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What is the extent of short food supply chains in Greece? Evidence from the cheese supply chains in the North Aegean Region

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Abstract: Rural development strategies recognise that in the contemporary competitive and globalised context of food trade, specific character products can contribute to the differentiation of agro-food products and to an increasing proportion of added value captured by the primary producers. Theory suggests that specific character products contribute to the appearance of the so-called alternative food networks (AFNs) and short food supply chains (SFSCs). Yet, evidence to support the contribution of these products to rural development is thin and fragmented. Moreover, the concurrence of specific character products with AFNs and SFSCs is over simplistic. This paper deals with specific character cheese products in the North Aegean Region, Greece and particularly with their supply chains, their distribution networks and added value. To portray these in detail we use primary and secondary data. Personal interviews with key informers were conducted while analytical data were selected for most cheese-making units in the region with the use of structured questionnaires. Results demonstrate that the existent conceptualisation of SFSCs is inadequate to describe the empirical realities in Greece.

Keywords: short food supply chains; SFSCs; specific character products; rural development; North Aegean Region; Greece.

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1 Alternative food networks, short food supply chains and rural development

There is a growing literature on the ‘quality’ turn in agro-food practices and on the emergence of the so-called alternative food networks (AFNs) and short food supply chains (SFSCs) (Renting et al., 2003; Parrott et al., 2002; Winter, 2005; Sonnino and Marsden, 2006). Alternative food has been conceptualised as ‘more natural’, ‘more local’ and ‘more healthy’ (Nygaard and Storstad, 1998; Marsden et al., 2000). Renting et al. (2003, p.394) define AFNs as ‘a broad embracing term to cover *newly* emerging networks of producers, consumers, and other actors that embody *alternatives* to the more standardised industrial mode of food supply’ (our emphasis). Here, we use SFSCs instead to define the types of food supply chain that short-circuit long, anonymous supply chains and shorten producer-consumer relations, as AFNs can not be considered as really ‘alternative’ or ‘new’ (Hinrichs, 2003; Ilbery and Maye, 2005).

Renting et al. (2003) suggest two dimensions in order to define SFSCs: the *organisational structure* and the specific mechanisms entailed in these to extend relations in time and space; the different *quality definitions* and conventions involved in the construction and operation of SFSCs.

For the first dimension, Marsden et al. (2000, pp.425–426) propose three positions, corresponding to different mechanisms that extend SFSCs across longer distances in time and space:

- a Face-to-face interaction where consumers purchase products directly from the producer or processor.
- b Proximate SFSCs, where the reach is extended beyond direct interaction, but is still based on relations of proximity.
- c Extended SFSCs, where products are sold to consumers outside the region of production and may cover large distances, but are still ‘short’ as ‘it is not the distance over which a product is transported that is critical, but the fact that it is embedded with value-laden information when it reaches the consumer, for example, printed on packaging or communicated at the point of retail. This enables the consumer to make connections with the place/space of production and, potentially, with the values of the people involved and production methods employed’ [Renting et al., (2003), p 400].

For the second dimension, two main categories of quality definitions are identified: the first category stresses the link between quality attributes of the product and its place of production. The second category includes products that are distinguished

by environmentally sound production methods such as organic and integrated production and products with claims of being natural or more healthy and safe. These categories are not mutually exclusive and often products claim quality attributes from both categories.

The notion of quality is central to the approach followed and its content requires some clarification. Quality is a complex, socially constructed notion, varying between different products, individuals, countries and cultural contexts (Ilbery and Kneafsey, 2000; Morris and Young, 2000). Generally, it is considered as a grade of excellence of a particular product, service, procedure etc. over similar products, services, procedures and it is usually thought to account for higher prices in the market. It is often linked to the needs of consumers (Leader European Observatory, 2000), implying that only their opinions are of real value when determining quality criteria (Cardello, 1995). These criteria are grouped in three categories (Grunert, 1995; Gilg and Battershill, 1998): the *intrinsic quality*, which for products refers mainly to the quality of the materials used, the nutritional value, the recipe etc.; the *certification* of this quality via production certification schemes (e.g., organic products, ISO or HACCP); and the *symbolic quality*, which refers to the quality that is attributed to a product or a service due to cultural, ideological or symbolic associations between the product – service and certain symbols, which build consumer attraction towards the product.

In the EU, the notion of specific character has been used to certify the symbolic and intrinsic quality of food. Specific character is defined as the ‘feature or set of features which distinguishes an agricultural product or a foodstuff clearly from other similar products or foodstuffs belonging to the same category’ (Regulation 509/2006, Article 2). The most important designations of specific character are linked with locality: protected designation of origin (PDO) and protected geographic indication (PGI). Elsewhere in the literature the notion of specificity is richer. Barjolle and Sylvander (2002, p.2) define specificity as a form of differentiation: ‘the product is *differentiated* if it has *specific characteristics* (that are measurable in the sense of substantial or intrinsic) and *if consumers perceive it as such*’ (emphasis in original). Specific character products are of particular interest to the study of SFSCs, as the idea that food quality can be signified through association with particular places, regions and modes of production is building consensus for the so-called discerning consumers.

Empirical and theoretical work on SFSCs and their role in rural development (for example Marsden et al., 2001; Alonso-Mielgo et al., 2001; Renting et al., 2003; Winter, 2005; Ilbery and Maye, 2005, 2006; Ilbery et al., 2006; Morgan et al., 2006 to name a few) seems to suggest that even if diverse settings are considered (different countries, different products, different questions raised) they help producers reorganise resources in an effort to gain more of the added value produced.

This paper examines the relation between SFSCs and specific character products. We focus on specific character cheese products of the North Aegean Region in Greece and more particularly on their supply chains, their distribution networks and the added value gained by the actors involved in their production. By doing this we test the adequacy of the SFSCs concept to describe the empirical reality of different specific character products in Greece and their contribution in the rural development of the North Aegean Region.

Figure 1 Cheese products in the North Aegean Region



2 Study area and research method

The North Aegean Region is an island Region consisting of three prefectures and ten inhabited islands (Figure 1). The Region stretches over 3,836 km², with 200,000 inhabitants (2001). The main land uses in the Region are groves (olive groves on Lesvos and Samos and mastic and citrus groves on Chios), vineyards (on Limnos and Samos) and grazing lands on all islands, while arable land is important only on Limnos. Livestock farming is also of great importance for Lesvos, Limnos, Samos, Ikaria and Chios. Sheep farms have more animals (66 per farm on average for the 5,800 farms) and most keep some goats as well (11 per farm), but there are also goat farms on Chios and

Ikaria. Cow farms are few and concentrated on certain localities. The number of animals, especially sheep, on Lesbos and Limnos increases constantly, despite the decline of the number of farms, indicating a growing intensification in the sector on these islands. The main food and drinks products of the region are olive oil, cheeses, wine, ouzo and mastic.

In order to shed light on the extent of SFSCs we focus on the cheese supply chains of the North Aegean Region. There are two main reasons for selecting the North Aegean Region. On one hand, livestock farming and cheese production are very important for the agricultural sector of the Region while on the other hand quality agri-food products thrive in the Greek insular regions (e.g., 40% of the Greek PDOs and PGIs are produced exclusively on islands, Vakoufaris and Kizos, 2011). We use primary and secondary data [provided by the National Statistical Service of Greece (NSSG) and by the Directorates of Rural Development and Food on Lesbos, Chios and Samos islands]. Primary data refer to personal interviews, which were conducted with the owner or manager of most of the cheese-making units (24 out of 29, the rest for a variety of reasons did not participate) using structured questionnaires. Five more interviews were conducted with representatives of local authorities and administrative bodies that are involved in cheese processing and supplying. Moreover, data on prices of the cheese products were collected in various retail shops in Mytilene in the spring of 2003 (in the two big supermarkets in the city and three smaller retail shops) and three major super-markets in Athens in the spring of 2003.

We must explain this focus on cheese-making units and not on other actors of the supply chains. During our research we found that the primary producers of the cheese products – the livestock farmers – were practically ‘cut off’ from the end products in every possible way. They do not know what happens to the milk they produce after delivering it to the cheese-making units (cooperative cheese-making units are the exception to this rule), and they do not have a say about the end products (prices, marketing policies etc.). Interprofessional organisations for the protection of the end products do not exist. Although the cooperatives perform a number of actions for their members (e.g., they buy and distribute cheap animal feedstuff) they are usually price takers when the price is bargained between cooperatives and cheese-making units. Data on downstream relationships between cheese-making units and other actors were collected through the cheese-making units’ questionnaires.

The analysis is based on the overall earnings of the cheese making units for every different supply chain, as our respondents, especially from smaller units, were either uncertain or simply unaware of the production costs of a particular product or even the overall revenue from that product (and/or were unwilling to make these calculations with us). One reason for this is that most of the units produce more than one cheese products and therefore the ‘breaking down’ of the operation costs (labour, power, water, etc.) per product is not feasible, while milk costs are calculated with the use of the average quantity used per product. But the most important reason behind this uncertainty is that units operate and calculate their earnings on the basis of particular supply chains and outlets for their products and more factors than the price are considered, such as the payment method (cash, 3-month checks, 6-month checks), the discounts that big retailers demand and the volume that can be channelled (for a similar approach [Vakoufaris and Kizos, 2011](#)). Therefore, the analysis of the earnings per chain was based on the prices and the quantities sold per chain (when these were readily available) and the overall earnings of the unit (those that were declared to us). This analysis provides some insights

on added value, but the issue remains open. This is an important point and is discussed in more detail below.

3 Results

3.1 Brief description of cheese production in the North Aegean Region

In the North Aegean Region, 18 different cheeses are produced (Table 1, only major productions are included), five of which are officially designated products (four PDOs and one organic). Only two PDOs are produced exclusively on the islands of the Region (Ladotiri on Lesbos and Kalathaki on Limnos), the rest being produced in other parts of Greece as well (see Figure 1). Other not officially designated products exist in the Region (e.g., Mastelo on Chios island, Melichloro on Limnos island), which are characterised by specific production modes and locality of production. Non-specific products include white cheese, which is feta-like cheese which either is produced outside the designated area (only Lesbos and Limnos in the region) or includes cows' milk and Graviera. Other cheese products produced in small quantities in the region are Kefalograviera, Touloumotiri, Kalathura, Anthotiro along with yoghurt and butter. One unit in Chios produces pasteurised milk. An unknown number of livestock producers process and sell their own cheese in small quantities, locally, on face-to-face networks. Selling this cheese is illegal according to Greek manufacturing legislation, but is quite common, especially on islands like Ikaria and Chios, where until recently no official processing units existed, or in localities with strong tradition in cheese processing, like some areas of Lesbos. The majority of those producers produce Feta cheese. This practice will probably continue in the margins of 'legal' cheese making for reasons of 'tradition', based on a small but persistent local demand and/or the lack of 'legal' cheese making units in the locality.

Most of the cheese-making units are located on Lesbos Island (22 of the 29 firms). These units are classified into four categories according to the amount of milk they process (Table 2, the cut off points of the categories were suggested by the actual frequencies of milk quantities and do not correspond to differences in other areas, as the 'industrial' units in the Region are middle size compared to the big cheese making industries of Greece): industrial units (more than 3,000 tons annually), big size enterprises (1,000 to 2,000 tons), medium size enterprises (100 to 1,000 tons) and small enterprises (less than 100 tons). The cheese-making units on Limnos Island are, along with the ones on Lesbos, the biggest in size and in quantities of milk processed. The cheeses produced include PDO Kalathaki Limnos, PDO Feta and Melichloro. Another interesting feature of Limnos' units is the variety of existing chains (Table 1), with face-to-face networks and strong links with super-market chains. On Chios Island the only existing cheese-making unit until 1993 was a cooperative milk production unit that produced small cheese quantities (Graviera) when milk production exceeded the milk consumption market capacity. The second unit operating since 1994 has introduced a new cheese product (Mastelo cheese), which is based on a traditional recipe modernised and transformed in order to meet hygiene standards. On Samos Island the only cheese-making unit operates since 1982 and produces white cheese. On Ikaria Island, homemade 'illegal' cheese is a common practice and only in 2002 a cheese-making unit has initiated production of Kalathura cheese. On all other islands, cheese processing is marginal and homemade.

Table 1 Cheese products in the North Aegean, supply chains, quantities supplied and number of units per category of supply chains

Island	Name of product	Official designation	Area of production	% of quantities – SFSCs (number of units*)	% of quantities – intermediary chains (number of units*)	% of quantities – conventional chains (number of units*)	Total quantities in kgr (number of units**)
Limnos	Kalathaki	PDO	Limnos Island	42.8 (2)	21.3 (3)	35.9 (2)	718,000 (3)
	Limnos						
	Feta	PDO	Mainland Greece and Pr. Lesvos	47.2 (2)	26.8 (3)	26.0 (2)	212,000 (3)
	Melichloro		Limnos Island	47.6 (1)	49.5 (2)	2.9 (1)	84,000 (2)
Lesvos	Ladotiri	PDO	Lesvos Island	17.5 (11)	20.6 (10)	61.9 (5)	458,280 (18)
	Mitilene						
	Kaseri	PDO	Regions Macedonia and Thessalia, Pr. Lesvos and Pr. Xanthi	3.4 (4)	2.0 (2)	94.6 (4)	630,700 (4)
	Feta	PDO	Mainland Greece and Pr. Lesvos	12.7 (11)	16.2 (10)	71.1 (5)	794,650 (19)
Feta		Organic	Mainland Greece and Pr. Lesvos		100 (1)		75,000 (1)
Graviera			Greece	19.2 (11)	12.9 (9)	67.9 (5)	993,900 (17)
	White cheese		Greece	69.9 (2)	30.1 (2)		19,000 (2)
Chios	Mastelo		Chios island		100 (1)		73,000 (1)
	Graviera		Greece		100 (1)		250,000 (1)
Samos	White cheese		Greece	90 (1)	10 (1)		12,000 (1)
Icaria	Kalathura		Greece	100 (1)			6,400 (1)

Notes: *Refers to the 24 cheese-making units to which interviews were conducted.

**Refers to all 29 cheese-making units. Additional data provided by the local Bureaus of Agriculture.

Table 2 Typology of cheese-making units according to the quantity of processed milk, employment and turnovers

Size typology	Island	Average milk processed in tons (range in tons)	Average number of milk farms (range)	Average turnovers in €*1000 (range in €*1000)	Average number of workers (% of which seasonal)
Small size (N = 5)	Lesvos (N = 4)	53.2 (31–70)	20 (1–50)	73 (44–100)	2 (50%)
	Ikaria (N = 1)				
Medium size (N = 11)	Lesvos (N = 8)	455.2 (180–700)	44 (15–50)	838 (150–3,000)	5 30%–80%
	Limnos (N = 2)				
	Samos (N = 1)				
Big size (N = 4)	Lesvos (N = 1)	1,365 (1,000–2,000)	196 (35–600)	753 (350–1,030)	9 (50%–80%)
	Limnos (N = 1)				
	Chios (N = 2)				
Industrial (N = 4)	Lesvos (N = 4)	5,625 (3,000–12,000)	925 (250–2,500)	4,244 (2,500–7,500)	16 (50%–80%)
	Total (N = 24)	1,442.6 (31–12,000)	(1–2,500)	1,242 (44–7,500)	7 (30%–80%)

Most of the cheese-making units were established in the 1980s and most of the owners are 30–50 years old (70% of the total number of owners) and only a smaller percentage is older than 50, while only two firms are owned by women. Owners have to do more or less everything (production – cheese-making, management of the firm and supplying of the products) even in some big size units. Only three cooperative units operate; two on Lesvos and one on Chios, the rest being private-owned. Big national cheese-making units can buy off smaller units in various localities to appropriate local and/or specific character products under their own brand names (this took place on Lesvos), demonstrating the inability to defend specific character products from big ‘outside players’. Only one firm employs trained personnel for milk quality control (an industrial one on Lesvos), and only four firms have appropriate quality control facilities.

3.2 Supply chains and price differences

The typology used in order to reconstruct the supply chains refers to (Table 1, Table 2, Table 3 and Figure 2): the type of products (specific character – officially designated or not – or conventional); the type of supply chains (SFSCs, intermediate or conventional); and the spatial proximity of chains (local, national and international). As conventional chains we define exclusively super-market chains; while as SFSCs are considered *only* those chains where the cheese products are sold directly by the cheese-making units (locally or not). This typology represents two extremes of a continuous spectre of different supply practices and regimes that the cheese-making units ‘in the real world’

use in order to sell their products. All other cases are defined as intermediate chains, which present features of both short and conventional character. This conceptualisation of SFSCs is different from the one proposed by Renting et al. (2003), but we believe it is the most appropriate to describe empirical reality, which is far more complex than the theory suggests. A second typology refers to the islands and some of the localities on Lesbos that present interesting features. This typology is based on the same two categorisations: the type of the supply chains and their spatial proximity (Figure 3).

Figure 2 Categorisation of North Aegean cheeses according to their supply chains, their spatial proximity and their specific character

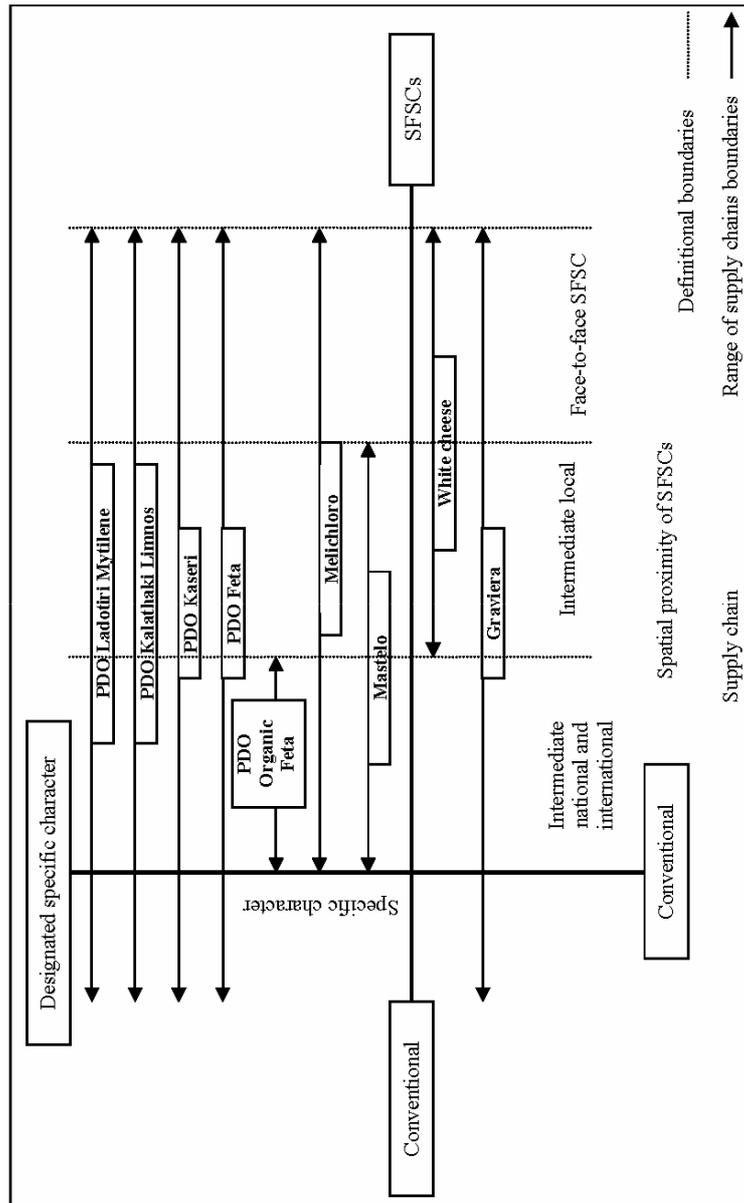
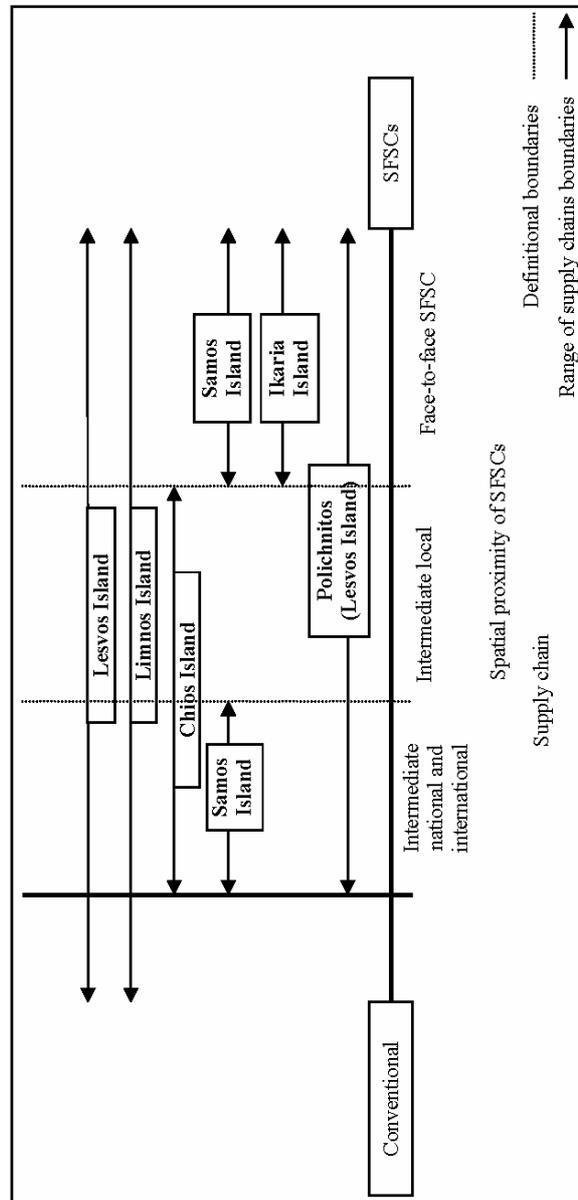


Figure 3 Categorisation of North Aegean Islands and selected localities according to the supply chains and their spatial proximity



According to our analysis, the size of the unit is positively related with the quantities sold in national markets. The regional market does not practically exist, as only one medium-size unit has declared to supply directly other islands of the Region. The reason behind this appears to be transportation costs and, with the exception of Lesvos and Limnos islands, insufficient production to cover demand. Of course some products can be found in other islands, especially the most known ones like Feta PDO, Ladotiri PDO and Kalathaki PDO, but it is the super-market chains that supply them and not the

cheese-making units. All types of units send small quantities abroad, mainly to markets where Greek immigrants live, with the exception of organic feta discussed later.

The supply chains differ according to the size and type of market (Table 3). Small units distribute most of their products through their own shops and small shops which are located near the processing unit or in settlements in a typical face-to-face SFSC. Small quantities which are supplied to national and international markets are distributed by wholesalers, but these chains can not be considered neither extended SFSCs nor conventional. Medium-size units also distribute their products through their own shops or other local shops, but with the notable exception of a Limnos company, the quantities are smaller and wholesalers perform a large part of local distribution. Major trading companies and super-market chains supply the national markets. Big-size units use super-market chains to distribute their production nationally. Industrial units distribute most of their production through these chains. Three things must be underlined here:

Table 3 Markets, supply chains and average percentages per supply chain for cheese companies of the North Aegean Region per type of company

<i>Type of unit</i>	<i>Market</i>	<i>SFSCs %</i>	<i>Intermediate chains%</i>	<i>Conventional chains %</i>	<i>Total %</i>
Small size (N = 5)	Local	28.8			28.8
	National		0.7		0.7
	International		70.5		70.5
	<i>Total</i>	28.8	71.2		
Medium size (N = 11)	Local	36.7	17.2		53.9
	National		30.7	9.9	40.6
	International		5.5		5.5
	<i>Total</i>	36.7	53.4	9.9	
Big size (N = 4)	Local	28.0	30.7		58.7
	National		0.8	34.8	35.6
	International		5.7		5.7
	<i>Total</i>	28.0	37.2	34.8	
Industrial (N = 4)	Local	5.2	0.2		5.4
	National			94.1	94.1
	International			0.5	0.5
	<i>Total</i>	5.2	0.2	94.6	
Total		19.6	25.0	55.4	

The enterprises' own shops offer direct links to products and producers attach greater importance to them than official designations and certifications. Consumers of Ladotiri cheese in Polichnitos area on Lesbos Island for example buy Mr X's cheese and not the product Ladotiri Mytilene PDO. As the prices' analysis will demonstrate, this is reflected to the amount of money the consumers are willing to pay in order to enjoy this symbolic quality and support the unit and the local production.

The same is in part true for all local supplies. Consumers buy products from producers or localities with cheese tradition and not PDO designations. This symbolic value colours many of the supply chains (mostly the local ones, but some of the national

as well) with the marks of the producer rather than with the denomination of the product and can be held responsible for the survival of some medium-size firms that cannot sell most of their quantities through their shops as small ones do and have to depend on brand name recognition. Immigrants from Lesvos (in Athens mainly but also in other countries like Germany, Australia and USA where Greeks live) demonstrate similar attachments to specific *products* and *areas*. This is reflected in the labels of the products (where applicable, as, e.g., feta cheese is sold in 16 kgr metal cans). PDO legislation is very specific on label content and format (the name of the product and the PDO sign should be printed in big capital letters and the name of the producer should be printed with smaller letters), but products found on the market do not always follow these guidelines, especially for Ladotiri Mytilene PDO.

Super-market chains are interested in certifications and designations and can be regarded as the locomotives of quality controls and legislative initiatives in conventional supply chains. Meeting certification requirements (HACCP certifications mostly) is easier for the big-size units and the industrial ones. Most of them are already certified. Small units do not acknowledge the importance of certification yet, with the notable exception of the unit that produces organic feta.

The question of added value arises with more intensity after these remarks on the differentiation of supply chains. According to the owners' declarations, there is strong negative correlation between profit margins and the size of the firm (Spearman's $r = -0.805^{**}$, $\alpha = 0.01$ and average profit margins at 26% (range 20% to 30%) for small-size units, 10% (range 5% to 30%) for medium-size units and 6% (range 5% to 8%) for big-size and industrial units), which means that smaller units operate with greater margins for earnings. This is in agreement with the products' prices presented in Table 4 and can be explained when the different supply chains are considered. For small-size units, factory and retail prices coincide and transport expenses are low, as only small quantities are transported out of the island that they are produced. Moreover, super-market chains tend to put pressure on prices.

Nevertheless, the differences in prices are striking in some cases. In Ladotiri PDO for example the difference of average prices between small and industrial units is 1.19 € in favour of small units (16% of the final price). Yet, the difference between the small units' and the super-markets' average prices in Athens is 0.96 €, thus raising the price difference of super-markets at 2.15 € or 25% of the final price in Athens and 2.94 € or 30% of the final price on Lesvos (Table 4). This loss for industrial units is partly compensated by the quantities sold and the reduction of transportation costs but remains however very high. On the other hand, small units sell at good prices, very competitive for the Mytilene market. The same differences occur in the Feta PDO case (difference of 0.94 € between small and industrial units or 20% of the final price and a difference of 1.19 € or 26% of the final price in Athens), in the Graviera case (difference of 16% of the final price between small and industrial units and difference of 26% between factory and Athens price for industrial units) and in the Kaseri PDO case, indicating that the price differences represent real differences of the supply chains.

In the next section specific case studies are presented and a closer look is given to the complexity of supply chains. In these, we calculate the earnings per supply chain and not for the whole unit, as the costs are known for raw materials especially milk, the price of which is significantly different on different islands and per type of milk (sheep milk price is higher with an average of 0.78 €/Kgr, 0.53 €/Kgr for and 0.48€/Kgr for goat milk), while turnovers were provided per supply chain or for the unit as a whole.

Table 4 Factory and retail prices per kgr of cheese products

		Average prices/kg in € for company types (range in €/kg)			
		Small (N = 5)	Medium (N = 11)	Big (N = 4)	Industrial (N = 4)
<i>Ladotiri PDO</i>	Factory price	*(N = 2 / 3) 7.34 (7.34–7.35)	(N = 8) 6.7 (6.4–7.45)		(N = 3 / 4) 6.15 (6–6.3)
	Retail price (Lesvos)	(N = 2 / 3) 7.34 (7.34–7.35)	(N = 2) 8.55 (8.23–8.9)		(N = 1) 8.79
	Retail price (Athens)				(N = 3) 8.3 (7.98–8.58)
<i>Feta PDO</i>	Factory price	(N = 2 / 3) 4.7 (4.7–4.7)	(N = 10) 4.2 (3.5–5.43)	(N = 1) 4.1	(N = 3 / 4) 3.76 (3.52–3.96)
	Retail price	(N = 3 / 3) 4.7 (4.7–4.7)	(N = 1) 4.98		(N = 1) 5.59
	Retail price (Athens)		(N = 1) 5	(N = 1) 5	(N = 1) 5.15
<i>Kaseri PDO</i>	Factory price			(N = 1) 6.45	(N = 2 / 3) 6.01 (5.86–6.16)
	Retail price			(N = 1) 8	(N = 1) 7.58
	Retail price (Athens)			(N = 1) 8.15	(N = 3) 7.53 (7.45–7.58)
<i>Kalathaki PDO</i>	Factory price		(N = 2) 5.2 (4–6.4)	(N = 1) 4.4	
	Retail price (Lesvos)		(N = 3) 5.56 (5.19–5.85)	(N = 2) 5.5 (5.45–5.55)	
	Retail price (Athens)			(N = 3) 5.56 (5.19–5.85)	
	Retail price (Limnos)		(N = 1) 6.4		
	Factory price	(N = 2 / 3) 7.34 (7.34–7.35)	(N = 7) 6.5 (6.4–7)		(N = 3 / 4) 6.11 (5.86–6.3)
<i>Graviera</i>	Retail price (Lesvos)	(N = 2 / 3) 7.34 (7.34–7.35)	(N = 7) 6.5 (6.4–7)		(N = 1) 8.5
	Retail price (Athens)				(N = 3) 8.26 (7.99–8.5)
	Factory price				
<i>Organic Feta PDO</i>	Factory price	(N = 1) 5.3			
	Retail price	(N = 1) 5.3			
<i>Melichloro</i>	Factory price		(N = 2) 8.2 (7–9.3)		
	Retail price (Limnos)		(N = 1) 9.3		
<i>Mastelo</i>	Factory price			(N = 1) 5.54	
	Retail price (Chios)			(N = 1) 5.54	
<i>White cheese</i>	Factory price		(N = 3) 4.3 (3.6–5.14)		
	Factory price		(N = 3) 4.3 (3.6–5.14)		
	Retail price				

Note: *Data only for two of the three firms.

3.3 *Case studies of supply chains and added value analysis*

3.3.1 *Short supply chains in Polichnitos*

In Polichnitos area on Lesvos Island a number of livestock producers still keep sheep as a part of a mixed agriculture model (along with olive groves and small areas with cereals and legumes for livestock use). The three small and the one medium-size units which are located there are typical examples of small scale and locally oriented production units found in many parts of rural Greece. The three small units use milk from their own farms and milk from a small number of other sheep farmers (from ten to 15 farmers). They all produce other dairy products for local customers like yogurt and have small shops in the settlement where all products are sold to locals and passing tourists, in an archetypal example of a face-to-face SFSC. Yet, it must be noted that two of the units sell a small part of their products through intermediate chains either locally or nationally. The prices they sell at are considerable higher than the factory prices of industrial and big-size units and lower than prices in Mytilene and Athens (Table 4). A closer look reveals the insecurities and uncertainties that these units have to face in a changing and globalised market. First of all, they had to meet production certification standards requirements (HACCP certification, a typical example of a 'regulatory treadmill'). It must also be understood that at the local level, PDO designation is not only unknown by the local consumers but also considered unnecessary. Consumers attach greater importance to symbolic dimensions and the 'name' of the producer than to certifications and designations. A reconstruction of the earnings for one firm is as follows: the milk that was processed in 2002 was nearly 60 tons bought at 0.7 €/kgr. The unit produced two tons of Feta PDO sold at 4.7 €/kgr, 4 tons of Graviera sold at 7.34 €/kgr and seven tons of Ladotiri PDO sold at 7.34 €/kgr and declared profits of 22,000 €. Therefore, the average cost of milk reaches 3.2 €/kgr of produced cheeses, the average cost of processing and selling the products at 2 €/kgr, leaving a margin for earnings at 1.7 €/kgr.

3.3.2 *Supply chains of Mastelo cheese*

As already mentioned, Mastelo is produced since 1994 by one unit in Chios that modernised a local traditional recipe for a semi-hard cheese and produced two Mastelo products, one using cow milk and one using goat milk bought by 35 farmers who sell their milk to the unit. The Mastelo cheese resembles other cases in Europe of the revival of older local products (Tregear, 2003). The quality and taste of the cheese has established it as a local brand name and the owner of the unit is seeking ways to produce greater volumes. Prices can be compared to feta and other soft cheeses' prices, as similar quantities of milk per kilo of product are used. The factory price is greater even than the Athens retail price for Feta PDO (9% greater) and Mastelo is sold in small packages, packed in vacuum. The unit does not own a retail shop and supplies local shops and other local companies with its own refrigerator truck. Small quantities (20% of the total quantity) are also sold in wholesalers in Athens. The reconstruction of the earnings for 2002 is as follows: 600 tons of cow milk and 400 tons of goat milk were processed, costing 0.41 €/kgr and 0.47 €/kgr respectively. On the consumption side, 35 tons of cow and 38 tons of goat Mastelo are sold at 5.3 €/kgr and 5.78 €/kgr respectively (factory prices), along with 29.2 tons of Mizithra cheese at 3.36 €/Kgr. The total earnings reach 68,000 € approximately. The owner declared profits of 18,000 €, and therefore production costs reach 50,000 €. Milk costs reach 4.2 €/Kgr, processing costs 0.5 €/Kgr

and earnings 0.2 €/Kgr approximately, significantly smaller than the Polichnitos example, due to greater milk costs.

3.3.3 Organic feta in Europe and Japan

Organic feta PDO is a 'double' specific character product: it is designated as PDO and it is organic. Its history on Lesvos begins in the middle 1990s when two partners established an organic olive oil enterprise that bottled the olive oil of a local charity Foundation of 160 ha (of which 60 ha with olive groves). The success of the product led to the next step, which was the production of organic milk and organic dairy products. The organic olive oil supply chains has offered the company contacts outside Greece, which were interested in organic products with a 'traditional' aura, connected to olive oil and products from Greece in general. The company established a market in Germany, where most of the quantities of organic feta are sold in a series of relatively small and specialised stores. It has even established regular contacts with the market in Japan, through a Japanese retail company. According to the owner of the company it was the retailers from those countries that discovered their company and initiated their commercial relations. For instance the Japanese retail company is owned by a Greek merchant who frequently makes journeys throughout Greece to discover local, authentic products in order to market them to Japan. The product's certifications were crucial for the establishment of those relations. Although prices in the markets abroad are not known, factory prices of organic feta are higher than all retail prices of non-organic feta and higher of all other factory prices (11% of the price of small size units, 16% of the price of medium and big-size units and 30% of the price of industrial units). What is more important though in this case is the consistency that is required in setting up and supplying distant markets with local products.

3.3.4 Conventional and intermediate supply chains of industrial units

The description 'conventional' is not doing justice to a series of different supply chains that are just 'not short' but intermediate, including the supply chains of the industrial units on Lesvos that appear to be 'more conventional' compared to the rest cases, involving super-market chains and/or wholesalers. Industrial units produce lots of cheeses, in volume and variety and obviously cannot be confined in local markets. Having to go national, they seek the cheapest way out of Lesvos Island (which is 12 hours by ferry from Athens, while all four units are located in ranging distances, from 50 to 90 km from the port of Mytilene). Obviously super-market chains or major trading firms are the best solution - but at what price? The factory and retail prices presented in Table 4 reveal that these differences reach 25%, 26% and 26% of the final price in the Ladotiri PDO, Feta PDO and Graviera cases respectively. On the other hand, the declared profits are satisfactory. The reconstruction of profit margins for one of the four firms is as follows: the total amount of milk used in 2002 was 3,000 tons bought at 0.73 €/kgr. 522 tons of 4 types of cheeses and butter were produced, sold at various prices and accounting for almost 3,000,000 € (or 5.5 € per kgr of cheese). The owner declared profits of 230,000 €, therefore milk costs reach 4.2 €/kgr, processing costs reach 1.03 €/kgr and profits 0.45 €/kgr. When operating under these narrow profit margins, the choice of conventional supply chains seems reasonable, considering also the competitive markets, the transportation costs and the quantities of cheese produced. There is a lack of local

shorter supply chains that can offer higher profit margins and exploit better the specific character of the products. The owners of the units seem satisfied with this de-localisation of their production and the loss of their products' specific character and wave the flag of safety that such chains entail. The fact remains though that the super-market chains gain the specific character and the symbolic quality of the products and sell at better profit margins than the industrial cheese-making units do.

4 Discussion

In theory, SFSCs have bigger impacts on rural development than conventional supply chains ([Renting et al., 2003](#); [Marsden et al., 2000](#)). The case of cheese-making units in the North Aegean Region presented here seems to verify this up to a point. One of the findings of the research was that small units appear to have greater earnings per kgr than all other units and face-to-face SFSCs are the tool for achieving this. This finding has to be dealt though with some caution, as all units and especially smaller ones make their economic calculations per outlet and supply chain for all the products sold through the particular chain and not overall per product. At the same time, the allocation of production costs and especially milk is not possible in detail per product. Therefore, the reconstructions were conducted per supply chain with the use of the prices in each knot of the chain.

Regarding the *supply chains*, one thing that emerged after examining the results of this study is that the terms conventional and short cover many different practices, leaving sometimes blurred definitional boundaries, especially when extended SFSCs are concerned. The typologies (especially the one of [Renting et al., 2003](#)) offer good insights in SFSCs, but conventional chains are considered as way too uniform than they really are. In the North Aegean, all cheese units use a great deal of different supply chains and indeed as Table 2 and Figure 2 and Figure 3 demonstrate, even the medium-size units use in part intermediate or even conventional supply chains. The main reasons behind this is that conventional supply chains represent a constant demand for the products, which is very important and allows firms to manage their production effectively. The actual behaviour of units does not fit tightly in the conceptual typologies and this reveals the complexity in which the units have to operate and how their 'reality' is different than conventional economic thinking.

As far as the *specific character products* and the *official designations and certifications of quality* are concerned, although SFSCs are defined (partly) according to the quality dimension, and the existence of a quality product is a prerequisite for the short character of the supply chain, *not all quality products are characterised by short chains* (as suggested for instance by [Renting et al., 2003](#)). Considering all organic products' chains and all officially designated products' chains as SFSCs is a methodological simplification.

Concerning markets and consumers, our research indicates that cheese markets for the North Aegean products have to be divided in three categories: local (island) markets (with the possible exception of Lesvos, where more local markets on intra-island level exist); national and international markets.

Consumers in local markets know that the products are of specific character, and knew it well before the appearance of designations and certifications [this point is raised also by [Brunori et al. \(2008\)](#) and [Bardaji et al. \(2009\)](#)]. The owners of the cheese-making

units mention that consumers and small retailers, especially those that sell products locally, do not always recognise PDO designations. The continuation of homemade cheese which is considered as 'good home-made cheese' is typical of this attitude towards quality and its certification.

Larger super-markets and traders, especially those that act at a national range, are interested in two things, according to our respondents: designation and certification of quality and low prices. Although PDO designations are not very well known, consumers especially of the large urban centres recognise symbolic quality connected to designation of origin and/or cheese-making traditions (Ladotiri of Lesvos Island for example). Prices in Athens seem to verify that the PDO designation cannot offer a significant price change for Ladotiri PDO and its price is very close to that of Graviera (which is not a PDO product, but is similar to Ladotiri), but the symbolic quality of Lesvos raises the prices significantly when compared to factory prices. Other areas in Greece with equally strong or stronger cheese-making traditions than that of Lesvos can sell at higher prices (Graviera from Metsovo is sold at a 40% higher price for example), demonstrating this limited knowledge of PDO designations or the attachment of consumers to different constructions of symbolic quality. This does not mean that the economic importance of PDOs and PGIs in Greece is not as big as for instance in France ([Bureau and Valceschini, 2003](#)) but it rather shows that some PDOs and PGIs are not as well known as for instance Feta PDO cheese and have failed to use the scheme to increase their market share or their prices. Whether this is the effect of the scheme or demonstrates inefficiencies of the companies that produce them is a question open to debate.

International markets can be considered as a special case. Although they present similarities with national markets, at the same time they appear to be constructed around 'less conventional' supply chains. Here of course, certification is absolutely necessary for exports, in agreement with [Belletti et al. \(2007\)](#) who point that PDO and PGI labels may act as a key to open long distance commercial channels and export channels.

For *symbolic quality*, the presentation of the prices in the various ends of supply chains of the North Aegean cheeses reveals that retailers in Athens and small and medium-size firms that can sell through 'short' chains actually gain the added value that symbolic quality attaches on the cheeses. If these price differences prove that the North Aegean cheeses indeed have higher symbolic value both locally and in the national market (especially in Athens and Thessaloniki), the problem that remains is how to reach these markets in a way that the added value 'stays' with the production units and is not gained by retailers. Respondents recognise that such chains 'open' new markets to their products, markets that otherwise might stay beyond reach, but this advantage is shadowed by the small margins and the payment methods that big retailers adopt.

Finally, the question on specific character products, SFSCs and rural development, cannot be answered in a straightforward way. What seems clear is that specific character is more linked to symbolic quality for local and, in part, for national consumers, and this specific character can create added value. The question that arises is whether this added value refers to the cheese-making units or to the major conventional supply chains. SFSCs at a local level appear able to allow small and medium-size units to survive in a competitive and globalised market. On the national market though, results indicate that cheese-making units are on the losing side, or at least that they can benefit more from symbolic quality than they really do. The other effect on rural development refers to local employment, not only those that work in the cheese making units that are few, but also sheep farmers who in various localities can be as many as half the active population. The

actual impact in the area though depends on the production scale of the unit and its success, as small and successful units may have less positive impacts than big and less successful units (Kizos, 2010). This issue requires closer attention and better empirical documentation.

5 Concluding points

In this paper we examine the relation between SFSCs and specific character products with material from the cheeses of an insular Region in Greece.

On the issue of supply chains, the definition of SFSCs (Renting et al., 2003) as *new* and *alternative* chains is inadequate to describe the empirical reality in the case study and in Greece in general. Most of the SFSCs that exist in Greece are not *new* chains that were created as a reaction to some changing rural development practices and politics, but an established tradition that has been going on for many years. New types of specific character products (PDOs, PGIs, organic) have been added and in most cases, *existing* chains were used to distribute these new products and perhaps this is one of the reasons that PDOs are not yet recognised very widely by consumers, especially locally where consumers attach greater importance to symbolic dimensions than to certifications and designations. The findings therefore suggest that the definition of SFSCs should be re-examined.

On the issue of added value, the analysis was performed for every different supply chain as the reality of respondents is that their production choices and decisions are determined by the benefits that each supply chain offers on the basis of not only the price, but also the volume that can be sold through the chain and the payment method. This reality raises another important issue in the definition of SFSCs which implies that consumers have access to the same information and knowledge and can choose rationally the best product and supply chain and also that producers have access to information and knowledge on the function of markets and act accordingly. This may be true in many cases, especially for bigger producers that can buy or hire specialised services, but smaller producers, for which SFSCs are very important, have different priorities. A reformulation of SFSCs that could take into account the actual complexities involved, such as hybrid chains, the power balance and trust across the chain, to name some of the findings of our case study would be of great use.

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