carrots, they are not so pointed and cylindric, and if you have 250 tonnes stored and you get a phone call: “it’s not selling, take it back”, then I am bankrupt, then I can sell the farm. The economic risk is big.”

Occasionally Norwegian organic fruit farmers have difficulties getting the full price for their apples when selling to supermarket chains, as there are requirements both for a certain redness, and a certain size to fit into the standard boxes, neither of which has any influence on the taste and quality of the apples (Milford et al., 2016). Since organic producers cannot use chemical fertilising and other conventional production methods, they have fewer possibilities for precision cultivation. Hence, it can be more challenging to get the exact required colour and size of their apples.

With local marketing the situation is different. Several interviewed farmers explained that the purchasers in this market segment are flexible, and willing to pay the full price for products that do not meet the standard requirements for uniformity, such as smaller potatoes or crooked carrots. This is in line with the study from Belgium by Verhaegen and Huylenbroeck (2011). This means that with local marketing it is likely that a smaller share of the harvest will go to waste. Furthermore, with mainstream marketing it is more difficult to start selling a new variety or type of vegetable. With many decision makers at various levels of the supply chain there is a certain hesitancy in the system, and a new product will only be tried out if it can be produced in large enough quantities, and it must be certain that consumers will buy it. In contrast, purchasers in local sales channels are keen on trying out new things. One of the farmers interviewed saw it as his competitive advantages that he could produce varieties and qualities that did not already exist in the market, and which restaurants

were willing to pay well for: *“Sometimes I grow five different types of kale, green and black. Then I add 20 % just because it’s unusual. But it’s not more difficult to grow it, that’s not a problem for me. Many wholesalers want to start selling green and black kale, and they can’t get it anywhere else, so they don’t look at the price.”* This is in line with previous studies which have found that one of the advantages of selling through local sales channels is the possibility to get a premium for extra fresh products and speciality crops (Kim et al., 2014). According to Monson et al. (2008), the growth in local food is partly driven by restaurants having discovered that high-quality and fresh products can be obtained locally. In the mainstream marketing channels higher quality products are not financially rewarded in the same way (Verhaegen and Van Huylenbroeck, 2001).

For farmers selling directly to consumers through CSA or their own food box schemes it is more advantageous to produce a large diversity to make their offer attractive, than only one or a few products. They have the flexibility to try out new varieties and they do not have to care about uniformity and aesthetic perfectness of products. As one producer explained: *“The advantage with the food box scheme is that you can talk with the subscribers. For instance, we had a lot of rain, and the lettuce was full of soil, so we could not have sold it to the supermarket or anything like that, and we couldn’t wash it off ourselves. But then we wrote a letter (to the subscribers), and they answered: ‘well we can wash it ourselves!’”*.

3.3. Distance to consumers

Local marketing often implies a shorter distance between producer and end user, both in terms of geographical distance and number of intermediaries. This may influence which type of farmers will choose which type of marketing, in several ways. With local marketing, the farmer is often responsible for the transport of the product, and in general the longer the distance, the higher the costs. A shorter geographical distance and lower number of intermediaries means that there is a shorter time span from harvesting to reaching the consumers. This gives fresher products, and it makes it is possible to produce varieties with a high quality, but which could not have been sold

through mainstream marketing because they are more perishable. This can become a competitive advantage which generates a higher willingness to pay by the customers. One of the farmers interviewed has his farm outside Bergen, the second largest city in Norway, to where he drives himself to deliver his produce to customers. He explains: *"When you are producing fruit, berries and vegetables, it's just like with the real estate prices. It's 'location, location, location', that matters. So, when I was buying a farm, I put a circle around Bergen at around 1,5 h of transport. I estimated that was the pain limit for me, when Bergen was the largest market. The way I work with a lot of sales to restaurants, I am completely dependent on Bergen."* That farmers using local sales channels are more likely to be located near urban centres, has also been found in other studies (e.g., Low and Vogel, 2011).

The other aspect that distinguishes the two marketing methods is the encounter between farmer and customer. There is a difference between selling to a large wholesaler operating on a national scale, and a small independent shop, restaurant or a consumer purchasing directly from the farm. The reduced distance to the consumer means that the farmer can more easily exchange information about the product. For instance, it is easier to explain to a customer how the product should be stored and treated to achieve the highest quality, and the customers can in return give feedback to the farmers on what they like and do not like about a fruit or vegetable variety that is being tried out. Furthermore, for the consumer, knowing who the farmer is, and even having the possibility to visit the farm, increases the level of trust (Monson et al., 2008).

But it is not only for practical reasons that the closer relation with customers is appreciated. One of the interviewed farmers explained how he appreciates the personal encounters with the consumers: *"It has to do with my predisposition, I want to have thanks for the vegetables and not just money. It takes a lot of effort and work, and I want that human contact."* The same farmer had previously been selling to one of the large wholesalers and had felt there was an unequal power relation and a lack of understanding of his situation. Another farmer describes it like this: *"The customers that meet you are more loyal. They feel prouder and think more about it when they eat*

the goods, 'this comes from that farmer that I know.' So, there are many positive things with direct contact."

3.4. Different type of marketing, different type of farming

The different requirements and characteristics of mainstream and local marketing imply that different ways of farming are made possible by the two types of sales channels. A local marketing farmer does not need to have a large quantity of each product, and hence it is possible to have small-scale fruit and vegetable production combined with other farm activities, or paid work outside the farm. It is also possible to have a larger diversity of fruits and vegetables. As uniformity is not important it is possible to use special varieties, and there is also room for getting a good price for products that do not fulfil strict aesthetic criteria. Furthermore, the closeness to the end user makes it possible to produce varieties and products with higher taste qualities, and to have a closer, more personal relationship with the customers.

Organic producers are obliged to fulfil certain requirements, and the most important is not to use any chemical pesticide or fertiliser. But there are also some additional requirements that the farmers should be aiming to fulfil, without being directly obliged to as part of the certification process. These non-compulsory requirements are for instance to use a crop rotation with 5 or 6 years between each time a crop is cultivated at the same area, and to use the bioresources produced at the farm as fertilisers for plants, or as feed for the animals. Farms that are self-sufficient with input factors can become certified as biodynamic.

It seems to be the case that with local marketing it is easier for a farm to comply with the principles of organic cultivation, beyond the prohibition of chemical inputs. With the possibility to grow smaller quantities and to have a larger variety of products, it is easier to have animals on the farm for manure, and to have other vegetable types or other crops such as grass or cereals for a better crop rotation.

The farmers we interviewed who were selling their entire produce through local marketing expressed their thoughts on organic cultivation and its philosophy. There are different ways of running an organic farm, and some of the farmers interviewed were strongly aware of this, and conscious that they wanted to run it in a way that was in line with their own ideas and values. One of the farmers compared going from conventional to organic production with going from being a meat eater to becoming vegetarian: *“If you only have ham, potatoes and brown sauce, it’s difficult to make vegetarian food. If you take away the ham, there is no dinner anymore. Then there’s just potatoes with brown sauce. You can’t eat that. Then you get nutrient deficiencies. But if you instead think about making vegetarian food from scratch, then you will start by buying some lentils, beans, and make a good sauce with vegetables and all that. That’s how it is. I’ve sort of made my farm from scratch.”*

Another farmer also had his philosophy about how the farm was run: *“It takes time to build up, and the farmer who was here for 40 years, he built it up. The thought behind is that ... there are many thoughts behind, but it is a view on nature, if you go into the philosophy a little, that what grows in a field is what is good for that field, if you let nature lead itself. But then you don’t let nature lead itself. But the manure which comes from the fodder that was cultivated here at the farm has the right composition for this farm. So, one cannot take manure from cows that are 100 km away from here on a different farm. (...) The farm remains healthy if it carries itself.”* This farm also had a biodynamic certification and was selling through various local marketing channels.

To sum up, because of the different requirements and characteristics of mainstream and local marketing, there is reason to expect differences between farmers selling through these different sales channels. We expect farmers to be different both in terms of farm size, location, and types of activities, but possibly also in terms of personal values and perceptions.

4. Quantitative analysis

With the data from our own survey and from the Norwegian Agricultural Agency we performed statistical analyses to see whether the quantitative data are consistent with our qualitative analysis. Three different analytical tools were used to identify significant differences between factors and characteristics of farmers selling 50 % or more through mainstream marketing, and those selling 50 % or more sold through local marketing. The variables are described in Table 1, which also gives summary statistics and the results of the mean-comparison test. There are 101 farmers (for the full sample) in the local marketing category and 28 in the mainstream marketing category. All the variables used in the analyses, except gender were found to have a statistically significant effect on marketing channel in at least one of the analyses. This means that there is some evidence that the likelihood of selling through local or mainstream marketing is influenced by both farm size, location, production type, education level and age, as well as attitudes to organic agriculture, income, customer relations and life quality. The results are consistent with the results from the qualitative study.

For most of the variables there is a significant difference between the averages of farmers selling through local marketing, and those selling through mainstream marketing. Local marketing farmers have smaller organic areas, they are more likely to have livestock, they are less likely to have non-organic production and do a substantial and higher amount of processing. They are more satisfied with customer relations and income is a weaker motivational factor to grow fruits and vegetable, while they are more motivated to grow organic because of quality and sustainability considerations. Local marketing farmers are also more likely to claim that growing fruits and vegetables gives them higher life quality. They have slightly higher education and are somewhat older. There is no significant difference in how centrally they are located, or in gender.

We also find that there are substantial differences between fruit producers and vegetable producers regarding their average farm sizes. Fruit producers selling mainstream are on average smaller than mainstream vegetable producers (25 ha for fruit farmers and 84 ha for vegetables

farmers). One possible explanation could be that the two markets are differently organised: fruit producers generally collect their members' products in a common warehouse in the area, while vegetable producers often have their products collected at the farm by the wholesaler company, which means that larger quantities are required for vegetable producers.

It should be noted that, although mainstream marketing farms on average are larger and less diversified than local marketing farms, we also have small and diversified mainstream marketing farmers in our sample. Of the 10 farmers in the survey selling their entire produce through mainstream marketing, eight have less than 100 ha, and four have animals on their farm. For comparison, the average size of fruit and vegetable farms in Norway, mainly conventional, is 136 ha (SSB 2019), which is more than twice the average of the mainstream marketing organic farmers in our sample.

We next performed both probit and fractional regression analysis to estimate the extent to which the various variables have an effect on the share of total sales through local marketing.

The regression results are presented in Table 2.

The results of the probit and fractional regression analyses are to a large degree consistent with each other. The only difference is that satisfaction with customer relations is statistically significant in the probit regression and not in the fractional regression, while the opposite is the case for education. The results are also largely consistent with the results of the mean comparison test. But the regression results in addition find that the likelihood of selling through local marketing is smaller for producers with larger organic areas and for those who have income as a motivating factor for producing fruits and vegetables. The likelihood of selling locally is higher for producers who are located nearer to an urban centre, who do a substantial amount of processing of their products, who have livestock, and for producers motivated to use organic production for quality and sustainability reasons. Further, respondents with more education were found to be more likely to sell through local marketing. The significant coefficients for age and age squared mean that the likelihood of selling through local marketing decreases with age, but only until a certain point.

Variable	Probit regression estimates			Fractional regression estimates		
	Coeff.	Std.err.	Sign.	Coeff.	Std.err.	Sign.
Organic area (hectare)	-0.039	(0.010)	***	-0.020	(0.006)	***
Central-periphery index	-0.780	(0.235)	***	-0.404	(0.118)	***
Have livestock	0.997	(0.428)	*	0.767	(0.277)	**
Have non-organic production	-0.898	(0.589)		-0.308	(0.350)	
Do substantial processing of F & V	2.445	(0.959)	*	0.857	(0.404)	*
Satisfied with customer relations	0.826	(0.339)	*	0.269	(0.231)	
Motivated to produce F & V by income	-1.449	(0.342)	***	-0.700	(0.146)	***
Motivated to produce organic by quality and sustainability	0.355	(0.159)	*	0.249	(0.095)	**
Growing F & V gives higher life quality	-0.039	(0.453)		-0.086	(0.272)	
Education	0.435	(0.238)		0.357	(0.146)	*
Gender	-0.534	(0.627)		-0.445	(0.331)	
Age	-0.622	(0.233)	**	-0.351	(0.142)	*
Age squared	0.006	(0.002)	**	0.003	(0.001)	*
Constant	20.980	(7.088)	**	12.159	(4.024)	**
Number of observations	104			104		
Pseudo R ²	0.69			0.53		

Significance levels: '***' denotes $p < 0.001$, '**' < 0.01 , '*' < 0.05 , 'o' < 0.1 .

However, differently from the mean comparison test, no significant effect was found for having non-organic (parallel) production and perceptions of life quality.

5. Discussion

There are significant differences between farms selling into mainstream supermarkets and selling through local sales channels. Local marketing farms are in general smaller, and they have a more diversified production, which includes more variation in crops and a higher likelihood of having livestock and of doing food processing on the farm. The main explanation for these differences are the structural constraints imposed by the two food systems, such as the requirements of the

mainstream supermarkets to provide large quantities of uniform quality, paired with the inability of the local sales channels to handle large volumes, and their demands for product diversity. This makes it more difficult for mainstream marketing farmers to have a diversified production more in line with organic cultivation principles, with for instance livestock or cereal production giving direct access to manure and more favourable conditions for crop rotation. Local marketing, on the other hand, requires that the farmer have access to a sales market and to cover transport costs themselves, which can be difficult when living in a remote area. Furthermore, as the opportunities for selling large volumes through local marketing are limited, it is hard for farmers to generate enough income from their production to be able to work full time on their farm, if this is an aim.

Some of the interviewed local marketing farmers describe a philosophy around building a farm where various plants and animals act in natural symbioses to increase both productivity and resilience. With local marketing there are more opportunities for farmers to have a diversified production more in line with the organic philosophy. Hence, for farmers who adhere more strongly to these ideas, it is possibly more appealing to sell locally than to sell through mainstream marketing. This is to some extent confirmed in the quantitative analysis, which shows a tendency for local marketing farms to have a stronger belief in the quality and sustainability benefits of organic production.

This does not mean that none of the farmers selling mainstream share the same beliefs in the organic philosophy with those selling locally. On the one hand, the choice of marketing channel is sometimes based on some unchangeable characteristics of the farm, such as size and location. For some farmers local marketing is not an option, even if they would prefer it. On the other hand, our results show that also some of the mainstream selling farms have a variety in their production, some have livestock and many, particularly fruit producers, have small farms. Compared with conventional fruit and vegetable farmers in Norway, the average size of the mainstream marketing farmers in our sample is less than half. Hence, in Norway at least, organic fruits and vegetables sold through the mainstream have not necessarily been “conventionalised”, meaning that it all comes from large

scale monoculture producing farms which are moving away from the organic philosophy and ideals. The characteristics of the Norwegian food market could be possible explanations for this: the dominance of producer owned cooperatives and political governance weakening competition from imports protects smaller producers from competition from lower priced products offered by global agribusiness companies.

In Norway, as in many other developing countries, the two market segments, local and mainstream, co-exist and have co-developed, and can sometimes be difficult to distinguish from each other. Many farmers use both sales channels and cater for different market demands and needs of consumers. The two forms of marketing both have their advantages. Mainstream marketing caters for the needs of consumers who want to find Norwegian, organic fruits and vegetables in the supermarket shelves where they do their daily shopping. As cultivation takes place mainly on larger holdings, mainstream marketing means benefits from economies of scale to reduce production and distribution costs, which can lower consumer prices and ensure that organically certified products expand into the large, mainstream markets where most of the sales take place. Local marketing organic farms, on the other hand, can cater for restaurants searching for fresh, high quality, sometimes unusual products, or consumers who wish to know the farmer they buy from and perhaps even participate in the cultivation process at a CSA farm. Local marketing farms can also meet the needs for fresh products in regions which, because of climate and topography, are unsuitable for large scale, mainstream production of fruits, berries and vegetables. This also fits Norway's goals of keeping land in agricultural production and building national food resilience. Local market purchasers are also more open for buying products that have excellent quality, but do not conform to the supermarkets' aesthetic criteria, which means a reduction in food waste. Furthermore, small scale cultivation has been found to be more advantageous for ensuring biodiversity than large, monoculture production (Sirami et al., 2019).

The existence of different marketing channels means that there are opportunities for farmers with different interests, personalities, and skills. There are farmers who find pleasure in

interacting socially with customers, and there are those who do not. Farmers also have different management capacities, where among some are more suited for small scale, some for diversified and some for large scale monoculture production. For risk averse farmers the existence of local marketing is an opportunity to produce small quantities without making large investments and while keeping their paid jobs or other income generating activities. Local marketing can also be a starting point for farmers who prefer to start in small scale and later expand into to the mainstream market, thus building down entry barriers. Farmers who are risk averse may also find advantages in the CSA business model, where consumers pay the farmers before the harvest and regardless of yield levels. Such risk reduction is particularly advantageous for cultivation in regions in Norway where the climate is more unstable and yield levels more uncertain.

The salience of these findings for the broader scholarly debate about organic and local food are that they reinforce results from other studies. The Norwegian context helps to focus on common features and policy responses. Unlike early studies that noted the impacts of market pressures (Guthman, 2004), institutionalisation under agricultural policies (Tovey, 1999), or the forces of export markets (Campbell and Coombes, 1999), as discussed above, Norway has a focus on the resilience of the domestic market and aligned support mechanisms. Yet, the logics of contemporary logistic chains coupled with food marketing norms still impact farm management decisions and strategies. Smaller, diversified farms can survive through direct-to-consumer sales to more active consumers and the specialist catering trade, especially in proximity to urban areas, a finding consistent across many localities (Lobley et al., 2009b; Polling et al., 2017). Farmers may hold organic aspirations but must manage these through the restraints of farm composition, market conditions and policy structures (Obach, 2015).

Modelling suggests that organic production can sustain the same agricultural output levels that we have today, and such a transition might be agronomically feasible (Blay-Palmer et al., 2020; Poux and Aubret, 2018). Such a transition is likely to founder through failure to integrate and transform the distribution and retailing of food (Blay-Palmer et al., 2020). Selling food as analogous

to other fast-moving consumer goods will undermine on-farm efforts to lessen environmental impact and other policy goals such as national resilience (Lang, 2020; van der Ploeg et al., 2019). Especially as this is often coupled with oligopolistic and oligopsonistic retailers, who dominate not just the retail supply chain but on-farm practices (Marsden et al., 1999). Often policy has failed to address food as a system that crosses policy boundaries, linking pollution to agricultural policy, greenhouse emissions to mental health, although that is beginning to change (Nordic Council of Ministers, 2018).

6. Conclusion

What can be derived from this research is that mainstream and local sales channels complement each other, creating opportunities for different types of farmers and reaching different consumer segments. Policy measures to promote production and sales of organic fruits and vegetables should therefore focus on both these channels. Factors that could be considered in mainstream marketing are for instance the aesthetic requirements for uniform quality, which are more difficult to fulfil with organic production methods. Working with supermarket criteria and consumer attitudes regarding these aspects could make mainstream marketing easier, as well as reducing food waste. With local sales channels important barriers are the high marketing and transport costs, and these could perhaps be brought down by facilitating collaborative projects, for instance based on clusters of locally marketing farmers.

Author statement

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Declaration of competing interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at

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