Food system integration of olive oil small farms in Southern Europe

Abstract

This study aims to identify the various forms of integration of olive oil producing small farms (OSFs) into food systems in four Southern European regions, as well as to identify the most beneficial strategies of integration. Drawing on data from SALSA Project, the study has found that besides self-provision, OSFs are engaged in multiple types of integration, including reciprocity relations, as well as relations with informal and formal markets. Multiple strategies with synergistic effects co-exist at the farm/farm household level. Specific territorial resources are partially mobilized by actors’ strategies, consequently, olive oils’ identities are to some extent valorized on the markets, but less so through positive externalities. Therefore, the unrealized potential of localization of the food systems in which OSFs operate is identified.

Keywords: small farms, olive oil, localized food systems, strategies, market integration, Southern Europe

1. Introduction

Olive tree cultivation has formed the Mediterranean landscape since antiquity, and olive oil is a hallmark of the Mediterranean diet and culture. Currently, 97% of all olive-oil is produced around the Mediterranean, while four Southern European countries (Spain, Italy, Greece, and Portugal) account for 69% of world production, with Spain by far exceeding all other countries, holding 45% of world production (average production of the period 2009/10-
26 2018/19, sec: IOC, 2019). In these countries, the majority of farms producing olive oil are small, i.e., wishing an utilized agricultural area (UAA) less than 5 ha: 52% in Spain, 69% in Italy, 70% in Portugal, and 84% in Greece (Eurostat, 2016).

27 Olive oil agri-food systems face a number of serious challenges, including a larger increase in production than consumption in the medium and long term, an unbalanced negotiating power in the value chains with a myriad of producers, a shorter number of milling industries and a handful of retailers with a significant market share, sometimes translated in unfair competition practices as the product is sold to final consumers below the acquisition cost as a marketing strategy, frequent price crises due to the alternate bearing pattern, the effects of climate change that makes harvest more unpredictable than usually and increases the need for irrigation in the dry areas where it is produced, as well as changes in agri-trade policies (Mili, 2010). Generally, the participation of small farms in modern food systems, is seriously severely constrained by factors such as the limited resource base, strict quality requirements, minimum volumes of production and high costs of specific on-farm investments (Rapsomanikis, 2015). Furthermore, small farms usually suffer from a scale mismatch in comparison to other food system participants, in both the input and output sides (Vorley, 2003; McGullogh et al., 2008). Apart from these challenges and constraints, small farms engaged in olive oil production run the risk of marginalization within an increasingly consolidating system, in which, especially since the 1990s, more intensive forms of cultivation are constantly continually expanding (Fernández-Escobar et al., 2013).

46 Remarkable literature is developing during the last years on the territorial dimension of food systems. For example, in the perspective of ‘localized agri-food systems’ (originating in the research on Systèmes Agroalimentaires Localisés), food systems are rooted in specific places and cultures and firmly attached to socially constructed territories (Bowen and Mutersbaugh, 2014; Bérard and Marchenay, 2006). By considering a value chain as
embedded into a territorial production system, this approach highlights the ability of local food systems to generate positive externalities and public goods at both the value chain and territorial levels (Arfini et al., 2019). Thus, ‘localization’ of food systems is perceived as the process of utilization of specific territorial resources that are considered as specific assets that influence the identity of food, and are seen as specific assets that can support the valorization of the identity of agri-food products (Sanz-Cañada and Muchnik, 2016).

In the context of the above-mentioned challenges and characteristics, small farms engaged in olive oil production try to achieve their goals through a series of strategies, including survival or adaptation in adverse conditions, various forms of diversification, strengthening of their business, intensification of production methods, etc. (Ilbery, 1991; Moran et al., 1993; Evans, 2009). Usually, the dual entity farm business/farm household uses more than one strategy in a complementary way. Of particular importance for this study are the strategies of small farms that aim at establishing a strong link of the olive oil with the territory in which it is produced, in an effort to resist the ‘commodification’ of this product (see also Sanz-Cañada, 2009).

Based on a food system approach, the aim of this study is twofold. Firstly, to identify the various forms of integration of olive oil producing small farms (OSFs) into food systems, spanning from self-provision to reciprocity relations and relations with markets; secondly, to identify the strategies adopted by the OSFs which are integrated into the food systems most effectively and contribute to the ‘localization’ of olive oil food systems. Drawing on data from SALSA Project, the study conducts an analysis of OSFs in the Mediterranean regions of Castellón (Spain), Lucca (Italy), Ileia (Greece) and Central Alentejo Central (Portugal).

The study comprises five parts. In the next section, the conceptual framework of the study is exposed, along with materials and methods. The findings of the study are then presented, in
2. Conceptual framework, methods and data

An impressive inter- and intra-regional diversity of food systems related to olive oil has been detected. As a result of historical trajectories of the regional economies and various spatial specificities, the four regions are highly differentiated in terms of farming systems, quality of the product, relative importance of OSFs and small food businesses, scale of operations, as well as interlinkages between food systems actors (for a more detailed description, see Karanikolas et al., 2018a).

Moreover, as all farms, OSFs try to adapt to various constraints and opportunities and respond to changing climatic, economic, policy and demographic conditions by adopting ‘survival strategies’ (Whatmore et al. 1987), ‘paths of development’ (Bowler, 1992), ‘pluriactivity’ (Robinson 2013), ‘adaptation’, ‘adjustment’ and ‘development’ strategies (Marsden et al., 1989; Mills et al., 2013; Andrade, 2015). These terms indicate a broad range of targets that farmers try to achieve through their strategies. Scholarly research has indicated that one of the main strategies, especially relevant for small farms, is the ‘territorial integration’ or ‘re-grounding’ of farms into their territories, which is usually implemented in synergy with the re-valorisation of small scale and proximity (Grando et al., 2019b; van Der Ploeg and Roep, 2003). Hence, we continue by identifying the strategies adopted by the OSFs, which are integrated into the markets most effectively, as the integration of the food systems in question is largely achieved through the markets. We argue that the effectiveness of this integration can be demonstrated in two ways.
We argue that the effectiveness of this integration can be illustrated, first by using the criterion of net family farm income (NFI) per hectare. NFI, or farm family income, has been used as a key indicator for measuring farm economic sustainability of family farms. This is so, because, by covering all cash expenses and depreciation, it ensures the reproduction of the productive system of the farm; also, it is a good indicator for the standard of living of the farm household, because it measures the returns to family labour, own capital, and management (Blank et al. 2009; Shadbolt et al. 2009; Dekker et al. 2011; Liontakis and Tzouramani, 2016). Thus, sales through traders, cooperatives, producer groups, open-air markets, producer–consumer networks, or other alternative channels; prices also reflect the bargaining power of food system participants. More generally, the prices reflect the terms of integration of a particular farm into the markets and the broader agri-food system.

Secondly, by examining the potential of localization of the food systems in which OSFs operate. In this study, we approach the notion of localization of food systems through the exploration of strategies developed by OSFs to establish strong links with the territory where olive oil is produced. Strategies include those contributing to the valorisation of the quality and the territorial specificity of olive oil, as well as strategies resisting the ‘commodification’ and de-localisation tendencies in olive oil systems (Sanz-Cañada and Muchnik, 2016). Thus, we examine some of the territorially-based resources that are mobilised by OSFs to assign a specific identity to the olive oil they produce, namely some of the biophysical, cultural and...
socio-institutional practices and resources that are specific to the region in which OSFs are localized (Bowen and Mutersbaugh, 2014). Of particular interest for our study are native-traditional olive trees varieties and local social networks, which have been identified as core elements of ‘localized’ food systems. Lastly, we examine the valorisation of this identity both on the markets and through the creation of positive externalities.

3. Methods and data

The research approach chosen is a mixed-method, comprising qualitative and quantitative methods. Following the broader methodology of SALSA project (Brunori et al., 2019; Grando et al., 2019a), the data for this study have been derived from four different sources:

- **Desk research**, with a literature review and statistical information from diverse sources, including Eurostat, national and regional statistical authorities, sectoral data, etc.
- **Forty-four semi-structured interviews** with key informants, conducted from March to July 2017. A broad range of stakeholders took part, including administration staff, farmers, co-ops’ and producer groups’ staff, researchers on plant protection issues, and food businesses representatives.
- **Four Focus groups** (one per region) with 32 olive oil related stakeholders, held between September and December 2017. [who were they?? Appendix Table]
- **Face to face interviews** with 72 small farmers producing olive oil, conducted in the June-November 2017 timespan, which were selected according to four main criteria (Grando et al., 2019a): 1) small farmers with UAA up to 5ha and/or small farms of up to 8 Economic Size Units; 2) small farms with different degrees of market integration; 3) small farms that have different degrees of self-sufficiency in the household; and 4) farms geographically dispersed within each region.
Although there is no universally accepted definition of a small farm (Guiomar et al. 2018; Davidova and Thomson 2014), small farms are usually identified through thresholds set for different size indicators, influenced by the aim of the classification as well as by the geographical context in which the analysis is conducted (Hazell et al., 2010; Lowder et al. 2016). In this study, we define small farms as those with less than 5 hectares of total UAA (EPRS 2014; EU, 2018) and/or those with an economic size of up to 8 Economic Size Units.

All the above data have been analyzed and used in the next sections. It has to be noted that the four data sources complement each other. Statistical information, key informants, and focus groups allowed for the identification of quantified flows between the different actors, as well as the extent of self-provision, reciprocity relations and the commercialization pathways available to OSFs. On the other hand, despite the fact that the sample of farms is not ‘representative’ in the strict statistical sense, interviews with farmers provided valuable detailed information, which along with all the information from the other sources, allowed for the representation of OSFs within their food systems and connections to their respective value chains.

4. Results
An impressive inter- and intra-regional diversity of food systems related to olive oil has been detected. As a result of historical trajectories of the regional economies and various spatial specificities, the four regions are highly differentiated in terms of farming systems, quality of the product, relative importance of OSFs and small food businesses, scale of operations, as well as interlinkages between food systems actors (for a more detailed description, see Karanikolas et al., 2018a).

4.1 Types of economic integration

4.1.1 Self-provision and reciprocity relations

Interviews with key-informants, as well as material from the focus groups show that olive oil systems in the four regions are mainly export oriented, as a large share of the oil produced is exported or sold to other national regions, ranging from 40% in Lucca, to 93% in Alentejo Central. Most of OSFs are engaged in multiple types of economic integration, including reciprocity relations, as well as relations with various markets, covering a variety of spatial scales (table 2). OSFs in all regions present a high degree of self-provision in quality olive oil, accompanied with extended non-market exchanges in the context of kinship and friends, as well as own informal networks of customers; part of the latter involve the disposal of olive oil in the agri-tourist part of the farm as well as to customers in the adjacent areas.

It has to be noted that an impressive inter- and intra-regional diversity of food systems related to olive oil has been detected. As a result of historical trajectories of the regional economies and various spatial specificities, the four regions are highly differentiated in terms of farming systems, quality of the product, relative importance of OSFs and small food businesses, scale
of operations as well as interlinkages between food systems actors for a more detailed description, see Karanikolas et al., 2018a.

Table 2: Self-provision and Types of economic integration of olive oil producing small farms

<table>
<thead>
<tr>
<th></th>
<th>Self-Provision of Olive Oil</th>
<th>Reciprocity Relations</th>
<th>Relations with informal markets</th>
<th>Relations with formal markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castellón (Spain)</td>
<td>Yes</td>
<td>Non-market exchanges of olive oil among extended family and friends</td>
<td>Direct informal sales by farmers to their own network of consumers inside the region</td>
<td>A relevant share is sold through cooperatives and small retailers or to restaurants in the province and a small percentage goes to neighboring provinces. About 40% of production (low quality oil) is sold to refineries in other provinces or abroad</td>
</tr>
<tr>
<td>Lucca (Italy)</td>
<td>Yes</td>
<td>Non-market exchanges of olive oil</td>
<td>Informal sales from OSFs only within the farms and the adjacent areas</td>
<td>Formal sales within the region, outside the region, and for exports to: Oil mills, sales representatives, exporters.</td>
</tr>
<tr>
<td>Ileia (Greece)</td>
<td>Yes</td>
<td>Non-market exchanges of olive oil</td>
<td>Direct informal sales from farmers to their own-network of consumers, both inside and outside of the region</td>
<td>Formal sales within the region to: wholesalers, packaging enterprises, oil mills, and to restaurants/hotels. Also, sales to other national regions and exports.</td>
</tr>
<tr>
<td>Central Alentejo (Portugal)</td>
<td>Yes</td>
<td>Non-market exchanges of olive oil and canned olives</td>
<td>Own-branded olive oil is sold at farmers’ markets and local shops.</td>
<td>Intensive and super intensive olive grove production mainly for export outside of the region. Processing in private oil mills.</td>
</tr>
</tbody>
</table>

Source: Interviews with key-informants and Focus Groups discussions
We have used the data derived from interviews with 72 olive oil small farmers in the four regions to distinguish three different categories of integration into food systems. By using the criterion of NFI per hectare, we identify an effective, a moderate and a minor market integration, with a high (>2000 €), a medium (1000-2000 €) and a low (<1000 €) NFI per ha, respectively (table 3); the whole sample is almost evenly distributed among these three categories. Astonishing differences between these categories are observed in both NFI per ha and NFI per farm; the latter is less dependent on subsidies in the case of the effectively integrated farms.

Table 3: OSFs by effectiveness of market integration

<table>
<thead>
<tr>
<th>Market Integration</th>
<th>NFI per Ha (€)</th>
<th>No of Farms</th>
<th>Total No of different crops sold</th>
<th>Utilized Agricultural Area (%) of UAA</th>
<th>NFI per Ha (€)</th>
<th>NFI per Farm (€)</th>
<th>Subsidies (% of NFI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Market Integration</td>
<td>High (&gt;2000 €)</td>
<td>22</td>
<td>3.0</td>
<td>46%</td>
<td>4396</td>
<td>19403</td>
<td>7%</td>
</tr>
<tr>
<td>Moderate Market Integration</td>
<td>Medium (1000-2000 €)</td>
<td>25</td>
<td>3.2</td>
<td>39%</td>
<td>1460</td>
<td>8262</td>
<td>15%</td>
</tr>
<tr>
<td>Minor Market Integration</td>
<td>Low (&lt;1000 €)</td>
<td>25</td>
<td>3.6</td>
<td>23%</td>
<td>294</td>
<td>3570</td>
<td>18%</td>
</tr>
<tr>
<td>All Farms</td>
<td>All Farms</td>
<td>72</td>
<td>3.3</td>
<td>34%</td>
<td>1952</td>
<td>10037</td>
<td>10%</td>
</tr>
</tbody>
</table>

Source: Interviews with olive oil small farmers

Olive cultivation is part of mixed farming systems, encompassing more than three different crops per farm intended for sale (table 3), that co-exist with numerous other crops for self-
The effectively integrated interviewed farms have the most intensified farming systems, as is evidenced by the highest percentage of their land, which is irrigated (46%, in comparison to 39% and 23% of the other categories). Higher irrigation rates imply a specialization of the farms in more intensified cultivations with high yields, such as vegetables and citrus fruits, as well as intensive olive groves in some cases.

All farms are fully integrated into the markets, as they sell 85%-87% of their production value, while a 13%-15% is not sold (table 4). The vast majority of the value of products that are not sold is intended for self-consumption by household members, including olive oil; interestingly, almost one-fifth of this value is given as a gift by the moderately and least integrated farms, which is an indication of some kind of reciprocity relations (table 4).

Table 4: Disposal of production not sold (Allocation of production value) and Reciprocity relations

<table>
<thead>
<tr>
<th>Total Sales</th>
<th>Total Value of Farm Products Not Sold</th>
<th>Production Not Sold</th>
<th>“Do You receive support (financial, technical, labour, in kind or other) from neighbours or relatives?” (% of “Yes” in each category)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Value of Farm Products Not Sold</td>
<td>Of which, For Household food consumption</td>
<td>Of which, For Gift</td>
</tr>
<tr>
<td>Effective Market Integration</td>
<td>84.5%</td>
<td>15.5%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Moderate Market Integration</td>
<td>86.9%</td>
<td>13.1%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Minor Market Integration</td>
<td>87.3%</td>
<td>12.8%</td>
<td>9.4%</td>
</tr>
<tr>
<td>All Farms</td>
<td>85.8%</td>
<td>14.2%</td>
<td>12.1%</td>
</tr>
</tbody>
</table>

Source: Interviews with olive oil small farmers
Moreover, although the share of the total value of farm production which is given as a gift is not impressive, ranging between 1.1% and 2.5%, many farms develop significant reciprocity relations, through various forms of support (such as financial, technical, labour, in kind or other) given to farmers from neighbours or relatives. Approximately one-third of the effectively integrated farms and 40% of the other two categories receive such a support (table 4).

### Table 5: Reciprocity relations

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Integration</td>
<td>23%</td>
</tr>
<tr>
<td>Moderate Integration</td>
<td>40%</td>
</tr>
<tr>
<td>Minor Integration</td>
<td>40%</td>
</tr>
<tr>
<td>All Farms</td>
<td>38%</td>
</tr>
</tbody>
</table>

Source: Interviews with olive oil small farmers

### 4.1.2 Relations with markets

The interviewed farms are connected with markets through different channels (table 5). The effectively integrated farms sell most of their products either directly or to wholesalers, while they provide small retailers with a non-negligible share of 11% of value of production. Wholesalers and cooperatives are the main channels for moderately integrated farms, whereas the least integrated farms present a relatively evenly distributed pattern of sales, with direct sales being the most important. It has to be noticed that part of ‘direct selling’ represents
informal activities on behalf of farmers, e.g. sales to own networks of customers without official documents.

Table 65: Disposal of farm production in the regional food system (Allocation of production value)

<table>
<thead>
<tr>
<th>Sales</th>
<th>Direct Selling (Farmers markets, Directly to consumers, etc.)</th>
<th>To Wholesalers</th>
<th>To Processors</th>
<th>To Small Retailers</th>
<th>Through Cooperatives</th>
<th>Total Sales</th>
<th>Total Value of Farm Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Market Integration</td>
<td>39%</td>
<td>25%</td>
<td>9%</td>
<td>11%</td>
<td>1%</td>
<td>85%</td>
<td>15%</td>
</tr>
<tr>
<td>Moderate Market Integration</td>
<td>15%</td>
<td>37%</td>
<td>4%</td>
<td>0%</td>
<td>31%</td>
<td>87%</td>
<td>13%</td>
</tr>
<tr>
<td>Minor Market Integration</td>
<td>32%</td>
<td>16%</td>
<td>11%</td>
<td>12%</td>
<td>16%</td>
<td>87%</td>
<td>13%</td>
</tr>
<tr>
<td>All Farms</td>
<td>31%</td>
<td>26%</td>
<td>8%</td>
<td>8%</td>
<td>12%</td>
<td>86%</td>
<td>14%</td>
</tr>
</tbody>
</table>

*Source: Interviews with olive oil small farmers*

4.2 Strategies of actors to achieve effective integration in the effectively integrated small farms in the food systems.
The interviewed farms follow different strategies to secure their livelihoods, as is evident from the composition of the sources of income. More specifically, the effectively integrated farms source their total household income mainly from the farm, in contrast to the other two categories, which rely mostly on income from off-farm activities of their members. However, even within the effectively integrated farms, several other important activities, beyond agriculture, take place (e.g. agri-tourism, catering), thus contributing a significant share to NFI (table 7).

Another important differentiation is observed in the strategies of OSFs in terms of labour usage, both on- and off- the farm. The effectively integrated farms mostly rely on hired labour (three-quarters of all on-farm employment), in contrast to the moderately integrated farms that largely use family labour. Interestingly, the farms with minor integration have the highest recourse on hired labour, which nevertheless, besides its trivial absolute magnitude, has to be seen in the context of extended off-farm employment of family members. In addition, cooperative membership ranges between 52% in the least integrated, and 72% in the moderately integrated farms.

### Table 6: Composition of income, labour usage and Cooperative membership

<table>
<thead>
<tr>
<th></th>
<th>Share of NFI to Total Household Income</th>
<th>Share of NFI from non-agricultural activities</th>
<th>Hired Labor/Total Labor on-farm</th>
<th>Member of a cooperative (% of farm holders in each category)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective Market Integration</td>
<td>59%</td>
<td>46%</td>
<td>76%</td>
<td>64%</td>
</tr>
<tr>
<td>Moderate Market Integration</td>
<td>39%</td>
<td>8%</td>
<td>22%</td>
<td>72%</td>
</tr>
<tr>
<td>Minor Market Integration</td>
<td>25%</td>
<td>38%</td>
<td>88%</td>
<td>52%</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>All Farms</td>
<td>45%</td>
<td>35%</td>
<td>77%</td>
<td>65%</td>
</tr>
</tbody>
</table>

Source: Interviews with olive oil small farmers

As regards high quality olive oil, it is involved in various critical aspects of the food systems in the examined regions, as well as to the strategies followed by OSFs. Interviews with key informants and material from focus groups show that 60% of the olive oil produced in Castellón is characterised as virgin or extra virgin, while almost the totality of produce in Ileia is extra virgin olive oil; also, monocultivar and organic olive oil are largely produced in Lucca, whereas oil from traditional and organic olive groves is produced in Alentejo Central.

In addition, interviews with OSFs reveal a striking difference in the percentage of farms that use certification of farm products, between the effectively integrated (55%), and the moderately and least integrated farms (16% and 28%, respectively). Certification concerns mainly organic oil and to a lesser degree oil from integrated production; the use of geographical indications is negligible.

Interviews with key informants and material from focus groups show that OSFs source high quality olive oil from their own production, whereas high quality olive oil is the main vehicle through which OSFs are linked to markets at local and regional level, as well as to national and international markets. Although high quality olive oil is exported from three of the examined regions, in Castellón it is the low quality oil that is exported in bulk for refining, whereas in Ileia, more than half of all the quantity of high quality oil is exported in bulk.

Furthermore, from our interviews with key informants and focus groups discussions, it ensues that intensive and super-intensive olive cultivating systems are already spread in Castellón and Alentejo Central, in contrast to Lucca and Ileia, where more extensive and traditional
systems prevail. In Alentejo Central farms with intensive and super-intensive production systems are entirely mechanized, and mostly processing olives in their own mills, while olives from OSFs are mainly converted into olive oil in cooperative oil mills. A series of native-local varieties of olive trees are cultivated in the examined regions: ‘Farga’, ‘Serrana de Espadán’ and ‘Borriolena’ in Castellón; ‘Frantoio’, ‘Leccino’ and ‘Moraiole’ in Lucca; and ‘Koroneiki’, ‘Kollyreiki’, and ‘Matsolia’ in Ileia.

The OSFs engaged in extensive and traditional cultivating systems, provide a series of positive externalities. Although we have not measured exactly these positive externalities in our study, as it has documented by ample literature, these systems, while lagging behind intensive systems in terms of yields, economic outcomes and profit, in many cases they provide landscape and habitat diversity, along with multiple benefits for the local communities (Russo et al., 2016; Borzęcka et al., 2018; Rodríguez Sousa et al., 2019).

It has to be noted that key informants and focus groups participants pointed out some strategies for building local networks, with clear benefits for OSFs. Solidarity purchasing groups in Lucca are a notable example in this category; in the same region (and to a lesser extent in the other regions), in cases where the whole food system structure is less concentrated, networks of small farms with small food businesses have been found to exert effectively a countervailing power, which is translated into better prices for the producers of oil. Finally, key informants and focus groups participants in all regions agreed that small farmers ensure higher producer prices firstly, when they sell olive oil from traditional varieties or organic, secondly, with direct sales to consumers and thirdly, through labelling and branding.

5. Discussion

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Olive cultivation in small farms of the examined Mediterranean regions is part of mixed farming systems, encompassing more than three different crops per farm; these crops are part of diverse value chains, which vary in terms of structure, geographical scope and governance arrangements. Self-provision of olive oil (as well as of some other products) seems to be the rule in the case of the OSFs, while noteworthy reciprocity relations were detected mainly through various forms of support, such as financial, technical, labour, in kind or other, given to farmers from neighbours or relatives.

Our interviews with small farmers reveal that OSFs develop extended non-market relations with relatives and friends, which can be seen as forms of social proximity (Dubois, 2018), i.e. interpersonal ties based on kinship and acquaintance. Also, OSFs develop own informal networks of customers that are usually based either on inter-personal relationships or on on-farm diversification strategies, such as the disposal of olive oil in the agri-touristic part of the farm. In addition, OSFs are strongly integrated into formal markets, spanning local, regional, national and international scales. Thus, our findings corroborate Winter’s argument who describes “a continuum, with embedded relations based on close social ties and loyalty on one end, and disembedded, impersonal, price-based relations at the other end” (Winter, 2003). We also confirm results from previous studies about the concurrent engagement of small farmers in multiple forms of market relations (Thorsøe and Noe, 2016), as well as in both alternative and conventional food systems (Brown and Miller, 2008; Tregear, 2011).

OSFs’ integration into formal markets is developed through various channels; in the case of the effectively integrated farms, through direct sales and sales to wholesalers, in contrast to sales to wholesalers and cooperatives for moderately integrated farms, whereas the least integrated farms present a relatively evenly distributed pattern of sales, with direct sales being the most important.
The effectively integrated OSFs combine various diversification strategies: off-farm sources of income, although they rely mainly on on-farm income; on-farm activities beyond agriculture (e.g. agri-tourism and catering); multi-cropping systems including olive groves, both irrigated/intensified and rainfed/extensive cultures; certification of products; and entrepreneurial characteristics, such as extensive use of hired labour. Therefore, we observe the coexistence of multiple strategies at the farm/farm household level, which have a complementary character and synergistic effects (see also: Grando et al., 2019b).

As the data of this study show, the special identity of the olive oil in the examined regions is usually recognised by the consumers (mainly in relation to its production from local varieties), however, olive oil has rarely obtained an official certification denoting a geographical indication. Yet, it has to be noted that consumers appreciate the quality of the virgin or extra-virgin olive oil produced in their region, even without branding, and look for it in the cooperatives’ shops, small retailers or through direct sales from OSFs.

This recognition of quality enables the formulation of strategies for building ‘short’ chains between producers and consumers, as well as for ensuring premium prices. Besides product differentiation (e.g. traditional olive oil, organic olive oil), we have seen that another strategy that ensures high producer prices is labelling and branding, on behalf of some successful cooperatives or OSFs with ‘entrepreneurial’ characteristics. This way, small farms can overcome some major constraints emanating from the unequal distribution of power across the value chains.

Nonetheless, some differences are observed, in the representation of the quality and value of the olive oil issuing from traditional olive groves and tree varieties, which explain the differences between the regions, in the added value of this oil in relation to oil resulting from more intensive productions. Part of the olive oil system in the examined Spanish and Portuguese regions seems to be lagging behind in relation to the marketing mechanisms and
capacity to obtain high prices for the oil from traditional groves, as if this oil had no particular quality, while the Italian and Greek regions seem to manage a higher valorization of this oil in the market, and make it possible for small farms to link to the market.

Although intensification is an option, at least partly adopted by OSFs, we have seen that in the examined regions, extensive olive farming systems are involved to varying degrees; in addition, the cultivation of traditional olive trees varieties indicates that many OSFs are engaged in activities of on-farm maintenance of agricultural biodiversity. The latter, imply the creation/generation of some positive externalities, which could be key ‘causal/anchorage factors’ for the construction of the specific identity of local olive oils (Sanz-Cañada and Muchnik, 2016).

This endeavour could build on the finding that intensified olive farming is a major cause of one of the biggest environmental problems affecting the EU today, i.e. the widespread soil erosion and desertification in all southern EU countries (Beaufoy, 2001). The expansion of irrigated olive production is increasing the over-exploitation of water resources that have already been eroded by other agricultural sectors. Adversely, traditional olive production systems contribute substantially to the preservation of agricultural biodiversity. As recent research shows, two critical factors/prerequisites for the on-farm conservation of local landraces (including olive trees varieties), are, firstly, their integration into both domestic and export markets, and secondly, the embeddedness of their products into the local culture and diet (Karanikolas, et al., 2018b). The former has been highlighted in this study and, therefore, with targeted strategies could help OSFs resist further marginalization.

Besides OSFs’ involvement in various informal networks, some local social networks that integrate both producers and consumers have been identified. Solidarity purchasing groups in Lucca are a notable example in this category; in the same region (and to a lesser extent in the other regions), in cases where the whole food system structure is less concentrated, networks of OSFs and small food businesses exert effectively a countervailing power. This is a
manifestation of 'organisational proximity' (Boschma, 2005) with an effective collective coordination. Finally, important coordinating activities, related to the valorization of local produce have been undertaken by some cooperatives. Thus, in Castellón some cooperatives with oil mills and own shop are taking the lead in promoting high quality oil from local varieties (some organic), developing a range of olive products and selling through their own shop, supplying small retailers and selling online. One marketing strategy put forward by these coops is to emphasize the value of this high quality oil as a way of preserving the very old olive trees (up to a thousand years-old), as part of the natural heritage in this area, and they have developed branding around this concept. In contrast, in Ileia region, an extreme fragmentation of both OSFs and small food businesses, along with inadequate collective action and lack of coordinating activities, consolidate the imbalances of the system; consequently, the large part of an extra virgin olive oil is sold in bulk, resulting in an inability of OSFs to capture a larger share of the added value.

The success (or lack of) of these valorisation strategies as a tool to avoid marginalisation can have also impacts on land use. Cropland abandonment is a common phenomenon in Europe (Strijker, 2005; Pointereau et al., 2008), being the problem particularly acute in the case of permanent crops as olive groves. The lack of profitability is the main reason for cropland abandonment, although there are many other interlinked reasons (Benayas et al., 2007; Pointereau et al., 2008). Land abandonment implies a loss of production potential, and entails a greater risk of fires, rural depopulation and soil degradation (OECD, 2001; López-Iglesias et al., 2013). Literature has discussed on land consolidation policies, and Sikor and Müller (2009) critically assessed state-led (i.e. top-down) versus community-based (i.e. bottom-up) initiatives. Thus, public strategies to prevent land abandonment have to necessarily support community-based actions on land use policies -such as common management of lands, or easing land sales, rentals and cessions. By the same vein, bolstering valorisation strategies...
Finally, it should be noted that despite the worth of our findings, the preceding analysis presents some limitations, primarily due to the small sample of farms surveyed, which is not representative in the strict statistical sense and, second, to the fact that olive oil trees are just one of the crops of these farms, under multi-crop systems. However, these limitations are tempered by the fact that farm-level information is supplemented by data from key informants and focus group discussions.

6. Conclusions

The aim of this study has been, firstly, to identify the various forms of integration of olive oil producing small farms to food systems and secondly, to identify the strategies adopted by the OSFs which are integrated into the food systems most effectively, the most beneficial strategies of economic integration, i.e. those that secure the long term sustainability of OSFs and contribute to the ‘localization’ of olive oil food systems.

Olive cultivation in small farms of the examined Mediterranean regions is part of mixed farming systems, encompassing more than three different crops per farm which are part of diverse value chains. All forms of integration of OSFs into food systems have been identified, i.e. self-provision of olive oil, reciprocity relations (mainly through various forms of support given to farmers from neighbours or relatives), extended non-market relations with relatives and friends, informal networks with customers that are usually based either on inter-personal
relationships or on-farm diversification strategies, as well a strong integration into formal markets, spanning local, regional, national and international scales.

The whole sample of our interviewees is almost evenly divided into three groups, with effective, moderate and minimal integration, respectively. Multiple strategies with synergistic effects co-exist at the farm/farm household level. Thus, the effectively integrated OSFs combine various on- and off-farm diversification strategies; direct sales and sales to wholesalers; multi-cropping systems; certification of products; and entrepreneurial characteristics, such as extensive use of hired labour.

Strategies for building ‘short’ chains between producers and consumers, as well as for ensuring premium prices for olive oil, are enabled by product differentiation (e.g. traditional olive oil, organic olive oil), and labelling and branding, on behalf of some successful cooperatives or OSFs with ‘entrepreneurial’ characteristics.

A series of specific territorial resources have been identified in the examined regions, including local olive trees varieties, extensive olive farming systems, recognition of the quality of olive oil by the consumers, as well as OSFs’ involvement in various informal and formal networks, that integrate both producers and consumers and indicate forms of social and organizational proximity. However, these resources are only partially mobilized by actors’ strategies, thus not creating a ‘strong’ identity of the various olive oils. These identities are to some extent valorized on the markets, but less so through positive externalities. Therefore, the unrealized potential of localization of the food systems in which OSFs operate, points to the need for targeted strategies that will contribute to the valorisation of the quality and the territorial specificity of olive oil.

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