

Farmers' Markets, Producer and Consumer Behaviour: Analysis of Interactions with the Metrics of Sustainability

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Abstract

This paper provides insights of the Italian farmers' markets (FMs) experience. These short food chains can be conceptualized among the so-called "alternative agro-food networks", which reject the traditional food chains features - productivity, products standardization and industrial organization - to focus on other issues such as quality, local production and "naturalness" of agro-food production.

The main objective of the paper is to evaluate the sustainability of FMs, through the analysis of the demand and the supply side. The analysis is based on a survey administered in 13 Italian FMs, involving 158 farmers and 458 consumers. Data are used to evaluate consumers' demand for sustainability within FMs and sustainability indicators at the farm level. These indicators support a classification of the farms, aimed at analysing their motivation to participate in the markets and the extent to which they are able to meet consumers' demand.

Results show that FMs might be able to favour the spreading of a more sustainable economy. However, farms should improve their business strategies in order to meet consumers' demand for sustainability. In this respect, agricultural policies at the European and local level can play a role, in order to enhance sustainable practices within the farms.

Keywords: *Farmers' markets, Sustainability, Producers, Consumers, Italy.*

1 Introduction

According to Parker (2005), a short supply chain (SSC) can be defined as an agro-food supply chain with a small number of intermediaries between the producer and the consumer and/or a limited geographical distance between the two. In agricultural markets, SSCs are therefore an alternative to traditional supply chains (Aubry et al., 2008), in which the principle players are wholesalers. Literature on the subject highlights that this is an approach to the agro-food supply chain based on new metrics: not mass production, but sustainable development (Morgan & Morley, 2002). Indeed, the so-called "alternative agro-food networks" (AAFNs) are named after the refusal of food chain actors to adopt the main characteristics of traditional supply chains, such as extreme productivity, standardization and industrial organization (Higgings et al., 2008), while paying greater attention to other aspects, such as quality, origin and the "naturalness" of agro-food production (Renting et al., 2003).

This context has encouraged the development of alternative forms of marketing food products, in which innovative dynamics occur in the interaction among the actors of the food system and the political, economic, socio-cultural and environmental challenges. Some examples are, for instance, community-supported agriculture, pick-your-own farms, food box schemes and farmers' markets (FMs). In particular, the U.S. Department of Agriculture - USDA defines FMs "as a retail outlet in which two or more vendors sell agricultural products directly to customers through a common marketing channel (direct marketing)" (Ragland & Tropp, 2009, p.13).

This paper focuses on FMs, seeking an assessment of their sustainability in the Italian context. The concept of sustainability to which we refer is that of the World Commission on Environment and

Development (1987), which takes into account the interrelation between environmental, social and economic issues. The short chain is able to touch all three aspects of sustainability because it is able to "reconnect" agriculture with consumers (Curry, 2002): socially, through dialogue and sharing between the parties involved; economically and environmentally, respectively through the management of agricultural resources aimed at obtaining profits and the maintenance of public goods.

The general objective is to evaluate, basing on empirical data, whether Italian FMs can be considered "sustainable markets", through the analysis of the characteristics and behaviour of their participants, i.e. producers and consumers. This follows the hypothesis that FMs provide a sustainable way of marketing and purchasing for farms and individuals that already pay attention to the issues of sustainability.

FMs are recently experiencing a remarkable increase in popularity. This can be attributed to various factors, such as the attention of consumers to quality and healthy products (Vecchio, 2009), the changes that have affected agriculture at international level (Brown, 2002), the health alarms and the sensation caused by GMOs (La Trobe, 2001). In the US, the popularity of FMs can be traced to a number of factors, including producers' renewed search for more profitable alternatives, consumers' rising interest in fresh and local foods, and also the pleasant atmosphere of the FMs (Hinrichs et al. 2004). American FMs operate and develop thanks to the management of non-governmental organizations and public funding coming from individual states or federal agencies (Brown & Miller, 2008); furthermore, increased interest of consumers in purchasing local products has been favoured by the implementation of food education programs by the State Department of Agriculture (Carpio & Insengildina-Massa, 2009) and by the definition of the normative framework¹. These experiences involve full time as well as part time farmers and backyard gardeners (USDA, 2002, 2009), usually running medium size farms with a specialization in vegetables and fruit production (Brown, 2002).

Within the European Union, FMs are however a relatively recent phenomenon (Holloway & Kneafsey, 2000). In the 1990s, such markets started to multiply especially in Germany, France and the UK (Boschetti, 2007). The development of European FMs builds on different foundations: mostly on activities of regional quality production (Sonnino & Marsden, 2006); on quality definitions such as sustainability or animal welfare, and on innovative forms of marketing in countries such as the UK, the Netherlands, and Germany (Ilbery & Maye, 2005). In addition, the emergent interest for local foods, which consumers perceive as characterized by higher quality standards and as tools for the preservation of tradition and local know how. The majority of the studies on FMs tend to point out to the enjoyable social atmosphere as their main characteristic; which enables consumers to connect with the producers and to support the local community. In European FMs, we find small and medium size farms, often implementing low impact production models (La Trobe, 2001).

Within the European framework, Italian experience of FMs has some specificity. In Italy, FMs gained momentum in the 1980s, with further development towards the end of the 1990s while the greatest expansion started around the mid-2000s.

A research carried out in 2010 revealed that in Italy there are 947 farmers' markets, although many of them only open seasonally, typically at Christmas and Easter. They are mainly concentrated in the North and in medium-size towns (Marino & Cicatiello, 2012). Top products are fresh fruits and vegetables, olive oil, wine and dairy products. The markets are mainly held outdoors, in public areas, but there are also indoors markets, whose offer is usually wider, including also processed fruit and vegetables. In Italy, FMs are typically managed by associations; the most important in

¹The number of FMs in the United States dramatically increased after the approval of Public Law 94-463, the Farmer-to-Consumer Direct Marketing Act of 1976 (Brown, 2002).

terms of number and size of markets is "Campagna Amica"².

Recent studies show that Italian FMs are quite diverse among each other: some only open once a week and host few farmers; others open every day, have a higher number of farmers participating and a wider offer of products; others are "alternative" markets, characterised by a particular attention to organic productions and the philosophy of food, run by associations like Slow Food³ (Marino & Cicatiello, 2012). Each of these typologies matches the need of different groups of farms and consumers. On the farm side, FMs are both a form of survival for family businesses, particularly those which are unable to integrate in the big retail food chain, and a way of innovation based upon a direct involvement with consumers and a clear ethical commitment. For what regards consumers, Italian FMs meet the needs of a core of consumers, maybe small but highly motivated, paying attention to the characteristics of products, prices, availability of fresh fruits and vegetables in season, and interested in the exchange of information with producers.

Therefore, Italian FMs significantly differ from European and US experiences and, at a first look, they show features related to a high level of sustainability.

In order to test this hypothesis, in the following paragraph, we will present an attempt to measure the attitude towards sustainability by producers and consumers participating in Italian FMs. In the subsequent part of the paper, results will be compared in order to verify whether the behaviour of the participants is able to characterize some FMs experiences with a high sustainability.

2 Short food chains: attitudes of consumers and producers

The issue of sustainability in agro-food production and distribution increasingly attracts the attention of consumers and producers. It follows that in food purchasing as well as in food production, together with economic, nutritional and organoleptic aspects, there is a rise in choices motivated by environmental and social issues.

In particular, in terms of sustainability-related issues, modern society displays a *reflexive consumerism*, i.e. the tendency to absorb the cultural changes in society into one's individual sphere, where they end up influencing purchasing decisions (Ilbery & Maye, 2005). The process of globalization, by introducing a significant level of detachment between the consumer and the social-environmental context in which goods are produced, has also contributed to this growing phenomenon (Kirwan et al., 2003). Moreover, we should consider that the consumption – and therefore the choice - of food is particularly important for *reflexive consumers*, because, as highlighted by Dupuis (2000), it is a basic action that involves the individual physically. This is confirmed by a research that highlights that there is a significant number of consumers willing to pay a *premium price* for food with an ethical value (MORI, 2000).

Nevertheless, the interest in sustainability that has taken shape in consumers' minds only partially translates into a real change in their consuming habits. This inconsistency, known as the *attitude-behaviour gap*, originates in a series of factors that hinder sustainable consumer behaviour at the individual level from being established. Vermeir and Verbeke (2006) identified three main barriers to *sustainable food consumption*.

- Price, often perceived as too high, causes a negative attitude towards sustainable products (De Pelsmacker et al., 2003), therefore those who could afford to buy these products rarely do so.
- The distance of consumers from the production phase both geographically and in terms of their understanding and knowledge, prevents them from being totally aware of the implications of their consuming decisions on the previous phases of the supply chain

² The Campagna Amica project is headed by Coldiretti, the leading Italian farmers association. Campagna Amica FMs have specific rules for farmers and a system of price control, with a reduction of 30% with respect to retail.

³ Slow Food is an international non-profit organization that supports the production of sustainable and quality food at a small scale. At these FMs, beyond the sale of local farms' products, cultural and educational activities are also held.

(Dickson, 2001).

- The limited availability of these products, linked to poor accessibility in terms of the diffusion, frequency and opening times of the shops where they are sold (Vannoppen et al., 2002).

Despite these obstacles impeding the shift from the intention to consume specific products to developing a real purchasing habit, it is clear that the increasing interest of consumers in ethical products is fundamental to kick-start its diffusion and, consequently, to reduce the *attitude-behaviour gap* to a minimum.

Increasingly, such a positive attitude also concerns local products, since buying locally has become an ethical question that embodies the concerns of numerous new consumers, for example, the acknowledgement of the environmental value of local products and their positive impact on the economy of the territory (Vermeir & Verbeke, 2006). Therefore, it seems that a significant number of consumers may direct their purchases towards local products, even when this choice is biased by other factors that influence their purchasing decisions more directly than ethical issues (Weatherell et al., 2003).

In the vast panorama of short supply chains, which put farmers and consumers into direct contact by eliminating intermediaries, FMs are certainly of great importance, not only under an economic profile, but above all for the primary role that they can play in determining and spreading the key principles that define marketing agro-food products on a local scale. The characteristics and motivations of people going to these markets have been the subject of many studies in recent years. Evidence shows that, from a demographic aspect, on average consumers are female, elderly and with a high level of education (Govindasamy et al., 1998). Yet, these characteristics are not substantially different from those of consumers who do not visit FMs (Mc Garry et al., 2005). Consuming behaviour and eating habits are what effectively distinguishes them. Indeed, FM-goers are more motivated towards searching for fresh, high quality products, and are keen to know their origin. Nevertheless, compared to consumers who use traditional marketing channels, attention to the price of products is less evident (Brown, 2002; Mc Garry et al., 2005). In the light of *attitude-gap behaviour*, it is important to underline that FM consumers also show a smaller resistance to change in their eating habits, which often tend to be altered when consumers adopt new forms of direct sale (Govindasamy et al., 1998; Pascucci et al., 2011). This means that these consumers are more likely to translate their purchasing intentions into real behaviour, as they are driven by ethical questions, with consideration for sustainability emerging in their own behaviour.

Studies on the effect of SSCs on producers have primarily looked at FMs, highlighting their economic, social and environmental implications.

From an economic point of view, producers taking part in FMs can make a significant profit (Brown, 2002). They have a direct input on price, which can be determined in a fully autonomous manner (Cicatiello & Franco, 2008). This allows farms to regain control over their decisions about what to produce (Hinrichs, 2000), and escape from the vicious circle typical of traditional markets. This also means that they can avoid the so-called *squeeze on agriculture* (Van der Ploeg, 2006), namely, the situation whereby a farmer is pressed on the one side by his suppliers and on the other by the wholesalers to whom he sells his produce, so that he gradually loses his decision-making autonomy. Producers taking part in FMs have enhanced entrepreneurial skills in aspects such as their relationships with customers, marketing and business self-confidence (Feenstra et al., 2003). A further economic advantage is the opportunity of gaining immediate financial benefit (Vaupel, 1989). Through FMs, producers can also dispose of products to market-goers during periods of the year when offer exceeds demand (Hardesty & Leff, 2009), while, at the same time, continuing to use traditional marketing channels. In this way, placing products without creating a surplus allows farmers to sell their produce for more than the price they would have received from a wholesaler, while consumers can pay less than the normal retail prices (Tropp, 2008).

Looking at social reasons, at local markets, relationships are easily made on a personal level and linked to this shared space (Lyson & Green, 1999; Hinrichs, 2000). These occasions represent an opportunity for sharing and exchanging information and opinions on production techniques, on the specific characteristics of a product and, more in general, on countryside knowledge (Renting et al., 2003). Following these considerations, we could interpret the spreading of new forms of supply chain even as a political tool, to back the wish of some public administrations to retain agriculture and farming in the areas surrounding towns instead of transforming previously farmed land into urban areas (Aubry et al., 2008). In this context, a local economy that develops around the food farming sector could be a way to revitalize the community (Feenstra, 1997), reinforcing or rebuilding the ties between its members.

Environmentally, farms that adopt forms of SSCs tend to develop more sustainable production methods, which have a positive impact on biodiversity, on the landscape and the natural resources of the territory (Battershill & Gilg, 1998; Cicatiello & Franco, 2012). The necessity to diversify production to meet consumers' demand for variety has pushed farmers towards more diverse farming practises, so that they do not specialize in one or two products but instead offer a wide range of produces. This often means the rediscovery of traditional vegetables, ancient fruit cultivars and dairy products made from indigenous breeds. The reorganization of production systems can also cover the decision to adopt production methods with lower environmental impact, such as organic farming or integrated agriculture (Bullock, 2000). On the other hand, short supply chains are already a greener alternative to traditional production and marketing systems. It has been shown that the greatest environmental costs in the food farming chain are associated to production on a global scale and distribution across areas that can be very distant from the place of production (Morgan & Morley, 2002). This involves very high increases in food miles, that is, the distance between the places where food is produced and where it is consumed (DEFRA, 2005). The short supply chain, being based on the relationship between producer and consumer at a local level, can greatly reduce the distance that food has to travel from where it is produced to where it is consumed, and, therefore, limit external negative factors linked to its transport, such as CO₂ emissions, air pollution, traffic, accidents and noise pollution (DEFRA, 2005).

Another aspect that must be taken into consideration, and one of primary importance for the impact that a SSC can have on the environmental sustainability of an area, is how this approach to marketing can spread consumer awareness of environmental issues. By shortening the supply chain, consumers can find out more about production methods and processes of the food that they buy and it has been shown that when consumers learn about the environmental benefits of particular production methods first hand from farmers, rather than from newspapers or in other indirect ways, they are more likely to search out these types of products (Bullock, 2000). This helps to create in consumers an ecological awareness that impacts not only on their purchasing decisions but also on their daily behaviour patterns.

This literature review of the influence of SSCs over consumers and producers has highlighted many aspects relating to sustainability and this has determined the choice of variables and indicators we used in our analysis.

3 Attitudes of consumers and producers in Italian farmers' markets

Methodology

The general objective of this paper, as mentioned in the introduction, is to evaluate the sustainability of Italian FMs by analysing the characteristics and behaviours of producers and consumers.

As we have seen, the increasing attention towards food sustainability by consumers primarily concerns short supply chains and, in particular, FMs, which are the most widespread expression of

these alternative supply chains. These markets represent the meeting place for the needs of both producers and consumers (Cicatiello et al., 2011).

Consequently, if consumers ask for sustainable products, the farmers involved may possibly try to answer this need by adopting opportune agricultural and commercial choices, with a positive impact on the sustainability of the entire system into which these short supply chains fit.

First, we will try to verify whether Italian FM consumers show a particular interest in different aspects of sustainability, in order to understand whether producers taking part in these markets meet these demands.

Our study is based on the results of a survey carried out on a sample of FMs operating in Italy⁴. The survey, conducted in 2010, involved 13 markets, selected in order to widely represent the different geographical areas and the different organization models. The choice was also supported by consultation with experts. The survey, which took one day for each market, was carried out with structured questionnaires (Appendix 1). They were administered to all producers present in the day of the survey and a sample of customers. Overall, in the 13 FMs involved (4 in Northern Italy, 6 in Central Italy, and 3 in Southern Italy) 158 producers and 458 consumers have been interviewed.

The surveyed farms have an average size of 54 hectares and are specialized mainly in horticultural crops, orchard trees and vineyards (66% of farms). A significant number of farms reporting livestock production and beekeeping was also found. Among the surveyed farms organic production is very relevant, covering 37% of the total area, as well as farming in protected areas (22% of the total area). The number of employees amounted to a total of 708 units, among which 283 young workers and 258 women. On average, each farm has 5 employees. The surveyed farms do not show a significant diversification of the activities performed, as only 37 of them reported multifunctional activities; among them, farm holidays is the most frequent. With respect to the FM where they were surveyed, the farms have an average distance of 53 km.

For what concerns consumers, they were approached at the exit of the market, after completing their purchases. A non-probability sampling was adopted, as respondents were casually selected among the customers going out of the market. It is therefore likely that the samples are not representative of the population of customers of the single markets, although the total sample of respondents involved in the survey is large enough to allow the drawing of inferences from the data recorded.

The socio-demographic profile of the sample is quite consistent with other studies held in European FMs. The average age of respondents is 55 with a median of 57. The gender distribution is quite skewed towards women, who account for two thirds of respondents; this might be due to local social rules and habitudes, since women's competence in the household food shopping is still the rule in most Italian families (Eurostat, 2008). A relatively high proportion of graduates (37%) is found; this result confirms that in Italy, as well as in other countries, the average customer of farmers' market is high educated. However, only half of surveyed consumers have a job; the other half includes housewives, retired people, students, and the unemployed. The vast majority (85%) comes from the municipality in which the market is held.

Basically, the survey had the scope of understanding and defining the reality of FMs in Italy, for the first time on a national scale. This study produced a remarkable amount of information, part of which was re-elaborated for the purposes of this paper. More specifically, the aspects that were taken into consideration were those concerning the shift towards sustainability by the consumers and producers involved in the survey. In order to investigate FM customers' interest in

⁴The survey was carried out within the framework of a project financed by the Italian Ministry of Agricultural and Forestry Policies, and coordinated by CURSA, the Inter-university Consortium for Socio-economic Research. The project included four stages: 1) analysis of the cognitive framework, 2) identification of indicators to assess SSC impacts on sustainability, 3) direct survey at FMs, and 4) measuring the indicators on the base of the data collected.

sustainability, our sample was divided into two groups (Table 1). The first is represented by regular FM-goers, that is to say the consumers who stated that they go to the market whenever it is open. For the majority of markets, this translates into weekly, or in some cases even daily, visits. These consumers represent about one fourth of the sample. We placed the clients who go to FMs less often into the second group as we believe that their consumer profile is very similar to that of consumers who do not use FMs much at all, and who, consequently, do their usual food shopping through other sales channels.

Table 1. Groups of consumers considered for the analysis

Groups of consumers	Number of interviews	Percentage of total interviews
Regulars to the market	123	27%
Non-regulars to the market	335	73%
Total	458	100%

For these two groups, we investigated consumer perception of several key sustainability aspects, with the aim to have a proxy of their attitude towards sustainability.

In particular, after providing a description of the sample's main demographic characteristics, we analysed the reasons that induce consumers to visit markets. This is because we are convinced that, by studying the reasons that customers gave when they were being surveyed, we can discover a common thread leading to a general demand for sustainability. Therefore, among the answers of the questionnaire, we considered the following issues:

- saving money
- buying local products
- ecological concerns
- quality of products
- convenience of the market
- freshness of the products

The sustainability of farms selling their products in the FMs where we carried out our survey was assessed using indicator ranking and rating techniques, as it is standard practice in statistics applied to social sciences (Wright & Masters, 1982; Van Dijk et al., 2007).

The indicators chosen are the ones most used in studies on sustainability, and were selected with the main reference being the most frequently mentioned examples in literature on FMs with regard to their environmental, social and economic impact (Battershill & Gilg, 1998; Ilbery & Maye, 2005; DEFRA, 2005; Aubry et al., 2008). They are listed in Tables 2, 3 and 4.

Table 2. Farm sustainability indicators: environmental macro descriptors

INDICATORS	SUB-INDICATORS	EXPLANATORY VARIABLES
A1 Impact on natural resources and landscape	A1.1 Increase in biodiversity and extensification of production methods	Greater variety of products
	A1.2 Conservation of the environment and farming landscape in marginal areas	% of land in protected areas
	A1.3 Spreading of organic and integrated agriculture	% land farmed organically
A2 Impact on negative external factors linked to food transport (food miles)	A2.1 Proximity of producers to market	Distance farmers travel to go to market
	A2.2 Proximity of producers to processing plant	Distance farmers travel to reach processing plant

Table 3. Farm sustainability indicators: social macro descriptors

INDICATORS	SUB-INDICATORS	EXPLANATORY VARIABLES
S1 Impact on social relationships	S1.1 Building of relationships between producers and consumers	Number of intermediaries between producers and consumers
	S1.2 Development of relationships between city and country dwellers	On-site farm shops
S2 Impact on food quality	S2.1 Improvement in eating habits	Conversations with consumers on quality-related product aspects
	S2.2 Improvement in quality of food eaten	Producers take part in markets to promote the quality of their products
S3 Impact on employment	S3.1 Safeguard small businesses, resulting in new employment opportunities	Increased farm work requirement
	S3.2 Work opportunities for younger agricultural entrepreneurs	% workers under 40 % female workers

Table 4. Farm sustainability indicators: economic macro descriptors

INDICATORS	SUB-INDICATORS	EXPLANATORY VARIABLES
E1 Impact on farm management	E1.1 Redirection towards markets (increased independence from overhead policies)	Changes to direction of production
	E1.2 Diversification of agricultural income	Implementation of other active sales channels
	E1.3 Transformation of part-time pursuits and hobbies into professional occupation	Economic convenience
E2 Impact on the value of products sold	E2.1 Benefits for producers	Higher prices Promotion of company products
	E2.2 Benefits for consumers	Greater availability of high quality products

This set of indicators, although it does not consider all the issues included in the definition of sustainability, aims to keep a combination of the three spheres of sustainability, using an approach of weak sustainability (Pearce & Turner, 1991). The attempt is therefore to turn the definition of sustainability into operative terms, in order to measure the phenomenon in relation to sustainability objectives, even with all the limitations of the case.

The sustainability index of farms participating in FMs was obtained by combining the variables in the database into sub-indicators, which in turn were grouped into three macro-descriptors according to their environmental, social and economic impact. The use of macro-descriptors enables to connect the data available for the Italian FMs to the general definition of sustainability. Although it may not exhaustively cover all the issues of environmental, social and economic sustainability, it allows a wide applicability to other experiences of short chains, operating in other contexts, for which there are available data.

Since most of the used variables are expressed in qualitative terms, it was necessary, in order to give a score, to convert them into a continuous scale of values on the interval [0,1], where the value "1" corresponds to the best sustainability-related characteristics or performances, and the value "0" to the worst⁵. The so calculated sub-indicators were then grouped into the three macro-descriptors, called:

⁵Amongst possible score awarding techniques, one of the most complete is the method defined by Saaty (1980) within the framework of multi-criteria analysis, which is based on setting up an assessment matrix, carried out by comparing pairs of criteria belonging to the analysis.

1. Environmental Sustainability Index (ESI);
2. Social Sustainability Index (SSI);
3. Economic Sustainability Index (CSI).

The methods used for calculating and grouping the sub-indicators brought the variation field of each of the three macro-descriptors within the interval [0-6].

The sum of the values of single macro-descriptors expresses the Farm Sustainability Index (FSI), which gives the overall evaluation of farm sustainability on a scale from 0 to 18.

Using FSI, farms were classified according to 4 levels of sustainability:

- Holistic Sustainability (OS) - range 16-18;
- High Sustainability (HS) - range 11-15;
- Medium Sustainability (MS) - range 6-10;
- Low Sustainability (LS) - range 0-5.

Consumers and sustainability in Italian FMs

The average profile emerging from interviews with consumers appears to be substantially consistent with the literature on the subject. With reference to the interviewees' consumer behaviour, we can first point out that their total budget for grocery shopping is quite limited, for most of them below 100 Euros per week. The average daily shopping varies significantly according to the type of FM, from a minimum of 11 Euros in small markets selling mainly fruit and vegetables, to a maximum of 21 Euros in markets offering organic and processed products with high added value.

In terms of strictly demographic aspects, the two groups of consumers previously identified (regular and non-regular market goers) do not differ significantly for the parameters under consideration (Table 5). The only appreciable difference is that regular market-goers ("Regulars") live closer to FMs, which probably means that they are more likely to visit their local market more frequently.

Despite this substantial similarity in the demographic profile, the two groups have very different reasons for visiting FMs, reflecting quite a different demand for sustainability. This aspect was investigated through a series of questions in which interviewees were asked to evaluate, on a scale from 0 to 3, the importance of a number of aspects regarding their decision to buy at the market. Regular market-goers show a range of stronger motivations for visiting, with a higher average for all the proposed items (Table 6).

Table 5: Demographics of the two groups of consumers

Groups of consumers	Age	Women	Housewives	Members of household	Distance from dwelling
Regulars to the market	55,7	70%	11%	2.66	4.07 km
Non-regulars to the market	53,7	65%	11%	2.73	6.05 km

Table 6: Reasons given by the two groups of consumers for visiting the market

Groups of consumers	Save money	Get local products	Ecological concerns	Quality of products	Convenience	Freshness
Regulars to the market	0.56	1.62	0.72	1.62	0.59	1.37
Non-regulars to the market	0.55	1.50	0.54	1.42	0.41	1.33

In particular, we have to underline the differences between three basic reasons: buying local products, ecological concerns and the quality of products. These aspects are particularly interesting for the purpose of this paper, as they are all tied to the concept of sustainability. Social issues belong to the first point, environmental issues to the second one, while both are covered by

the third, with its vast implications. It is reasonable to recognize that consumers' reasons represent their expectations towards the offer available in FMs. As regular consumers believe that aspects linked to sustainability are the most important, it follows that this is an indicator of their greater interest in this subject.

Moreover, we should note that both groups give very low importance to economic reasons. This means that their choice to visit the market is influenced by other factors, which, as we have seen, act at a very different level.

As shown in Figure 1, visiting FMs regularly produces a greater tendency to change consumers' eating habits. Such changes mainly concern the consumption of fruit and vegetables, and organic products, with a clearly positive influence on the quality of consumers' diet, as well as on the global sustainability of their eating behaviour.

Finally, with reference to the social issues of sustainability, it is important to note that the more regular consumers, when visiting FMs, add a social experience to the act of purchasing: about 80% of the people interviewed declared that they meet friends and acquaintances sometimes or often; whilst this is only the case for 65% of non-regular market-goers (Figure 2). This might be an indicator of consumers' willingness to combine food purchases with a social experience, with a possible positive influence on the web of relations within a community.

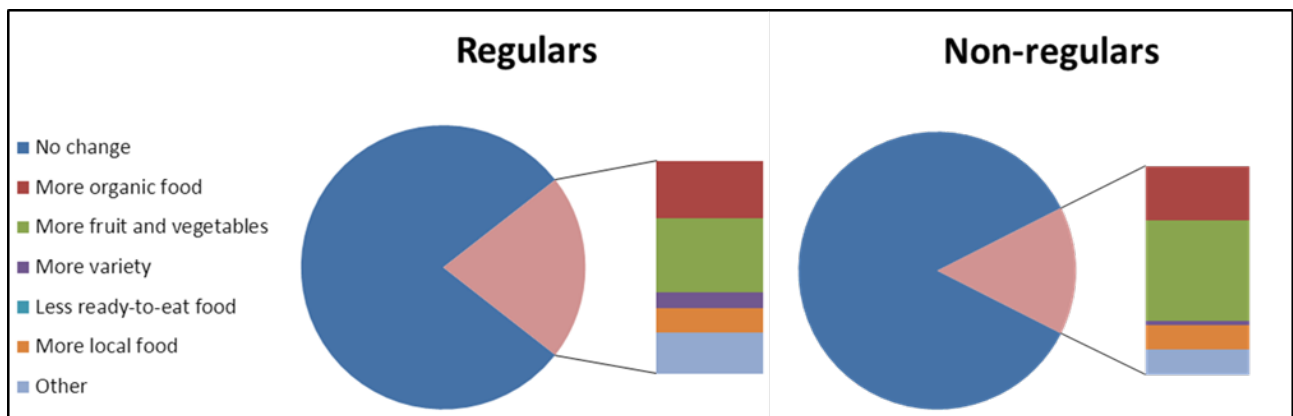


Figure 1. Consumer attitude to change in food habits

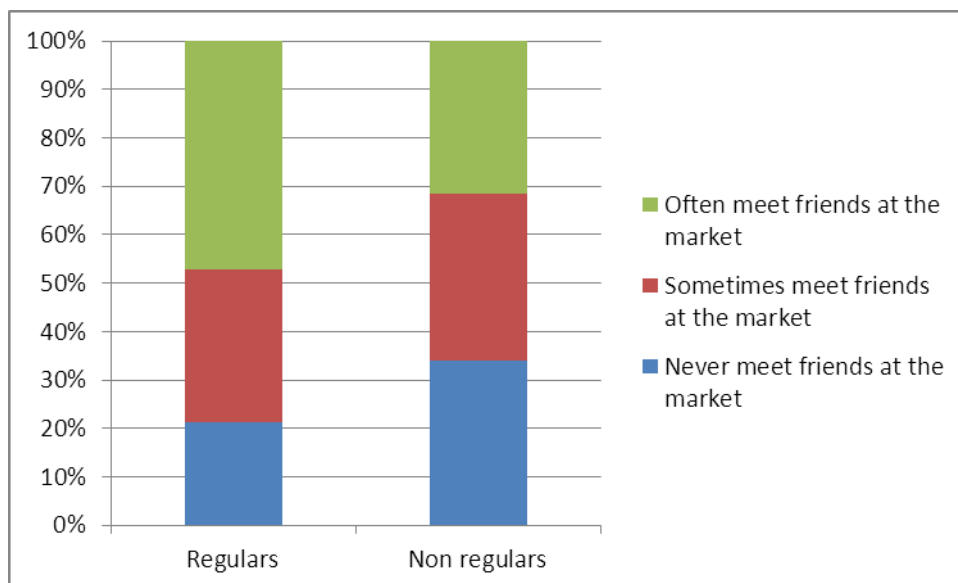


Figure 2. Social behaviour at the market for consumers of different groups

Comparing these two groups of consumers clearly shows that greater market attendance is associated to an increasing interest in aspects linked to the concept of sustainability. This means that large numbers of FM-goers expect that their alternative marketing experience should satisfy their more or less explicit demand for more ethical and ecological production and distribution systems.

We now have to analyse whether, and in what measure, the farmers attending the markets are able to meet this demand, by adopting a behaviour that is more sustainable and that consumers are aware of and can share and appreciate. This issue is covered in the following paragraph.

Farms and sustainability in Italian FMs

As previously mentioned, in this paragraph we will analyse the attitude of producers with respect to sustainability, in order to understand whether they can meet the needs of consumers, which were highlighted in the previous paragraph.

By applying the FSI (Farm Sustainability Index) to the surveyed farms, we can see that a relatively compact setting emerges. 103 of the surveyed farms (65% of the sample) are defined by a medium level of sustainability, while 51 achieve high levels. Only 4 farms show a low degree of sustainability, and none of them reach holistic sustainability. Table 7 presents the structural characteristics of the farms surveyed, classified according to their FSI.

Table 7. Structural characteristics of the farms surveyed.

Farms	UAA (ha)	Organic (%)	Protected Area (%)	Farming	Employees (n)	UAA/WU ratio	Young workers (n)	Female workers (n)
HS	49.26	54.79	25.16	Mixed (policultivation, cultivations, breeding)	4.16	11.85	1.80	1.33
MS	57.90	29.52	20.41	Zootechnics, vegetables and fruit	4.67	12.40	1.83	1.82
LS	33.19	29.58	5.27	Vegetables and fruit	3.75	8.85	0.75	0.75
Average	54.49	36.89	21.56		4.48	12.16	1.79	1.63

High sustainability (HS) farms have an average size of 49 hectares and are defined both by great areas dedicated to organic farming (55% of the total) and by land in protected areas (25% of total). Farms are located mainly in flat areas (61%), less so on hills (26%) and mountains, while the usable farmland is more evenly balanced between plains (49%) and hills (41%). Types of production structure appear to be quite diversified and the main productions are mixed, such as policultivation and cultivation-breeding. On average, a farm employs 4 people. Analysing staff composition, the number of workers under 40 is very high (around 2 per farm). The UAA/WU ratio (utilized agricultural area to working unit) is interesting. Multifunctional activities, mostly farm holidays, are quite significant while the distance between farms and markets is 54 km on average. It is useful to point out that there have always been agricultural systems in and around cities to satisfy the needs of the people around whom the food production had developed (de Zeeuw & Dubbeling, 2010), with proximity being a necessary condition, especially for the sale of fresh products (Marino & Cavallo, 2009).

Medium Sustainability (MS) farms are on average 58 hectares in size. The extension of organic and protected areas (respectively 30% and 21%) is smaller than that of HS farms. These farms show a clear specialisation in zootechnics and in fruit and vegetable production, and employ around 5 people per farm. The number of under 40 and female workers is very significant (about 2 per farm). The UAA/WU ratio is high and greater than the average value of the sample. Related activities are basically irrelevant. Also in this case, the average distance between farms and

markets is slightly over 54 km. Farms and farmland are mainly concentrated on plains (61% for farms and 62% for farmland).

Low Sustainability (LS) farms are around 33 hectares in size and are defined by small areas of protected land (only 5% of the total). Land dedicated to organic farming is significant (30%). The main production is fruit and vegetables. Employment is 3.5 people per farm, lower than HS and MS farms, and the number of under 40 and female workers on the farms is lower. The UUA/WU ratio is quite low and there are virtually no related activities. The average distance between farms and their reference markets is 23 km.

The sample, composed of 158 farms, was divided using cluster analysis, which allowed us to identify different farm typologies according to their level of sustainability. Cluster analysis was carried out using the three macro descriptors and the Farm Size Index (ASI).

The last index involves the farm size, calculated according to the farm's area and number of employees. The variables appear to be only scarcely connected to each other, and this meant that we could avoid using factor analysis in the methodological procedure.

The analysis shows that a good division of this sample results in 5 homogeneous groups of farms, explaining around 57% of the total variance.

Table 8 summarizes the characteristics of the five groups relative to the segmentation variables of the farms in each group. In order to help the comparison between clusters, the values were compared to the sample average. It follows that values lower than 1 show that a group has, for that variable, smaller values compared to the sample average.

Vice-versa, values higher than 1 show a better performance than that specific group's average.

Table 8. Sustainability index values according to farm typology

Cluster	ESI	SSI	CSI	ASI
A1	0.979	0.662	0.566	0.492
A2	0.900	1.294	1.218	1.556
A3	0.959	1.172	1.274	0.395
A4	1.004	0.831	0.714	1.422
A5	1.285	0.985	1.294	1.146

Class A1 includes 29 small-sized farms (15 hectares), with low work intensity (2.3 WU) and low sustainability, especially from an economic point of view. Class A2 contains 34 large-sized farms (90 hectares) that differ from the other groups for their social and working aspects (6.2 WU), while class A3 comprises 38 very small-sized farms (less than 8 hectares), with low work intensity, which show an interesting economic performance. Class A4 includes 38 large-sized farms (103 hectares), which present a modest degree of sustainability, especially from a social-economic point of view. Lastly, class A5 contains 19 medium-sized farms both in terms of area (38 hectares) and occupation (4.3 WU), with good levels of environmental and economic sustainability.

By cross-analysing the data referring to the 5 farm types and the FSI, an even clearer setting emerges. The HS-level group comprises mostly types A3 and A5. These farms are small or medium-sized and are located mainly on hills. Their production is diversified and they are defined, from an environmental point of view, by a greater extent of land cultivated biologically and of land in protected areas, and, from an economic point of view, by sales of organic and farm-processed products.

The MS-level group includes mainly types A1, A2 and A4. A1 and A4 farms are of small and large size respectively and they specialize in the production of vegetables and fruit, as well as livestock products. The economic results of these farms are in general modest. A2 farms are large in size and they differ for social aspects connected to employment, and, in particular, for the number of under 40 and female workers.

The LS-level group includes small-sized farms of type A1 that are highly specialized in conventional fruit and vegetable growing, and are situated in plains, close to their reference markets. Their low sustainability rates must be placed in relation to their modest social and economic indicator values.

By observing these results, it is possible to interpret the farms' level of FM participation in the light of their performance, with reference to sustainability indicators.

For instance, we could hypothesize that class A1 farms take part in FMs mainly because of their very small size, which is probably an obstacle to developing more traditional marketing channels. These farms do not seem to meet a specific demand for sustainability, since their performance is pretty modest for all sustainability indicators.

For groups A2 and A3, taking part in markets seems to be determined mainly by the opportunity to promote their products, obtaining a better return for their work. Nevertheless, group A2 farms also reflect a series of social issues, such as the need to expand their workforce and build direct relationship with consumers.

Similarly, class A5 farms pursue economic sustainability targets whilst also trying to respond to environmentally-related issues. For these farms, it is likely that taking part in FMs represents the wish to better promote and "sell" the environmental quality of their products.

The approach to the market of group A4 farms remains less clear. Maybe, since they are very big farms, their interest lies mainly in long supply chains, and short supply chains are used marginally to place surplus production in certain periods of the year.

In terms of different typologies of farm, those with a stronger orientation towards sustainability – whether environmental, social or economic – are only one third of the total, although in terms of UAA, they make up more than 50%.

The analysis of farm type distribution throughout the various FMs (Table 9) indicates quite a diversified situation. The farms with the highest level of sustainability are the most common in three markets, but in other two markets farms classed as less sustainable are more widespread. In the other markets, farms with a medium level of sustainability are prevalent, as they include economically and socially sustainable farms. Therefore, for the FMs surveyed, the level of sustainability of the production offer is not homogeneous, and, in some cases, there are significant margins for improvement.

Table 9. Distribution of farm typologies within FMs

City where the FM is	Level of Sustainability	Main Farm Typologies	Percentage of Main Farm Typologies
Bari	high	A4, A5	72.7%
Bologna Slow Food	medium	A1, A2	58.3%
Milano	high	A4, A5	87.5%
Montevarchi (AR)	medium-high	A4	43.8%
Padova	medium	A3, A4	66.7%
Roma Circo Massimo	medium	A3, A4, A5	81.3%
Roma Testaccio	medium-high	A3, A4, A5	76.2%
San Giovanni Val d'Arno (FI)	low	A1	57.1%
Taranto	high	A4, A5	71.4%
Torino	medium-low	A1, A3	78.9%
Vetralla (VT)	medium	A2	50.0%

During the empirical analysis, a final phase was the comparison between the results concerning the demand for sustainability by consumers and the level of sustainability offered by producers taking part in FMs. We were clearly expecting that there would be a high number of consumers

interested in sustainability-linked issues regularly visiting FMs with a higher level of sustainability. However, this is not confirmed by data, as regulars make up less than 10% of visitors to FMs with high sustainability, while they reach 50% of the customers at medium or low sustainability FMs. Therefore, it is necessary to identify the factors that could help sustainability-conscious consumers to engage with farms with the most virtuous behaviour, in order to maximize the benefits for both.

4 Conclusions

This paper moves from the idea that short food chains, and FMs in particular, represent a strategy for food system's actors to improve sustainability and competitiveness for themselves and for the food sector as a whole. Indeed, on the one hand, there is a growing demand for sustainability by consumers and, on the other hand, farmers aim to exploit their high environmental quality products through the search for innovative markets.

Moving from this hypothesis, widely shared in international literature, a first survey was carried out. The aim of the survey was to analyse to which extent producers and consumers attending FMs pay a special attention to sustainability. Once this attitude is demonstrated, it would be possible to consider the real possibility that FMs could favour the spreading of more sustainable production and consumption models and then to detect the conditions to promote such alternative food chain.

The analysis of demand has highlighted, from the FMs visitors' part, a precise interest in production and distribution models associated to the concept of sustainability. The criteria that, above all others, reflect the attitude of consumers towards a sustainable and responsible consumption – attention to quality, demand for local food and request for environmental security – are significantly connected to the frequency of purchases made by consumers in FMs, rather than to their socio-demographic profile. Even if this result needs to be validated, mainly comparing consumers attending FMs with “conventional” ones, we might argue that FMs are an efficient tool to bring out the consumers' demand for sustainability, be it overtly expressed or latent.

From the offer side, the surveyed farms seem to use quite a diversified group of strategies – according to their size, variety of products, territorial location, type of farm and family management – in which the FM becomes an efficient market form. Results show that farms attending FMs are characterized by different sustainability levels and point out how the choice of this selling channel is not always a consequence of farmer environmental responsibility, but can be due to other motivations as, for example, a higher price or a business strategy.

In general, our analysis shows that Italian FMs are certainly capable of attracting a passive demand for sustainability, and, at the same time, through the participating farms, offer an environmental, social and economic contribution. However, the meeting between this demand and offer does not always necessarily take place within the market context. By comparing the demand side with the offer profile, there is a real risk that the information coming from FMs may once again be misaligned between producers and consumers. Furthermore, there is the possibility that the level of trust, which defines and goes hand in hand with the FMs consumer's demand for sustainability, could not be satisfied, with possible consequences on the growth of FMs. Indeed, the presence, and sometimes prevalence, of less sustainable farms within the FMs could undermine consumers' trust, causing damage even to the most virtuous farms.

FMs may certainly represent a type of market that can help for a more sustainable economy. At the same time, it is necessary to work on farms so that their strategies meet the demand for sustainability expressed by FMs' consumers considering that, as our survey has shown, there is a great margin for improvement from this point of view.

In promoting FMs as a more sustainable food supply chain, policy makers can play an important role in different perspectives. Policies, beyond their contribution to a widespread dissemination of the culture of sustainability among consumers and producers, should favour the diffusion of FMs

defining a clear regulatory framework and supporting their logistic organization.

The public effort together with a larger consumers and producers attitude towards sustainability could expand the market of short food chain thus improving the food system's capability for innovations with the spread of sustainable dynamics in the food system.

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Appendix

Selected questions from the 13-items questionnaire administered to consumers.

Question code	Question type *	Question text	List of answers
Q1	MCo	How often do you shop at this farmers' market?	Every time it is open (Regular to the market) More than once a month; once a month; less than once a month; it's the first time (Non-regular to the market)
Q4	SC	Why are you shopping at this farmers' market?	To save money; to buy local products, to preserve the environment; to buy quality food; proximity of the market; to buy fresh products.
Q6	MCm	Did you change your food habits since you started shopping at the farmers' market?	No; I eat more organic food; I eat more fruit and vegetables; I eat a greater variety of foods; I eat less ready-to-eat meals; I eat more local products.
Q9	MCo	How often do you meet acquaintances or friends at the farmers' market?	Seldom; sometimes; often.
Q10	OP	How much did you spend at the farmers' market today?	-
Q12.1	OP	How old are you?	-
Q12.2	MCo	Gender	Male; female.
Q12.3	OP	Distance of dwelling from the market	-
Q12.4	MCo	Education	Elementary; high school; graduate
Q12.5	MCo	Occupation	Employed; housewife; retired; student; unemployed
Q12.6	OP	Members of the household	-

* MCo: multiple choice, one answer; MCm: multiple choice, multiple answer; SC: score from 0 to 3; OP: open question

Selected questions from the 7-items questionnaire administered to farmers.

Question code	Question type *	Question text	List of answers
Q2	MCm	Which products do you sell at the market?	Fruit; vegetables; dairy products; wine; oil; meat; honey; other.
Q2.1	OP	How far is the industry where you process your products?	-
Q3	MCm	Where do you sell you products beside this market?	Wholesale; large retail; small retail; industries; restaurants; other FMs; farm shop; community supported agriculture; farmers' cooperatives; on-line.
Q4	SC	Why are you selling at this farmers' market?	Higher price; add value to products; diversify marketing channels; emphasize features of the farm; emphasize qualities of products; other.
Q5	SC	How often do you exchange information with customers about (see answers)?	Raw materials; management of the farms; product processing; product origin; price; recipes; food storage; quality; other.
Q6.1	OP	UAA	-
Q6.2	OP	Organic UAA	-
Q6.3	OP	Distance of the farm from the market	-
Q6.4	OP	UAA in natural areas	-
Q6.5	MCm	Multifunctional activities	Farm holidays; educational activities; cultural events; subcontracting; other.
Q6.6	OP	Number of employees	-
Q6.6a	OP	Number of female employees	-
Q6.6b	OP	Number of young (<40 yo) employees	-
Q6.7	MCo	Did the labour need increase after your participation in the FM?	Yes; no
Q6.9	MCo	Did you change your productions after your participation in the FM?	Yes (how?); no

* MCo: multiple choice, one answer; MCm: multiple choice, multiple answer; SC: score from 0 to 3; OP: open question